Molded Case Circuit Breakers Family



3 Molded Case Circuit Breakers

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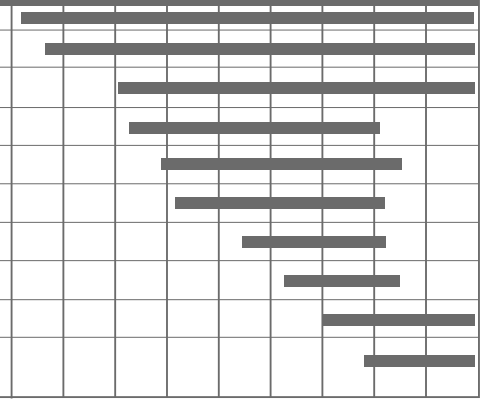
Molded Case Circuit Breakers



Power Defense MCCB

Time Line—Major Product Introductions

Year	Product
1923	First compact, workable circuit breaker developed by Westinghouse
1927	Westinghouse introduced the first complete circuit breaker line, rated 10– 600 A, 600 V
1970	Motor Circuit Protector (MCP) introduced—first sensitive, low level protection designed specifically for motor circuits
1973	SELTRONIC™ introduced—first molded case circuit breaker with an electronic trip unit
1979	Current Limit-R circuit breaker introduced—first true current limiting trip unit
1982	Series C® Family introduced—new world-class standard, meeting increasing interrupting requirements without sacrificing compact size
1995	OPTIM™ Family introduced—first truly programmable molded case circuit breaker
2004	Series G® First Global Breaker Line
2010	Arc-Flash Reduction Maintenance System is introduced offering new levels of safety for service personnel
2019	Power Defense™ molded case circuit breakers launch with global ratings and Power Xpert Release (PXM) electronic trip units spanning the entire product portfolio



Product Description

Eaton's molded case circuit breakers are designed to provide circuit protection for low-voltage distribution systems. They are described by NEMA® as ". . . a device for closing and interrupting a circuit between separable contacts under both normal and abnormal conditions," and furthermore as ". . . a breaker assembled as an integral unit in supporting an enclosed housing of insulating material." The NEC® describes them as ". . . a device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating."

Circuit breakers protect against overloads in conductors and protect against short circuits in connected apparatus such as motors and motor starters.

Circuit breakers are designed for use in panelboards, switchboards, motor control centers, control panels, combination starters, individual enclosures and bus duct plug-in units.

Product History

Originally a Westinghouse Product

The need for molded case circuit breakers came about in 1918 when numerous applications for electrical motors resulted in a demand for a device that would ensure safe operation and, at the same time, protect electrical circuits.

During this period, individual motors were used for the first time in industrial plants to operate machine tools and in private homes to operate appliances. Plant electricians were constantly changing fuses blown during motor startups because of the lack of properly designed fuses for motor circuit protection.

Homes experienced similar problems when electrical circuits were overloaded. Inspectors were concerned about fire hazards because of plug fuses being bridged with pennies and the installation of fuses with too high an ampere rating. Inspection authorities became involved and initiated meetings with manufacturers to find a solution to the problem. The switch manufacturers were asked to develop a switching device that would interrupt a circuit under prolonged overload conditions.

The device would have to be safe, reliable, and tamperproof. The device should also be resettable and reusable after a fault interruption without the need to replace any parts.

This search for better circuit protection resulted in many different but unacceptable approaches to the problem. These early meetings and subsequent efforts prepared the groundwork for the eventual development of the molded case circuit breaker.

After intensive research and development, Westinghouse produced the DE-ION® arc extinguisher for use in large oil circuit breakers. Although too large in its initial form to be practical for small circuit breakers, the arc extinguisher was eventually modified into a usable size.

The first compact, workable circuit breaker was developed in 1923 when the modified arc extinguisher was coupled with a thermal tripping mechanism. It was not until four years later, however, that Westinghouse research engineers found the ideal combination of materials and design that permitted circuit breakers to interrupt fault currents of 5000 A at 120 Vac or Vdc. One year later, Westinghouse placed the first circuit breaker on the market. Its acceptance was instantaneous.

Since that initial introduction in 1927, Westinghouse continued to be at the forefront of circuit breaker technology with an unprecedented series of circuit protective enhancements and introductions.

In 1994, the Westinghouse Distribution and Control Business Unit (DCBU) was acquired by Eaton and integrated with Cutler-Hammer families of products. For over 100 years, Eaton has been the leader in molded case circuit breaker innovation, delivering safe, efficient, and reliable circuit protection to the electrical industry.

Breaker Identification

Nameplate Data

A circuit breaker is commonly identified by data found on the circuit breaker nameplate. Every Eaton molded case circuit breaker, including the Westinghouse series, Challenger series, and Cutler-Hammer series product, will have information, similar to the following, printed on the nameplate.

Common nameplate information:

- Catalog number
- Style number
- Shop order
- Amperage
- Number of poles
- Voltage class
- Temperature rating
- Data code

Shop Orders

Depending on the modifications completed at the factory some molded case circuit breakers may also have a Shop Order number (SO#) that would document the breaker configuration beyond what is commonly known as a registered (catalog) part number.

A Shop Order Number begins with one or two numbers followed by a single letter and four additional numbers.

A shop order number is listed in place of a catalog number and indicates that the circuit breaker was modified at the factory, i.e., addition of a shunt trip, special calibration, etc. Every shop order number must be researched with the factory to properly identify modifications.

Contact your EatonCare representative for assistance with this information.

Example: 70E2121

Note: Eaton does not recommend replacing a circuit breaker identified by a Shop Order Number with a standard "off-the-shelf" circuit breaker without first identifying the modifications. They may be critical to safe and reliable operation.

Catalog Numbers

An Eaton molded case circuit catalog number begins with frame family designation followed by poles and ampere ratings and completed by suffix which describe common calibrations, terminals, and accessories. This "Catalog System" was first introduced with the launch of the Series C® molded case line and continues today with the Series G® and Power Defense products that identify:

- Circuit breaker type
- Number of poles
- Maximum amperage
- Terminals
- Calibrations
- Accessories

Example: Catalog number HFD3200VA13S06 indicates an Eaton, Cutler-Hammer Series C molded-case circuit breaker, high interrupting, F-Frame (10–225 A), domestic (UL 489/NEMA) construction, three poles, 200 A, calibrated for 50° ambient temperature, load-only terminals, with a left mounted two contacts auxiliary switch, and a right mounted 120 V shunt trip.

Serial Numbers and Manufacturing Codes—Serialization

Every Series C, Series G, and Power Defense molded case circuit breakers will also have a Serial Number, QPC Code (serial number) or an Eaton QR code with a unique serial number, for product identification, applied to the front or left side of the circuit breaker.

In most instances, the catalog number, style number or shop order number will supply enough information to identify the circuit breaker. However, it is always advisable to obtain all data from the nameplate to facilitate identification.

Contact your EatonCare representative for assistance with this information.

Accessories

Most circuit breaker accessories are mounted internally and are not visible with a quick inspection. However, because many accessories rely on or supply an external signal, there may be electrical leads exiting the circuit breaker case. Inspect for these leads when obtaining full descriptive information for circuit breaker replacement. Examples of common accessories:

Shunt Trip

The shunt trip is used to remotely trip the circuit breaker using an electrical signal. Typically, two wires extend through the case.

Undervoltage Release (UVR)

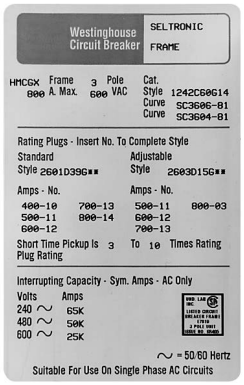
The undervoltage release is used to trip the circuit breaker when voltage drops below a specified percentage of the UVR coil voltage (typically 70%). Typically, two wires extend through the case.

Auxiliary Switch

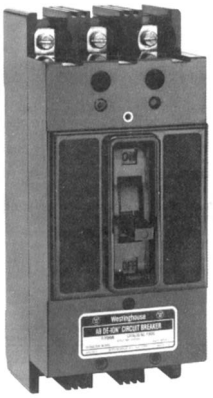
The auxiliary switch provides remote indication of the circuit breaker status (open/closed). Typically, three wires extend through the case in a single-pole 1A/1B application.

Alarm Lockout Switch

The alarm lockout switch provides a means for remote indication of an automatic trip operation. Typically, two or three wires extend through the case.



Vintage Label for Typical SELTRONIC



Pre-Series C Breaker with Original Label



Series C Breaker with Original Label



Series C Breaker (2007) Cutler-Hammer Series



Series C Breaker Eaton Cutler-Hammer Series

Factory Original Circuit Breakers

Why Insist on Only Genuine, New MCCBs Purchased Through Authorized Distributors?

Eaton defines "New" product as that which has not yet been installed in an electrical circuit, purchased through authorized channels in factory original condition and packaged in unopened original Eaton cartons. Only products purchased as "new" through authorized channels are covered under the Eaton 25-000 warranty policy.

- The only way to ensure safe and reliable operation of your system is to use new, genuine, molded case circuit breaker products purchased exclusively from Eaton's authorized distributor networks and other authorized resellers
- The growth of ecommerce and auction sites has increased the risks of receiving suspect products that have been misrepresented as new and genuine. In some cases, products have been found to be old, surplus, used, altered, tampered, rebuilt and even counterfeit, and have been unknowingly purchased from these sites
- The reconditioning of many products is widely accepted as a means for sustainable use. The 2020 NFPA 70, commonly known as the National Electrical Code (NEC) 240.88, specifically indicates that "molded-case circuit breakers shall not be permitted to be reconditioned. Original product modified during reconditioning may not function properly and fail to safely protect connected equipment and personnel

Identifying Genuine, Factory Original Circuit Breakers Manufactured by Eaton

There are many features of an Eaton molded case circuit breaker that can be used to determine if it is genuine, rebuilt or counterfeit. These features, when present, provide confidence that a new, genuine product has been purchased. It's important, however, to note that reproductions, relabeling and counterfeiting of electrical products has become more sophisticated since 2010 and even more difficult to detect.

Serial Number (Manufacturing)

A genuine Eaton brand molded case circuit breaker manufactured by Eaton will have a serialized bar code unique to the breaker.The removal of original serial numbers from a product, or the addition of labels not originally applied by Eaton are causes for concern.



Serial Number Label



Serial Number Laser-marked

Factory Seal

The factory seal ensures the internal integrity of the breaker. If, for any reason, the factory seal is missing, or the seal is broken, do not accept the breaker. (Seal does not appear on interchangeable trip breakers.)



Unbroken Seal

Manufacturing Date Code

There is a manufacturing date code applied to all genuine Eaton molded case circuit breakers. The date code will usually appear on the back of the breaker. It may appear to be stamped on the circuit breaker, printed on a label applied to the back of the circuit breaker, or it may be laser-marked directly on the back of the circuit breaker frame.

The date code will typically appear in a Year, Month, Day format with a Plant Code suffix (e.g., 230228-T.) The date code appearing on the back of the breaker should represent a date similar to the nameplate date code and the carton label date code which also use the same format.

If the date coding is missing, it may mean the breaker has been subjected to tampering. Most frequently the date code is removed in an attempt to represent an old, surplus or reconditioned breaker as new.



Manufacturing Date Code

UL Label

An Underwriters Laboratories (UL) or (UR) label is applied to all Eaton Westinghouse series, Challenger series, Cutler-Hammer series, and Power Defense molded case circuit breakers where UL certification is applicable.

Packaging and Carton Labels

Eaton MCCB products are packed individually and shipped in Eaton branded cartons. The original carton labels are printed with the product specific information found on the nameplates.



Eaton Labeled Cartons



Eaton Carton

Tampered, Altered, Modified

Eaton products and packaging, including carton labels, that have been visibly altered, tampered or modified, especially the removal of original Eaton Serial Numbers, should not be used.

Authentication

Since 2011, Eaton has offered the ability to authenticate Cutler-Hammer Series C and Series G molded case circuit breakers using online tools and the manufacturing serial numbers applied on products up to 400 A. See www.eaton.com/counterfeit for more information.

With the introduction of Power Defense molded case breakers, authentication is made even easier through the use of QR codes that are marked on the front of every Power Defense molded case circuit breaker. Authentication, and other capabilities, are also available for the entire product family of PD breakers using www.eaton.com or by scanning the Eaton QR code with a mobile device.



QR Code

For questions or concerns about suspect Eaton products, email: mailto:Report_Fakes@eaton.com.

Replacement Capabilities

Power Defense Molded Case Circuit Breakers

When and Where to Use

- Generally a first choice wherever physically and electrically practical
- Where communications, arc flash protection, energy and power quality monitoring are desired
- As a direct replacement or add-on to already installed Series C or Series G product, including Westinghouse breakers (see **Page V12-T3-16**)

Advantages

- The most current molded-case circuit breaker technology
- Higher interrupting capacities in each frame size
- Smaller and lighter for a given frame size than other options
- Generally less expensive than other replacement breaker options
- Readily available throughout range, high levels of stock
- Available from stock
- One-year warranty

Series C and Series G Molded Case Circuit Breakers

When and Where to Use

- As a direct, one-for-one replacement of current production Series C or Series G product
- Where you know the catalog/style number but not the physical or electrical specifics about the application
- For special applications such as DC engine generator

Advantages

- Ease of selection and certainty of replacement
- Guaranteed to be both a physical and electrical duplicate of original
- Still in production
- Newly manufactured
- UL listed
- Available from stock
- One-year warranty

Replacement of Current Panelboard Molded Case Circuit Breakers

When and Where to Use

- When replacing Series C circuit breakers in a current design panelboard

Advantages

- Newly manufactured and tested to the latest technology
- UL Listed
- Available from stock in most frame sizes
- One-year warranty. Refer to **Page V12-T3-417** for Series C connector kits

Replacement of Out-of-Production Panelboard Molded Case Circuit Breakers (Including Westinghouse)

When and Where to Use

- When replacing out-of-production circuit breakers in an existing panelboard
- When replacing Westinghouse breakers. Refer to **Pages V12-T3-16**

Advantages

- Newly manufactured and tested to the latest applicable standards
- Both physically and electrically interchangeable with the circuit breakers that they are designed to replace
- UL Listed
- Available from stock in most frame sizes
- One-year warranty

Replacement of Out-of-Production Motor Control Center Molded Case Circuit Breakers and Upgrades

When and Where to Use

- When replacing out-of-production circuit breakers in an existing motor control center: 5 Star, Type W and F10 designs
- When upgrading Westinghouse breakers with a Series C technology upgrade breaker

Advantages

- Newly manufactured and tested to the latest technology
- Series C retrofit kits are physically and electrically interchangeable with the circuit breakers that they are designed to replace
- UL Listed
- Available from stock in most frame sizes
- One-year warranty. Refer to **Page V12-T3-417**

Contact: 1-800-OLD-UNIT.

Service for Molded Case Circuit Breakers

When and Where to Use

- Where circuit breaker has sustained minor physical damage to a handle, lug, etc., that otherwise would be fully functional
- For mining breaker service and repair. Eaton offers a variety of services for the repair and maintenance of mining equipment including technology upgrades
- Large frame circuit breaker (600 A and above) that has experienced some normal wear, but is in generally good condition, as an economically driven alternative to new
- When replacing Westinghouse breakers. Refer to **Page V12-T3-16**

Advantages

- Prevents loss of circuit breakers due to minor damage
- Reduces overall breaker costs
- Prevents use of potentially unreliable third-party refurbishers
- Includes full one-year Eaton Electrical Inc. warranty
- Ensures reliability through dealing with the original manufacturer with a long and well-recognized tradition of product safety, integrity and quality
- Provides a simple and convenient solution
- The best option for safety-related applications, especially those under severe operating conditions, like under ground mining operations. Eaton takes pride in supporting the DOE, DOL and MSHA safety-related initiatives

Contact Eaton's Breaker Service Center: 1-877-BRK-SRVC.

QUICKLAG and Eaton Miniature Circuit Breaker Replacement Guide

QUICKLAG and Eaton Plug-In Industrial Circuit Breakers—Dimensions in Inches

Description	Maximum Amperes 150 A	125 A	100 A	30 A
Current Design				
These circuit breakers replace the out-of-production circuit breakers listed below.	**HQP**  Width: 1.00 Height: 2.94 Depth: 2.38	**QPHW**  Width: 1.00 Height: 2.94 Depth: 2.38	**QHPX**  Width: 1.00 Height: 2.94 Depth: 2.38	**QHPW**  Width: 1.00 Height: 2.94 Depth: 2.38
Out-of-Production Westinghouse Circuit Breakers				
These circuit breakers are no longer manufactured. Recommended QUICKLAG circuit breakers listed above.	**HQNPL, HQNPAL, HQNP, HQNPA, QP, QPA, QPAH, QNPL, QNPAL, QNP, Type P, PL**	**QPH**	No previous circuit breaker existed	**QHPL** **QHP**

QUICKLAG Bolt-On Industrial Circuit Breakers—Dimensions in Inches

Description	Maximum Amperes 150 A	125 A	100 A	30 A
Current Design				
These circuit breakers replace the out-of-production circuit breakers listed below.	**BAB**  Width: 1.00 Height: 2.94 Depth: 2.38	**QBHW**  Width: 1.00 Height: 2.94 Depth: 2.38	**HBAX**  Width: 1.00 Height: 2.94 Depth: 2.38	**HBAW**  Width: 1.00 Height: 2.94 Depth: 2.38
Out-of-Production Westinghouse Circuit Breakers				
These circuit breakers are no longer manufactured. Recommended QUICKLAG circuit breakers listed above.	**HQNB, HQNBA, QB, BA, QNBL, QNBAL**	**QBH**	No previous circuit breaker existed	**HBA**

QUICKLAG and Eaton Cable-In/Cable-Out Industrial Circuit Breakers—Dimensions in Inches

Description	Maximum Amperes 60 A	100 A	100 A	100 A	30 A	40 A
Current Design						
These circuit breakers replace the out-of-production circuit breakers listed below.	**QCR** **QCF**  Width: 0.50 Height: 3.94 Depth: 2.44	**QC**  Width: 1.00 Height: 3.75 Depth: 2.44	**QCHW**  Width: 1.00 Height: 3.75 Depth: 2.44	**QHCX**  Width: 1.00 Height: 3.75 Depth: 2.44	**QHCW**  Width: 1.00 Height: 3.75 Depth: 2.44	**WMZ/FAZ** Width: 0.70 Height: 4.10 Depth: 2.60
Out-of-Production Westinghouse Circuit Breakers						
These circuit breakers are no longer manufactured. Recommended QUICKLAG circuit breakers listed above.	No previous circuit breaker existed	**HQCL, HQCAL, HQC, HQCA, QCA**	**QCH**	No previous circuit breaker existed	**QHCL, QHC**	**WMT**

Note: For supplementary protectors, the Eaton WMZS and FAZ Series replace the WMS supplementary protectors that are no longer manufactured.

QUICKLAG Miniature Circuit Breakers

QUICKLAG is the largest and most complete family of industrial thermal-magnetic miniature circuit breakers. They provide the exclusive features of steel frame calibration and arc chutes in every pole.

QUICKLAG circuit breakers are provided in ranges from 5 to 125 A continuous in single-, two- and three-pole configurations with interrupting capacities from 10,000 AIC to 65,000 AIC. QUICKLAG circuit breakers have been series rated up to 200,000 AIC in conjunction with larger Westinghouse/ Cutler-Hammer current limiting circuit breakers.

Each QUICKLAG rating is available for plug-in (Type P), bolt-on (Type B) and cable-to-cable connections (Type C) for line/load feed applications. They are also available with one of the industry's widest selection of accessories, including shunt trip, and can be custom modified to meet special application requirements.

Circuit Breaker Selection Guide

Circuit Breaker Type	Circuit Breaker Type Code	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Federal Spec. W-C-375b	UL Listed Interrupting Ratings rms Symmetrical Amperes AC Ratings Volts 120	120/240	240	DC ① 24	48	80
HQP	P	5–70	1	120/240	24, 48, 80	10a, 11a, 12a	—	10,000	—	5000	5000	2000
HQP	P	10–125	2	120/240	24, 48, 80	10a, 12a	—	10,000	—	5000	5000	5000
HQP	P	10–100	2, 3	240	—	10b, 11b, 12b	—	—	10,000	—	—	—
QPHW	P	15–70	1	120/240	24, 48, 80	14a	—	22,000	—	5000	5000	2000
QPHW	P	15–125	2	120/240	24, 48, 80	14a	—	22,000	—	5000	5000	5000
QPHW	P	15–100	2, 3	240	—	14b	—	—	22,000	—	—	—
QHPX	P	15–70	1	120/240	24, 48, 80	—	—	42,000	—	5000	5000	2000
QHPX	P	15–100	2	120/240	24, 48, 80	—	—	42,000	—	5000	5000	5000
QHPX	P	15–100	3	240	—	—	—	—	42,000	—	—	—
QHPW	P	15–30	1	120/240	24, 48, 80	15a	—	65,000	—	5000	5000	2000
QHPW	P	15–30	2	120/240	24, 48, 80	15a	—	65,000	—	5000	5000	5000
QHPW	P	15–30	3	240	—	15b	—	—	65,000	—	—	—
QPGF	P, GF	15–30	1	120	—	10a, 11a, 12a	10,000	—	—	—	—	—
QPGF	P, GF	15–50	2	120/240	—	10a, 11a, 12a	—	10,000	—	—	—	—
QPHGF	P, GF	15–30	1	120	—	10a, 11a, 12a	22,000	—	—	—	—	—
QPHGF	P, GF	15–50	2	120/240	—	10a, 11a, 12a	—	22,000	—	—	—	—
QPGFEP	P, GFEP	15–30	1	120	—	—	10,000	—	—	—	—	—
QPGFEP	P, GFEP	15–50	2	120/240	—	—	—	10,000	—	—	—	—
QPHGFEP	P, GFEP	15–30	1	120	—	—	22,000	—	—	—	—	—
QPHGFEP	P, GFEP	15–30	2	120/240	—	—	22,000	—	—	—	—	—
BAB	B	5–70	1	120/240	24, 48, 80	10a, 11a, 12a	—	10,000	—	5000	5000	2000
BAB	B	10–125	2	120/240	24, 48, 80	10a, 12a	—	10,000	—	5000	5000	5000
BAB	B	10–100	2, 3	240	—	10b, 11b, 12b	—	—	10,000	—	—	—
QBHW	B	15–70	1	120/240	24, 48, 80	14a	—	22,000	—	5000	5000	2000
QBHW	B	15–125	2	120/240	24, 48, 80	14a	—	22,000	—	5000	5000	5000
QBHW	B	15–100	2, 3	240	—	14b	—	—	22,000	—	—	—
HBAX	B	15–70	1	120/240	24, 48, 80	—	—	42,000	—	5000	5000	2000
HBAX	B	15–100	2	120/240	24, 48, 80	—	—	42,000	—	5000	5000	5000
HBAX	B	15–100	3	240	—	—	—	—	42,000	—	—	—
HBAW	B	15–30	1	120/240	24, 48, 80	15a	—	65,000	—	5000	5000	2000
HBAW	B	15–30	2	120/240	24, 48, 80	15a	—	65,000	—	5000	5000	5000
HBAW	B	15–30	3	240	—	15b	—	—	65,000	—	—	—
QBGF	B, GF	15–30	1	120	—	10a, 11a, 12a	10,000	—	—	—	—	—
QBGF	B, GF	15–50	2	120/240	—	10a, 11a, 12a	—	10,000	—	—	—	—

Notes

① Two-pole DC interrupting rating based on two poles connected in series.

Circuit breaker type codes: **P** Plug-in; **B** Bolt-on; **C** Cable-in/Cable-out; **GF** Ground Fault, 5 mA; **GFEP** Ground Fault, 30 mA.

Circuit Breaker Selection Guide, continued

Circuit Breaker Type	Circuit Breaker Type Code	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Federal Spec. W-C-375b	UL Listed Interrupting Ratings rms Symmetrical Amperes AC Ratings Volts 120	120/240	240	DC ① 24	48	80
QBHGF	B, GF	15–30	1	120	—	10a, 11a, 12a	22,000	—	—	—	—	—
QBHGF	B, GF	15–30	2	120/240	—	10a, 11a, 12a	—	22,000	—	—	—	—
QBGFEP	B, GFEP	15–30	1	120	—	—	10,000	—	—	—	—	—
QBGFEP	B, GFEP	15–50	2	120/240	—	—	—	10,000	—	—	—	—
QBHGFEP	B, GFEP	15–30	1	120	—	—	22,000	—	—	—	—	—
QBHGFEP	B, GFEP	15–30	2	120/240	—	—	22,000	—	—	—	—	—
QC	C	5–70	1	120/240	24, 48, 80	10a, 11a, 12a	—	10,000	—	5000	5000	2000
QC	C	10–100	2	120/240	24, 48, 80	10a, 12a	—	10,000	—	5000	5000	5000
QC	C	10–100	2, 3	240	—	10b, 11b, 12b	—	—	10,000	—	—	—
QC	C	15–100	4	240	—	10b, 11b, 12b	—	—	10,000	—	—	—
QCF	C	10–60	1, 2	120/240	—	—	10,000	10,000	—	—	—	—
QCR	C	10–60	1, 2	120/240	—	—	10,000	10,000	—	—	—	—
QCHW	C	15–70	1	120/240	24, 48, 80	14a	—	22,000	—	5000	5000	2000
QCHW	C	15–100	2	120/240	24, 48, 80	14a	—	22,000	—	5000	5000	5000
QCHW	C	15–100	2, 3	240	—	14b	—	—	22,000	—	—	—
QHCX	C	15–70	1	120/240	24, 48, 80	—	—	42,000	—	5000	5000	2000
QHCX	C	15–100	2	120/240	24, 48, 80	—	—	42,000	—	5000	5000	5000
QHCX	C	15–100	3	240	—	—	—	—	42,000	—	—	—
QHCW	C	15–30	1	120/240	24, 48, 80	15a	—	65,000	—	5000	5000	2000
QHCW	C	15–30	2	120/240	24, 48, 80	15a	—	65,000	—	5000	5000	5000
QHCW	C	15–30	3	240	—	15b	—	—	65,000	—	—	—
QCGF	C, GF	15–30	1	120	—	—	10,000	—	—	—	—	—
QCGF	C, GF	15–50	2	120/240	—	—	10,000	10,000	—	—	—	—
QCHGF	C, GF	15–30	1	120	—	—	22,000	—	—	—	—	—
QCHGF	C, GF	15–30	2	120/240	—	—	22,000	22,000	—	—	—	—
QCGFEP	C, GFEP	15–30	1	120	—	—	10,000	—	—	—	—	—
QCGFEP	C, GFEP	15–30	2	120/240	—	—	10,000	10,000	—	—	—	—
QCHGFEP	C, GFEP	15–30	1	120	—	—	22,000	—	—	—	—	—
QCHGFEP	C, GFEP	15–30	2	120/240	—	—	22,000	22,000	—	—	—	—

Notes

① Two-pole DC interrupting rating based on two poles connected in series.

Circuit breaker type codes: **P** Plug-in; **B** Bolt-on; **C** Cable-in/Cable-out; **GF** Ground Fault, 5 mA; **GFEP** Ground Fault, 30 mA.

CHB Circuit Breaker

Originally a Cutler-Hammer Product

The CHB breaker continues to be available as a replacement breaker for use in Cutler-Hammer Type PB panelboards.

When combined with the mounting base, CHB breakers were also used for surface and DIN rail mount cable-in/cable-out applications. (See photo below.)

For "new" cable-in/cable-out applications, Eaton recommends the use of our most current product offering:

- QUICKLAG Type QC breakers (1.00-inch per pole)
- QCR breakers—rear mount (0.50-inch per pole)
- QCF breakers—front mount (0.50-inch per pole)

QCR and QCF breakers provide a 50% space savings over 1.00-inch per pole designs of the same rating.



CHB Breaker Mounting Base

CHB Mounting Bases

Description		Catalog Number
Low Ampere		
15–50 A	Single-pole	**CHB9L1**
15–50 A	Two-pole	**CHB9L250**
15–50 A	Three-pole	**CHB9L350**
High Ampere		
25–50 A	Single-pole	**CHB9H1**
25–125 A	Two-pole	**CHB9H2125**
25–100 A	Three-pole	**CHB9H3100**

CHB Circuit Breaker Catalog Numbering System

CHB 3 100

Bolt-on Circuit Breaker	Poles	Ampere Rating	Accessories
	1-, 2- or 3-		**ST** = Shunt-trip (requires extra pole space) **SW** = Switched neutral application **HID** = High intensity discharge lighting applications **HM** = High magnetic trip **GF** = Ground fault personnel protection **EPD** = Ground fault equipment protection **H2** = 22,000 AIC (40, 50, 60 A obsolete)

Replacement Capabilities



Single-Pole

QUICKLAG Type QC Cable-In/ Cable-out Breaker—1.00 Inch per Pole



Single-Pole *Two-Pole*

Type QCF Cable-In/Cable-Out Breaker —0.50 Inch per Pole (Front-Connected)



Single-Pole *Two-Pole*

Type QCR Cable-In/Cable-Out Breaker —0.50 Inch per Pole (Rear-Connected)

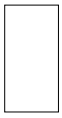
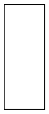
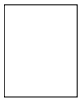
Westinghouse, Challenger and Bryant

Cross-Reference for Cutler-Hammer Residential MCBs

Circuit Breaker Brand and Type			
Westinghouse	**Challenger**	**Bryant**	**Cutler-Hammer**
BR	C	BR	**BR**
BRD	A	BRD	**BRD**
BRH	HC	BRH	**BRH**
BRHH	VC	BRHH	**BRHH**
—	XC	—	**BRX**
BRO	C	BRO	**BRO**
GFCB	HAGF	GFCB	**GFCB**
GFCBH	HAGFH	GFCBH	**GFCBH**
GFEP	HAGFEP	GFEP	**GFEP**
GFEPH	HAGFHEP	GFEPH	**GFEPH**
—	CM	—	**BW**
—	CMH	—	**BWH**
—	CMV	—	**BWHH**
—	CB	—	**CC**
WFL	QFL	—	**QFL**
WFP	QFP	—	**QFP**

Series C Molded Case Circuit Breaker Replacement Guide

Series C Industrial Circuit Breakers—Dimensions in Inches (Per Three-Pole Breaker)

Description	Maximum Amperes/AC Voltages (see application guides for DC ratings) 100 A/480 V	125 A/600 V	125 A/240 V	100 A/480 V	100 A/600 V	150 A/600 V	225 A/600 V
Current Design							
Power Defense molded case circuit breakers, a globally rated platform from Eaton.	**GD**  Width: 3.00 Height: 4.88 Depth: 2.81	**PDG1**  Width: 3.00 Height: 5.50 Depth: 3.00	**PDD2**  Width: 4.13 Height: 6.00 Depth: 3.50	**PDG2**  Width: 4.13 Height: 6.00 Depth: 3.50	**PDG2**  Width: 4.13 Height: 6.00 Depth: 3.50	**PDG2**  Width: 4.13 Height: 6.00 Depth: 3.50	**PDG2**  Width: 4.13 Height: 6.00 Depth: 3.50
Replacement Circuit Breakers							
These new UL labeled circuit breakers continue to be manufactured and are primarily for exact physical and electrical replacement of previously installed Westinghouse, Cutler-Hammer and Challenger series circuit breakers of the same style number and rating.	**GHC/GHB**  Width: 3.00 Height: 4.88 Depth: 2.94	**EG**  Width: 3.00 Height: 5.50 Depth: 3.00	**ED**  Width: 4.13 Height: 6.00 Depth: 3.38	**HFD**  Width: 4.13 Height: 6.00 Depth: 3.38	**HFD**  Width: 4.13 Height: 6.00 Depth: 3.38	**HFD**  Width: 4.13 Height: 6.00 Depth: 3.38	**HFD**  Width: 4.13 Height: 6.00 Depth: 3.38
Out-of-Production Circuit Breakers							
These circuit breakers are no longer manufactured. *Indicates the last date of manufacture. As an option, any of these circuit breakers can be reconditioned at the original factory. For details, see **Page V12-T3-6**, or contact your local Eaton Field Sales office.	No previous circuit breaker existed.	**CA, CAH, HCA** ①  Width: 4.13 Height: 6.50 Depth: 2.69 **QCC**  *1968 Width: 4.50 Height: 7.00 Depth: 3.38	**EDH, EDC**  Width: 4.13 Height: 5.00 Depth: 3.38 **E, EA**  *1974 Width: 4.13 Height: 6.00 Depth: 3.38	**FDB, EHB, EHD** ①  Width: 4.13 Height: 6.00 Depth: 3.38 **EH**  *1974 Width: 4.13 Height: 6.50 Depth: 3.38	**FS, EC, EHC**  Width: 4.13 Height: 6.13 Depth: 3.38 **F, HF**  1974 Width: 4.13 Height: 9.38 Depth: 4.06	**FL**  Width: 4.13 Height: 9.31 Depth: 3.19 **G**  1965 Width: 8.25 Height: 9.38 Depth: 4.06	**FB** ①**, HFB**  Width: 4.13 Height: 6.00 Depth: 3.38 **FA, HFA**  *1974 Width: 4.13 Height: 6.50 Depth: 3.38	**FD, FDC**  Width: 4.13 Height: 6.00 Depth: 3.38

Note

① These frames are obsolete. For replacement solutions, see the cross-reference on **Pages V12-T3-16.**

Note: Power Defense switchboard replacement will require a connector kit and cover plates. Please contact Eaton for assistance.

Series C Industrial Circuit Breakers—Dimensions in Inches (Per Three-Pole Breaker), Continued

Maximum Amperes/AC Voltages (see application guides for DC ratings)

	225 A, 250 A/600 V	400 A/240 V	400 A/600 V	600 A/600 V
Current Design				
Power Defense molded case circuit breakers, a globally rated platform from Eaton.	**PDG2** ①  225 A maximum Width: 4.13 Height: 6.00 Depth: 3.50	**PDG3**  Width: 5.50 Height: 10.10 Depth: 4.30	**PDG3**  Width: 5.50 Height: 10.10 Depth: 4.30	**PDG3**  Width: 5.50 Height: 10.10 Depth: 4.30	**PDG3**  Width: 5.50 Height: 10.10 Depth: 4.30	**PDG3**  Width: 5.50 Height: 10.10 Depth: 4.30
Replacement Circuit Breakers				
These new UL labeled circuit breakers continue to be manufactured and are primarily for exact physical and electrical replacement of previously installed Westinghouse, Cutler-Hammer and Challenger series circuit breakers of the same style number and rating.	**HJD** 250A  Width: 4.13 Height: 10.00 Depth: 4.06	**JG** 250A  Width: 4.13 Height: 7.00 Depth: 3.57	**DK**②  Width: 5.50 Height: 10.13 Depth: 4.06	**HKD**  Width: 5.50 Height: 10.13 Depth: 4.06	**LDC, HLD-DC.**  Width: 8.25 Height: 10.75 Depth: 4.06	
Out-of-Production Circuit Breakers						
These circuit breakers are no longer manufactured. *Indicates the last date of manufacture. As an option, any of these circuit breakers can be reconditioned at the original factory. For details, see **Page V12-T3-6**, or contact your local Eaton Field Sales office.	**JB, KB, HKB** **JDB, JD, JDC** 250 A Width: 4.13 Height: 10.00 Depth: 4.06 **JK** 225 A *1967 Width: 8.25 Height: 10.75 Depth: 4.06 **K, HK** 225 A *1967 Width: 8.25 Height: 15.50 Depth: 4.06	**JA, KA, HKA** 225 A Width: 5.50 Height: 10.13 Depth: 4.06 **J** 225 A *1967 Width: 8.25 Height: 10.13 Depth: 4.06 **JS, JH, JL** Width: 4.25 Height: 12.00 Depth: 3.81	**DA** ③ Width: 5.50 Height: 10.13 Depth: 4.06	**LB, HLB, LBB** Width: 5.50 Height: 10.13 Depth: 4.06 **KL, HKL** *1967 Width: 8.25 Height: 5.75 Depth: 4.06 **KS-D, KH-D, KS, KH** Width: 5.50 Height: 10.13 Depth: 3.81	**KDB** **KD, KDC** ② Width: 5.50 Height: 10.13 Depth: 4.06 **LA**③**, HLA, LAB**③ Width: 8.25 Height: 10.13 Depth: 4.06 **JKL** *1967 Width: 8.25 Height: 10.75 Depth: 4.06	**L, LM, HLM** *1967 Width: 8.25 Height: 22.00 Depth: 5.50 SPCB 600A, SCB 600A *1986 (Consult Eaton) Width: 8.25 Height: 10.75 Depth: 4.06 **LS(E), LH(E), LS(A), LH(A)** Width: 8.25 Height: 10.75 Depth: 3.81	**LG** Width: 5.48 Height: 10.13 Depth: 4.09 **LD, HLD, LDB** Width: 8.25 Height: 10.75 Depth: 4.06 **LC**③**, HLC, LA**③**, HLA** Width: 8.25 Height: 10.75 Depth: 4.06

Notes

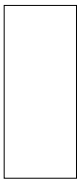
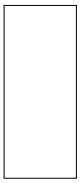
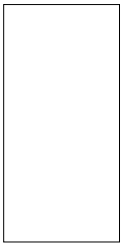
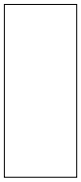
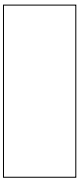
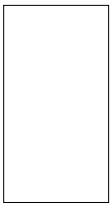
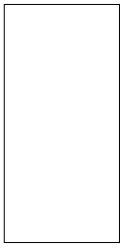
① Replacement through 225 A with up to 100% rated breaker.

② When upgrading a HLB, LBB to a Series C K-Frame in a panelboard application, also order TAD3 spacer kit.

③ These frames are obsolete. For replacement solutions, see the cross-reference on **Pages V12-T3-16.**

Note: Power Defense switchboard replacement will require a connector kit and cover plates. Please contact Eaton for assistance.

Series C Industrial Circuit Breakers—Dimensions in Inches (Per Three-Pole Breaker), Continued

Description	Maximum Amperes/AC Voltages (see application guide for DC ratings) 800 A/600 V	800 A/600 V	1200 A/600 V	1600 A/2000 A/2500 A ①/600 V
Current Design				
Power Defense molded case circuit breakers, a globally rated platform from Eaton.	**PDG4**  Width: 8.25 Height: 16.00 Depth: 4.38	**PDG45**  Width: 8.30 Height: 16.00 Depth: 5.50	**PDG5**  Width: 8.30 Height: 16.00 Depth: 5.50	**PDG6**  Width: 15.50 Height: 16.00 Depth: 9.80
Replacement Circuit Breakers	Replace with equivalent Power Defense® circuit breaker			
These new UL labeled circuit breakers continue to be manufactured and are primarily for exact physical and electrical replacement of previously installed Westinghouse, Cutler-Hammer and Challenger series circuit breakers of the same style number and rating.	**PDG4**  Width: 8.25 Height: 16.00 Depth: 4.38	**PDG45**  Width: 8.30 Height: 16.00 Depth: 5.50	**PDG5**  Width: 8.30 Height: 16.00 Depth: 5.50	**PDG6**  Width: 15.50 Height: 16.00 Depth: 9.80
	(Cutler-Hammer Series, Series C® -MDL, HMDL, ND, HND, NDC, RD)(Cutler-Hammer Series, Series G® - NG, RG)			
Out-of-Production Circuit Breakers				
These circuit breakers are no longer manufactured. *Indicates the last date of manufacture. As an option, any of these circuit breakers can be reconditioned at the original factory. For details, see **Page V12-T3-6**, or contact your local Eaton Field Sales office.	**MA②, HMA, MD②, MDS② and MC②**  Width: 8.25 Height: 16.00 Depth: 4.06	**MDL, HMDL**  Width: 8.25 Height: 16.00 Depth: 4.06	**MA②, HMA and MC②, MCC② SELTRONIC™②**  Width: 8.25 Height: 16.00 Depth: 4.06	**NC②, HNC and NB②, HNB**  Width: 8.25 Height: 16.00 Depth: 5.50
	NG ND, HND, NDC  Width: 8.25 Height: 16.00 Depth: 5.50	**PC, PCC**  Width: 12.06 Height: 22.06 Depth: 9.06	**PC, PCC**  Width: 8.25 Height: 16.00 Depth: 9.75	
	LM, HLM, M  *1967 Width: 8.25 Height: 22.00 Depth: 5.50	**MS, MH**  Width: 8.25 Height: 16.00 Depth: 4.06	**LM, HLM, M**  *1967 Width: 8.25 Height: 22.00 Depth: 5.50	**NS, NH**  Width: 8.25 Height: 16.00 Depth: 5.50
	MA, HMA  1200 A *1968 Width: 8.25 Height: 16.00 Depth: 5.50	**MA, HLM**  *1967 Width: 8.25 Height: 22.00 Depth: 5.50	**PA**  *1974 Width: 12.00 Height: 22.00 Depth: 9.06	**PB**  *2014 Width: 12.06 Height: 22.06 Depth: 9.06

Notes

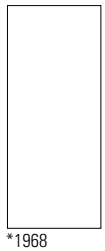
① RD breaker replaces PC, PCC and PB breakers for 2000 A and 2500 A only.

② These frames are obsolete.

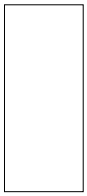
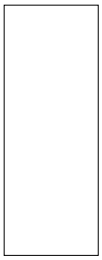
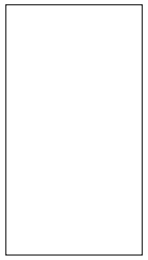
Note: Power Defense switchboard replacement will require a connector kit and cover plates.

Please contact Eaton for assistance.

Current-Limiting Circuit Breakers—Dimensions in Inches (Per Three-Pole Breaker)

Description	Maximum Amperes 100 A	250 A	400 A	100 A	225 A
Current Design					
All circuit breakers listed in a column are ELECTRICALLY INTERCHANGEABLE.	**FCL Current Limit-R (non-fused)**  Width: 4.13 Height: 8.75 Depth: 3.38	**LCL Current Limit-R (non-fused)**  Width: 8.25 Height: 16.00 Depth: 4.06	**LCL Current Limit-R (non-fused)**  Width: 8.25 Height: 16.00 Depth: 4.06	**FB TRI-PAC® (fused)**  Width: 4.13 Height: 8.75 Depth: 3.50	**LA TRI-PAC (fused)**  Width: 8.25 Height: 16.00 Depth: 4.75
Replacement Circuit Breakers					
These new UL labeled circuit breakers continue to be manufactured and are primarily for exact physical and electrical replacement of previously installed Westinghouse, Cutler-Hammer,and Challenger series circuit breakers of the same style number and rating.					
Out-of-Production Circuit Breakers					
These circuit breakers are no longer manufactured. *Indicates the last date of manufacture. As an option, any of these circuit breakers can be reconditioned at the original factory. For details, see **Page V12-T3-6**, or contact your local Eaton Field Sales office.				**FA TRI-PAC**  *1968 Width: 4.13 Height: 9.38 Depth: 3.19	**F TRI-PAC**  *1968 Width: 4.63 Height: 11.81 Depth: 3.81	**K TRI-PAC**  *1968 Width: 8.25 Height: 19.63 Depth: 4.06

Current-Limiting Circuit Breakers—Dimensions in Inches (Per Three-Pole Breaker)

Description	Maximum Amperes 400 A	800 A	1600 A
Current Design			
All circuit breakers listed in a column are ELECTRICALLY INTERCHANGEABLE.	**LA TRI-PAC® (Fused)**  Width: 8.25 Height: 16.00 Depth: 4.75	**NB TRI-PAC (Fused)**  Width: 8.25 Height: 22.00 Depth: 5.50	**PB TRI-PAC (Fused)**  Width: 12.06 Height: 22.13 Depth: 9.06
Replacement Circuit Breakers			
These new UL labeled circuit breakers continue to be manufactured and are primarily applied to achieve exact physical and electrical replacement of previously installed Cutler-Hammer/Westinghouse circuit breakers of the same style number and rating.			
Out-of-Production Circuit Breakers			
These circuit breakers are no longer manufactured. *Indicates the last date of manufacture. As an option, any of these circuit breakers can be reconditioned at the original factory. For details, see **Page V12-T3-6**, or contact your local Eaton Field Sales office.	**KL TRI-PAC**  *1968 Width: 8.25 Height: 19.63 Depth: 4.06	**L TRI-PAC**  *1968 Width: 8.25 Height: 26.91 Depth: 5.50	**MA TRI-PAC**  *1968 Width: 8.25 Height: 22.00 Depth: 5.50	**PA TRI-PAC**  *1968 Width: 12.00 Height: 22.00 Depth: 9.06

Cross-Reference

Westinghouse and Challenger

Cross-Reference for Cutler-Hammer Industrial MCB/MCCBs

Circuit Breaker Brand and Type		
Westinghouse	**Challenger**	**Cutler-Hammer**
BAB	CBB	**BAB**
BAB-H	CBB-H	**BAB-H**
CA	CD	**CA**
CAH	CDH	**CAH**
CHKD	CKHC	**CHKD**
CHLD	CLHC	**CHLD**
CHND	CNHC	**CHND**
CKD	CKC	**CKD**
CKDC	CKVC	**CKDC**
CLD	CLC	**CLD**
CLDC	CLVC	**CLDC**
CND	CNC	**CND**
CNDC	CNVC	**CNDC**
CRD	CRC	**CRD**
CRDC	CRVC	**CRDC**
DK	CDK	**DK**
EB	—	**EB**
ED	CED	**ED**
EDC	CEV	**EDC**
EDH	CEH	**EDH**
EHB	—	**EHB**
EHD	CE	**EHD**
FB	—	**FB**
FB-P	CTB	**FB-P**
FCL	CXF	**FCL**
FD	CF	**FD**
FDB	CFS	**FDB**
FDC	CFV	**FDC**
GB	CG	**GB**
GC	CGL	**GC**
GDB	CGDB	**GDB**
GHB	CH	**GHB**
GHBS	CSCB	**GHBS**
GHC	CHL	**GHC**
HCA	CDT	**HCA**
HFB	—	**HFB**
HFD	CFH	**HFD**
HJD	CJH	**HJD**
HKB	—	**HKB**
HKD	CKH	**HKD**
HLA	—	**HLA**
HLC	CSHL	**HLC**
HLCC	CSHLC	**HLCC**
HLD	CLH	**HLD**
HMA	—	**HMA**

Circuit Breaker Brand and Type		
Westinghouse	**Challenger**	**Cutler-Hammer**
HMC	CSHM	**HMC**
HMCC	CSHMC	**HMCC**
HNB	—	**HNB**
HNC	CSHN	**HNC**
HND	CNH	**HND**
JB, KB	—	**JB, KB**
JD	CJ	**JD**
JDB	CJS	**JDB**
JDC	CJV	**JDC**
KD	CK	**KD**
KDB	CKS	**KDB**
KDC	CKV	**KDC**
LA	—	**LA**
LA-P	CTL	**LA-P**
LC	CSL	**LC**
LCC	CSLC	**LCC**
LCL	CXL	**LCL**
LCY	CSLY	**LCY**
LD	CL	**LD**
LDB	CK	**LDB**
LDC	CLV	**LDC**
MA	—	**MA**
MC	CSM	**MC**
MCC	CSMC	**MCC**
MCY	CSMY	**MCY**
MDS	CSMD	**MDS**
MDSC	CSMDC	**MDSC**
MDSY	CSMDY	**MDSY**
NB	—	**NB**
NB-P	CTN	**NB-P**
NC	CSN	**NC**
NCY	CSNY	**NCY**
ND	CN	**ND**
NDC	CNV	**NDC**
PB-P	CTP	**PB-P**
PC	CSP	**PC**
PCC	CSPC	**PCC**
QBGF	CBBGF	**QBGF**
QBGFEP	CBBGFEP	**QBGFEP**
QBHGF	CBBHGF	**QBHGF**
QBHGFEP	CBBHGFEP	**QBHGFEP**
QBHW	CBBH	**QBHW**
QBHW-H	CBBH-H	**QBHW-H**
RD	CR	**RD**
RDC	CRV	**RDC**

Molded Case Circuit Breaker Frame Designations

In 1939, Westinghouse introduced, along with ordering information, style numbers, and the various maximum current ratings, which came to be known as the frame designations, were published.

The original frame designations were updated with the subsequent releases of Series C and Series G circuit breakers in 1982 and 2004 respectively. The 2019 launch of Power Defense circuit breakers brings with it new frame designations. The new frame designations are PD1–PD6 to represent the most advanced molded case circuit breaker line ever offered by Eaton.

Frame Designations

Westinghouse 1939	Series C 1982	Series G 2004	Power Defense 2019
E-Frame to 50 A	G-Frame to 100 A	EG-Frame to 125 A	PD1
G-Frame to 100 A	G-Frame to 100 A	EG-Frame to 125 A	PD1
F-Frame to 225 A	F-Frame to 225 A	JG-Frame to 250 A	PD2
J-Frame to 250 A	J-Frame to 250 A	JG-Frame to 250 A	PD2
K-Frame to 400 A	K-Frame to 400 A	LG-Frame to 600 A	PD3
L-Frame to 600 A	L-Frame to 600 A	LG-Frame to 600 A	PD3
M-Frame to 800 A	M-Frame to 800 A	NG-Frame to 1200 A	PD4
N-Frame to 1200 A	N-Frame to 1200 A	NG-Frame to 1200 A	PD5
P-Frame to 3000 A	R-Frame to 2500 A	RG-Frame to 2500 A	PD6

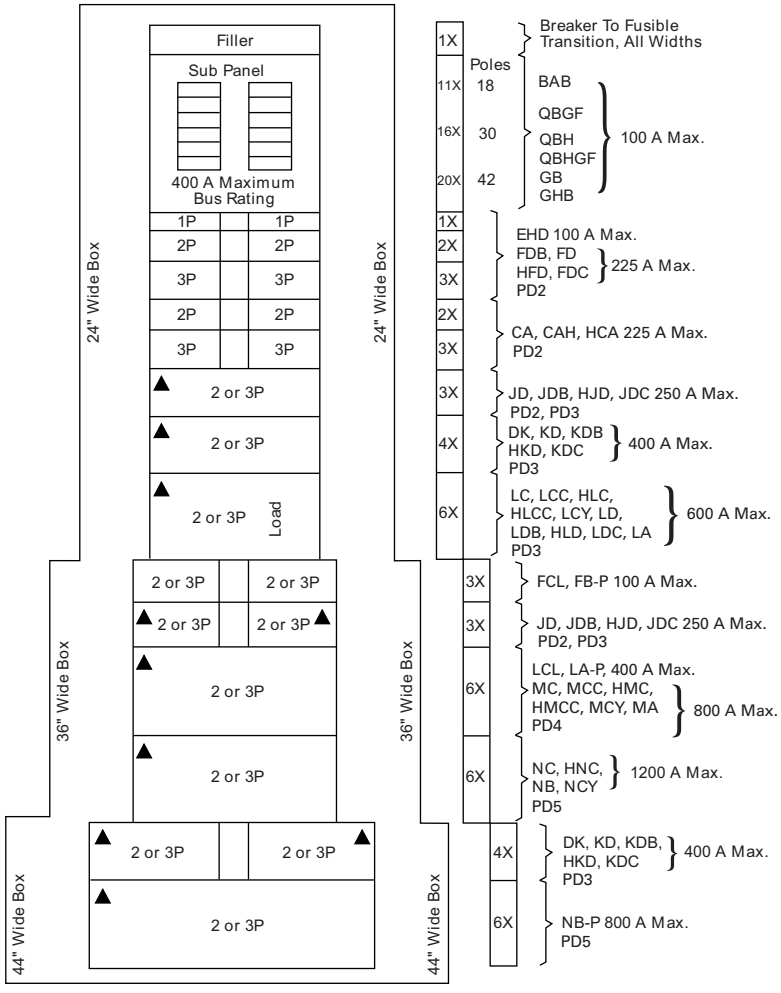
Notes for Replacement Breaker and Mining Breaker Replacement Tables

1. Many of the suggested Power Defense replacements are electrical replacements only, and may have different dimensions, mountings, handle forces and throw (which would require a handle mechanism change).
2. Replacement breaker frames, trips, plugs and some of the terminals and attachments may not be interchangeable.
3. Replacing with a higher IC circuit breaker does not increase the IC rating of the assembly (panelboard, switchboard, etc.).
4. Saf-T-Vue is no longer available on the replacement breaker line. Eaton Canada does make the Series C with Saf-T-Vue and may be sourced through our **Canadian Distribution Center** at **905-631-4318**.
5. Suggested replacements also apply to breakers that had suffixes such as "L," line and load terminals, "V" 50C calibration and "W" without terminals. Contact EatonCare for assistance with the proper selection of replacement breakers with special configurations.
6. The HFB two-pole breaker is on a three-pole frame. The Series C replacement is a true two-pole.
7. Continuous amperes and/or trip range may be a little different on the replacement Series C, Series G or Power Defense breakers.

Note: If accessories are to be factory installed, contact the factory for pricing.

Typical Panelboard Chassis Spacing

Panelboard replacement and upgrades will require correct "X" space, connectors, and covers. The following will assist in determining these requirements. Contact the local Eaton satellite plant for connectors, covers, interior, or complete panelboard replacement options.



One X space = 1.38 inches (35.1 mm).
Blank fillers are required for unused X space.

Electronic Trip Units (Digitrip RMS Trip Units)—Multi-Function Electronic Trip Units for All Applications

True rms Sensing

Digitrip RMS trip units use Eaton's microprocessor-based intelligence to provide true rms sensing, permitting increased accuracy and reliable system protection. True rms sensing is not susceptible to nuisance tripping when waveforms containing high harmonic currents are present.

Digitrip RMS 310+

Digitrip RMS 310+ electronic trip units are available with Eaton Series G circuit breakers JG, LG, NG and RG, as well as Series C FD, KD, LD and MDL circuit breakers.

Digitrip 310+ trip units are equipped with an integrated I_r switch that allows users to modify the continuous current rating of the breaker without having to replace a rating plug. This provides further flexibility for coordination in systems. The trip units may be used in 50 Hz or 60 Hz applications. The Digitrip 310+ offers true rms sensing, is front adjustable and has an optional local display of current and cause of trip.

Curve Shaping

When selectively coordinated systems are called for, Digitrip RMS 310+ will provide a cost-effective solution for a variety of applications.

The standard Digitrip RMS 310+ includes an adjustable short time pickup setting encompassing an I^2t ramp function that provides the basic LS curve shaping function.

Digitrip 310+ trip units also include selectable long time delay (t_{LD}) and pickup settings (I_r). A rating plug is not required.

The optional Digitrip RMS 310+ LSI and LSIG provide additional flat response short time delay adjustments and an instantaneous setting to provide LSI curve shaping capability.

Digitrip RMS 310+ LSG and LSIG units are available with ground fault pickup and flat response ground fault delay. Ground fault alarm options are available with trip and no trip functionality as a means to notify users of a ground fault condition with the option to maintain the breaker online.

Digitrip RMS 310+ trip units can effectively coordinate with both sophisticated upstream power breakers as well as downstream thermal-magnetic breakers, making Digitrip RMS 310+ trip units the cost-effective reliable choice for selectively coordinated systems.

Thermal Memory

All Digitrip RMS trip units incorporate a long delay. Thermal memory prevents the system from cumulative overheating due to repeated overcurrent events that may occur in quick succession.

Field Testing

A field test kit is available for Digitrip RMS 310+ trip units.

Arcflash Reduction Maintenance System

Arcflash Reduction Maintenance System is an available feature on KD, LG, LD, MDL, NG and RG frames with 310+ electronic trip units. This feature increases worker safety by providing an accelerated instantaneous trip unit to reduce arc flash. Additionally, LG, NG and RG frames with the Arcflash Reduction Maintenance System feature include a fully adjustable instantaneous setting.

Digitrip RMS 610 and 910

Digitrip RMS 610 and 910 trip units are available with Eaton R-Frame circuit breakers 800 through 2500 amperes. Digitrip 610 and 910 trip units provide unparalleled system protection with the added convenience of a local display.

Curve Shaping

Digitrip RMS 610 and 910 trip units are available with up to nine curve shaping choices achieved by adjusting up to seven switches on the front of the unit for optimum system coordination. Maximum curve shaping flexibility is provided by dependent long and short delay adjustments that are long delay pickup (I_r) based, depicted on the front of the unit by the blue portion of the time-current curve.

Additional coordination capability can be provided by utilizing the short delay and ground fault zone selective interlocking features available on these trip units.

System Diagnostics

Digitrip RMS 610 and 910 models of trip units provide long delay, short delay, instantaneous, and ground fault cause of trip LEDs on the front of the unit. Their display shows a magnitude of trip information, as well as remote signal contacts, for improved system alarming.

System Monitoring

Digitrip 610 and 910 trip units have the capability to monitor phase currents, as well as neutral or ground currents. This information is displayed on a large digital display mounted on the unit.

Digitrip RMS 910 trip units can also provide the user with power and energy monitoring capability. Peak power demand, present power demand, and total energy, as well as forward and reverse energy can be monitored with this unit.

Digitrip RMS 910 trip units have the additional capability of monitoring line-to-line voltage, as well as system power factor. Both parameters are displayed in the digital display window and are supported by LEDs to indicate which parameter is being displayed.

Harmonics Monitoring

Digitrip RMS 910 trip units are capable of displaying values of current harmonics in the digital display window. Percentage of harmonic content can be monitored for each phase, up to the 27th harmonic. Additionally, a total harmonic distortion value can be calculated and displayed.

Communications

Digitrip RMS 910 units have built-in communications options to allow all protection, monitoring, and control information to be transmitted back to a central location via the Eaton PowerNet™ system.

Field Testing

Integral field testing capability is provided on all 610 and 910 trip units. No additional test set is needed to perform both trip and no trip field testing.

Product Selection Guide—Electronic Trip Units

Digitrip—RMS 310+, 610 and 910

RMS 310+



RG



JG



LG/NG

RMS 610



RMS 910



Breaker Type					
Series G frame(s)		JG-, LG-, NG- and RG-Frames		RG-Frame	RG-Frame
Ampere rating		20–2500 A		800–2500 A	800–2500 A
Interrupting rating at 415 V		35, 70, 100 kA		70, 100 kA	70, 100 kA
Trip Unit Sensing					
rms sensing		Yes		Yes	Yes
Protection and Coordination ①					
Protection	Ordering options	LS, LSG	LSI, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG
	Fixed rating plug (I_n) ②	Yes	Yes	Yes	Yes
	Overtemperature trip	Yes	Yes	Yes	Yes
Long delay	Adjustable I_r switch	Yes	Yes	No	No
	Long delay setting	Var/frame	Var/frame	0.5–1.0 x (I_n)	0.5–1.0 x (I_n)
	Long delay time I^2t at 6x	10 seconds ③	10 seconds ③	2–24 seconds	2–24 seconds
	Long delay thermal memory	Yes	Yes	Yes	Yes
	High load alarm	1.05 I_r	1.05 I_r	0.85 x I_r	0.85 x I_r
Short delay	Short delay setting	Var/frame ④	Var/frame ④	200–600% S1 and S2 x (I_r)	200–600% S1 and S2 x (I_r)
	Short delay time I^2t	100 ms	No	100, 300, 500 ms	100, 300, 500 ms
	Short delay time flat	No	I–300 ms	100–500 ms	100–500 ms
	Short delay time ZSI	No	Yes	Yes	Yes
Instantaneous	Independent adjustable Inst. setting	No	Yes ⑤	Yes	Yes
	Instantaneous setting	No	Var/frame	200–600% M1 and M2 x (I_n)	200–600% M1 and M2 x (I_n)
	Discriminator	No	No	Yes ⑥	Yes ⑥
	Instantaneous override	Yes	Yes	Yes	Yes
Ground fault	Ground fault setting	Var/frame ⑦	Var/frame ⑦	25–100% x (I_n) ⑦	25–100% x (I_n) ⑦
	Ground fault delay I^2t at 0.62x	No	No	100, 300, 500 ms	100, 300, 500 ms
	Ground fault delay flat	I–300 ms	I–300 ms	100–500 ms	100–500 ms
	Ground fault ZSI	No	Yes	Yes	Yes
	Ground fault thermal memory	No	No	Yes	Yes

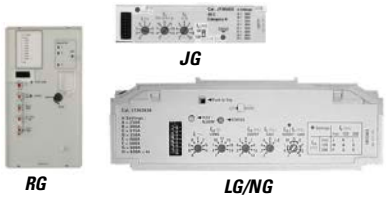
Notes

I_n = Rating plug rating.
I_r = Long delay setting.

① 310+ details are included by frame in **Pages V12-T3-57** (JG), **V12-T3-75** (LG), **V12-T3-85** (NG), and **V12-T3-96** (RG).
② 310+ trip units have selectable settings instead of a rating plug.
③ 310+ trip units have adjustable long delay times of 2–24 seconds, except NG 310+ for 800 A frame, for which it is 2–14 seconds.
④ JG/LG: 2X–14X (I_n); NG: 2X–8X (I_n); RG: 2X–9X (I_n); 2500 ampere RG-Frame 2X–6X% x (I_n).
⑤ LG, NG and RG ALSI and ALSIG 310+ trip units include an independently adjustable Instantaneous (I_i) setting.
⑥ LS, LSG only.
⑦ Not to exceed 1200 amperes.

Digitrip—RMS 310+, 610 and 910, continued

RMS 310+



RMS 610



RMS 910



	LS, LSG	LSI, LSIG	LSI, LSIG, LSIG (A)	LSI (A), LSIG
System Diagnostics				
Cause of trip LEDs	Yes ①②	Yes ①②	Yes	Yes
Magnitude of trip information	No	No	Yes	Yes
Remote signal contacts	No	No	Yes	Yes
System Monitoring				
Digital display	Yes ③	Yes ③	Yes	Yes
Current	Yes ③	Yes ③	Yes	Yes
Voltage	No	No	No	Yes
Power and energy	No	No	No	Yes
Power quality—harmonics	No	No	No	Yes
Power factor	No	No	No	Yes
System Communications				
PowerNet	No	No	No	Yes
Field Testing				
Testing method	Test set ④	Test set ④	Integral	Integral

Notes

① Using cause of trip module (catalog number **TRIP-LED**).
② RG 310+ trip units include integrated cause of trip LEDs.
③ Using ammeter or remote ammeter/cause of trip display (catalog number **DIGIVIEW** and **DIGIVIEWR06**).
④ Test kit available for field testing 310+ trip units (catalog number **MTST230V**).

Molded Case Breaker Replacement Guide

Industrial Circuit Breakers

EG-Frame UL 489/IEC 60947-2 (15–125 A)

Circuit Breaker Type	Number of Poles	Volts AC (50/60 Hz) 120	220–240 I_{cu}	220–240 I_{cs}	277	347	380–415 I_{cu}	380–415 I_{cs}	480	600Y/347	Volts DC ① 125 I_{cu}	125 I_{cs}	250 ②③ I_{cu}	250 ②③ I_{cs}	Recommended Power Defense Replacement ④
EGB125	1	35	25	25	18	—	—	—	—	—	10	10	—	—	PDG11C
	2, 3, 4	—	25	25	—	—	18	18	18	—	—	—	10	10	PDG1xC
EGE125	2, 3, 4	—	35	35	—	—	25	25	25	18	—	—	10	10	PDG1xF
EGS125	1	100	85	43	35	22	—	—	—	—	35	35	—	—	PDG11G
	2, 3, 4	—	85	43	—	—	40	30	35	22	—	—	35	35	PDG1xG
EGH125	1	200	100	50	65	25	—	—	—	—	42	42	—	—	PDG1xM
	2, 3, 4	—	100	50	—	—	70	35	65	25	—	—	42	42	PDG1xM
EGC125 ⑤	3, 4	—	200	200	—	—	100	100	100	35	—	—	42	42	PDG1xP
EGB160 ②	3, 4	—	25	25	—	—	18	18	18	—	—	—	10	10	PDG1xC
EGE160 ②	3, 4	—	35	35	—	—	25	25	25	18	—	—	10	10	PDG1xG
EGS160 ②	3, 4	—	85	43	—	—	40	30	35	22	—	—	35	35	PDG1xK

JG-Frame UL 489/IEC 60947-2 (63–250 A)

Circuit Breaker Type	Number of Poles	Volts AC (50/60 Hz) 220–240 I_{cu}	220–240 I_{cs}	380–415 I_{cu}	380–415 I_{cs}	480	600	690 ② I_{cu}	690 ② I_{cs}	Volts DC ① 250 ②③	Recommended Power Defense Replacement ④
JGE250	2, 3, 4	65	65	25	25	25	18	12	6	10	PDG2xF PDF2xF PDG3xG
JGS250	2, 3, 4	85	85	40	40	35	18	12	6	22	PDG2xG PDF2xG PDG3xG
JGH250	2, 3, 4	100	100	70	70	65	25	14	7	22	PDG2xM PDF2xM PDG3xM
JGC250 ⑤	3, 4	200	200	100	100	100	35	16	12	42	PDG3xP
JGU250 ⑤	3, 4	200	200	150	150	150	50	18	14	50	PDG3xP
JGX250 ⑤	3, 4	200	200	200	200	200	50	18	14	50	PDG3xP

Notes

① DC ratings apply to substantially non-inductive circuits.

② Two-pole circuit breaker, or two poles of three-pole circuit breaker.

③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 42 kA.

④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

⑤ Current limiting per UL 489.

Shaded area denotes obsolete or discontinued products and services.

LG-Frame UL 489/IEC 60947-2 (250–630 A)

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA rms Symmetrical Amperes) (kA) Volts AC (50/60 Hz) 240–240 Icu	240–240 Ics	380–415 Icu	380–415 Ics	480	600	690 Icu	690 Ics	Volts DC ① 250 ②③ Icu	250 ②③ Ics	Recommended Power Defense Replacement ④
LGE630	3, 4	65	65	35	35	35	18	12	6	22	22	PDG3xG
LGS630	3, 4	85	85	50	50	50	25	20	10	22	22	PDG3xK
LGH630	3, 4	100	100	70	70	65	35	25	13	42	42	PDG3xM
LGC630 ⑤	3, 4	200	200	100	100	100	50	30	15	42	42	PDG3xN
LGU630 ⑤	3, 4	200	200	150	150	150	65	35	18	50	50	PDG3xP
LGX630 ⑤	3, 4	200 ⑥	200	200	200	200	65	35	18	50	50	PDG3xP

NG-Frame UL 489/IEC 60947-2 (320–1200 A) ⑦

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240 (UL)	220–240 I_{cu}	220–240 I_{cs}	380–415 I_{cu}	380–415 I_{cs}	480	600	690 I_{cu}	690 I_{cs}	Recommended Power Defense Replacement ④
NGS ①	2, 3, 4	65	85	85	50	50	50	25	20	10	PDG5xK
NGH	2, 3, 4	100	100	100	70	50	65	35	25	13	PDG5xM
NGC	2, 3, 4	200	200	100	100	50	100	65	35	18	PDG5xP
NGU	3, 4	200	—	—	—	—	150	65	—	—	PDG5xP

RG-Frame UL 489/CSA (800–2500 A) ⑧

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Recommended Power Defense Replacement ④
RGH	3, 4	125	65	50	PDG6xN
RGC	3, 4	200	100	65	PDG6xP

Notes

① DC ratings apply to substantially non-inductive circuits.
② Two-pole circuit breaker, or two poles of three-pole circuit breaker.
③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.
⑤ Current limiting per UL 489.
⑥ IEC rating is 300 kA at 240 Vac.
⑦ 1600 A is not a UL or CSA listed rating. 1200 A is the maximum UL and CSA rating for NG.
⑧ Utilization Category A circuit breakers.

Series C Quick Reference

Industrial Circuit Breakers

G-Frame UL 489 (15–100 A)

Circuit Breaker Type	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Type of Trip ①	Federal Specification W-C-375b	UL Listed Interrupting Ratings (rms Symmetrical Amperes) AC (kA) 120	120/240	240	277	480	600	DC (kA) ② 125 ③	250	Recommended Power Defense Replacement ④
GHB	15–100	1	120	125	N.I.T.U.	11a	65	—	—	—	—	—	14	—	—
GHB	15–100	2, 3	240	125/250	N.I.T.U.	11a10b, 11b	—	—	65	—	—	—	—	14	—
GHB	15–100	1	277	125	N.I.T.U.	12b, 14b	—	—	—	14	—	—	14	—	—
GHB	15–100	2, 3	480Y/277	125/250	N.I.T.U.	15b	—	—	—	14	14	—	—	14	—
HGHB	15–30	1	277	125	N.I.T.U.	12c, 13a, 13b	65	—	—	25	—	—	14	—	—
GHBS	15–30	1, 2	480Y/277	—	—	—	65	65	—	14	—	—	—	—	—
GBHS	15–20	1, 2	600Y/347	—	N.I.T.U.	—	—	—	—	—	—	10	—	—	—
GDB	15–50	2	480	125/250	N.I.T.U.	—	—	—	—	—	14	—	—	10	—
GDB	15–100	3	480	250	N.I.T.U.	—	—	—	—	—	14	—	—	10	—
GD	15–50	2	480	125/250	N.I.T.U.	13b	—	—	65	—	14	—	—	10	PDG12G
GD	15–100	3	480	250	N.I.T.U.	13b	—	—	65	—	22	—	—	10	PDG13G
GHC	15–100	1	120	125	N.I.T.U.	12c, 13a	65	—	—	—	—	—	14	—	PDG1xG
GHC	15–100	2, 3	240	125/250	N.I.T.U.	13b	—	—	65		—	—	—	1	PDG11C
GHC	15–100	1	277	125	N.I.T.U.	12c, 13a	—	—	—	14	—	—	14	—	PDG1xC
GHC	15–100	2, 3	480Y/277	125/250	N.I.T.U.	13b	—	—	—	14	14	—	—	14	PDG1xC
HGHC	15–30	1	277	125	N.I.T.U.	—	65	—	—	25	—	—	14	—	PDG11G

F-Frame UL 489 (10–225 A)

Circuit Breaker Type	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Type of Trip ①	Federal Specification W-C-375b	UL Listed Interrupting Ratings (rms Symmetrical Amperes) AC (kA) 120	120/240	240	277	480	600	DC (kA) ② 125	250	Recommended Power Defense Replacement ④
EDB	100–225	2, 3	240	125	N.I.T.U.	—	—	—	22	—	—	—	10	—	PDD2xF
EDS	100–225	2, 3	240	125	N.I.T.U.	—	—	—	42	—	—	—	10	—	PDD2xG
ED	15–225	2, 3	240	125	N.I.T.U.	12b	—	—	65	—	—	—	10	—	PDD2xK
EDH	100–225	2, 3	240	125	N.I.T.U.	14b	—	—	100	—	—	—	10	—	PDD2xM
EDC	100–225	2, 3	240	125	N.I.T.U.	1	—	—	200	—	—	—	10	—	PDD2xP
EHD	15–100	1	277	125	N.I.T.U.	13a	—	—	—	14	—	—	10	—	PDG21F
EHD	15–100	2, 3	480	250	N.I.T.U.	13b	—	—	18	—	14	—	—	10	PDG2xF
FDB	15–150	2, 3	600	250	N.I.T.U.	18a	—	—	18	—	14	14	—	10	PDG2xF
FDB	15–150	4	600	250	N.I.T.U.	⑤	—	—	18	—	14	14	—	10	PDG24M
FD	15–150	1	277	125	N.I.T.U.	13a	—	—	—	35	—	—	10	—	PDG21G
FD	15–225	2, 3	600	250	N.I.T.U.	22a	—	—	65	—	35	18	—	10	PDG2xG
FD	15–225	4	600	250	N.I.T.U.	⑤	—	—	65	—	35	18	—	10	PDG24G
FDE	15–225	3	600	—	N.I.T.U.	—	—	—	65	—	35	18	—	—	PDG23G PXR ETU
HFD	15–150	1	277	125	N.I.T.U.	13a	—	—	—	65	—	—	10	—	PDG21M
HFD	15–225	2,3	600	250	N.I.T.U.	22a	—	—	100	—	65	25	—	22	PDG2xM
HFD	15–225	4	600	250	N.I.T.U.	⑤	—	—	100	—	65	25	—	22	PDG24M
HFDE	15–225	3	600	—	N.I.T.U.	—	—	—	100	—	65	25	—	—	PDG23M PXR ETU
FDC ⑥	15–225	2, 3	600	250	N.I.T.U.	24a	—	—	200	—	100	35	—	22	PDG2xP
FDC ⑥	15–225	4	600	250	N.I.T.U.	⑤	—	—	200	—	100	35	—	22	PDG24P
FDCE ⑥⑦	15–225	3	600	—	N.I.T.U.	—	—	—	200	—	100	25	—	—	PDG23P PXR ETU

Notes

① N.I.T.U. is non-interchangeable trip unit and I.T.U. is interchangeable trip unit.
② Two-pole circuit breaker, or two poles of three-pole circuit breaker at 250 Vdc.
③ Single-pole breakers can be applied in DC systems up to 70 A.
④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.
⑤ Not defined in W-C-375b.
⑥ Current limiting.
⑦ Check with Eaton for availability.

Shaded area denotes obsolete or discontinued products and services.

J-Frame UL 489 (70–250 A)

Circuit Breaker Type	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Type of Trip ①	Federal Specification W-C-375b	UL Listed Interrupting Ratings (rms Symmetrical Amperes) AC (kA) 120	120/240	240	277	480	600	DC (kA) ② 125	250	Recommended Power Defense Replacement ③
JDB	70–250	2, 3	600	250	N.I.T.U.	22a	—	—	65	—	35	18	—	10	PDG2xG PDF2xG PDG3xG
JD	70–250	2, 3, 4	600	250	I.T.U.	22a	—	—	65	—	35	18	—	10	PDG2xG PDF2xG PDG3xG
HJD	70–250	2, 3, 4	600	250	I.T.U.	22a	—	—	100	—	65	25	—	22	PDG2xM PDF2xM PDG3xM
JDC ④	70–250	2, 3, 4	600	250	I.T.U.	22a	—	—	200	—	100	35	—	22	PDG2xP PDF2xP PDG3xP

K-Frame UL 489 (70–400 A)

Circuit Breaker Type	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Type of Trip ①	Federal Specification W-C-375b	UL Listed Interrupting Ratings (rms Symmetrical Amperes) AC (kA) 120	120/240	240	277	480	600	DC (kA) ② 125	250	Recommended Power Defense Replacement ③
DK	250–400	2, 3	240	250	N.I.T.U.	14b	—	—	65	—	—	—	—	10	PDD3xG
KDB	100–400	2, 3	600	250	N.I.T.U.	23a	—	—	65	—	35	25	—	10	PDG3xG
KD	100–400	2, 3, 4	600	250	I.T.U.	23a	—	—	65	—	35	25	—	10	PDG3xG
CKD	100–400	2, 3, 4	600	250	I.T.U.	23a	—	—	65	—	35	25	—	—	PDF3xG
HKD	100–400	2, 3, 4	600	250	I.T.U.	23a	—	—	100	—	65	35	—	22	PDG3xM
CHKD	100–400	2, 3, 4	600	250	I.T.U.	23a	—	—	100	—	65	35	—	—	PDF3xM
KDC ④	100–400	2, 3, 4	600	250	I.T.U.	23a	—	—	200	—	100	65	—	22	PDG3xP

L-Frame UL 489 (125–600 A)

Circuit Breaker Type	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Type of Trip ①	Federal Specification W-C-375b	UL Listed Interrupting Ratings (rms Symmetrical Amperes) AC (kA) 120	120/240	240	277	480	600	DC (kA) ② 125	250	Recommended Power Defense Replacement ③
LDB	300–600	2, 3	600	250	N.I.T.U.	23a	—	—	65	—	35	25	—	22	PDG3xG
LD	300–600	2, 3, 4	600	250	I.T.U.	23a	—	—	65	—	35	25	—	22	PDG3xG
CLD	300–600	2, 3, 4	600	250	I.T.U.	23a	—	—	65	—	35	25	—	—	PDF3xG
HLD	300–600	2, 3, 4	600	250	I.T.U.	23a	—	—	100	—	65	35	—	25	PDG3xM
CHLD	300–600	2, 3, 4	600	250	I.T.U.	23a	—	—	100	—	65	35	—	—	PDF3xM
LDC ④	300–600	2, 3, 4	600	250	I.T.U.	23a	—	—	200	—	100	50	—	30	PDG3xP
CLDC ④	300–600	2, 3, 4	600	250	I.T.U.	23a	—	—	200	—	100	50	—	30	PDF3xP

M-Frame UL 489 (300–800 A)

Circuit Breaker Type	Continuous Ampere Rating at 40 °C	No. of Poles	Volts AC	Volts DC	Type of Trip ①	Federal Specification W-C-375b	UL Listed Interrupting Ratings (rms Symmetrical Amperes) AC (kA) 120	120/240	240	277	480	600	DC (kA) ② 125	250	Recommended Power Defense Replacement ③
MDL	300–800	2, 3	600	250	I.T.U.	23a	—	—	65	—	50	25	—	22	PDG4xK
CMDL	300–800	2, 3	600	250	I.T.U.	23a	—	—	65	—	50	25	—	—	PDF4xK
HMDL	300–800	2, 3	600	250	I.T.U.	23a	—	—	100	—	65	35	—	25	PDG4xM
CHMDL	300–800	2, 3	600	250	I.T.U.	23a	—	—	100	—	65	35	—	—	PDF4xM

Notes

① N.I.T.U. is non-interchangeable trip unit and I.T.U. is interchangeable trip unit.

② Two-pole circuit breaker, or two poles of three-pole circuit breaker at 250 Vdc.

③ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

④ Current limiting.

Molded Case Circuit Breakers

Series G

Series G, 15–2500 Amperes for UL, CSA and IEC Applications



Contents

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NG-Frame (320–1200 A	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
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30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
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Learn Online

Drawings Online

Product Overview

Series G, 15–2500 Amperes for UL, CSA and IEC Applications

Eaton Series G molded case circuit breakers provide increased performance in considerably less space than standard circuit breakers or comparable fusible devices.

The "G" signifies global applications: Series G circuit breakers are marked with UL, CSA, CE, IEC and KEMA KEUR listings. Other advantages include:

- Field-fit accessories
- Common accessories through 630 amperes
- Electronic trip units from 20 to 2500 amperes
- UL-listed and IEC-rated, 30 mA ground fault/earth leakage modules
- Built-in ground fault protection down to 20 amperes

The EG, JG and LG frames are designed around space-saving footprints. The NG and RG use the proven Eaton Series C ND and RD designs.

The Series G family includes five frame sizes in ratings from 15 to 2500 amperes. Series G offers a choice of several interrupting capacities up to 200 kA at 480 volts AC (200 kA at 240 volts AC).

Series G molded case circuit breakers are also available in direct current options. Please see Specialty Breakers **CA08100005E, Volume 4, Tab 2** for more details.

Standard calibration is 40 °C. For applications in high ambient temperature conditions, 50 °C factory calibration is available on thermal-magnetic breakers (not UL).

The Most Logically Designed Contact Assembly

The flexibility and outstanding performance characteristics of Eaton circuit breakers are made possible by the best contact designs in circuit breaker history. Our technology creates a high-speed "blow-open" action using the electromechanical forces produced by high-level fault currents.

Eaton circuit breakers are operated by a toggle-type mechanism that is mechanically trip-free from the handle so that the contacts cannot be held closed against short circuit currents. Tripping due to overload or short circuits is clearly indicated by the position on the handle. This remarkably fast and dependable contact action is designed to enhance safety.

Thorough In-Plant Testing

The quality, dependability and reliability of every Eaton Circuit Breaker is ensured by a thorough program of in-plant testing. Two calibration tests are conducted on every pole of every circuit breaker to verify the trip mechanism, operating mechanism, continuity and accuracy.

Current-Limiting Characteristics

Circuit breakers are current-limiting because of their high repulsion contact arrangement and use of state-of-the-art arc extinguishing technology.

Eaton offers one of the most complete lines of current-limiting breakers in the industry. The industrial breakers are available in current-limiting versions with interrupting capacities up to 200 kA at 480 V without fuses in the same physical size as standard and high interrupting capacity breakers.

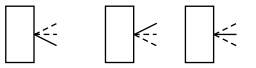
Operating Mechanisms

Eaton circuit breakers have a toggle handle operating mechanism, which also serves as a switching position indicator. The indicator shows the positions of: ON, OFF and TRIPPED.

The toggle handle snaps into the TRIPPED position if the breaker is tripped by one of its overcurrent, short circuit, shunt or undervoltage releases. Before the circuit breaker can be reclosed following a trip-out, the toggle handle must be brought beyond the OFF position (RESET). The circuit breaker can then be reclosed.

As an additional switching position indicator for EG- to RG-Frame circuit breakers, there are two windows on the right and on the left of the toggle handle, in which the switching state is indicated by means of the colors red, green and white corresponding to the ON, OFF and TRIPPED positions respectively.

Positions of the Toggle Handle Drive



Standards and Certifications

Eaton Series G circuit breakers meet applicable UL 489 and IEC 60947-2 standards.

Molded case circuit breakers from Eaton are designed to conform with the following international standards:

- Australian Standard AS 2184 and AS 3947-2 molded case circuit breakers
- British Standards Institution Standard EN60947.2
- International Electromechanical Commission Recommendations IEC 60947.2 circuit breakers

CE

- Japanese T-Mark standard molded case circuit breakers
- National Electrical Manufacturers Association Standards Publication No. AB1-1993 molded case circuit breakers
- South African Bureau of Standards, Standard SANS 156, Standard Specification for molded case circuit breakers
- Swiss Electro-Technical Association Standard SEV 947.2, Safety Regulations for circuit breakers
- Union Technique de l'Electricite Standard NF C 63-120, low-voltage switchgear and control gear circuit breaker requirements
- Verband Deutscher Elektrotechnike (Association of German Electrical Engineers) Standard VDE 0660, low-voltage switchgear and control gear, circuit breakers

Global Third-Party Certification

Certification marks ensure product compliance with the total standard via the third party witnessing of tests by globally recognized independent certification organizations.

KEMA is a highly recognized, independent international organization that offers certification and inspection facilities for equipment in many industries. The KEMA-KEUR mark is the highest certification an electrical product can receive from KEMA. Our IEC 60947-2 molded case circuit breakers are KEMA tested and certified. These breakers are also listed in accordance with UL 489, as well as CSA C22.2 No. 5-02.

KEMA, UL and CSA provide ongoing follow-up testing and inspections to ensure that Eaton molded case circuit breakers continue to meet their exacting standards.

ISO Certification

Eaton circuit breakers are manufactured in ISO® certified facilities.

EG-Frame (15–125 Amperes)



Contents

Description	*Page*
EG-Frame (15–125 A)	
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NG-Frame (320–1200 A)	**V12-T3-78**
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Motor Circuit Protectors (MCP)	**V12-T3-104**
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Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

EG-Frame (15–125 A)

Product Description

EG breaker is HACR rated.

Technical Data

UL 489/IEC 60947-2 Interrupting Capacity Ratings (Symmetrical Amperes) (kA)

Circuit Breaker Type	Number of Poles	Volts AC (50/60 Hz) 120	220–240 I_{cu}	220–240 I_{cs}	277	347	380–415 I_{cu}	380–415 I_{cs}	480	600Y/347	Volts DC ① 125 I_{cu}	125 I_{cs}	250 ②③ I_{cu}	250 ②③ I_{cs}	Recommended Power Defense Replacement ④
EGB125	1	35	25	25	18	—	—	—	—	—	10	10	—	—	PDG11C
	2, 3, 4	—	25	25	—	—	18	18	18	—	—	—	10	10	PDG1xC
EGE125	2, 3, 4	—	35	35	—	—	25	25	25	18	—	—	10	10	PDG1xF
EGS125	1	100	85	43	35	22	—	—	—	—	35	35	—	—	PDG11G
	2, 3, 4	—	85	43	—	—	40	30	35	22	—	—	35	35	PDG1xG
EGH125	1	200	100	50	65	25	—	—	—	—	42	42	—	—	PDG1xM
	2, 3, 4	—	100	50	—	—	70	35	65	25	—	—	42	42	PDG1xM
EGC125 ⑤	3, 4	—	200	200	—	—	100	100	100	35	—	—	42	42	PDG1xP
EGB160 ②	3, 4	—	25	25	—	—	18	18	18	—	—	—	10	10	PDG1xC
EGE160 ②	3, 4	—	35	35	—	—	25	25	25	18	—	—	10	10	PDG1xG
EGS160 ②	3, 4	—	85	43	—	—	40	30	35	22	—	—	35	35	PDG1xK

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
EGC	240 V/200 kA	24.5	0.6310
EGC	480 V/100 kA	24.5	0.6310
EGC	600 Y/35 kA	20.0	1.392

Notes

① DC ratings apply to substantially non-inductive circuits.

② Two-pole circuit breaker, or two poles of three-pole circuit breaker.

③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 42 kA.

④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

⑤ Current limiting per UL 489.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Series G—EG-Frame (15–125 Amperes)

E G H 3 015 FF G

Frame
E

Standard/Application
G = IEC/CE/UL/CSA

Performance				
	600Y/347	**480**	**415**	**240**
B	—	18	18	25
E	18	25	25	35
S	22	35	40	85
H	25	65	70	100
C	35	100	100	200
K	Molded case switch ②			

Number of Poles
1 = One
2 = Two
3 = Three
4 = Four—neutral 0% protected
7 = Four—neutral 100% protected

Amperes
016 ①
015
020
025
030
032 ①
035
040
045
050
060
063 ①
070
080
090
100
110
125
160 ①

Terminations/Hardware	
Terminals	**Mounting Hardware**
M = Metric end caps	Metric
E = Imperial end caps	Imperial
G = Line/load standard	Metric
B = Bolt-on	—

Trip Unit
FF = Fixed fixed
AF = Adjustable thermal fixed magnetic
KS = Molded case switch

Notes

① Cannot be UL rated.

② Available only as 125 and 160 A sizes.

Product Selection

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware) IC Rating at 415/480 Volts

EG-Frame



EG-Frame—18/18

Maximum Continuous Amps at 40 °C ①	Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Three-Pole Adjustable ② Thermal, Fixed Magnetic Catalog Number	Four-Pole ③ Fixed Thermal, Fixed Magnetic Catalog Number	Four-Pole ③ Adjustable ② Thermal, Fixed Magnetic Catalog Number
15	**EGB1015FFG**	**EGB2015FFG**	**EGB3015FFG**	—	**EGB4015FFG**	—
16	**EGB1016FFG**	**EGB2016FFG**	**EGB3016FFG**	—	**EGB4016FFG**	—
20	**EGB1020FFG**	**EGB2020FFG**	**EGB3020FFG**	—	**EGB4020FFG**	**EGB4020AFG**
25	**EGB1025FFG**	**EGB2025FFG**	**EGB3025FFG**	**EGB3025AFG**	**EGB4025FFG**	**EGB4025AFG**
30	**EGB1030FFG**	**EGB2030FFG**	**EGB3030FFG**	—	**EGB4030FFG**	—
32	**EGB1032FFG**	**EGB2032FFG**	**EGB3032FFG**	**EGB3032AFG**	**EGB4032FFG**	**EGB4032AFG**
35	**EGB1035FFG**	**EGB2035FFG**	**EGB3035FFG**	—	**EGB4035FFG**	—
40	**EGB1040FFG**	**EGB2040FFG**	**EGB3040FFG**	**EGB3040AFG**	**EGB4040FFG**	**EGB4040AFG**
45	**EGB1045FFG**	**EGB2045FFG**	**EGB3045FFG**	—	**EGB4045FFG**	—
50	**EGB1050FFG**	**EGB2050FFG**	**EGB3050FFG**	**EGB3050AFG**	**EGB4050FFG**	**EGB4050AFG**
60	**EGB1060FFG**	**EGB2060FFG**	**EGB3060FFG**	—	**EGB4060FFG**	—
63	**EGB1063FFG**	**EGB2063FFG**	**EGB3063FFG**	**EGB3063AFG**	**EGB4063FFG**	**EGB4063AFG**
70	**EGB1070FFG**	**EGB2070FFG**	**EGB3070FFG**	—	**EGB4070FFG**	—
80	**EGB1080FFG**	**EGB2080FFG**	**EGB3080FFG**	**EGB3080AFG**	**EGB4080FFG**	**EGB4080AFG**
90	**EGB1090FFG**	**EGB2090FFG**	**EGB3090FFG**	—	**EGB4090FFG**	—
100	**EGB1100FFG**	**EGB2100FFG**	**EGB3100FFG**	**EGB3100AFG**	**EGB4100FFG**	**EGB4100AFG**
110	**EGB1110FFG**	**EGB2110FFG**	**EGB3110FFG**	—	**EGB4110FFG**	—
125	**EGB1125FFG**	**EGB2125FFG**	**EGB3125FFG**	**EGB3125AFG**	**EGB4125FFG**	**EGB4125AFG**
160	—	—	**EGB3160FFG**	**EGB3160AFG**	**EGB4160FFG**	**EGB4160AFG**

Notes

① 16, 32, 63 and 160 A are not UL listed ratings.

② Adjustable thermal are not UL listed.

③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

EG-Frame—25/25 Single-Pole Unavailable

EG-Frame



EG-Frame—25/25

Maximum Continuous Amps at 40 °C ①	Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Adjustable ② Thermal, Fixed Magnetic Catalog Number	Four-Pole ③ Fixed Thermal, Fixed Magnetic Catalog Number	Adjustable ② Thermal, Fixed Magnetic Catalog Number
15	**EGE2015FFG**	**EGE3015FFG**	—	**EGE4015FFG**	—
16	**EGE2016FFG**	**EGE3016FFG**	—	**EGE4016FFG**	—
20	**EGE2020FFG**	**EGE3020FFG**	—	**EGE4020FFG**	**EGE4020AFG**
25	**EGE2025FFG**	**EGE3025FFG**	**EGE3025AFG**	**EGE4025FFG**	**EGE4025AFG**
30	**EGE2030FFG**	**EGE3030FFG**	—	**EGE4030FFG**	—
32	**EGE2032FFG**	**EGE3032FFG**	**EGE3032AFG**	**EGE4032FFG**	**EGE4032AFG**
35	**EGE2035FFG**	**EGE3035FFG**	—	**EGE4035FFG**	—
40	**EGE2040FFG**	**EGE3040FFG**	**EGE3040AFG**	**EGE4040FFG**	**EGE4040AFG**
45	**EGE2045FFG**	**EGE3045FFG**	**EGE3050AFG**	**EGE4045FFG**	—
50	**EGE2050FFG**	**EGE3050FFG**	—	**EGE4050FFG**	**EGE4050AFG**
60	**EGE2060FFG**	**EGE3060FFG**	—	**EGE4060FFG**	—
63	**EGE2063FFG**	**EGE3063FFG**	**EGE3063AFG**	**EGE4063FFG**	**EGE4063AFG**
70	**EGE2070FFG**	**EGE3070FFG**	—	**EGE4070FFG**	—
80	**EGE2080FFG**	**EGE3080FFG**	**EGE3080AFG**	**EGE4080FFG**	**EGE4080AFG**
90	**EGE2090FFG**	**EGE3090FFG**	—	**EGE4090FFG**	—
100	**EGE2100FFG**	**EGE3100FFG**	**EGE3100AFG**	**EGE4100FFG**	**EGE4100AFG**
125	**EGE2125FFG**	**EGE3125FFG**	**EGE3125AFG**	**EGE4125FFG**	**EGE4125AFG**
160	—	**EGE3160FFG**	**EGE3160AFG**	**EGE4160FFG**	**EGE4160AFG**

Notes

① 16, 32, 63 and 160 A are not UL listed ratings.
② Adjustable thermal are not UL listed.
③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

EG-Frame



EG-Frame—40/35

Maximum Continuous Amps at 40 °C ①	Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Three-Pole Adjustable ② Thermal, Fixed Magnetic Catalog Number	Four-Pole ③ Fixed Thermal, Fixed Magnetic Catalog Number	Four-Pole ③ Adjustable ② Thermal, Fixed Magnetic Catalog Number
15	EGS1015FFG	EGS2015FFG	EGS3015FFG	—	EGS4015FFG	—
16	EGS1016FFG	EGS2016FFG	EGS3016FFG	—	EGS4016FFG	—
20	EGS1020FFG	EGS2020FFG	EGS3020FFG	—	EGS4020FFG	EGS4020AFG
25	EGS1025FFG	EGS2025FFG	EGS3025FFG	EGS3025AFG	EGS4025FFG	EGS4025AFG
30	EGS1030FFG	EGS2030FFG	EGS3030FFG	—	EGS4030FFG	—
32	EGS1032FFG	EGS2032FFG	EGS3032FFG	EGS3032AFG	EGS4032FFG	EGS4032AFG
35	EGS1035FFG	EGS2035FFG	EGS3035FFG	—	EGS4035FFG	—
40	EGS1040FFG	EGS2040FFG	EGS3040FFG	EGS3040AFG	EGS4040FFG	EGS4040AFG
45	EGS1045FFG	EGS2045FFG	EGS3045FFG	—	EGS4045FFG	—
50	EGS1050FFG	EGS2050FFG	EGS3050FFG	EGS3050AFG	EGS4050FFG	EGS4050AFG
60	EGS1060FFG	EGS2060FFG	EGS3060FFG	—	EGS4060FFG	—
63	EGS1063FFG	EGS2063FFG	EGS3063FFG	EGS3063AFG	EGS4063FFG	EGS4063AFG
70	EGS1070FFG	EGS2070FFG	EGS3070FFG	—	EGS4070FFG	—
80	EGS1080FFG	EGS2080FFG	EGS3080FFG	EGS3080AFG	EGS4080FFG	EGS4080AFG
90	EGS1090FFG	EGS2090FFG	EGS3090FFG	—	EGS4090FFG	—
100	EGS1100FFG	EGS2100FFG	EGS3100FFG	EGS3100AFG	EGS4100FFG	EGS4100AFG
125	EGS1125FFG	EGS2125FFG	EGS3125FFG	EGS3125AFG	EGS4125FFG	EGS4125AFG
160	—	—	EGS3160FFG	EGS3160AFG	EGS4160FFG	EGS4160AFG

Notes

① 16, 32, 63 and 160 A are not UL listed ratings.
② Adjustable thermal are not UL listed.
③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

EG-Frame



EG-Frame—70/65

Maximum Continuous Amps at 40 °C ①	Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Adjustable ② Thermal, Fixed Magnetic Catalog Number	Four-Pole ③ Fixed Thermal, Fixed Magnetic Catalog Number	Adjustable ② Thermal, Fixed Magnetic Catalog Number
15	**EGH1015FFG**	**EGH2015FFG**	**EGH3015FFG**	—	**EGH4015FFG**	—
16	**EGH1016FFG**	**EGH2016FFG**	**EGH3016FFG**	—	**EGH4016FFG**	—
20	**EGH1020FFG**	**EGH2020FFG**	**EGH3020FFG**	**EGH3020AFG**	**EGH4020FFG**	**EGH4020AFG**
25	**EGH1025FFG**	**EGH2025FFG**	**EGH3025FFG**	**EGH3025AFG**	**EGH4025FFG**	**EGH4025AFG**
30	**EGH1030FFG**	**EGH2030FFG**	**EGH3030FFG**	—	**EGH4030FFG**	—
32	**EGH1032FFG**	**EGH2032FFG**	**EGH3032FFG**	**EGH3032AFG**	**EGH4032FFG**	**EGH4032AFG**
35	**EGH1035FFG**	**EGH2035FFG**	**EGH3035FFG**	—	**EGH4035FFG**	—
40	**EGH1040FFG**	**EGH2040FFG**	**EGH3040FFG**	**EGH3040AFG**	**EGH4040FFG**	**EGH4040AFG**
45	**EGH1045FFG**	**EGH2045FFG**	**EGH3045FFG**	—	**EGH4045FFG**	**EGH4050AFG**
50	**EGH1050FFG**	**EGH2050FFG**	**EGH3050FFG**	**EGH3050AFG**	**EGH4050FFG**	—
60	**EGH1060FFG**	**EGH2060FFG**	**EGH3060FFG**	—	**EGH4060FFG**	—
63	**EGH1063FFG**	**EGH2063FFG**	**EGH3063FFG**	**EGH3063AFG**	**EGH4063FFG**	**EGH4063AFG**
70	**EGH1070FFG**	**EGH2070FFG**	**EGH3070FFG**	—	**EGH4070FFG**	—
80	**EGH1080FFG**	**EGH2080FFG**	**EGH3080FFG**	**EGH3080AFG**	**EGH4080FFG**	**EGH4080AFG**
90	**EGH1090FFG**	**EGH2090FFG**	**EGH3090FFG**	—	**EGH4090FFG**	—
100	**EGH1100FFG**	**EGH2100FFG**	**EGH3100FFG**	**EGH3100AFG**	**EGH4100FFG**	**EGH4100AFG**
125	**EGH1125FFG**	**EGH2125FFG**	**EGH3125FFG**	**EGH3125AFG**	**EGH4125FFG**	**EGH4125AFG**

Notes

① 16, 32, 63 A are not UL listed ratings.
② Adjustable thermal are not UL listed.
③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on the LH side.

EG-Frame—100/100 Current Limiting (Single-Pole and Two-Pole Unavailable)

EG-Frame



EG-Frame—100/100

Maximum Continuous Amps at 40 °C ①	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number	Three-Pole Adjustable ② Thermal, Fixed Magnetic Catalog Number	Four-Pole 0% Protected Neutral ③ Fixed Thermal, Fixed Magnetic Catalog Number	Four-Pole 0% Protected Neutral ③ Adjustable ② Thermal, Fixed Magnetic Catalog Number
15	**EGC3015FFG**	—	**EGC7015FFG**	—
16	**EGC3016FFG**	—	**EGC7016FFG**	—
20	**EGC3020FFG**	**EGC3020AFG**	**EGC7020FFG**	**EGC7020AFG**
25	**EGC3025FFG**	**EGC3025AFG**	**EGC7025FFG**	**EGC7025AFG**
30	**EGC3030FFG**	—	**EGC7030FFG**	—
32	**EGC3032FFG**	**EGC3032AFG**	**EGC7032FFG**	**EGC7032AFG**
35	**EGC3035FFG**	—	**EGC7035FFG**	—
40	**EGC3040FFG**	**EGC3040AFG**	**EGC7040FFG**	**EGC7040AFG**
45	**EGC3045FFG**	—	**EGC7045FFG**	—
50	**EGC3050FFG**	**EGC3050AFG**	**EGC7050FFG**	**EGC7050AFG**
60	**EGC3060FFG**	—	**EGC7060FFG**	—
63	**EGC3063FFG**	**EGC3063AFG**	**EGC7063FFG**	**EGC7063AFG**
70	**EGC3070FFG**	—	**EGC7070FFG**	—
80	**EGC3080FFG**	**EGC3080AFG**	**EGC7080FFG**	**EGC7080AFG**
90	**EGC3090FFG**	—	**EGC7090FFG**	—
100	**EGC3100FFG**	**EGC3100AFG**	**EGC7100FFG**	**EGC7100AFG**
125	**EGC3125FFG**	**EGC3125AFG**	**EGC7125FFG**	**EGC7125AFG**

Molded Case Switches ④

Catalog Number
EGK3125KSG
EGK7125KSG
EGK3160KSG
EGK7160KSG

Notes

① 16, 32, 63 A are not UL listed ratings.
② Adjustable thermal is not UL listed.
③ Change the fourth digit to 7 for 100% neutral protection. Neutral is on LH side.
④ Molded case switches may open above 1250 A.

EG Bolt-On Complete Breaker (Includes Frame, Trip Unit and Mounting Hardware)

EG-Frame



EG-Frame—18 kAIC at 480 Vac

Maximum Continuous Amps at 40 °C	Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number ①	Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number ②	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number ③
15	EGB1015FFB	EGB2015FFB	EGB3015FFB
20	EGB1020FFB	EGB2020FFB	EGB3020FFB
25	EGB1025FFB	EGB2025FFB	EGB3025FFB
30	EGB1030FFB	EGB2030FFB	EGB3030FFB
35	EGB1035FFB	EGB2035FFB	EGB3035FFB
40	EGB1040FFB	EGB2040FFB	EGB3040FFB
45	EGB1045FFB	EGB2045FFB	EGB3045FFB
50	EGB1050FFB	EGB2050FFB	EGB3050FFB
60	EGB1060FFB	EGB2060FFB	EGB3060FFB
70	EGB1070FFB	EGB2070FFB	EGB3070FFB
80	EGB1080FFB	EGB2080FFB	EGB3080FFB
90	EGB1090FFB	EGB2090FFB	EGB3090FFB
100	EGB1100FFB	EGB2100FFB	EGB3100FFB
110	EGB1110FFB	EGB2110FFB	EGB3110FFB
125	EGB1125FFB	EGB2125FFB	EGB3125FFB

EG-Frame



EG-Frame—35 kAIC at 480 Vac

Maximum Continuous Amps at 40 °C	Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number ①	Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number ②	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number ③
15	EGS1015FFB	EGS2015FFB	EGS3015FFB
20	EGS1020FFB	EGS2020FFB	EGS3020FFB
25	EGS1025FFB	EGS2025FFB	EGS3025FFB
30	EGS1030FFB	EGS2030FFB	EGS3030FFB
35	EGS1035FFB	EGS2035FFB	EGS3035FFB
40	EGS1040FFB	EGS2040FFB	EGS3040FFB
45	EGS1045FFB	EGS2045FFB	EGS3045FFB
50	EGS1050FFB	EGS2050FFB	EGS3050FFB
60	EGS1060FFB	EGS2060FFB	EGS3060FFB
70	EGS1070FFB	EGS2070FFB	EGS3070FFB
80	EGS1080FFB	EGS2080FFB	EGS3080FFB
90	EGS1090FFB	EGS2090FFB	EGS3090FFB
100	EGS1100FFB	EGS2100FFB	EGS3100FFB
110	EGS1110FFB	EGS2110FFB	EGS3110FFB
125	EGS1125FFB	EGS2125FFB	EGS3125FFB

Notes

① For bulk pack 24, add suffix BP24 and order quantities of 24.
② For bulk pack 12, add suffix BP12 and order quantities of 12.
③ For bulk pack 8, add suffix BP8 and order quantities of 8.

EG-Frame



EG-Frame—65 kAIC at 480 Vac

Maximum Continuous Amps at 40 °C	Single-Pole Fixed Thermal, Fixed Magnetic Catalog Number ①	Two-Pole Fixed Thermal, Fixed Magnetic Catalog Number ②	Three-Pole Fixed Thermal, Fixed Magnetic Catalog Number ③
15	**EGH1015FFB**	**EGH2015FFB**	**EGH3015FFB**
20	**EGH1020FFB**	**EGH2020FFB**	**EGH3020FFB**
25	**EGH1025FFB**	**EGH2025FFB**	**EGH3025FFB**
30	**EGH1030FFB**	**EGH2030FFB**	**EGH3030FFB**
35	**EGH1035FFB**	**EGH2035FFB**	**EGH3035FFB**
40	**EGH1040FFB**	**EGH2040FFB**	**EGH3040FFB**
45	**EGH1045FFB**	**EGH2045FFB**	**EGH3045FFB**
50	**EGH1050FFB**	**EGH2050FFB**	**EGH3050FFB**
60	**EGH1060FFB**	**EGH2060FFB**	**EGH3060FFB**
70	**EGH1070FFB**	**EGH2070FFB**	**EGH3070FFB**
80	**EGH1080FFB**	**EGH2080FFB**	**EGH3080FFB**
90	**EGH1090FFB**	**EGH2090FFB**	**EGH3090FFB**
100	**EGH1100FFB**	**EGH2100FFB**	**EGH3100FFB**
110	**EGH1110FFB**	**EGH2110FFB**	**EGH3110FFB**
125	**EGH1125FFB**	**EGH2125FFB**	**EGH3125FFB**

Load Terminals

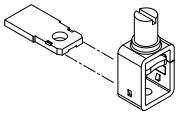
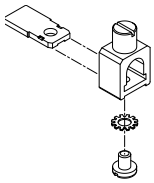
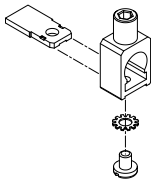
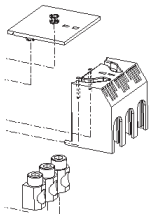
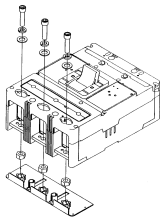
Maximum Breaker Amps	Terminal, Body Material	Wire Type	Metric Wire Range mm^2	AWG Wire Range	(Package of Three Terminals) Catalog Number
Standard Cu/Al Pressure Type Terminals					
15–50	Aluminum	Cu/Al	2.5–50	#14–1/0	**3TA125EF**
60–125	Aluminum	Cu/Al	16–70	#6–3/0	**3TA150EF**

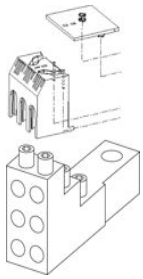
Notes

① For bulk pack 24, add suffix BP24 and order quantities of 24.
② For bulk pack 12, add suffix BP12 and order quantities of 12.
③ For bulk pack 8, add suffix BP8 and order quantities of 8.

Accessories Selection Guide and Ordering Information

EG-Frame



3T125EF	3TA125EF	3TA150EF	3TA160EFK	EF2RTWK, Two-Pole–Metric EF3RTWK, Three-Pole–Metric EF4RTWK, Four-Pole–Metric EF2RTDK, Two-Pole–Imperial EF3RTDK, Three-Pole–Imperial EF4RTDK, Four-Pole–Imperial	Control Wire Terminal Kit GCWTK	Multiwire Connectors

Line and Load Terminals

Maximum Breaker Amps	Terminal Body Material	Wire Type	Metric Wire Range mm^2	AWG Wire Range	(Package of Three Terminals) Catalog Number
Standard Cu/Al Pressure Type Terminals					
125	Steel	Al	4–6	#14-3/0	**3T125EF** ①
125	Steel	Cu	2.5–95	#14-3/0	**3T125EF** ①
125	Aluminum	Cu/Al	2.5–50	#14-1/0	**3TA125EF**
160	Aluminum	Cu/Al	16–70	#6-3/0	**3TA150EF**
160	Aluminum	Cu/Al	35–120	#3-250	**3TA160EFK**
160	Aluminum	Cu/Al	35–120	#3-250	**4TA160EFK** ②

EG-Frame circuit breakers and molded case switches have line and load terminals as standard equipment.

Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer.

Caution: Collar must surround conductor.

Insert collar enclosing conductor and center on extrusion. Tighten securely with screw and washer. Endcap kits are used on the E-Frame breaker line side to connect bus bar or similar electrical connections. Includes hardware.

Notes

① Standard line and load terminals.
② Four-pole kit with four terminals.

Control Wire Terminal Kit

	Catalog Number
Control wire terminal kit	**5652B38G01**
Package of 12—priced individually	

For use with steel or stainless steel standard line and load terminals only.

Interphase Barriers

	Catalog Number
Interphase barriers	**EIPBK**
Package includes 2 barriers	

The interphase barrier is available for extended insulation between circuit breaker poles. Specify quantity when ordering.

Base Mounting Hardware—DIN Rail Mounting

	Catalog Number
DIN rail adapter—single-pole	**EF1DIN**
DIN rail adapter—two-pole	**EGDIN**
DIN rail adapter—three- or four-pole	**EF34DIN**
Metal DIN rail adapter—three-pole	**EGGDDIN**

Metric base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order S/N 8703C80G08.

Note: English mounting hardware kit can be supplied separate. Catalog number is **BMHE** #6–32 x 3 inches for two-, three- and four-pole. Single-pole mounting hardware metric order **8703C80G11**. English hardware **8703C80G12**. Both sold in quantities of 100.

Terminal Shields

The terminal shield is available for line terminal areas in three- and four-pole circuit breakers. Special terminal shields are also available for use when an electrical (solenoid) operator is mounted on the circuit breaker. The standard style number by pole for each terminal shield is for a package of 10 and is priced per each package. Special terminal shields are packaged individually.

Terminal Shields—IP30 Protection

Number of Poles	Catalog Number
3	**EFTS3K**
4	**EFTS4K**

Terminal End Covers (Gas Barrier)

The terminal end cover is available for three-pole circuit breakers only. Two conductor opening sizes are available. Specify quantity (one per circuit breaker) when ordering.

Terminal End Covers

Conductor Opening Diameter Inches (mm)	Catalog Number
6.35 (0.25)	**EEC3K**
10.41 (0.41)	**EEC4K**

Multiwire Connectors

Field-installed multiwire connectors for the load side (OFF) end terminals. They are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include mounting hardware, terminal shield insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

EG-Frame Multiwire Connectors Ordering Information (Package of 3) ①

Maximum Amperes	Wires per Terminal	Wire Size Range AWG Cu	Kit Catalog Number
125	3	14–2	**3TA125E3K**
125	6	14–6	**3TA125E6K**

Note

① For four-pole kit, change "3" at beginning of catalog number to "4."

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

EG-Frame Accessories

Description	Reference Page	Single-Pole	Two-Pole		Three-Pole			Four-Pole			
		Center	Left	Right	Left	Center	Right	Left	Center	Right	Neutral
Internal Accessories (Only one internal accessory per pole)											
Alarm lockout (Make/Break)	**V12-T3-128**	—	—	■	—	—	●	—	—	●	—
Alarm lockout (2Make/2Break)	**V12-T3-128**	—	—	■	—	—	●	—	—	●	—
Auxiliary switch (1A, 1B)	**V12-T3-128**	—	—	■	—	—	●	—	—	●	—
Auxiliary switch (2A, 2B)	**V12-T3-128**	—	—	■	—	—	●	—	—	●	—
Auxiliary switch and alarm switch combination	**V12-T3-128**	—	—	■	—	—	●	—	—	●	—
Shunt trip—standard	**V12-T3-128**	—	—	—	●	—	—	●	—	—	—
Undervoltage release mechanism	**V12-T3-129**	—	—	—	●	—	—	●	—	—	—
External Accessories											
End cap kit	**V12-T3-38**	—	●	●	●	●	●	●	●	●	●
Control wire terminal kit	**V12-T3-38**	●	●	●	●	●	●	●	●	●	●
Multiwire connectors	**V12-T3-38**	●	●	●	●	●	●	●	●	●	●
Base mounting hardware	**V12-T3-38**	●	●	●	●	●	●	●	●	●	●
Terminal shields	**V12-T3-38**	●	●	●	●	●	●	●	●	●	●
Terminal end covers	**V12-T3-38**	—	—	—	●	●	●	—	—	—	—
Interphase barriers	**V12-T3-38**	—	●	●	●	●	●	●	●	●	●
Non-padlockable handle block	**V12-T3-126**	●	●	—	—	●	—	—	●	—	—
Snap-on padlockable handle lock hasp	**V12-T3-126**	●	●	—	—	●	—	—	●	—	—
Padlockable handle lock hasp	**V12-T3-126**	—	—	●	❍	—	❍	❍	—	❍	—
Walking beam interlock—requires two breakers	**V12-T3-126**	—	—	—	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-126**	—	●	●	●	●	●	●	●	●	●
Electrical operator	**V12-T3-126**	—	—	—	●	●	●	—	—	—	—
Handle mechanisms	—	—	—	—	●	●	●	—	—	—	—
Modifications (Refer to Eaton)											
Moisture fungus treatment	**V12-T3-124**	●	●	●	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●	●	●	●
Marine/naval application, UL 489 Supplement SA and SB	—	●	●	●	●	●	●	●	●	●	●

Legend

● Applicable in indicated pole position
❍ May be mounted on left or right pole—not both
● Accessory available/modification available

Dimensions and Weights

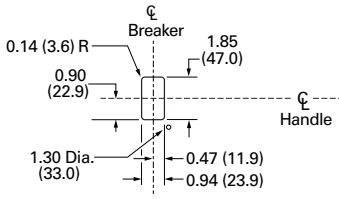
Approximate Dimensions in Inches (mm)

EG-Frame

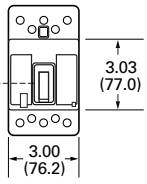
Number of Poles	Width	Height	Depth
1	1.00 (25.4)	5.50 (139.7)	2.99 (75.9)
2	2.00 (50.8)	5.50 (139.7)	2.99 (75.9)
3	3.00 (76.2)	5.50 (139.7)	2.99 (75.9)
4	4.00 (101.6)	5.50 (139.7)	2.99 (75.9)

EG-Frame

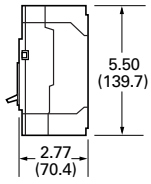
Front Cover Cutout



Front View Three-Pole



Side View

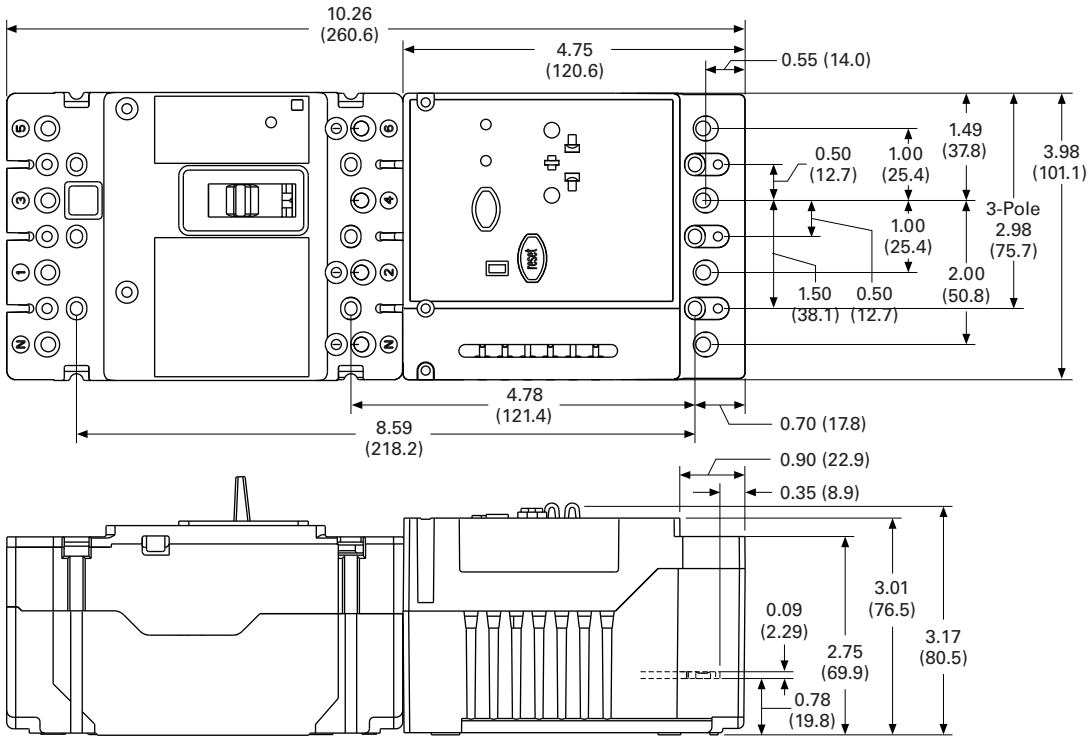


Approximate Shipping Weight in Lb (kg)

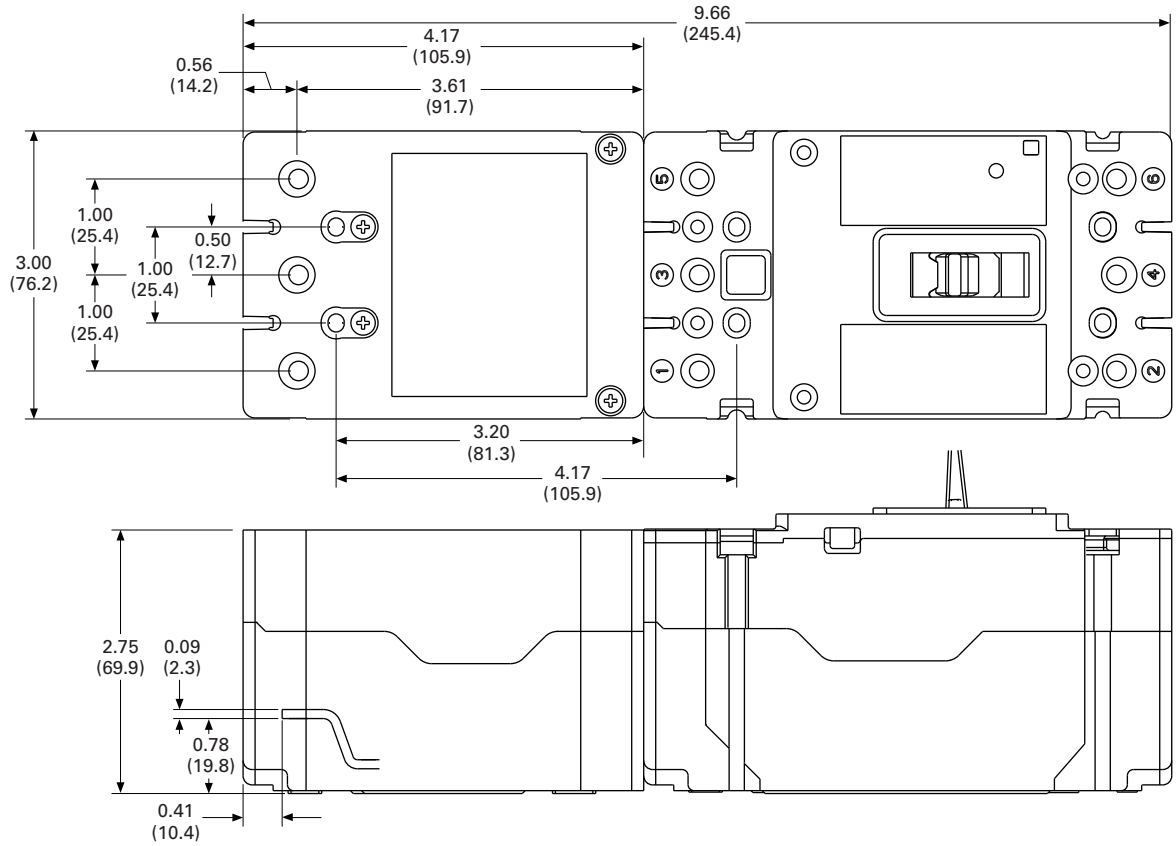
EG-Frame

EG Breaker Type	Number of Poles 1	2	3	4
EGB125	1.5 (0.68)	2.0 (0.91)	3.0 (1.36)	4.9 (1.82)

EG-Frame With Earth Leakage Module



EG-Frame With Current Limiter Module



Molded Case Circuit Breakers

Series G

JG-Frame (63–250 Amperes)



Contents

Description	*Page*
EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	
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NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

JG-Frame (63–250 A)

Product Description

JG breaker is HACR rated.

Technical Data

UL 489/IEC 60947-2 Interrupting Capacity Ratings (Symmetrical Amperes) (kA)

Circuit Breaker Type	Number of Poles	Volts AC (50/60 Hz) 220–240 I_{cu}	220–240 I_{cs}	380–415 I_{cu}	380–415 I_{cs}	480	600	690 ② I_{cu}	690 ② I_{cs}	Volts DC ① 250 ②③	Recommended Power Defense Replacement ④
JGE250	2, 3, 4	65	65	25	25	25	18	12	6	10	PDG2xF/PDF2xF/PDG3xG
JGS250	2, 3, 4	85	85	40	40	35	18	12	6	22	PDG2xG/PDF2xG/PDG3xG
JGH250	2, 3, 4	100	100	70	70	65	25	14	7	22	PDG2xM/PDF2xM/PDG3xM
JGC250 ⑤	3, 4	200	200	100	100	100	35	16	12	42	PDG3xP
JGU250 ⑤	3, 4	200	200	150	150	150	50	18	14	50	PDG3xP
JGX250 ⑤	3, 4	200	200	200	200	200	50	18	14	50	PDG3xP

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
JGC	240 V/200 kA	45.1	1.820
JGC	480 V/100 kA	45.1	1.820
JGC	600 V/35 kA	32.8	2.140
JGU	240 V/200 kA	45.1	1.820
JGU	480 V/150 kA	45.1	1.820
JGU	600 V/50 kA	32.8	2.140
JGX	240 V/200 kA	45.1	1.820
JGX	480 V/200 kA	45.1	1.820
JGX	600 V/50 kA	32.8	2.140

Notes

① DC ratings apply to substantially non-inductive circuits.

② Two-pole circuit breaker, or two poles of three-pole circuit breaker.

③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.

④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

⑤ Current limiting per UL 489.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Series G—JG-Frame Complete Breaker (63–250 Amperes)

J G S 3 250 FA G C

Frame
J

Standard/Application
G = IEC/CE/UL/CSA

Performance				
	600	**480**	**415**	**240**
E	18	25	25	65
S	18	35	40	85
H	25	65	70	100
C	35	100	100	200
U	50	150	150	200
X	50	200	200	200
K	Molded case switch			

Number of Poles
2 = Two
3 = Three
4 = Four—Neutral 0% Protected
9 = Four—Neutral 100% Protected

Amperes
050
070
080
090
100
125
150
160
175
200
225
250

Rating
Blank = 80% rated
C = 100% rated
F01 = Freeze tested for –70°F (–57°C)
F02 = Freeze tested for –22°F (–30°C)

Terminations/Hardware	
Terminals	**Mounting Hardware**
M = Metric end caps	Metric
E = Imperial end caps	Imperial
G = Line/load standard	Metric
W = Without terminals	

Trip Unit
AA = Adj. adj.
FA = Fixed adj.
KS = Molded case switch
33 = 310+ electronic LS
32 = 310+ electronic LSI
35 = 310+ electronic LSG
36 = 310+ electronic LSIG
NN = Frame only (250 A only; no trip unit)

Trip Unit Only

JT 4 100 FA B20

Trip
JT

Number of Poles
2 = Two
3 = Three
4 = Four—Neutral 0% Protected
9 = Four—Neutral 100% Protected

Amperes	
T/M	**ETU**
080	**050**
090	**100**
100	**160**
110	**250**
125	
150	
160	
175	
200	
225	
250	

Trip Unit
AA = Adj. adj.
FA = Fixed adj.
KS = Molded case switch
33 = 310+ electronic LS
32 = 310+ electronic LSI
35 = 310+ electronic LSG
36 = 310+ electronic LSIG

Features (ETU Only) ①②
Blank= No feature
B20= High load alarm
B21= Ground fault alarm, with trip
B22= Ground fault alarm, no trip
ZG= Zone selective interlocking

Notes

① Bxx features cannot be combined with other Bxx features.
② B21 and B22 available with LSG and LSIG trip units.

Product Selection

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)—IC Rating at 415/480 Volts

JG-Frame



JG-Frame—IEC/CE/UL/CSA—25/25

Maximum Continuous Amperes	Magnetic Range	Two-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Adjustable Thermal, Adjustable Magnetic ① Catalog Number	Four-Pole 0%② Fixed Thermal, Adjustable Magnetic Catalog Number	Adjustable Thermal, Adjustable Magnetic ① Catalog Number
70	350–700	**JGE2070FAG**	**JGE3070FAG**	—	**JGE4070FAG**	—
90	450–900	**JGE2090FAG**	**JGE3090FAG**	—	**JGE4090FAG**	—
100	500–1000	**JGE2100FAG**	**JGE3100FAG**	**JGE3100AAG**	**JGE4100FAG**	**JGE4100AAG**
125	625–1250	**JGE2125FAG**	**JGE3125FAG**	**JGE3125AAG**	**JGE4125FAG**	**JGE4125AAG**
150	750–1550	**JGE2150FAG**	**JGE3150FAG**	—	**JGE4150FAG**	—
160	800–1600	—	—	**JGE3160AAG**	—	**JGE4160AAG**
175	875–1750	**JGE2175FAG**	**JGE3175FAG**	—	**JGE4175FAG**	—
200	1000–2000	**JGE2200FAG**	**JGE3200FAG**	**JGE3200AAG**	**JGE4200FAG**	**JGE4200AAG**
225	1125–2250	**JGE2225FAG**	**JGE3225FAG**	—	**JGE4225FAG**	—
250	1250–2500	**JGE2250FAG**	**JGE3250FAG**	**JGE3250AAG**	**JGE4250FAG**	**JGE4250AAG**

JG-Frame



JG-Frame—IEC/CE/UL/CSA—40/35, Two-Pole

Maximum Continuous Amperes	Magnetic Range	Two-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Adjustable Thermal, Adjustable Magnetic ① Catalog Number	Four-Pole 0%② Fixed Thermal, Adjustable Magnetic Catalog Number	Adjustable Thermal, Adjustable Magnetic ① Catalog Number
70	350–700	**JGS2070FAG**	**JGS3070FAG**	—	**JGS4070FAG**	—
90	450–900	**JGS2090FAG**	**JGS3090FAG**	—	**JGS4090FAG**	—
100	500–1000	**JGS2100FAG**	**JGS3100FAG**	**JGS3100AAG**	**JGS4100FAG**	**JGS4100AAG**
125	625–1250	**JGS2125FAG**	**JGS3125FAG**	**JGS3125AAG**	**JGS4125FAG**	**JGS4125AAG**
150	750–1550	**JGS2150FAG**	**JGS3150FAG**	—	**JGS4150FAG**	—
160	800–1600	—	—	**JGS3160AAG**	—	**JGS4160AAG**
175	875–1750	**JGS2175FAG**	**JGS3175FAG**	—	**JGS4175FAG**	—
200	1000–2000	**JGS2200FAG**	**JGS3200FAG**	**JGS3200AAG**	**JGS4200FAG**	**JGS4200AAG**
225	1125–2250	**JGS2225FAG**	**JGS3225FAG**	—	**JGS4225FAG**	—
250	1250–2500	**JGS2250FAG**	**JGS3250FAG**	**JGS3250AAG**	**JGS4250FAG**	**JGS4250AAG**

Notes

① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.

② 9 for 0–100% neutral protection. Neutral is on LH side.

JG-Frame



JG-Frame—IEC/CE/UL/CSA—70/65

Maximum Continuous Amperes	Magnetic Range	Two-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Adjustable Thermal, Fixed Magnetic ① Catalog Number	Four-Pole 0%② Fixed Thermal, Adjustable Magnetic Catalog Number	Adjustable Thermal, Fixed Magnetic ① Catalog Number
70	350–700	**JGH2070FAG**	**JGH3070FAG**	—	**JGH4070FAG**	—
90	450–900	**JGH2090FAG**	**JGH3090FAG**	—	**JGH4090FAG**	—
100	500–1000	**JGH2100FAG**	**JGH3100FAG**	**JGH3100AAG**	**JGH4100FAG**	**JGH4100AAG**
125	625–1250	**JGH2125FAG**	**JGH3125FAG**	**JGH3125AAG**	**JGH4125FAG**	**JGH4125AAG**
150	750–1550	**JGH2150FAG**	**JGH3150FAG**	—	**JGH4150FAG**	—
160	800–1600	—	—	**JGH3160AAG**	—	**JGH4160AAG**
175	875–1750	**JGH2175FAG**	**JGH3175FAG**	—	**JGH4175FAG**	—
200	1000–2000	**JGH2200FAG**	**JGH3200FAG**	**JGH3200AAG**	**JGH4200FAG**	**JGH4200AAG**
225	1125–2250	**JGH2225FAG**	**JGH3225FAG**	—	**JGH4225FAG**	—
250	1250–2500	**JGH2250FAG**	**JGH3250FAG**	**JGH3250AAG**	**JGH4250FAG**	**JGH4250AAG**

Notes

① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.

② 9 for 0–100% neutral protection. Neutral is on LH side.

Two-Pole not available in IEC/CE/UL/CSA 100/100, 150/150

JG-Frame



JG-Frame—IEC/CE/UL/CSA—100/100, Current Limiting

Maximum Continuous Amperes	Magnetic Range	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Three-Pole Adjustable Thermal, Adjustable Magnetic ① Catalog Number	Four-Pole 0% ② Fixed Thermal, Adjustable Magnetic Catalog Number	Four-Pole 0% ② Adjustable Thermal, Adjustable Magnetic ① Catalog Number
70	350–700	**JGC3070FAG**	—	**JGC4070FAG**	—
80	400–800	—	**JGC3080AAG**	—	**JGC4080AAG**
90	450–900	**JGC3090FAG**	—	**JGC4090FAG**	—
100	500–1000	**JGC3100FAG**	**JGC3100AAG**	**JGC4100FAG**	**JGC4100AAG**
125	625–1250	**JGC3125FAG**	**JGC3125AAG**	**JGC4125FAG**	**JGC4125AAG**
150	750–1550	**JGC3150FAG**	—	**JGC4150FAG**	—
160	800–1600	—	**JGC3160AAG**	—	**JGC4160AAG**
175	875–1750	**JGC3175FAG**	—	**JGC4175FAG**	—
200	1000–2000	**JGC3200FAG**	**JGC3200AAG**	**JGC4200FAG**	**JGC4200AAG**
225	1125–2250	**JGC3225FAG**	—	**JGC4225FAG**	—
250	1250–2500	**JGC3250FAG**	**JGC3250AAG**	**JGC4250FAG**	**JGC4250AAG**

JG-Frame



JG-Frame—IEC/CE/UL/CSA—150/150, Current Limiting

Maximum Continuous Amperes	Magnetic Range	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Three-Pole Adjustable Thermal, Adjustable Magnetic ① Catalog Number	Four-Pole 0% ② Fixed Thermal, Adjustable Magnetic Catalog Number	Four-Pole 0% ② Adjustable Thermal, Adjustable Magnetic ① Catalog Number
70	350–700	**JGU3070FAG**	—	**JGU4070FAG**	—
80	400–800	—	**JGU3080AAG**	—	**JGU4080AAG**
90	450–900	**JGU3090FAG**	—	**JGU4090FAG**	—
100	500–1000	**JGU3100FAG**	**JGU3100AAG**	**JGU4100FAG**	**JGU4100AAG**
125	625–1250	**JGU3125FAG**	**JGU3125AAG**	**JGU4125FAG**	**JGU4125AAG**
150	750–1550	**JGU3150FAG**	—	**JGU4150FAG**	—
160	800–1600	—	**JGU3160AAG**	—	**JGU4160AAG**
175	875–1750	**JGU3175FAG**	—	**JGU4175FAG**	—
200	1000–2000	**JGU3200FAG**	**JGU3200AAG**	**JGU4200FAG**	**JGU4200AAG**
225	1125–2250	**JGU3225FAG**	—	**JGU4225FAG**	—
250	1250–2500	**JGU3250FAG**	**JGU3250AAG**	**JGU4250FAG**	**JGU4250AAG**

Notes

① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.

② 9 for 0–100% neutral protection. Neutral is on LH side.

Two-Pole not available in IEC/CE/UL/CSA 200/200

JG-Frame



JG-Frame—IEC/CE/UL/CSA 200/200, Current Limiting

Maximum Continuous Amperes	Magnetic Range	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number	Three-Pole Adjustable Thermal, Adjustable Magnetic ① Catalog Number	Four-Pole ② Fixed Thermal, Adjustable Magnetic Catalog Number	Four-Pole ② Adjustable Thermal, Adjustable Magnetic ① Catalog Number
70	350–700	**JGX3070FAG**	—	**JGX4070FAG**	—
80	400–800	—	**JGX3080AAG**	—	**JGX4080AAG**
90	450–900	**JGX3090FAG**	—	**JGX4090FAG**	—
100	500–1000	**JGX3100FAG**	**JGX3100AAG**	**JGX4100FAG**	**JGX4100AAG**
125	625–1250	**JGX3125FAG**	**JGX3125AAG**	**JGX4125FAG**	**JGX4125AAG**
150	750–1550	**JGX3150FAG**	—	**JGX4150FAG**	—
160	800–1600	—	**JGX3160AAG**	—	**JGX4160AAG**
175	875–1750	**JGX3175FAG**	—	**JGX4175FAG**	—
200	1000–2000	**JGX3200FAG**	**JGX3200AAG**	**JGX4200FAG**	**JGX4200AAG**
225	1125–2250	**JGX3225FAG**	—	**JGX4225FAG**	—
250	1250–2500	**JGX3250FAG**	**JGX3250AAG**	**JGX4250FAG**	**JGX4250AAG**

Molded Case Switches ③

Catalog Number
JGK3250KSG
JGK7250KSG

Notes

① EC-EN 60947-2 only. Adjustment is 0.8 and 1.0.

② 9 for 0–100% neutral protection. Neutral is on LH side.

③ Molded case switches will trip above 2500 amperes.

Frame—IC Rating at 415/480 Volts

Maximum Amperes	Two-Pole Catalog Number	Three-Pole Catalog Number	Four-Pole 0% Catalog Number
25/25			
250	**JGE2250NN**	**JGE3250NN**	**JGE4250NN**
40/35			
250	**JGS2250NN**	**JGS3250NN**	**JGS4250NN**
70/65			
250	**JGH2250NN**	**JGH3250NN**	**JGH4250NN**
100/100 Current Limiting Per UL 489			
250	—	**JGC3250NN**	**JGC4250NN**
150/150 Current Limiting Per UL 489			
250	—	**JGU3250NN**	**JGU4250NN**
200/200 Current Limiting Per UL 489			
250	—	**JGX3250NN**	**JGX4250NN**
25/25 100% Rated Per UL 489 ①			
250	—	**JGE3250NNC**	—
40/35 100% Rated Per UL 489 ①			
250	—	**JGS3250NNC**	—
70/65 100% Rated Per UL 489 ①			
250	—	**JGH3250NNC**	—

Thermal-Magnetic Trip Unit

Ampere Rating	Range	Catalog Number			Range	Catalog Number	
70	350–700	**JT2070FA**	**JT3070FA**	—	—	**JT4070FA**	—
80	400–800	—	**JT3080FA**	**JT3080AA** ②	64–100	—	**JT4080AA** ②
90	450–900	**JT2090FA**	**JT3090FA**	—	—	**JT4090FA**	—
100	500–1000	**JT2100FA**	**JT3100FA**	**JT3100AA** ②	80–100	**JT4100FA**	**JT4100AA** ②
125	625–1250	**JT2125FA**	**JT3125FA**	**JT3125AA** ②	100–125	**JT4125FA**	**JT4125AA** ②
150	750–1550	**JT2150FA**	**JT3150FA**	—	—	**JT4150FA**	—
160	800–1600	—	—	**JT3160AA** ②	128–160	—	**JT4160AA** ②
175	875–1750	**JT2175FA**	**JT3175FA**	—	—	**JT4175FA**	—
200	1000–2000	**JT2200FA**	**JT3200FA**	**JT3200AA** ②	160–200	**JT4200FA**	**JT4200AA** ②
225	1125–2250	**JT2225FA**	**JT3225FA**	—	—	**JT4225FA**	—
250	1250–2500	**JT2250FA**	**JT3250FA**	**JT3250AA** ②	200–250	**JT4250FA**	**JT4250AA** ②

Notes

① Components—100% rated frame.

② Adjustable thermal trip units are typically used in IEC markets and are not UL or CSA listed.

310+ Electronic Trip Units

See 310+ adjustability specifications on **Page V12-T3-57**.

JG 310+ Electronic Trip Units

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
50	**JT305033**	**JT305032**	**JT305035**	**JT305036**	**JGFCT050**
100	**JT310033**	**JT310032**	**JT310035**	**JT310036**	**JGFCT100**
160	**JT316033**	**JT316032**	**JT316035**	**JT316036**	**JGFCT160**
250	**JT325033**	**JT325032**	**JT325035**	**JT325036**	**JGFCT250**
Four-Pole ②③					
50	**JT405033**	**JT405032**	**JT405035**	**JT405036**	—
100	**JT410033**	**JT410032**	**JT410035**	**JT410036**	—
160	**JT416033**	**JT416032**	**JT416035**	**JT416036**	—
250	**JT425033**	**JT425032**	**JT425035**	**JT425036**	—

310+ Electronic Trip Unit Accessories

Description	Catalog Number
Electronic portable test kit	**MTST230V**
Trip unit tamper protection wire seal	**5108A03H01**
External neutral sensor (250 A)	**JGFCT250**
External neutral sensor (160 A)	**JGFCT160**
External neutral sensor (100 A)	**JGFCT100**
External neutral sensor (80 A)	**JGFCT050**
Breaker-mount cause-of-trip indication	**TRIP-LED**
Breaker-mount ammeter module	**DIGIVIEW**
Remote-mount ammeter module	**DIGIVIEWR06**

Notes

① For use on a three-pole breaker used in a four-wire system if ground fault protection for the neutral is required.

② Neutral protection 4 = 0%, 7 = 100% electronic trip unit neutral protection is not adjustable.

③ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

Complete Breaker with 310+ Electronic Trip Units

See 310+ adjustability specifications on **Page V12-T3-57**.

IEC/UL/CSA—25/25

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
50	**JGE305033G**	**JGE305032G**	**JGE305035G**	**JGE305036G**	**JGFCT050**
100	**JGE310033G**	**JGE310032G**	**JGE310035G**	**JGE310036G**	**JGFCT100**
160	**JGE316033G**	**JGE316032G**	**JGE316035G**	**JGE316036G**	**JGFCT160**
250	**JGE325033G**	**JGE325032G**	**JGE325035G**	**JGE325036G**	**JGFCT250**
Four-Pole ②					
50	**JGE405033G**	**JGE405032G**	**JGE405035G**	**JGE405036G**	—
100	**JGE410033G**	**JGE410032G**	**JGE410035G**	**JGE410036G**	—
160	**JGE416033G**	**JGE416032G**	**JGE416035G**	**JGE416036G**	—
250	**JGE425033G**	**JGE425032G**	**JGE425035G**	**JGE425036G**	—

IEC/UL/CSA—40/35

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
50	**JGS305033G**	**JGS305032G**	**JGS305035G**	**JGS305036G**	**JGFCT050**
100	**JGS310033G**	**JGS310032G**	**JGS310035G**	**JGS310036G**	**JGFCT100**
160	**JGS316033G**	**JGS316032G**	**JGS316035G**	**JGS316036G**	**JGFCT160**
250	**JGS325033G**	**JGS325032G**	**JGS325035G**	**JGS325036G**	**JGFCT250**
Four-Pole ②③					
50	**JGS405033G**	**JGS405032G**	**JGS405035G**	**JGS405036G**	—
100	**JGS410033G**	**JGS410032G**	**JGS410035G**	**JGS410036G**	—
160	**JGS416033G**	**JGS416032G**	**JGS416035G**	**JGS416036G**	—
250	**JGS425033G**	**JGS425032G**	**JGS425035G**	**JGS425036G**	—

IEC/UL/CSA—70/65

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
50	**JGH305033G**	**JGH305032G**	**JGH305035G**	**JGH305036G**	**JGFCT050**
100	**JGH310033G**	**JGH310032G**	**JGH310035G**	**JGH310036G**	**JGFCT100**
160	**JGH316033G**	**JGH316032G**	**JGH316035G**	**JGH316036G**	**JGFCT160**
250	**JGH325033G**	**JGH325032G**	**JGH325035G**	**JGH325036G**	**JGFCT250**
Four-Pole ②					
50	**JGH405033G**	**JGH405032G**	**JGH405035G**	**JGH405036G**	—
100	**JGH410033G**	**JGH410032G**	**JGH410035G**	**JGH410036G**	—
160	**JGH416033G**	**JGH416032G**	**JGH416035G**	**JGH416036G**	—
250	**JGH425033G**	**JGH425032G**	**JGH425035G**	**JGH425036G**	—

Notes

① Required for four-wire systems if neutral protection is required.

② Neutral protection 4 = 0%, 7 = 100% electronic trip unit neutral protection is not adjustable.

③ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

IEC/UL/CSA—100/100, Current Limiting Per UL 489

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
50	**JGC305033G**	**JGC305032G**	**JGC305035G**	**JGC305036G**	**JGFCT050**
100	**JGC310033G**	**JGC310032G**	**JGC310035G**	**JGC310036G**	**JGFCT100**
160	**JGC316033G**	**JGC316032G**	**JGC316035G**	**JGC316036G**	**JGFCT160**
250	**JGC335033G**	**JGC325032G**	**JGC325035G**	**JGC325036G**	**JGFCT250**
Four-Pole ②					
50	**JGC405033G**	**JGC405032G**	**JGC405035G**	**JGC405036G**	—
100	**JGC410033G**	**JGC410032G**	**JGC410035G**	**JGC410036G**	—
160	**JGC416033G**	**JGC416032G**	**JGC416035G**	**JGC416036G**	—
250	**JGC435033G**	**JGC425032G**	**JGC425035G**	**JGC425036G**	—

IEC/UL/CSA—150/150, Current Limiting Per UL 489

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
50	**JGU305033G**	**JGU305032G**	**JGU305035G**	**JGU305036G**	**JGFCT050**
100	**JGU310033G**	**JGU310032G**	**JGU310035G**	**JGU310036G**	**JGFCT100**
160	**JGU316033G**	**JGU316032G**	**JGU316035G**	**JGU316036G**	**JGFCT160**
250	**JGU335033G**	**JGU325032G**	**JGU325035G**	**JGU325036G**	**JGFCT250**
Four-Pole ②③					
50	**JGU405033G**	**JGU405032G**	**JGU405035G**	**JGU405036G**	—
100	**JGU410033G**	**JGU410032G**	**JGU410035G**	**JGU410036G**	—
160	**JGU416033G**	**JGU416032G**	**JGU416035G**	**JGU416036G**	—
250	**JGU435033G**	**JGU425032G**	**JGU425035G**	**JGU425036G**	—

IEC/UL/CSA—200/200, Current Limiting Per UL 489

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
50	**JGX305033G**	**JGX305032G**	**JGX305035G**	**JGX305036G**	**JGFCT050**
100	**JGX310033G**	**JGX310032G**	**JGX310035G**	**JGX310036G**	**JGFCT100**
160	**JGX316033G**	**JGX316032G**	**JGX316035G**	**JGX316036G**	**JGFCT160**
250	**JGX325033G**	**JGX325032G**	**JGX325035G**	**JGX325036G**	**JGFCT250**
Four-Pole ②					
50	**JGX405033G**	**JGX405032G**	**JGX405035G**	**JGX405036G**	—
100	**JGX410033G**	**JGX410032G**	**JGX410035G**	**JGX410036G**	—
160	**JGX416033G**	**JGX416032G**	**JGX416035G**	**JGX416036G**	—
250	**JGX425033G**	**JGX425032G**	**JGX425035G**	**JGX425036G**	—

Notes

① Required for four-wire systems if neutral protection is required.
② Neutral protection 4 = 0%, 7 = 100% electronic trip unit neutral protection is not adjustable.
③ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

JG 100% Rated Circuit Breaker—Thermal-Magnetic Trip Unit

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)—IC Rating at 415/480 Volts

JG-Frame



JG-Frame—IEC/CE/UL/CSA—25/25

Maximum Continuous Amperes	Magnetic Range	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number
70	350–700	**JGE3070FAGC**
90	450–900	**JGE3090FAGC**
100	500–1000	**JGE3100FAGC**
125	625–1250	**JGE3125FAGC**
150	750–1550	**JGE3150FAGC**
160	800–1600	—
175	875–1750	**JGE3175FAGC**
200	1000–2000	**JGE3200FAGC**
225	1125–2250	**JGE3225FAGC**
250	1250–2500	**JGE3250FAGC**

JG-Frame—IEC/CE/UL/CSA—70/65

Maximum Continuous Amperes	Magnetic Range	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number
70	350–700	**JGH3070FAGC**
90	450–900	**JGH3090FAGC**
100	500–1000	**JGH3100FAGC**
125	625–1250	**JGH3125FAGC**
150	750–1550	**JGH3150FAGC**
160	800–1600	—
175	875–1750	**JGH3175FAGC**
200	1000–2000	**JGH3200FAGC**
225	1125–2250	**JGH3225FAGC**
250	1250–2500	**JGH3250FAGC**

JG-Frame—IEC/CE/UL/CSA—40/35

Maximum Continuous Amperes	Magnetic Range	Three-Pole Fixed Thermal, Adjustable Magnetic Catalog Number
70	350–700	**JGS3070FAGC**
90	450–900	**JGS3090FAGC**
100	500–1000	**JGS3100FAGC**
125	625–1250	**JGS3125FAGC**
150	750–1550	**JGS3150FAGC**
160	800–1600	—
175	875–1750	**JGS3175FAGC**
200	1000–2000	**JGS3200FAGC**
225	1125–2250	**JGS3225FAGC**
250	1250–2500	**JGS3250FAGC**

JG 100% Rated 310+ Electronic Trip Unit Circuit Breaker

See 310+ adjustability specifications on **Page V12-T3-57**.

IEC/UL/CSA—25/25

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
50	**JGE305033GC**	**JGE305032GC**	**JGE305035GC**	**JGE305036GC**	**JGFCT050**
100	**JGE310033GC**	**JGE310032GC**	**JGE310035GC**	**JGE310036GC**	**JGFCT100**
160	**JGE316033GC**	**JGE316032GC**	**JGE316035GC**	**JGE316036GC**	**JGFCT160**
250	**JGE325033GC**	**JGE325032GC**	**JGE325035GC**	**JGE325036GC**	**JGFCT250**

IEC/UL/CSA—40/35

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
50	**JGS305033GC**	**JGS305032GC**	**JGS305035GC**	**JGS305036GC**	**JGFCT050**
100	**JGS310033GC**	**JGS310032GC**	**JGS310035GC**	**JGS310036GC**	**JGFCT100**
160	**JGS316033GC**	**JGS316032GC**	**JGS316035GC**	**JGS316036GC**	**JGFCT160**
250	**JGS325033GC**	**JGS325032GC**	**JGS325035GC**	**JGS325036GC**	**JGFCT250**

IEC/UL/CSA—70/65

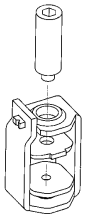
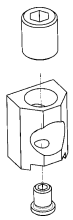
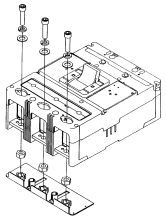
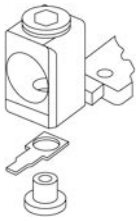
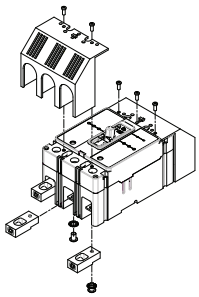
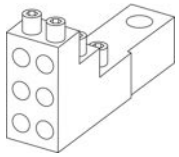
Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
50	**JGH305033GC**	**JGH305032GC**	**JGH305035GC**	**JGH305036GC**	**JGFCT050**
100	**JGH310033GC**	**JGH310032GC**	**JGH310035GC**	**JGH310036GC**	**JGFCT100**
160	**JGH316033GC**	**JGH316032GC**	**JGH316035GC**	**JGH316036GC**	**JGFCT160**
250	**JGH325033GC**	**JGH325032GC**	**JGH325035GC**	**JGH325036GC**	**JGFCT250**

Note

① Required for four-wire systems if neutral protection is required.

Accessories Selection Guide and Ordering Information

JG-Frame

T250FJ	TA250FJ	Endcap Kit	Control Wire Terminal Kit	Rear Fed Terminals	Multiwire Connectors

Load and Line Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Metric Wire Range mm^2	AWG Wire Range/ Number of Conductors	Catalog Number
Standard Pressure Type Terminals					
250	Stainless steel	Cu	25–185	#4–350 (1)	**T250FJ** ①
250	Aluminum	Cu/Al	10–185	#8–350 (1)	**TA250FJ** ①②

JG-Frame circuit breakers include aluminum terminals TA250FJ as standard. When optional stainless steel only terminals are required, order by catalog number.

Endcap Kits

Number of Poles	Catalog Number Metric	Imperial
3	**FJ3RTWK**	**FJ3RTDK**
4	**FJ4RTWK**	**FJ4RTDK**

Endcap kits are used on J250-Frame breaker to connect bus bar or similar electrical connections. Includes hardware.

Control Wire Terminal Kit

Description	Catalog Number
Package of 14 (priced individually)	**FJCWTK**

For use with aluminum or copper terminals only.

Rear Fed Terminals

Maximum Amperes	Wire Size Range AWG Cu	Catalog Number
250	#4–350 kcmil	**TA250JGRF**
		3TA250JGRF

Rear fed terminals allow the cable to connect to the breaker from the back instead of the top. Terminal shields or interphase barriers are included with each rear fed terminal kit (depending on frame size). When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order 66A2546G02.

Terminal Shields IP30

Location	Number of Poles	Catalog Number
Line or Load	2, 3	**FJTS3K**
	4	**FJTS4K**

Interphase Barriers

Number of Poles	Catalog Number
3	**FJIPBK** ③
4	**FJIPBK4** ③

Multiwire Connectors

Field-installed multiwire connectors for the load side (OFF) end terminals are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include terminal shield, mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

JG-Frame Multiwire Connectors Ordering Information (Package of 3)

Maximum Amperes	Wires per Terminal	Wire Size Range AWG Cu	Kit Catalog Number
250	3	14–2	**3TA250FJ3**
250	6	14–6	**3TA250FJ6**

Notes

① Individually packed.
② Standard line and load.
③ Individually priced.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

JG-Frame Accessories

Description	Reference Page	Two- and Three-Pole Left	Center	Right	Four-Pole Left	Center	Right	Neutral
Internal Accessories (Only one internal accessory per pole)								
Alarm lockout (Make/Break)	**V12-T3-128**	—	—	■	—	—	●	—
Auxiliary switch (1A, 1B)	**V12-T3-128**	—	—	■	—	—	●	—
Auxiliary switch (2A, 2B)	**V12-T3-128**	—	—	■	—	—	●	—
Auxiliary switch and alarm switch combination	**V12-T3-128**	—	—	■	—	—	●	—
Shunt trip—standard	**V12-T3-128**	■	—	—	■	—	—	—
Undervoltage release mechanism	**V12-T3-129**	■	—	—	■	—	—	—
External Accessories								
End cap kit	**V12-T3-54**	●	●	●	●	●	●	●
Control wire terminal kit	**V12-T3-54**	●	●	●	●	●	●	●
Rear fed terminals	**V12-T3-54**	●	●	●	●	●	●	●
Multiwire connectors	**V12-T3-54**	●	●	●	●	●	●	●
Base mounting hardware	**V12-T3-54**	●	●	●	●	●	●	●
Interphase barriers	**V12-T3-54**	●	●	●	●	●	●	●
Padlockable handle block	**V12-T3-126**	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Key interlock kit	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V12-T3-126**	●	●	●	—	—	—	—
Electrical operator	**V12-T3-126**	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-126**	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●
Earth leakage/ground fault protector	**V12-T3-111**	●	●	●	●	●	●	●
Drawout cassette	**V12-T3-134**	●	●	●	●	●	●	●
Digitrip 310+ test kit	**V12-T3-49**	●	●	●	●	●	●	●
Ammeter/cause of trip display	**V12-T3-125**	●	●	●	●	●	●	●
Cause of trip LED module	**V12-T3-125**	●	●	●	●	●	●	●
Modifications (Refer to Eaton)								
Moisture fungus treatment	**V12-T3-124**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application, UL 489 supplement SA and SB	①	●	●	●	●	●	●	●

Legend

● Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Note

① Contact Eaton.

Specifications

JG 310+ Specifications

Description	Specification
Trip Unit Type	Digitrip RMS 310+
Breaker Type	
Frame designation	JG
Frames available	50 A, 100 A, 160 A, 250 A
Continuous current range (A)	20–250 A
Ground fault pickup (A)	10–250 A
Interrupting capacities at 480 Vac (kAIC)	35, 65, 100, 150, 200
100% rated	Yes
Protection	
Ordering options	LS, LSI, LSG, LSIG
Arcflash reduction maintenance system (or maintenance mode)	No
Interchangeable trip unit	Yes
High load alarm (suffix B20) ①	Yes
Ground fault alarm with trip (suffix B21) ①	Yes
Ground fault alarm, no trip (suffix B22) ①	Yes
Zone selective interlocking (suffix ZG)	LSI, LSIG
Cause of trip indication	Yes
Thru-cover accessories	Yes

Note

① B2x suffixes cannot be combined with B2x suffixes.

JG 310+ Adjustability Specifications

310+ Settings		JG Frame 50 A	100 A	160 A	250 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r				
	A	20	40	63	100
	B	20	45	80	125
	C	25	50	90	150
	D	30	63	100	160
	E	32	70	110	175
	F	40	80	125	200
	G	45	90	150	225
	H (= I_n)	50	100	160	250
t_r = long delay time (seconds) (All 310+)	Position 1	2	2	2	2
	Position 2	4	4	4	4
	Position 3	7	7	7	7
	Position 4	10	10	10	10
	Position 5	12	12	12	12
	Position 6	15	15	15	15
	Position 7	20	20	20	20
	Position 8	24	24	24	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x	2x	2x	2x
	Position 2	3x	3x	3x	3x
	Position 3	4x	4x	4x	4x
	Position 4	5x	5x	5x	5x
	Position 5	6x	6x	6x	6x
	Position 6	7x	7x	7x	7x
	Position 7	8x	8x	8x	8x
	Position 8	10x	10x	10x	10x
	Position 9	14x	14x	14x	14x
t_{sd} = short delay time I^2t (milliseconds) (LS, LSG)	Fixed	67 at10x	67 at10x	67 at10x	67 at10x
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG)	Position 1	Inst	Inst	Inst	Inst
	Position 2	120	120	120	120
	Position 3	300	300	300	300
I_g = ground fault pickup (amperes) (LSG, LSIG)	Position 1	10	20	32	50
	Position 2	15	30	48	75
	Position 3	20	40	64	100
	Position 4	30	60	96	150
	Position 5	40	80	128	200
	Position 6	50	100	160	250
t_g = ground fault delay time (milliseconds) (LSG, LSIG)	Position 1	Inst	Inst	Inst	Inst
	Position 2	120	120	120	120
	Position 3	300	300	300	300
Independently Adjustable Instantaneous (I_i) setting ①	N/A				
Maintenance Mode pickup (2.5 x I_n) (amperes) ②	N/A				

Notes

① Not available for JG. Independently adjustable Ii setting available in LG, NG and RG ALSI and ALSIG trip units.

② Maintenance Mode not available for JG frames. It is available for KD, LD, MDL, LG, NG, and RG.

Dimensions and Weights

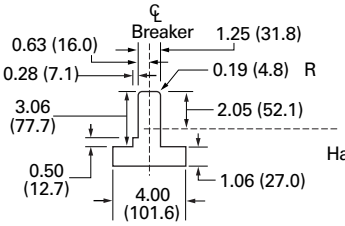
Approximate Dimensions in Inches (mm)

JG-Frame

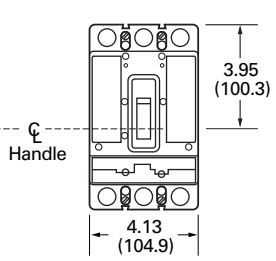
Number of Poles	Width	Height	Depth
2, 3	4.13 (104.9)	7.00 (177.8)	3.57 (90.7)
4	5.34 (135.6)	7.00 (177.8)	3.57 (90.7)

JG-Frame

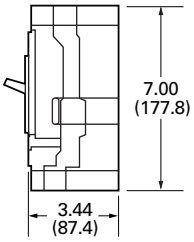
Front Cover Cutout



Front View Three-Pole



Side View

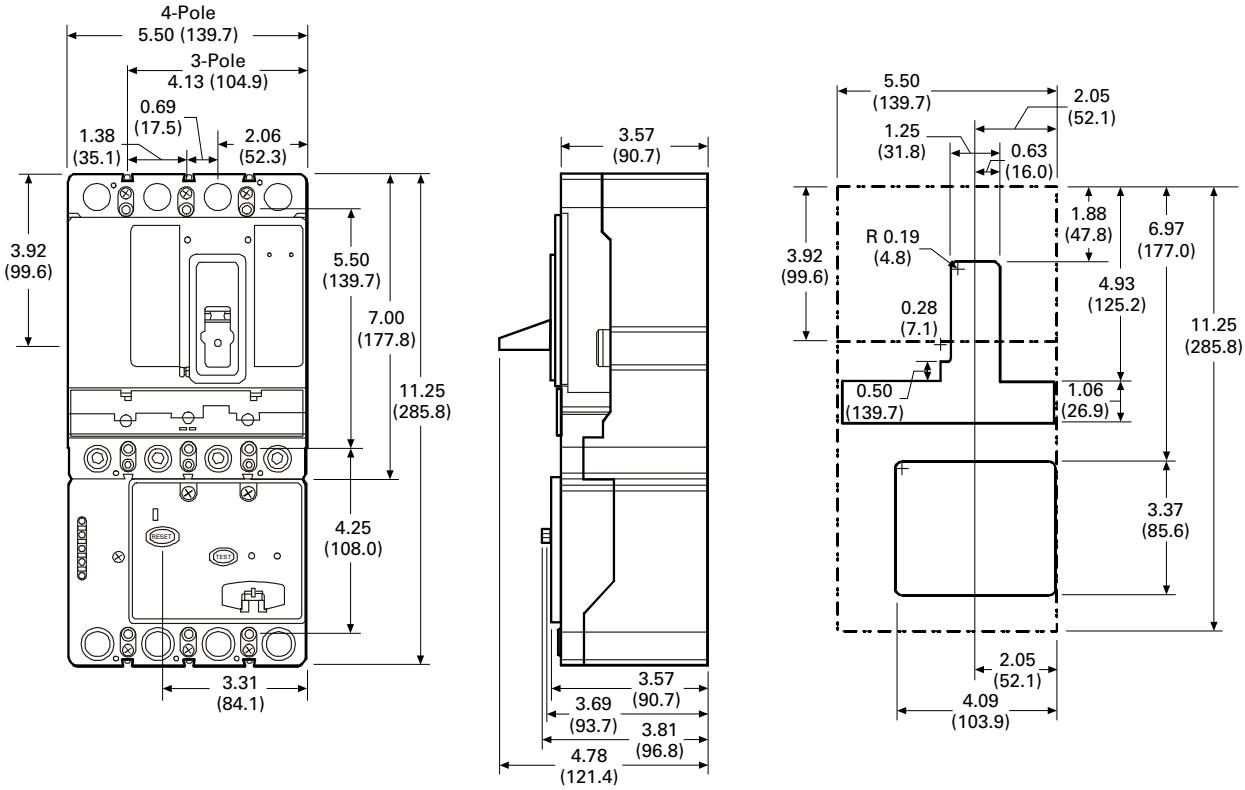


Approximate Shipping Weight in Lb (kg)

JG-Frame

Breaker Type	Number of Poles 2, 3	4
JGC	6.00 (2.70)	8.00 (3.60)
JGE	6.00 (2.70)	8.00 (3.60)
JGH	6.00 (2.70)	8.00 (3.60)
JGS	6.00 (2.70)	8.00 (3.60)
JGU	6.00 (2.70)	8.00 (3.60)
JGX	6.00 (2.70)	8.00 (3.60)

JG-Frame With Earth Leakage Module



Molded Case Circuit Breakers

Series G

LG-Frame (250–630 Amperes)



Contents

Description	*Page*
EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	
Catalog Number Selection	**V12-T3-61**
Product Selection	**V12-T3-62**
Accessories	**V12-T3-73**
Specifications	**V12-T3-74**
Dimensions and Weights	**V12-T3-76**
NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

LG-Frame (250–630 A)

Product Description

LG breaker is HACR rated.

Technical Data

UL 489/IEC 60947-2 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA rms Symmetrical Amperes) (kA) Volts AC (50/60 Hz) 240–240 Icu	Ics	380–415 Icu	Ics	480	600	690 Icu	Ics	Volts DC ① 250 ②③ Icu	Ics	Recommended Power Defense Replacement ④
LGE630	3, 4	65	65	35	35	35	18	12	6	22	22	PDG3xG
LGS630	3, 4	85	85	50	50	50	25	20	10	22	22	PDG3xK
LGH630	3, 4	100	100	70	70	65	35	25	13	42	42	PDG3xM
LGC630 ⑤	3, 4	200	200	100	100	100	50	30	15	42	42	PDG3xN
LGU630 ⑤	3, 4	200	200	150	150	150	65	35	18	50	50	PDG3xP
LGX630 ⑤	3, 4	200 ⑥	200	200	200	200	65	35	18	50	50	PDG3xP

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
LGC	240 V/200 kA	56.4	5.873
LGC	480 V/100 kA	56.4	5.873
LGC	600 V/50 kA	56.4	6.690
LGU	240 V/200 kA	77.7	7.320
LGU	480 V/150 kA	77.7	7.320
LGU	600 V/65 kA	50.6	6.690
LGX	240 V/200 kA	77.7	7.320
LGX	480 V/200 kA	77.7	7.320
LGX	600 V/65 kA	50.6	6.690

Notes

① DC rating apply to substantially non-inductive circuits.

② Two-pole circuit breaker, or two poles of three-pole circuits.

③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at–kA.

④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

⑤ Current limiting per UL 489.

⑥ IEC rating is 300 kA at 240 Vac.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Series G—LG-Frame Complete Breaker (250–630 Amperes)

L G S 3 600 FA G C

Frame
L

Standard/Application
G = IEC/CE/UL/CSA

Performance	600	480	415	240
E	18	35	35	65
S	25	50	50	85
H	35	65	70	100
C	50	100	100	200
U	65	150	150	200
X	65	200	200	200
K	Molded case switch			

Number of Poles
3 = Three
4 = Four—Neutral 0% protected
6 = Four—Neutral 60% protected
7 = Four—Neutral 100% protected
8 = Four—Neutral 0–60% protected
9 = Four—Neutral 0–100 protected

Amperes
250
300
350
400
500
600
630

Terminations/Hardware	
Terminals	**Mounting Hardware**
M = Metric end caps	Metric
E = Imperial end caps	Imperial
G = Line/load standard	Metric
W = Without terminals	

Rating
Blank = 80% rated
C = 100% rated (for LGE, LGS and LGH only)

Trip Unit
AA = Adj. adj.
FA = Fixed adj.
KS = Molded case switch
33 = 310+ electronic LS
32 = 310+ electronic LSI
35 = 310+ electronic LSG
36 = 310+ electronic LSIG
38 = 310+ electronic ALSI
39 = 310+ electronic ALSIG
NN = Frame only (630 A only; no trip unit)

Trip Unit Only

LT 3 600 FA B20

Trip
LT

Number of Poles
3 = Three
4 = Four—neutral 0% protected
8 = Four—neutral 0/60% protected
9 = Four—neutral 0/100% protected

Amperes
250
300
350
400
500
600
630

Trip Unit
AA = Adj. adj., thermal-magnetic
FA = Fixed adj., thermal-magnetic
KS = Molded case switch
33 = 310+ electronic LS
32 = 310+ electronic LSI
35 = 310+ electronic LSG
36 = 310+ electronic LSIG
38 = 310+ electronic ALSI
39 = 310+ electronic ALSIG

Features (ETU Only) ①②
Blank= No feature
B20= High load alarm
B21= Ground fault alarm, with trip
B22= Ground fault alarm, no trip
ZG= Zone selective interlocking

Notes

① Bxx features cannot be combined with other Bxx features.
② B21 and B22 available with LSG and LSIG trip units.

Product Selection

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)

LG-Frame



LG-Frame—630 Amperes (600 Amperes UL, CSA)
IC Rating: 35 kAIC at 415 and 480 Vac ①

	Three-Pole ②		Four-Pole (0%) ③	
	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤
Ampere Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
250	LGE3250FAG	LGE3250AAG	LGE4250FAG	LGE4250AAG
300	LGE3300FAG	—	LGE4300FAG	—
320	—	LGE3320AAG	—	LGE4320AAG
350	LGE3350FAG	—	LGE4350FAG	—
400	LGE3400FAG	LGE3400AAG	LGE4400FAG	LGE4400AAG
500	LGE3500FAG	LGE3500AAG	LGE4500FAG	LGE4500AAG
600	LGE3600FAG	—	LGE4600FAG	—
630 ④	—	LGE3630AAG	—	LGE4630AAG

LG-Frame



LG-Frame—630 Amperes (600 Amperes UL, CSA)
IC Rating: 50 kAIC at 415 and 480 Vac ①

	Three-Pole ②		Four-Pole (0%) ③	
	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤
Ampere Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
250	LGS3250FAG	LGS3250AAG	LGS4250FAG	LGS4250AAG
300	LGS3300FAG	—	LGS4300FAG	—
320	—	LGS3320AAG	—	LGS4320AAG
350	LGS3350FAG	—	LGS4350FAG	—
400	LGS3400FAG	LGS3400AAG	LGS4400FAG	LGS4400AAG
500	LGS3500FAG	LGS3500AAG	LGS4500FAG	LGS4500AAG
600	LGS3600FAG	—	LGS4600FAG	—
630 ④	—	LGS3630AAG	—	LGS4630AAG

LG-Frame



LG-Frame—630 Amperes (600 Amperes UL, CSA)
IC Rating: 70 kAIC at 415, 65 kAIC at 480 Vac ①

	Three-Pole ②		Four-Pole (0%) ③	
	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤
Ampere Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
250	LGH3250FAG	LGH3250AAG	LGH4250FAG	LGH4250AAG
300	LGH3300FAG	—	LGH4300FAG	—
320	—	LGH3320AAG	—	LGH4320AAG
350	LGH3350FAG	—	LGH4350FAG	—
400	LGH3400FAG	LGH3400AAG	LGH4400FAG	LGH4400AAG
500	LGH3500FAG	LGH3500AAG	LGH4500FAG	LGH4500AAG
600	LGH3600FAG	—	LGH4600FAG	—
630 ④	—	LGH3630AAG	—	LGH4630AAG

Notes

① Replace suffix "G" with "W" for no line and load terminals.
② For two-pole applications, use two outer poles.
③ Neutral protection is indicated by the fourth character: 4 = 0%, 7 = 100%, 8 = adjustable 0–60% and 9 = 0–100%. Neutral is on LH side.
④ 320/630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
⑤ Adjustable thermal units are typically used in IEC markets and are not UL or CSA listed.

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)

LG-Frame



LG-Frame—630 Amperes (600 Amperes UL, CSA), Current Limiting Per UL 489 IC Rating: 100 kAIC at 415 and 480 Vac ①

	Three-Pole ②		Four-Pole (0%) ③	
	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤
Ampere Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
250	LGC3250FAG	LGC3250AAG	LGC4250FAG	LGC4250AAG
300	LGC3300FAG	—	LGC4300FAG	—
320	—	LGC3320AAG	—	LGC4320AAG
350	LGC3350FAG	—	LGC4350FAG	—
400	LGC3400FAG	LGC3400AAG	LGC4400FAG	LGC4400AAG
500	LGC3500FAG	LGC3500AAG	LGC4500FAG	LGC4500AAG
600	LGC3600FAG	—	LGC4600FAG	—
630 ④	—	LGC3630AAG	—	LGC4630AAG

LG-Frame



LG-Frame—630 Amperes (600 Amperes UL, CSA), Current Limiting Per UL 489 IC Rating: 150 kAIC at 415 and 480 Vac ①

	Three-Pole ②		Four-Pole (0%) ③	
	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤
Ampere Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
250	LGU3250FAG	LGU3250AAG	LGU4250FAG	LGU4250AAG
300	LGU3300FAG	—	LGU4300FAG	—
320	—	LGU3320AAG	—	LGU4320AAG
350	LGU3350FAG	—	LGU4350FAG	—
400	LGU3400FAG	LGU3400AAG	LGU4400FAG	LGU4400AAG
500	LGU3500FAG	LGU3500AAG	LGU4500FAG	LGU4500AAG
600	LGU3600FAG	—	LGU4600FAG	—
630 ④	—	LGU3630AAG	—	LGU4630AAG

LG-Frame



LG-Frame—630 Amperes (600 Amperes UL, CSA), Current Limiting Per UL 489 IC Rating: 200 kAIC at 415 and 480 Vac ①

	Three-Pole ②		Four-Pole (0%) ③	
	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic ④⑤
Ampere Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
250	LGX3250FAG	LGX3250AAG	LGX4250FAG	LGX4250AAG
300	LGX3300FAG	—	LGX4300FAG	—
320	—	LGX3320AAG	—	LGX4320AAG
350	LGX3350FAG	—	LGX4350FAG	—
400	LGX3400FAG	LGX3400AAG	LGX4400FAG	LGX4400AAG
500	LGX3500FAG	LGX3500AAG	LGX4500FAG	LGX4500AAG
600	LGX3600FAG	—	LGX4600FAG	—
630 ④	—	LGX3630AAG	—	LGX4630AAG

Notes

① Replace suffix "G" with "W" for no line and load terminals.
② For two-pole applications, use two outer poles.
③ Neutral protection is indicated by the fourth character: 4 = 0%, 7 = 100%, 8 = adjustable 0–60% and 9 = 0–100%. Neutral is on LH side.
④ 320/630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
⑤ Adjustable thermal units are typically used in IEC markets and are not UL or CSA listed.

Molded Case Switches [1]

Ampere Rating	Number of Poles	Catalog Number
400	3 [2]	LGK3400KSG
	4	LGK4400KSG
630 [3]	3 [2]	LGK3630KSG
	4	LGK4630KSG

Frame—IC Rating at 415/480 Volts

Maximum Amperes [3]	Three-Pole [2] Catalog Number	Four-Pole 0% Catalog Number
35/35		
630 [3]	LGE3630NN	LGE4630NN
	LGE3630NNWC [4]	—
50/50		
630 [3]	LGS3630NN	LGS4630NN
	LGS3630NNWC [4]	—
70/53		
630 [3]	LGH3630NN	LGH4630NN
	LGH3630NNWC [4]	—
100/100 Current Limiting Per UL 489		
630	LGC3630NN	LGC4630NN
150/150 Current Limiting Per UL 489		
630	LGU3630NN	LGU4630NN
200/200 Current Limiting		
630	LGX3630NN	LGX4630NN

Thermal-Magnetic Trip Unit

	Three-Pole [2]		Four-Pole (0%) [6]	
	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic [5]	Fixed Thermal, Adjustable Magnetic	Adjustable Thermal, Adjustable Magnetic [5]
Ampere Rating	Catalog Number	Catalog Number	Catalog Number	Catalog Number
250	LT3250FA	LT3250AA	LT4250FA	LT4250AA
300	LT3300FA	—	LT4300FA	—
320	—	LT3320AA	—	LT4320AA
350	LT3350FA	—	LT4350FA	—
400	LT3400FA	LT3400AA	LT4400FA	LT4400AA
500	LT3500FA	LT3500AA	LT4500FA	LT4500AA
600	LT3600FA	—	LT4600FA	—
630	—	LT3630AA	—	LT4630AA

Notes

[1] Molded case switches will trip above 6300 amperes.
[2] For two-pole applications, use two outer poles.
[3] 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
[4] 100% rated frame.
[5] Adjustable thermal, adjustable magnetic trip units are typically used in IEC markets and are not UL or CSA listed.
[6] Neutral protection is indicated by the third character: 4 = 0%, 7 = 100%, 8 = adjustable 0–60% and 9 = 0–100%.

Digitrip 310+ Electronic Trip Units

See 310+ adjustability specifications on **Page V12-T3-75**.

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
Three-Pole					
250	**LT325033**	**LT325032**	**LT325035**	**LT325036**	**LGFCT250**
400	**LT340033**	**LT340032**	**LT340035**	**LT340036**	**LGFCT400**
600	**LT360033**	**LT360032**	**LT360035**	**LT360036**	**LGFCT600**
630 ②	**LT363033**	**LT363032**	**LT363035**	**LT363036**	**LGFCT600**
Four-Pole ③④					
250	**LT425033**	**LT425032**	**LT425035**	**LT425036**	—
400	**LT440033**	**LT440032**	**LT440035**	**LT440036**	—
600	**LT460033**	**LT460032**	**LT460035**	**LT460036**	—
630 ②	**LT463033**	**LT463032**	**LT463035**	**LT463036**	—

310+ Electronic Trip Unit Accessories

Description	Catalog Number
Electronic portable test kit	**MTST230V**
Trip unit tamper protection wire seal	**5108A03H01**
External neutral sensor (630 A)	**LGFCT630**
External neutral sensor (600 A)	**LGFCT600**
External neutral sensor (400 A)	**LGFCT400**
External neutral sensor (250 A)	**LGFCT250**
Breaker-mount cause-of-trip indication	**TRIP-LED**
Breaker-mount ammeter module	**DIGIVIEW**
Remote-mount ammeter module	**DIGIVIEWR06**

Notes

① Required for four-wire systems if neutral protection is desired.
② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
③ Neutral protection: 4= 0%, 6 = 60%, 7 = 100%. Electronic trip unit neutral protection is not adjustable.
④ Four-pole LSG and LSIG trip units are only available with 0% neutral protection.

IC Rating at 415/480 V
Complete LG Breakers with Electronic Trip Unit (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware) ①

See 310+ adjustability specifications on **Page V12-T3-75**.

IC Rating: 35 kAIC at 415 and 480 Vac

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ② Catalog Number
Three-Pole ③					
250	**LGE325033G**	**LGE325032G**	**LGE325035G**	**LGE325036G**	**LGFCT250**
400	**LGE340033G**	**LGE340032G**	**LGE340035G**	**LGE340036G**	**LGFCT400**
600	**LGE360033G**	**LGE360032G**	**LGE360035G**	**LGE360036G**	**LGFCT600**
630 ④	**LGE363033G**	**LGE363032G**	**LGE363035G**	**LGE363036G**	**LGFCT600**
Four-Pole ⑤					
250	**LGE425033G**	**LGE425032G**	**LGE425035G**	**LGE425036G**	—
400	**LGE440033G**	**LGE440032G**	**LGE440035G**	**LGE440036G**	—
600	**LGE460033G**	**LGE460032G**	**LGE460035G**	**LGE460036G**	—
630 ④	**LGE463033G**	**LGE463032G**	**LGE463035G**	**LGE463036G**	—

IC Rating: 50 kAIC at 415 and 480 Vac

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ② Catalog Number
Three-Pole ③					
250	**LGS325033G**	**LGS325032G**	**LGS325035G**	**LGS325036G**	**LGFCT250**
400	**LGS340033G**	**LGS340032G**	**LGS340035G**	**LGS340036G**	**LGFCT400**
600	**LGS360033G**	**LGS360032G**	**LGS360035G**	**LGS360036G**	**LGFCT600**
630 ④	**LGS363033G**	**LGS363032G**	**LGS363035G**	**LGS363036G**	**LGFCT600**
Four-Pole ⑤⑥					
250	**LGS425033G**	**LGS425032G**	**LGS425035G**	**LGS425036G**	—
400	**LGS440033G**	**LGS440032G**	**LGS440035G**	**LGS440036G**	—
600	**LGS460033G**	**LGS460032G**	**LGS460035G**	**LGS460036G**	—
630 ④	**LGS463033G**	**LGS463032G**	**LGS463035G**	**LGS463036G**	—

IC Rating: 70 kAIC at 415 Vac, 65 kAIC at 480 Vac

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ② Catalog Number
Three-Pole ③					
250	**LGH325033G**	**LGH325032G**	**LGH325035G**	**LGH325036G**	**LGFCT250**
400	**LGH340033G**	**LGH340032G**	**LGH340035G**	**LGH340036G**	**LGFCT400**
600	**LGH360033G**	**LGH360032G**	**LGH360035G**	**LGH360036G**	**LGFCT600**
630 ④	**LGH363033G**	**LGH363032G**	**LGH363035G**	**LGH363036G**	**LGFCT600**
Four-Pole ⑤⑥					
250	**LGH425033G**	**LGH425032G**	**LGH425035G**	**LGH425036G**	—
400	**LGH440033G**	**LGH440032G**	**LGH440035G**	**LGH440036G**	—
600	**LGH460033G**	**LGH460032G**	**LGH460035G**	**LGH460036G**	—
630 ④	**LGH463033G**	**LGH463032G**	**LGH463035G**	**LGH463036G**	—

Notes

① Replace suffix "G" with "W" for no line and load terminals.
② Required for four-wire systems if neutral protection is desired.
③ For two-pole applications, use two outer poles.
④ 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
⑤ Neutral protection: 4= 0%, 6 = 60%, 7 = 100%. Electronic trip unit neutral protection is not adjustable.
⑥ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

IC Rating at 415/480 V
Complete LG Breakers with Electronic Trip Unit (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware) ①

See 310+ adjustability specifications on **Page V12-T3-75**.

IC Rating: 100 kAIC at 415 Vac and 480 Vac, Current Limiting Per UL 489

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ② Catalog Number
Three-Pole ③					
250	**LGC325033G**	**LGC325032G**	**LGC325035G**	**LGC325036G**	**LGFCT250**
400	**LGC340033G**	**LGC340032G**	**LGC340035G**	**LGC340036G**	**LGFCT400**
600	**LGC360033G**	**LGC360032G**	**LGC360035G**	**LGC360036G**	**LGFCT600**
630 ④	**LGC363033G**	**LGC363032G**	**LGC363035G**	**LGC363036G**	**LGFCT600**
Four-Pole ⑤⑥					
250	**LGC425033G**	**LGC425032G**	**LGC425035G**	**LGC425036G**	—
400	**LGC440033G**	**LGC440032G**	**LGC440035G**	**LGC440036G**	—
600	**LGC460033G**	**LGC460032G**	**LGC460035G**	**LGC460036G**	—
630 ④	**LGC463033G**	**LGC463032G**	**LGC463035G**	**LGC463036G**	—

IC Rating: 150 kAIC at 415 Vac and 480 Vac, Current Limiting Per UL 489

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ② Catalog Number
Three-Pole ③					
250	**LGU325033G**	**LGU325032G**	**LGU325035G**	**LGU325036G**	**LGFCT250**
400	**LGU340033G**	**LGU340032G**	**LGU340035G**	**LGU340036G**	**LGFCT400**
600	**LGU360033G**	**LGU360032G**	**LGU360035G**	**LGU360036G**	**LGFCT600**
630 ④	**LGU363033G**	**LGU363032G**	**LGU363035G**	**LGU363036G**	**LGFCT600**
Four-Pole ⑤					
250	**LGU425033G**	**LGU425032G**	**LGU425035G**	**LGU425036G**	—
400	**LGU440033G**	**LGU440032G**	**LGU440035G**	**LGU440036G**	—
600	**LGU460033G**	**LGU460032G**	**LGU460035G**	**LGU460036G**	—
630 ④	**LGU463033G**	**LGU463032G**	**LGU463035G**	**LGU463036G**	—

IC Rating: 200 kAIC at 415 Vac and 480 Vac, Current Limiting Per UL 489

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ② Catalog Number
Three-Pole ③					
250	**LGX325033G**	**LGX325032G**	**LGX325035G**	**LGX325036G**	**LGFCT250**
400	**LGX340033G**	**LGX340032G**	**LGX340035G**	**LGX340036G**	**LGFCT400**
600	**LGX360033G**	**LGX360032G**	**LGX360035G**	**LGX360036G**	**LGFCT600**
630 ④	**LGX363033G**	**LGX363032G**	**LGX363035G**	**LGX363036G**	**LGFCT600**
Four-Pole ⑤					
250	**LGX425033G**	**LGX425032G**	**LGX425035G**	**LGX425036G**	—
400	**LGX440033G**	**LGX440032G**	**LGX440035G**	**LGX440036G**	—
600	**LGX460033G**	**LGX460032G**	**LGX460035G**	**LGX460036G**	—
630 ④	**LGX463033G**	**LGX463032G**	**LGX463035G**	**LGX463036G**	—

Notes

① Replace suffix "G" with "W" for no line and load terminals.
② Required for four-wire systems if neutral protection is desired.
③ For two-pole applications, use two outer poles.
④ 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
⑤ Neutral protection: 4= 0%, 6 = 60%, 7 = 100%. Electronic trip unit neutral protection is not adjustable.
⑥ Four-pole breakers with LSG and LSIG trip units are only available with 0% neutral protection.

LG 100% Rated Circuit Breaker—Thermal-Magnetic Trip Unit

Complete Breaker (Includes Frame, Trip Unit, Standard Terminals and Mounting Hardware)

LG-Frame



LG-Frame—630 Amperes (600 Amperes UL, CSA) IC Rating: 35 kAIC at 415 and 480 Vac ①

	Three-Pole ② Fixed Thermal, Adjustable Magnetic
Ampere Rating	**Catalog Number**
250	**LGE3250FAGC**
300	**LGE3300FAGC**
320	—
350	**LGE3350FAGC**
400	**LGE3400FAGC**
500	**LGE3500FAGC**
600	**LGE3600FAGC**
630 ③	—

LG-Frame—630 Amperes (600 Amperes UL, CSA) IC Rating: 50 kAIC at 415 and 480 Vac ①

	Three-Pole ② Fixed Thermal, Adjustable Magnetic
Ampere Rating	**Catalog Number**
250	**LGS3250FAGC**
300	**LGS3300FAGC**
320	—
350	**LGS3350FAGC**
400	**LGS3400FAGC**
500	**LGS3500FAGC**
600	**LGS3600FAGC**
630 ③	—

LG-Frame—630 Amperes (600 Amperes UL, CSA) IC Rating: 70 kAIC at 415, 65 kAIC at 480 Vac ①

	Three-Pole ② Fixed Thermal, Adjustable Magnetic
Ampere Rating	**Catalog Number**
250	**LGH3250FAGC**
300	**LGH3300FAGC**
320	—
350	**LGH3350FAGC**
400	**LGH3400FAGC**
500	**LGH3500FAGC**
600	**LGH3600FAGC**
630 ③	—

Notes

① Replace suffix "G" with "W" for no line and load terminals.
② For two-pole applications, use two outer poles.
③ 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.

LG 100% Rated Electronic Breaker Per UL 489

See 310+ adjustability specifications on **Page V12-T3-75**.

IEC/UL/CSA 35 kAIC at 415 and 480 Vac

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
250	LGE325033GC	LGE325032GC	LGE325035GC	LGE325036GC	LGFCT250
400	LGE340033GC	LGE340032GC	LGE340035GC	LGE340036GC	LGFCT400
600	LGE360033GC	LGE360032GC	LGE360035GC	LGE360036GC	LGFCT600
630 ②	LGE363033GC	LGE363032GC	LGE363035GC	LGE363036GC	LGFCT600

IEC/UL/CSA 50 kAIC at 415 and 480 Vac

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
250	LGS325033GC	LGS325032GC	LGS325035GC	LGS325036GC	LGFCT250
400	LGS340033GC	LGS340032GC	LGS340035GC	LGS340036GC	LGFCT400
600	LGS360033GC	LGS360032GC	LGS360035GC	LGS360036GC	LGFCT600
630 ②	LGS363033GC	LGS363032GC	LGS363035GC	LGS363036GC	LGFCT600

IEC/UL/CSA 70 kAIC at 415 and 480 Vac

Ampere Rating	LS Catalog Number	LSI Catalog Number	LSG Catalog Number	LSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
250	LGH325033GC	LGH325032GC	LGH325035GC	LGH325036GC	LGFCT250
400	LGH340033GC	LGH340032GC	LGH340035GC	LGH340036GC	LGFCT400
600	LGH360033GC	LGH360032GC	LGH360035GC	LGH360036GC	LGFCT600
630 ②	LGH363033GC	LGH363032GC	LGH363035GC	LGH363036GC	LGFCT600

Notes

① Required for four-wire systems if neutral protection is required.

② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.

LG Electronic Breaker with Arcflash Reduction Maintenance System

See 310+ adjustability specifications on **Page V12-T3-75**.

Series G LG circuit breakers are available with the Arcflash Reduction Maintenance System™ integrated into the electronic trip units helping to improve safety by providing a simple and reliable method to reduce fault clearing time. The Arcflash Reduction Maintenance System unit utilizes a separate analog trip circuit that provides faster interruption times than the standard (digital) "instantaneous" protection. Work locations downstream of a circuit breaker with an Arcflash Reduction Maintenance System unit can have a significantly lower incident energy level, reducing arc flash potential to the system.

LG with Arcflash Reduction Maintenance System



LG Electronic Breaker with Arcflash Reduction Maintenance System

Ampere Rating	ALSI Catalog Number	ALSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
IEC/UL/CSA 35 kAIC at 415 and 480 Vac			
250	**LGE325038G**	**LGE365039G**	**LGFCT250**
400	**LGE340038G**	**LGE340039G**	**LGFCT400**
600	**LGE360038G**	**LGE360039G**	**LGFCT600**
630	**LGE363038G**	**LGE363039G**	**LGFCT600**
IEC/UL/CSA 50 kAIC at 415 and 480 Vac			
250	**LGS325038G**	**LGS365039G**	**LGFCT250**
400	**LGS340038G**	**LGS340039G**	**LGFCT400**
600	**LGS360038G**	**LGS360039G**	**LGFCT600**
630	**LGS363038G**	**LGS363039G**	**LGFCT600**
IEC/UL/CSA 70 kAIC at 415 and 480 Vac			
250	**LGH325038G**	**LGH365039G**	**LGFCT250**
400	**LGH340038G**	**LGH340039G**	**LGFCT400**
600	**LGH360038G**	**LGH360039G**	**LGFCT600**
630	**LGH363038G**	**LGH363039G**	**LGFCT600**
IEC/UL/CSA 100 kAIC at 415 and 480 Vac, Current Limiting Per UL 489			
250	**LGC325038G**	**LGC365039G**	**LGFCT250**
400	**LGC340038G**	**LGC340039G**	**LGFCT400**
600	**LGC360038G**	**LGC360039G**	**LGFCT600**
630	**LGC363038G**	**LGC363039G**	**LGFCT600**
IEC/UL/CSA 150 kAIC at 415 and 480 Vac, Current Limiting Per UL 489			
250	**LGU325038G**	**LGU365039G**	**LGFCT250**
400	**LGU340038G**	**LGU340039G**	**LGFCT400**
600	**LGU360038G**	**LGU360039G**	**LGFCT600**
630	**LGU363038G**	**LGU363039G**	**LGFCT600**
IEC/UL/CSA 200 kAIC at 415 and 480 Vac, Current Limiting Per UL 489			
250	**LGX325038G**	**LGX365039G**	**LGFCT250**
400	**LGX340038G**	**LGX340039G**	**LGFCT400**
600	**LGX360038G**	**LGX360039G**	**LGFCT600**
630	**LGX363038G**	**LGX363039G**	**LGFCT600**

LG Electronic Trip Units with Arcflash Reduction Maintenance System

Ampere Rating	ALSI Catalog Number	ALSIG Catalog Number	Neutral CT for LSG and LSIG ① Catalog Number
250	**LT325038**	**LT325039**	**LGFCT250**
400	**LT340038**	**LT340039**	**LGFCT400**
600	**LT360038**	**LT360039**	**LGFCT600**
630	**LT363038**	**LT363039**	**LGFCT600**

Note

① Required for four-wire systems if neutral protection is required.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range/ Number of Conductors	Metric Wire Range (mm^2)	Number of Terminals Included	Catalog Number
400	Aluminum	Cu/Al	500–750 (1)	240–380 (1)	3	**3TA631LK** ①
400	Aluminum	Cu/Al	500–750 (1)	240–380 (1)	4	**4TA631LK** ①
400	Copper	Cu	500–750 (1)	240–380 (1)	3	**3T631LK** ①
400	Copper	Cu	500–750 (1)	240–380 (1)	4	**4T631LK** ①
630	Aluminum	Cu/Al	2–500 (2)	35–240 (2)	1	**TA632L**
630	Aluminum	Cu/Al	2–500 (2)	35–240 (2)	3	**3TA632LK** ①②
630	Aluminum	Cu/Al	2–500 (2)	35–240 (2)	4	**4TA632LK** ①②
630	Copper	Cu	2–500 (2)	35–240 (2)	3	**3T632LK** ①
630	Copper	Cu	2–500 (2)	35–240 (2)	4	**4T632LK** ①
400	Aluminum	Cu/Al	3–500 (1)	35–240 (1)	1	**TA350LK** ②
400	Copper	Cu	3–500 (1)	35–240 (1)	1	**T350LK**

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order 66A4560G03.

Terminal Covers

Description	Catalog Number
Three-pole terminal cover ③	**LTS3K**
Four-pole terminal cover ③	**LTS4K**

End Cap Kits (MIO Metric Nuts)

Number of Poles	Catalog Number
3	**L3RTWK**
4	**L4RTWK**

Control Wire Terminal Kit

Description	Terminal Body Type	Catalog Number
Three-pole kit	Aluminum	**3TA632LKW**
Four-pole kit	Aluminum	**4TA632LKW**
Three-pole kit	Copper	**3T632LKW**
Four-pole kit	Copper	**4T632LKW**

Terminal Spreaders

Number of Poles	Catalog Number
3	**LGTEW3**
4	**LGTEW4**

Terminal Extensions

Number of Poles	Catalog Number
3	**LGTES3**
4	**LGTES4**

Handle Extension

Description	Catalog Number
Handle extension	**HEXLG**

Interphase Barrier

Package of 2	Catalog Number
Interphase barrier	**IPB3**

Rear Fed Terminals

Maximum Amperes	Wire Size Range AWG Cu	Catalog Number
400	2–500 kcmil	**TA350LKRF**
400	2–500 kcmil	**3TA350LKRF**
630	2–500 (2) kcmil	**TA632LKRF**
630	2–500 (2) kcmil	**3TA632LKRF**

Rear fed terminals allow the cable to connect to the breaker from the back instead of the top. Terminal shields or interphase barriers are included with each rear fed terminal kit (depending on frame size). When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.

Multiwire Connectors

Field-installed multiwire connectors for the load side (OFF) end terminals are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include terminal shield, mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

LG-Frame Multiwire Connectors Ordering Information (Package of 3)

Maximum Amperes	Wires per Terminal	Wire Size Range AWG Cu	Kit Catalog Number
600	6	14–1/0	**3TA600L6K**

Notes

① Includes LTS3K (three-pole) or LTS4K (four-pole) terminal covers.
② Standard terminal included with complete breaker.
③ Included in TA63IL, T63IL, TA632L kits listed above.

StrandAble Multiwire Terminals

Field-installed multiwire terminals are UL listed for nearly any class of rigid or fine strand wire without the use of additional fittings.

Used on the load side of circuit breaker to distribute the load to multiple devices without the use of a power distribution block.

StrandAble multiwire terminals are available in three-pole kits that include the necessary hardware and shielding.

3TA600L6SWK_



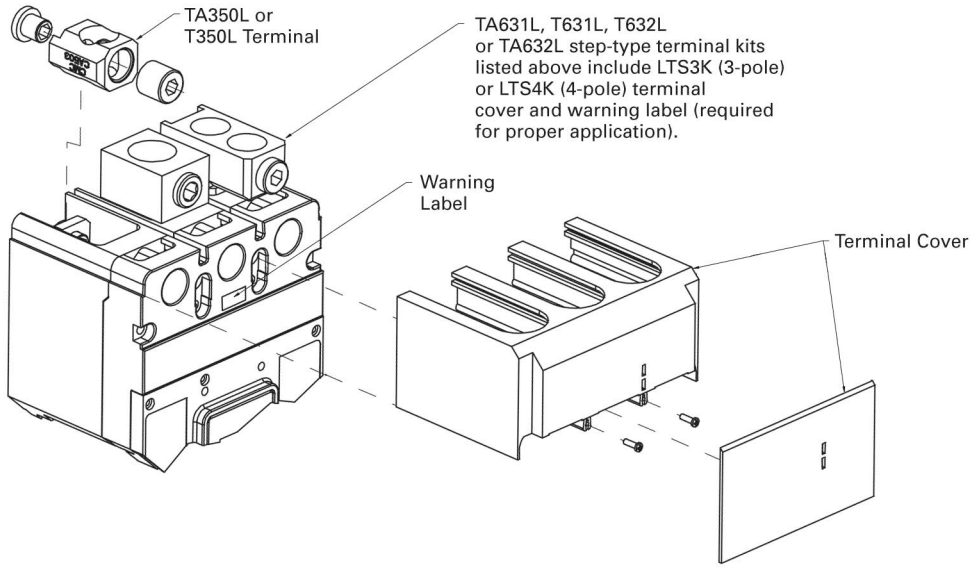
LG Frame StrandAble Multiwire Terminals (Three-Pole Kits)

Maximum Amperage	Wire Class	Wire Range	Shield Included	Catalog Number
600	B and C	(6) 12–2/0	Interphase barrier	**3TA600L6SWKI**
600	D, G, H, I, K, M	(6) 8–1/0	Interphase barrier	
600	B and C	(6) 12–2/0	Terminal shield	**3TA600L6SWKS**
600	D, G, H, I, K, M	(6) 8–1/0	Terminal shield	

Terminals and Terminal Cover

Terminals and Terminal Cover for the LG Breaker—Includes LTS3K (Three-Pole) or LTS4K (Four-Pole) Terminal Covers

Note: Extended terminal covers add 2.13 inches (54.0 mm) to breaker length.



Accessories

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch. (Included with breaker.) If required separately, order 66A4560G03.

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

LG-Frame Accessories

Description	Reference Page	Three-Pole Left	Center	Right	Four-Pole Left	Center	Right	Neu.
Internal Accessories (Only One Internal Accessory Per Pole)								
Alarm lockout (Make/Break)	**V12-T3-128**	—	—	■	—	—	■	—
Auxiliary switch (1A, 1B)	**V12-T3-128**	—	—	■	—	—	■	—
Auxiliary switch (2A, 2B)	**V12-T3-128**	—	—	■	—	—	■	—
Auxiliary switch and alarm switch combination	**V12-T3-128**	—	—	■	—	—	■	—
Shunt trip—standard	**V12-T3-128**	■	—	—	■	—	—	—
Undervoltage release mechanism	**V12-T3-129**	■	—	—	■	—	—	—
External Accessories								
End cap kit	**V12-T3-71**	●	—	—	●	—	—	—
Handle extension	**V12-T3-71**	●	—	—	●	—	—	—
Terminal cover	**V12-T3-71**	●	—	—	●	—	—	—
Rear fed terminals	**V12-T3-71**	●	●	●	●	●	●	●
Multiwire connectors	**V12-T3-71**	●	●	●	●	●	●	●
Padlockable handle block	**V12-T3-126**	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Key interlock kit	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V12-T3-126**	●	●	●	●	●	●	●
Electrical operator	**V12-T3-126**	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-126**	●	●	●	●	●	●	●
Rear connecting studs	**V12-T3-126**	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●
Earth leakage/ground fault protector	**V12-T3-111**	●	●	●	●	●	●	●
Drawout cassette	**V12-T3-134**	●	●	●	●	●	●	●
Digitrip 310+ test kit	**V12-T3-65**	●	●	●	●	●	●	●
Ammeter/cause of trip display	**V12-T3-125**	●	●	●	●	●	●	●
Cause of trip LED module	**V12-T3-125**	●	●	●	●	●	●	●
Modifications (Refer to Eaton)								
Moisture fungus treatment	**V12-T3-124**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application, UL 489 Supplement SA and SB	①	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Note

① Contact Eaton.

Specifications

LG 310+ Specifications

Description	Specification
Trip Unit Type	Digitrip RMS 310+
Breaker Type	
Frame designation	LG
Frames available	250 A, 400 A, 600 A
Continuous current range (A)	100–600 A
Ground fault pickup (A)	50–600 A
Interrupting capacities at 480 Vac (kAIC)	35, 65, 100, 150, 200
100% rated	Yes
Protection	
Ordering options	LS, LSI, LSG, LSIG, ALSI, ALSIG
Arcflash reduction maintenance system (or maintenance mode)	Yes
Interchangeable trip unit	Yes
High load alarm (suffix B20) ①	Yes
Ground fault alarm with trip (suffix B21) ①	Yes
Ground fault alarm, no trip (suffix B22) ①	Yes
Zone selective interlocking (suffix ZG)	LSI, LSIG, ALSI, ALSIG
Cause of trip indication	Yes
Thru-cover accessories	Yes

Note

① B2x suffixes cannot be combined with B2x suffixes.

LG 310+ Adjustability Specifications

310+ Settings		LG Frame 250 A	400 A	600 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r			
	A	100	160	250
	B	125	200	300
	C	150	225	315
	D	160	250	350
	E	175	300	400
	F	200	315	450
	G	225	350	500
	H (= I_n)	250	400	600
t_r = long delay time (seconds) (All 310+)	Position 1	2	2	2
	Position 2	4	4	4
	Position 3	7	7	7
	Position 4	10	10	10
	Position 5	12	12	12
	Position 6	15	15	15
	Position 7	20	20	20
	Position 8	24	24	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x	2x	2x
	Position 2	3x	3x	3x
	Position 3	4x	4x	4x
	Position 4	5x	5x	5x
	Position 5	6x	6x	6x
	Position 6	7x	7x	7x
	Position 7	8x	8x	8x
	Position 8	10x	10x	10x
	Position 9	12x	12x	12x
t_{sd} = short delay time I^2t (milliseconds) (LS, LSG)	Fixed	67 at10x	67 at10x	67 at10x
t_{sd} = short delay time flat (milliseconds) ① (LSI, LSIG, ALSI, ALSIG)	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
I_g = ground fault pickup (amperes) (LSG, LSIG, ALSIG)	Position 1	50	80	120
	Position 2	75	120	180
	Position 3	100	160	240
	Position 4	150	240	360
	Position 5	200	320	480
	Position 6	250	400	600
t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG)	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
Independently Adjustable Instantaneous (I_i) setting (ALSI, ALSIG)	Yes	2.5x, 4x, 6x, 7x, 8x, 10x, 12x	2.5x, 4x, 6x, 7x, 8x, 10x, 12x	2.5x, 4x, 6x, 7x, 8x, 10x, 12x
Maintenance Mode (remote) pickup (2.5 x I_n) ② (ALSI, ALSIG)	Fixed	2.5x		

Notes

① 50 ms for ALSI and ALSIG trip units.

② Maintenance Mode is enabled remotely using a 24 Vdc circuit.

Dimensions and Weights

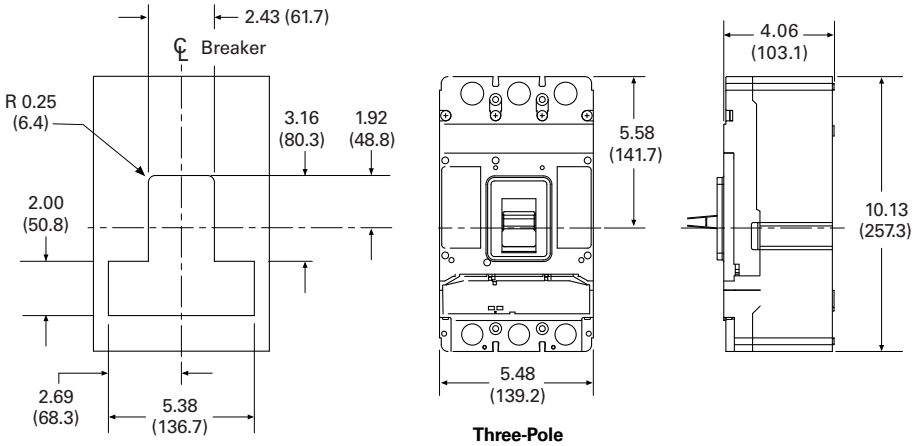
Approximate Dimensions in Inches (mm)

LG-Frame

Number of Poles	Width	Height	Depth
2, 3	5.48 (139.2)	10.13 (257.3)	4.09 (103.9)
4	7.22 (183.4)	10.13 (257.3)	4.09 (103.9)

LG-Frame

Note: TA63IL, T63IL, T632L, TA632L terminals add 1.19 inches (30.2 mm) to line or load side of LG. LTS3K or LTS4K terminal covers add 2.13 inches (54.1 mm) to line or load side of LG.



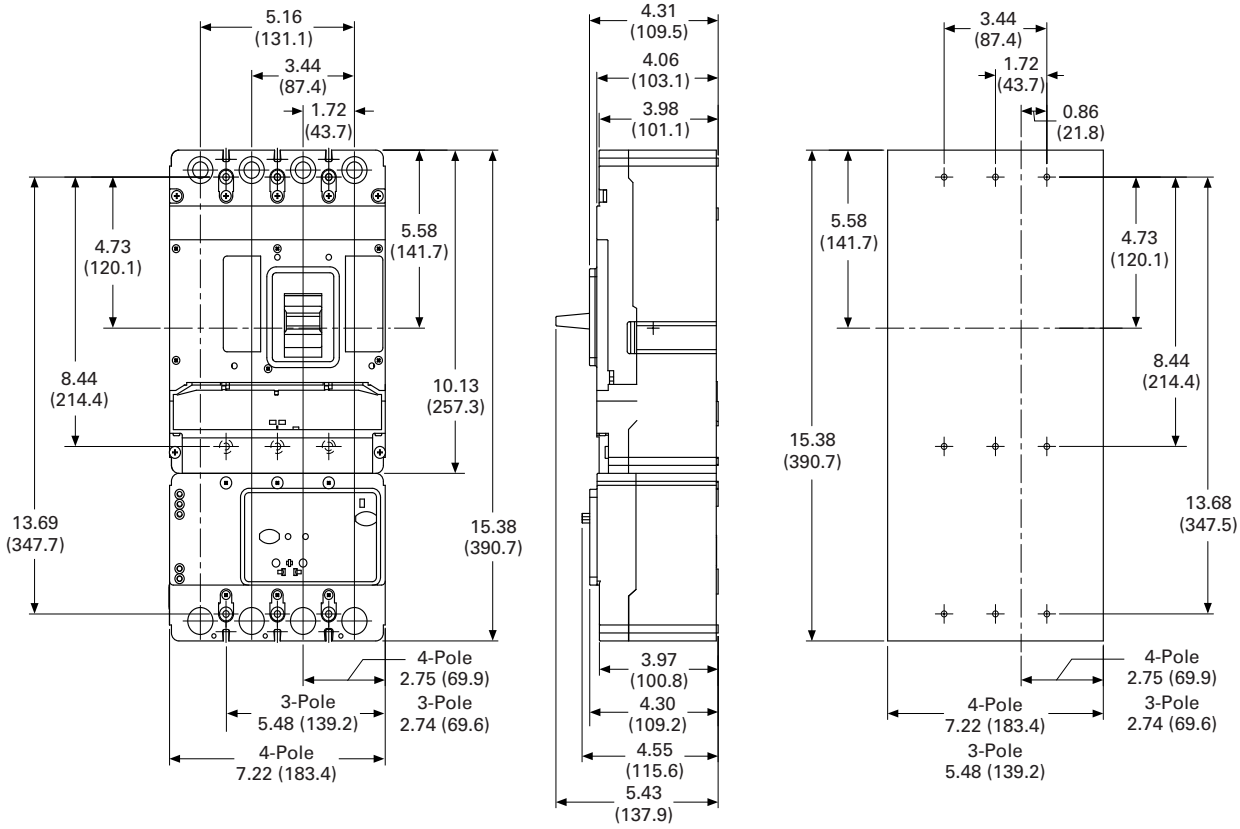
Three-Pole

Approximate Shipping Weight in Lb (kg)

LG-Frame

Breaker Type	Two- and Three-Pole	Four-Pole
LGE, LGS, LGH, LGC, LGU, LGX	16 (7.3)	20 (9.1)

LG-Frame With Earth Leakage Module



Shaded area denotes obsolete or discontinued products and services.

NG-Frame (1200 Ampere)



Contents

Description	*Page*
EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	**V12-T3-60**
NG-Frame (320–1200 A)	
Catalog Number Selection	**V12-T3-79**
Product Selection Guide and Ordering Information	**V12-T3-80**
Accessories	**V12-T3-83**
Specifications	**V12-T3-84**
Dimensions and Weights	**V12-T3-86**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

NG-Frame (320–1200 A)

Product Description

- All Eaton NG-Frame circuit breakers are suitable for reverse feed use
- All NG-Frame circuit breakers are HACR rated

Technical Data

UL 489/IEC 60947-2 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240 (UL)	220–240 I_{cu}	220–240 I_{cs}	380–415 I_{cu}	380–415 I_{cs}	480	600	690 I_{cu}	690 I_{cs}	Recommended Power Defense Replacement ②
NGS ①	2, 3, 4	65	85	85	50	50	50	25	20	10	PDG5xK
NGH	2, 3, 4	100	100	100	70	50	65	35	25	13	PDG5xM
NGC	2, 3, 4	200	200	100	100	50	100	65	35	18	PDG5xP
NGU	3, 4	200	—	—	—	—	150	65	—	—	PDG5xP

Note

① 1600 amperes is not a UL or CSA listed rating. 1200 amperes is the maximum UL and CSA rating for NG.

② Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

Shaded area denotes obsolete or discontinued products and services.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

NG Circuit Breaker with 310+ Electronic Trip Unit

NG H 3 080 39 ZG E C

Frame
NG

Performance at 480 Vac
S = 50 kAIC
H = 65 kAIC
C = 100 kAIC
U = 150 kAIC ①
K = Molded case switch

Poles
2 = Two
3 = Three
4 = Four; neutral ② 0% protected
7 = Four; neutral ② 100% protected
9 = Four; neutral ② 0/60/100% adjustable protection

Amperes
080= 800
120 = 1200

Trip Unit
33 =310+ Electronic LS
32 =310+ Electronic LSI
35 =310+ Electronic LSG
36 =310+ Electronic LSIG
38 =310+ Electronic ALSI with maintenance mode
39 =310+ Electronic ALSIG with maintenance mode
KS =Molded case switch

Feature
Blank=No feature
B20=High load alarm
B21=Ground fault alarm, with trip
B22=Ground fault alarm, no trip
ZG= Zone selective interlocking

Terminations ③
M =Metric tapped line/load conductors
E =Imperial tapped line/load conductors

Rating
Blank=80% rated
C = 100% rated

Notes

① 800 A only.
② Neutral inn left pole on GN; right pole on NG.
③ Breakers do not ship with lugs.

Trip units are factory installable only.

Shaded area denotes obsolete or discontinued products and services.

Product Selection Guide and Ordering Information

Type NGS Standard Interrupting Capacity—U_e Max. 690 Vac, 50 kA I_{cu} at 480 Vac or 415 Vac

See 310+ adjustability specifications on **Page V12-T3-85**.

Maximum Continuous Ampere Rating at 40 °C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip Electronic Trip Unit with Imperial Tapped Conductors						
		LS	LSI	LSG	LSIG	ALSI	ALSIG	Neutral CT for LSG and LSIG ③
800	2	NGS208033E	NGS208032E	NGS208035E	NGS208036E	—	—	—
	3	NGS308033E	NGS308032E	NGS308035E	NGS308036E	NGS308038E	NGS308039E	NGFCT120
	4	NGS408033E	NGS408032E	NGS408035E ④	NGS408036E ④	NGS408038E	NGS408039E ④	—
	4 ⑤	NGS708033E	NGS708032E	—	—	NGS708038E	—	—
	4 ⑥	NGS908033E	NGS908032E	—	—	NGS908038E	—	—
1200 ⑥	2	NGS212033E	NGS212032E	NGS212035E	NGS212036E	—	—	—
	3	NGS312033E	NGS312032E	NGS312035E	NGS312036E	NGS312038E	NGS312039E	NGFCT120
	4	NGS412033E	NGS412032E	NGS412035E ④	NGS412036E ④	—	NGS412039E ④	—
	4 ⑤	NGS712033E	NGS712032E	—	—	NGS712038E	—	—
	4 ⑥	NGS912033E	NGS912032E	—	—	NGS912038E	—	—

Molded Case Switches ⑦⑧⑨⑩

Ampere Rating	U_e Maximum 690 Vac Three-Pole	Catalog Number	Four-Pole	Catalog Number
800	MCS with Imperial tapped line and load conductors	NGK3080KSE	MCS with Imperial line and load terminals	NGK4080KSE
1200	MCS with Imperial tapped line and load conductors	NGK3120KSE	MCS with Imperial line and load terminals	NGK4120KSE
1250	MCS with Imperial tapped line and load conductors	NGK3125KSE	MCS with Imperial line and load terminals	NGK43125KSE

Notes

① For AC use only.
② NG MCCBs are suitable for 40 °C or 50 °C applications. Order suffix V3 to eliminate standard 40 °C labeling.
③ Required for four-wire systems if neutral protection is desired. Sold separately.
④ Neutral 0% protected. NG, neutral in right pole; GN, neutral in left pole.
⑤ Neutral 100% protected (denoted by 7 in digit four); no neutral protection available with LSG or LSIG trip units.
⑥ Neutral 0%/60%/100% adjustable protection (denoted by 9 in digit four).
⑦ Non-UL listed NG 1250 with 1250 ampere trip unit is also available.
⑧ For AC use only. Molded case switch will trip above 14,000 amperes.
⑨ For two-pole applications, use outer poles of three-pole molded case switch.
⑩ Add "**M**" to above catalog numbers for metric tapped line/load conductors.

Shaded area denotes obsolete or discontinued products and services.

Type NGH High Interrupting Capacity—U_e Max. 690 Vac, 65 kA I_{cu} at 480 Vac or 415 Vac

See 310+ adjustability specifications on **Page V12-T3-85**.

Maximum Continuous Ampere Rating at 40 °C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip Electronic Trip Unit						
		LS	LSI	LSG	LSIG	ALSI	ALSIG	Neutral CT for LSG and LSIG ③
800	2	NGH208033E	NGH208032E	NGH208035E	NGH208036E	—	—	—
	3	NGH308033E	NGH308032E	NGH308035E	NGH308036E	NGH308038E	NGH308039E	NGFCT120
	4	NGH408033E	NGH408032E	NGH408035E ④	NGH408036E ④	NGH408038E	NGH408039E ④	—
	4 ⑤	NGH708033E	NGH708032E	—	—	NGH708038E	—	—
	4 ⑥	NGH908033E	NGH908032E	—	—	NGH908038E	—	—
1200	2	NGH212033E	NGH212032E	NGH212035E	NGH212036E	—	—	—
	3	NGH312033E	NGH312032E	NGH312035E	NGH312036E	NGH312038E	NGH312039E	NGFCT120
	4	NGH412033E	NGH412032E	NGH412035E ④	NGH412036E ④	—	NGH412039E ④	—
	4 ⑤	NGH712033E	NGH712032E	—	—	NGH712038E	—	—
	4 ⑥	NGH912033E	NGH912032E	—	—	NGH912038E	—	—

Type NGC Very High Capacity—U_e Max. 690 Vac, 100 kA I_{cu} at 480 Vac or 415 Vac

See 310+ adjustability specifications on **Page V12-T3-85**.

Maximum Continuous Ampere Rating at 40 °C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip Electronic Trip Unit						
		LS	LSI	LSG	LSIG	ALSI	ALSIG	Neutral CT for LSG and LSIG ③
800	2	NGC208033E	NGC208032E	NGC208035E	NGC208036E	—	—	—
	3	NGC308033E	NGC308032E	NGC308035E	NGC308036E	NGC308038E	NGC308039E	NGFCT120
	4	NGC408033E	NGC408032E	NGC408035E ④	NGC408036E ④	NGC408038E	NGC408039E ④	—
	4 ⑤	NGC708033E	NGC708032E	—	—	NGC708038E	—	—
	4 ⑥	NGC908033E	NGC908032E	—	—	NGC908038E	—	—
1200	2	NGC212033E	NGC212032E	NGC212035E	NGC212036E	—	—	—
	3	NGC312033E	NGC312032E	NGC312035E	NGC312036E	NGC312038E	NGC312039E	NGFCT120
	4	NGC412033E	NGC412032E	NGC412035E ④	NGC412036E ④	—	NGC412039E ④	—
	4 ⑤	NGC712033E	NGC712032E	—	—	NGC712038E	—	—
	4 ⑥	NGC912033E	NGC912032E	—	—	NGC912038E	—	—

Type NGU Ultra High Capacity—U_e Max. 600 Vac, 150 kA at 480 Vac

See 310+ adjustability specifications on **Page V12-T3-85**.

Maximum Continuous Ampere Rating at 40 °C ①②	Number of Poles	Circuit Breaker Frame Including Digitrip Electronic Trip Unit						
		LS	LSI	LSG	LSIG	ALSI	ALSIG	Neutral CT for LSG and LSIG ③
800	3	NGU308033E	NGU308032E	NGU308035E	NGU308036E	NGU308038E	NGU308039E	NGFCT120

Notes

① For AC use only.
② NG MCCBs are suitable for 40 °C or 50 °C applications. Order suffix V3 to eliminate standard 40 °C labeling.
③ Required for four-wire systems if neutral protection is desired. Sold separately.
④ Neutral 0% protected. NG, neutral in right pole; GN, neutral in left pole.
⑤ Neutral 100% protected (denoted by 7 in digit four); no neutral protection available with LSG or LSIG trip units.
⑥ Neutral 0%/60%/100% adjustable protection (denoted by 9 in digit four).

Shaded area denotes obsolete or discontinued products and services.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

N-Frame circuit breakers do not include terminals as standard. When copper or Cu/Al terminals are required, order by catalog number.

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire (Number of Conductors)	AWG Wire Catalog Number ①	Metric Wire Range mm^2	Metric Catalog Number ①
Standard Cu/Al Pressure Terminals						
700	Aluminum	Cu/Al	1–500 (2)	**TA700NB1**	50–240	**TA700NB1M**
1000	Aluminum	Cu/Al	3/0–400 (3)	**TA1000NB1**	95–185	**TA1000NB1M**
1200	Aluminum	Cu/Al	4/0–500 (4)	**TA1200NB1**	120–240	**TA1200NB1M**
1200	Aluminum	Cu/Al	500–750 (3)	**TA1201NB1**	300–400	**TA1201NB1M**
Optional Copper and Cu/Al Pressure Type Terminals						
700	Copper	Cu	2/0–500 (2)	**T700NB1**	70–240	**T700NB1M**
1000	Copper	Cu	3/0–500 (3)	**T1000NB1**	95–240	**T1000NB1M**
1200	Copper	Cu	3/0–400 (4)	**T1200NB3**	95–185	**T1200NB3M**

310+ Electronic Trip Unit Accessories

Description	Catalog Number
Electronic portable test kit	**MTST230V**
Trip unit tamper protection wire seal	**5108A03H01**
External neutral sensor (1200 A) ②	**NGFCT120**
External neutral sensor (800 A) ②	**NGFCT120**
Breaker-mount cause-of-trip indication	**TRIP-LED**
Breaker-mount ammeter module	**DIGIVIEW**
Remote-mount ammeter module	**DIGIVIEWR06**

Base Mounting Hardware

Base mounting hardware is included with a circuit breaker or molded case switch.

Base Mounting Hardware ③

Number of Poles	Description	Catalog Number
Three- and four-pole	Imperial hardware: 0.3125–18 x 1.25 pan-head steel screws and lock washers	**BMH5**
Three- and four-pole	Metric hardware: M8 pan-head steel screws and lock washers	**BMH5M**

Terminal Shield

Terminal Shield

Description	Catalog Number
Three-pole terminal shield	**NTS3K**

Conductor Extension Kit

Conductor Extension Kit ④

Description	Catalog Number
Three-pole both ends Metric	**5104A24G04**
Three-pole both ends English	**5104A24G02**

Keeper Nut

Not required on NG-Frame. Terminals are threaded.

Handle Extension

Included with breaker. Additional handle extensions are available.

Handle Extension

Description	Catalog Number
Single handle extension	**HEX5**

Interphase Barriers

The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. Barriers are high dielectric insulating plates that are installed in the molded slots between the terminals. (Field installation only.)

Interphase Barriers

Description	Catalog Number
Interphase barriers ④	**IPB5**

Notes

① Single terminals individually packed.
② Required for four-wire systems if neutral protection is desired. Sold separately.
③ Metric hardware included with breaker.
④ Included as standard on 100% rated 1200 A breakers only.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

NG-Frame Accessories

Description	Reference Page	Three-Pole			Four-Pole			
		Left	Center	Right	Left	Center	Right	Neu.
Internal Accessories (Only One Internal Accessory Per Pole)								
Alarm lockout (Make/Break)	**V12-T3-128**	●	—	■	●	—	■	—
Auxiliary switch (1A, 1B)	**V12-T3-128**	●	—	■	●	—	■	—
Auxiliary switch (2A, 2B)	**V12-T3-128**	●	—	■	●	—	■	—
Auxiliary switch and alarm switch combination	**V12-T3-128**	●	—	■	●	—	■	—
Shunt trip—standard	**V12-T3-128**	■	—	—	■	—	—	—
Undervoltage release mechanism	**V12-T3-129**	■	—	—	■	—	—	—
External Accessories								
Base mounting hardware	**V12-T3-82**	●	●	●	●	●	●	●
Interphase barriers	**V12-T3-82**	●	●	●	●	●	●	●
Non-padlockable handle block	**V12-T3-126**	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Key interlock kit	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V12-T3-126**	●	●	●	—	—	—	—
Electrical operator	**V12-T3-126**	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-133**	●	●	●	●	●	●	●
Rear connecting studs	**V12-T3-126**	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●
Drawout cassette	**V12-T3-134**	●	●	●	●	●	●	●
Handle extension	**V12-T3-82**	●	●	●	●	●	●	●
Ammeter/cause of trip display	**V12-T3-125**	●	●	●	●	●	●	●
Cause of trip LED module	**V12-T3-125**	●	●	●	●	●	●	●
Digitrip 310+ test kit	**V12-T3-125**	●	●	●	●	●	●	●
Modifications (Refer to Eaton)								
Moisture fungus treatment	**V12-T3-124**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/Naval application, UL 489 Supplement SA and SB	①	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Note

① Contact Eaton.

Shaded area denotes obsolete or discontinued products and services.

Specifications

NG-Frame Digitrip Specifications

NG 310+ Specifications

Description	Specification
Trip Unit Type	Digitrip RMS 310+
Breaker Type	
Frame designation	NG
Frames available	800 A, 1200 A
Continuous current range (A)	320–1200 A
Ground fault pickup (A)	160–1200 A
Interrupting capacities at 480 Vac (kAIC)	35, 65, 100, 150
100% rated	Yes
Protection	
Ordering options	LS, LSI, LSG, LSIG, ALSI, ALSIG
Arcflash reduction maintenance system (or maintenance mode)	Yes
Interchangeable trip unit	No
High load alarm (suffix B20) ①	Yes
Ground fault alarm with trip (suffix B21) ①	Yes
Ground fault alarm, no trip (suffix B22) ①	Yes
Zone selective interlocking (suffix ZG)	LSI, LSIG, ALSI, ALSIG
Cause of trip indication	Yes
Thru-cover accessories	No

Note

① B2x suffixes cannot be combined with B2x suffixes.

Shaded area denotes obsolete or discontinued products and services.

NG 310+ Adjustability Specifications

310+ Settings		NG Frame 800 A	1200 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r		
	A	320	500
	B	400	600
	C	450	630
	D	500	700
	E	600	800
	F	630	900
	G	700	1000
	H (= I_n)	800	1200
t_r = long delay time (seconds) (All 310+)	Position 1	2	2
	Position 2	4	4
	Position 3	6	7
	Position 4	8	10
	Position 5	10	12
	Position 6	12	15
	Position 7	14	20
	Position 8	14	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x	2x
	Position 2	3x	3x
	Position 3	4x	4x
	Position 4	5x	5x
	Position 5	6x	6x
	Position 6	7x	7x
	Position 7	8x	8x
	Position 8	9x	9x
	Position 9	9x	9x
t_{sd} = short delay time I^2t (milliseconds) (LS, LSG)	Fixed	67 at10x	67 at10x
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG) ①	Position 1	Inst	Inst
	Position 2	120	120
	Position 3	300	300
I_g = ground fault pickup (amperes) (LSG, LSIG, ALSIG)	Position 1	160	240
	Position 2	240	360
	Position 3	320	480
	Position 4	480	720
	Position 5	640	960
	Position 6	800	1200
t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG)	Position 1	Inst	Inst
	Position 2	120	120
	Position 3	300	300
Independently Adjustable Instantaneous (I_i) setting (ALSI, ALSIG)	Yes	2.5x, 4x, 6x, 7x, 8x, 10x, 18x	2.5x, 4x, 6x, 7x, 8x, 10x, 12x
Maintenance Mode (remote) pickup (2.5 x I_n) (ALSI, ALSIG) ②	Fixed	2.5x	2.5x

Notes

① 50 ms for ALSI and ALSIG trip units.

② Maintenance Mode is enabled remotely using a 24 Vdc circuit.

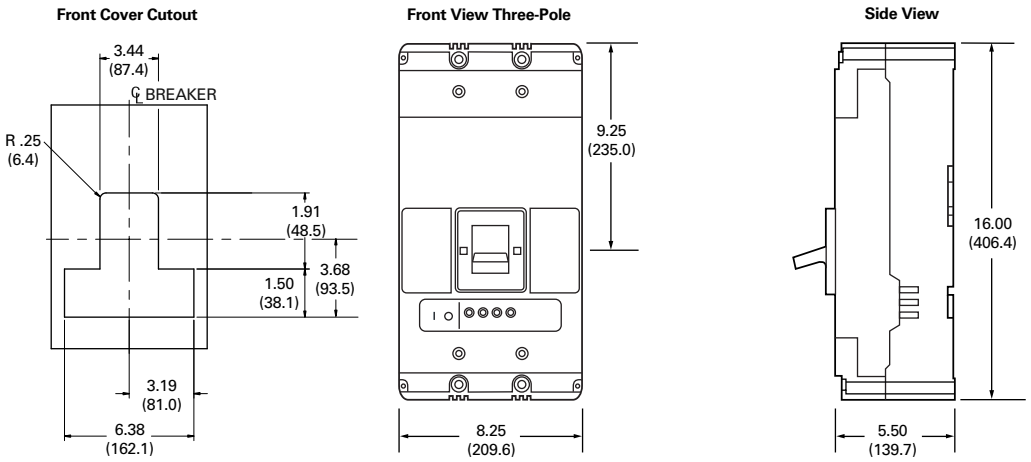
Dimensions and Weights

Approximate Dimensions in Inches (mm)

NG-Frame

Number of Poles	Width	Height	Depth
3	8.25 (209.6)	16.00 (406.4)	5.50 (139.7)
4	11.13 (282.6)	16.00 (406.4)	5.50 (139.7)

NG-Frame



Approximate Shipping Weight in Lb (kg)

NG-Frame

Breaker Type	Complete Breaker Three-Pole	Four-Pole
NGS, NGH, NGC	45 (20.4)	58 (26.3)

Shaded area denotes obsolete or discontinued products and services.

RG-Frame (800–2500 Amperes)



Contents

Description	*Page*
EG-Frame (15–125 A)	V12-T3-28
JG-Frame (63–250 A)	V12-T3-42
LG-Frame (250–630 A)	V12-T3-60
NG-Frame (320–1200 A	V12-T3-78
RG-Frame (800–2500 A)	
Catalog Number Selection	V12-T3-88
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Dimensions and Weights	V12-T3-97
Motor Circuit Protectors (MCP)	V12-T3-104
Motor Protector Circuit Breakers (MPCB)	V12-T3-108
30 mA Ground Fault (Earth Leakage) Module	V12-T3-111
Current-Limiting Circuit Breaker Module	V12-T3-115
High Instantaneous Circuit Breaker for Selective Coordination	V12-T3-120
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Plug-In Blocks	V12-T3-133
Drawout Cassette	V12-T3-134

RG-Frame (800–2500 A)

Product Description

- Eaton's RG-Frame circuit breakers are available as frame (which includes trip unit), rating plug and terminals
- All R-Frame circuit breakers are suitable for reverse feed use

Technical Data

UL 489/CSA Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Recommended Power Defense Replacement ②
RGH	3, 4	125	65	50	PDG6xN
RGC	3, 4	200	100	65	PDG6xP

IEC 947-2 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	415	690	Recommended Power Defense Replacement ②
RGH					
I_{cu}	3, 4	135	70	25	PDG6xN
I_{cs}	3, 4	100	50	13	PDG6xN
RGC					
I_{cu}	3, 4	200	100	35	PDG6xP
I_{cs}	3, 4	100	50	18	PDG6xP

Note

① Utilization Category A circuit breakers.

② Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

Shaded area denotes obsolete or discontinued products and services.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

70 kA at 415 Vac and 65 kA at 480 Vac

RG Circuit Breaker With 310+ Electronic Trip Unit

RG H 3 250 39 ZG E C

Frame
RG

Performance at 480 Vac
H = 65 kAIC
C = 100 kAIC
K = Molded case switch

Poles
3 = Three
4 = Four

Amperes
160 = 1600
200 = 2000
250 = 2500

Trip Unit
33 =310+ Electronic LS
32 =310+ Electronic LSI
35 =310+ Electronic LSG
36 =310+ Electronic LSIG
38 =310+ Electronic LSI w/ Maintenance Mode
39 =310+ Electronic LSIG w/ Maintenance Mode
KS =Molded case switch

Feature
Blank=No feature
B20=High load alarm
B21=Ground fault alarm, with trip
B22=Ground fault alarm, no trip
ZG= Zone selective interlocking

Terminations
M =Metric tapped line/load conductors
E =Imperial tapped line/load conductors
W =No terminals

Rating
Blank=80% rated
C = 100% rated (except 2500 A)

RG 310+ Electronic Trip Unit

RT 3 250 39 ZG

Type
RT

Poles
3 = Three

Amperes
160 = 1600
200 = 2000
250 = 2500

Trip Unit
33 =310+ Electronic LS
32 =310+ Electronic LSI
35 =310+ Electronic LSG
36 =310+ Electronic LSIG
38 =310+ Electronic LSI w/ Maintenance Mode
39 =310+ Electronic LSIG w/ Maintenance Mode

Feature
Blank=No feature
B20=High load alarm
B21=Ground fault alarm, with trip
B22=Ground fault alarm, no trip
ZG= Zone selective interlocking

RG Circuit Breaker with Digitrip 610 and 910 Electronic Trip Unit

RGH 3 16 T92 W

Type
RGH 65K
RGC 100K

Poles
3 = Three
4 = Four

Amperes
16 = 1600
20 = 2000
25 = 2500

Trip Function
Digitrip 610
T61 = LI
T62 = LSI
T63 = LS
T64 = LIG
T65 = LSG
T66 = LSIG
Digitrip 910
T91 = LI
T92 = LSI
T93 = LS
T94 = LIG
T95 = LSG
T96 = LSIG

Modification Suffix
R = Ground fault remote RES trip
E = 100% protection (new design 310) RES trip unit
P = 100% prot. neut. 4P RES trip unit
V3 = Electronic trip without ambient temperature marked on trip unit
W = w/o terms
K = Molded case switch

Shaded area denotes obsolete or discontinued products and services.

Product Selection

70 kA at 415 Vac and 65 kA at 480 Vac

Type RGH with Digitrip 310+ High Interrupting Capacity—U_e Maximum 690 Vac, 70 kA I_{cu} at 415 Vac

See 310+ adjustability specifications on **Page V12-T3-96**.

Maximum Continuous Ampere Rating at 40 °C ①	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ②						
		LS	LSI	LSG ③	LSIG ③	ALSI	ALSIG	Neutral CT for LSG and LSIG ④
1600 ①	3	**RGH316033E**	**RGH316032E**	**RGH316035E**	**RGH316036E**	**RGH316038E**	**RGH316039E**	**RGFCT160A**
2000	3	**RGH320033E**	**RGH320032E**	**RGH320035E**	**RGH320036E**	**RGH320038E**	**RGH320039E**	**RGFCT200A**
2500	3	**RGH325033E**	**RGH325032E**	**RGH325035E**	**RGH325036E**	**RGH325038E**	**RGH325039E**	**RGFCT250A**

100 kA at Both 415 Vac and 480 Vac

Type RGH with Digitrip 310+ High Interrupting Capacity—U_e Maximum 690 Vac, 70 kA I_{cu} at 415 Vac

See 310+ adjustability specifications on **Page V12-T3-96**.

Maximum Continuous Ampere Rating at 40 °C ①	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ②					
		LS	LSI	LSG ③⑤	LSIG ③⑤	ALSI	ALSIG ③⑤
1600 ①	4 ⑥	**RGH416033E**	**RGH416032E**	—	—	**RGH416038E**	—
2000	4 ⑥	**RGH420033E**	**RGH420032E**	—	—	**RGH420038E**	—
2500	4 ⑥	**RGH425033E**	**RGH425032E**	—	—	**RGH425038E**	—

Notes

① For SCR application, use 2000 ampere frame.
② Order terminals separately. Mounting hardware not included.
③ Ground fault equipped trip units available with remote indicating panel. Add "R" to catalog number, for example, "**RGH316035RW**."
④ Required for four-wire systems if neutral protection is desired. Sold separately.
⑤ No neutral protection available on four-pole breakers with LSG or LSIG trip units.
⑥ Unprotected left pole neutral. Add "P" to catalog number for 100% protected left pole neutral, add "E" for 60% protected, for example, "**RGH416033PW**," "**RGH416033EW**."

RG MCCBs have English threading on line and load conductors. Use suffix "M" for metric threading.

Shaded area denotes obsolete or discontinued products and services.

100 kA at Both 415 Vac and 480 Vac

Type RGC with Digitrip 310+ Very High Interrupting Capacity—U_e Maximum 690 Vac, 100 kA I_{cu} at 415 Vac

See 310+ adjustability specifications on **Page V12-T3-96**.

Maximum Continuous Ampere Rating at 40 °C ①	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ② LS	LSI	LSG ③	LSIG ③	ALSI	ALSIG	Neutral CT for LSG and LSIG ④
1600 ①	3	**RGC316033E**	**RGC316032E**	**RGC316035E**	**RGC316036E**	**RGC316038E**	**RGC316039E**	**RGFCT160A**
2000	3	**RGC320033E**	**RGC320032E**	**RGC320035E**	**RGC320036E**	**RGC320038E**	**RGC320039E**	**RGFCT200A**
2500	3	**RGC325033E**	**RGC325032E**	**RGC325035E**	**RGC325036E**	**RGC325038E**	**RGC325039E**	**RGFCT250A**

Type RGC with Digitrip 310+ Very High Interrupting Capacity—U_e Maximum 690 Vac, 100 kA I_{cu} at 415 Vac, continued -

See 310+ adjustability specifications on **Page V12-T3-96**.

Maximum Continuous Ampere Rating at 40 °C ①	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit with Adjustable Rating Plugs—Catalog Number ② LS	LSI	LSG ③⑤	LSIG ③⑤	ALSI	ALSIG ③⑤
1600 ①	4 ⑥	**RGC416033E**	**RGC416032E**	—	—	**RGC416038E**	—
2000	4 ⑥	**RGC420033E**	**RGC420032E**	—	—	**RGC420038E**	—
2500	4 ⑥	**RGC425033E**	**RGC425032E**	—	—	**RGC425038E**	—

Molded Case Switches ⑦

Ampere Rating	Number of Poles	Catalog Number
1600	3	**RGK3160KSE**
2000	3	**RGK3200KSE**
1600	4	**RGK4160KSE**
2000	4	**RGK4200KSE**

Notes

① For SCR application, use 2000 ampere frame.
② Order terminals separately. Mounting hardware not included.
③ Ground fault equipped trip units available with remote indicating panel. Add "R" to catalog number, for example, "**RGH316035RW**."
④ Required for four-wire systems if neutral protection is desired. Sold separately.
⑤ No neutral protection available on four-pole breakers with LSG or LSIG trip units.
⑥ Unprotected left pole neutral. Add "P" to catalog number for 100% protected left pole neutral, add "E" for 60% protected, for example, "**RGH416033PW**," "**RGH416033EW**."
⑦ Molded case switch will trip above 17,500 amperes.

RG MCCBs have English threading on line and load conductors. Use suffix "M" for metric threading.

Shaded area denotes obsolete or discontinued products and services.

Type RG with Digitrip 610 and 910

Maximum Continuous Ampere Rating at 40 °C	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 610 and 910 Electronic Trip Unit with Rating Plugs Order as Individual Component—Catalog Number ① LI	LS	LSI	LIG	LSG	LSIG	Digitrip RMS Interchangeable Rating Plug (Order as Individual Component) Fixed Rating Plug Ampere Rating	Catalog Number
		L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S –Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G –Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)							
Long Delay Pickup		0.5–1.0 x I_n	0.5–I.0$_n$	0.5–1.0 x I_n	0.5–1.0 x I_n	0.5–1.0 x I_n	0.5–1.0 x I_n		
Long Delay Time		2–24 Seconds	2–24 Seconds	2–24 Seconds	2–24 Seconds	2–24 Seconds	2–24 Seconds		
Short Time Range		2–6 x I_r	2–6 x I_r	2–6 x I_r	2–6 x I_r	2–6 x I_r	2–6 x I_r		
Short Time Delay		—	100–500 ms	100–500 ms	—	100–500 ms	100–500 ms		
Instantaneous		2–6 x M1 and M2	—	2–6 x M1 and M2	2–6 x M1 and M2	—	2–6 x M1 and M2		
Ground Fault Pickup		—	—	—	0.25–1.0 x I_n ②	0.25–1.0 x I_n ②	0.25–1.0 x I_n ②		
Ground Fault Delay		—	—	—	100–500 ms	100–500 ms	100–500 ms		
Type RGH with Digitrip 610 High Interrupting Capacity—U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac									
1600	3	**RGH316T61WP44**	**RGH316T63WP44**	**RGH316T62WP44**	**RGH316T64WP44**	**RGH316T65WP44**	**RGH316T66WP44**	800	**RP6R16A080**
								1000	**RP6R16A100**
								1200	**RP6R16A120**
								1250	**RP6R16A125**
		Includes 1600 A rating plug						1600	**RP6R16A160**
2000	3	**RGH320T61WP49**	**RGH320T63WP49**	**RGH320T62WP49**	**RGH320T64WP49**	**RGH320T65WP49**	**RGH320T66WP49**	1000	**RP6R20A100**
								1200	**RP6R20A120**
								1250	**RP6R20A125**
								1600	**RP6R20A160**
		Includes 2000 A rating plug						2000	**RP6R20A200**
2500	3	**RGH325T61WP53**	**RGH325T63WP53**	**RGH325T62WP53**	**RGH325T64WP53**	**RGH325T65WP53**	**RGH325T66WP53**	1600	**RP6R25A160**
								2000	**RP6R25A200**
								2500	**RP6R25A250**
Type RGC with Digitrip 610 Very High Interrupting Capacity—U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac									
1600	3	**RGC316T61WP44**	**RGC316T63WP44**	**RGC316T62WP44**	**RGC316T64WP44**	**RGC316T65WP44**	**RGC316T66WP44**	800	**RP6R16A080**
								1000	**RP6R16A100**
								1200	**RP6R16A120**
								1250	**RP6R16A125**
		Includes 1600 A rating plug						1600	**RP6R16A160**
2000	3	**RGC320T61WP49**	**RGC320T63WP49**	**RGC320T62WP49**	**RGC320T64WP49**	**RGC320T65WP49**	**RGC320T66WP49**	1000	**RP6R20A100**
								1200	**RP6R20A120**
								1250	**RP6R20A125**
								1600	**RP6R20A160**
		Includes 2000 A rating plug						2000	**RP6R20A200**
2500	3	**RGC325T61WP53**	**RGC325T63WP53**	**RGC325T62WP53**	**RGC325T64WP53**	**RGC325T65WP53**	**RGC325T66WP53**	1600	**RP6R25A160**
								2000	**RP6R25A200**
		Includes 2500 A rating plug						2500	**RP6R25A250**

Notes

① Order terminals separately. Mounting hardware not included.

② Not to exceed 1200 ampere ground fault pickup.

RG MCCBs have metric threading on line and load conductors. Use RD MCCBs if imperial threading is required.1

Molded Case Circuit Breakers

Series G

Shaded area denotes obsolete or discontinued products and services.

Type RG with Digitrip 610 and 910, continued

Maximum Continuous Ampere Rating at 40 °C	Number of Poles	Circuit Breaker Frame Including Digitrip RMS 610 and 910 Electronic Trip Unit with Rating Plugs Order as Individual Component—Catalog Number ①						Digitrip RMS Interchangeable Rating Plug (Order as Individual Component)	
		L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S –Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G –Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)						Fixed Rating Plug	
		LI	LS	LSI	LIG	LSG	LSIG	Ampere Rating	Catalog Number
Long Delay Pickup		0.5–1.0 x I_n	0.5–I.0$_n$	0.5–1.0 x I_n	0.5–1.0 x I_n	0.5–1.0 x I_n	0.5–1.0 x I_n		
Long Delay Time		2–24 Seconds	2–24 Seconds	2–24 Seconds	2–24 Seconds	2–24 Seconds	2–24 Seconds		
Short Time Range		2–6 x I_r	2–6 x I_r	2–6 x I_r	2–6 x I_r	2–6 x I_r	2–6 x I_r		
Short Time Delay		—	100–500 ms	100–500 ms	—	100–500 ms	100–500 ms		
Instantaneous		2–6 x M1 and M2	—	2–6 x M1 and M2	2–6 x M1 and M2	—	2–6 x M1 and M2		
Ground Fault Pickup		—	—	—	0.25–1.0 x In ②	0.25–1.0 x In ②	0.25–1.0 x In ②		
Ground Fault Delay		—	—	—	100–500 ms	100–500 ms	100–500 ms		
Type RGH with Digitrip 910 High Interrupting Capacity—U_e Max. 690 Vac, 70 kA I_{cu} at 415 Vac									
1600	3	RGH316T91WP44	RGH316T93WP44	RGH316T92WP44	RGH316T94WP44	RGH316T95WP44	RGH316T96WP44	800	RP6R16A080
								1000	RP6R16A100
								1200	RP6R16A120
								1250	RP6R16A125
		Includes 1600 A rating plug						1600	RP6R16A160
2000	3	RGH320T91WP49	RGH320T93WP49	RGH320T92WP49	RGH320T94WP49	RGH320T95WP49	RGH320T96WP49	1000	RP6R20A100
								1200	RP6R20A120
								1250	RP6R20A125
								1600	RP6R20A160
		Includes 2000 A rating plug						2000	RP6R20A200
2500	3	RGH325T91WP53	RGH325T93WP53	RGH325T92WP53	RGH325T94WP53	RGH325T95WP53	RGH325T96WP53	1600	RP6R25A160
								2000	RP6R25A200
		Includes 2500 A rating plug						2500	RP6R25A250
Type RGC with Digitrip 910 Very High Interrupting Capacity—U_e Max. 690 Vac, 100 kA I_{cu} at 415 Vac									
1600	3	RGC316T91WP44	RGC316T93WP44	RGC316T92WP44	RGC316T94WP44	RGC316T95WP44	RGC316T96WP44	800	RP6R16A080
								1000	RP6R16A100
								1200	RP6R16A120
								1250	RP6R16A125
		Includes 1600 A rating plug						1600	RP6R16A160
2000	3	RGC320T91WP49	RGC320T93WP49	RGC320T92WP49	RGC320T94WP49	RGC320T95WP49	RGC320T96WP49	1000	RP6R20A100
								1200	RP6R20A120
								1250	RP6R20A125
								1600	RP6R20A160
		Includes 2000 A rating plug						2000	RP6R20A200
2500	3	RGC325T91WP53	RGC325T93WP53	RGC325T92WP53	RGC325T94WP53	RGC325T95WP53	RGC25T96WP53	1600	RP6R25A160
								2000	RP6R25A200
		Includes 2500 A rating plug						2500	RP6R25A250

Notes

① Order terminals separately. Mounting hardware not included.

② Not to exceed 1200 ampere ground fault pickup.

RG MCCBs have metric threading on line and load conductors. Use RD MCCBs if imperial threading is required.

Accessories Selection Guide and Ordering Information

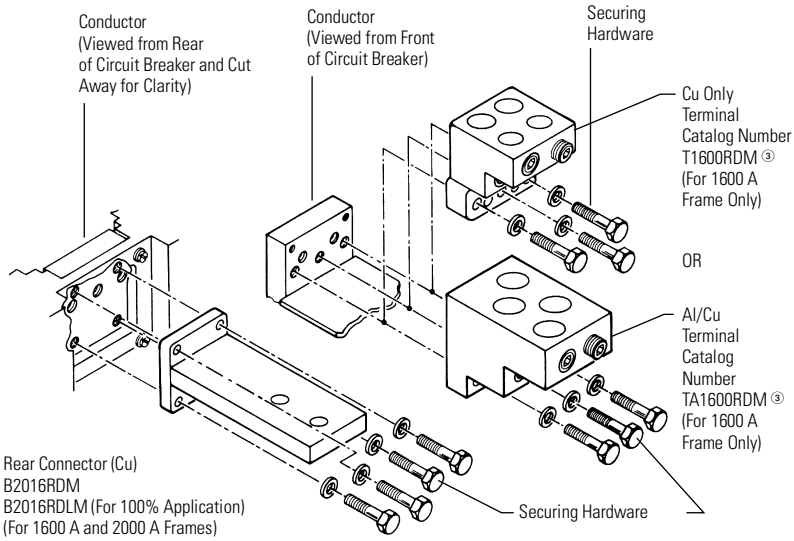
Line and Load Terminals

R-Frame circuit breakers use Cu/Al terminals as standard and copper only terminals as an option. Specify if factory installation is required. Must have terminals for 100% rated and or freeze testing requirements.

Line and Load Terminals

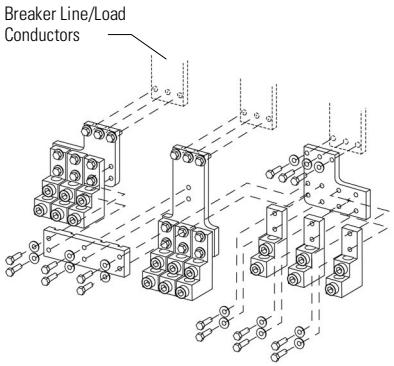
Maximum Breaker Amperes	Terminal Body Material	Wire Type	Hardware	AWG/kcmil Wire Range/ Number of Conductors	Metric Wire Range mm^2	Catalog Number
Wire Terminals						
1600	Aluminum	Cu/Al	Metric	500–1000 (4)	300–500	**TA1600RDM** ①
1600	Copper	Cu	Metric	1–600 (4)	50–300	**T1600RDM** ①
2000	Aluminum	Cu/Al	Metric	2–600 (6)	35–300	**TA2000RDM** ②
Rear Connectors						
2000	Copper	—	Metric	—	—	**B2016RDM** ①
2000	Copper	—	Metric	—	—	**B2016RDLM** ①
2500	Copper	—	Metric	—	—	**B2500RDM** ①

RG Rear Connector Exploded View



TA2000RD Wire Terminal

Note: Order one TA2000RDM kit per three poles. Catalog number includes bus connection, terminals and hardware for either line side or load side of three-pole breaker.



Base Mounting Hardware

Supplied by customer.

Handle Extension

Included with breaker. Additional handle extensions are available.

Handle Extension

Description	Catalog Number
Single handle extension	**HEX6**

Wire Seal

The wire seal can be used to secure the cover on the trip unit to prevent adjustments after settings are confirmed.

Wire Seal

Description	Catalog Number
Wire seal	**5108A03H01**

Notes

① Order one per pole—single terminals individually packed.

② Order one TA2000RD kit per three poles. Catalog number includes bus connection, terminals and hardware for either line side or load side of three-pole breaker.

③ For use with 2500 A Frame. Do not order separately unless for replacement purposes. Included in breaker carton when 2500 A frame is ordered.

RG MCCBs have metric threading on line and load conductors. Use RD MCCBs if imperial threading is required.

Shaded area denotes obsolete or discontinued products and services.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

RG-Frame Accessories

Description	Reference Page	Three-Pole Left	Three-Pole Center	Three-Pole Right	Four-Pole Left	Four-Pole Center	Four-Pole Right	Four-Pole Neutral
Internal Accessories (Only One Internal Accessory Per Pole)								
Alarm lockout (Make/Break)	**V12-T3-128**	—	—	■	—	—	■	—
Auxiliary switch (1A, 1B)	**V12-T3-128**	—	—	■	—	—	■	—
Auxiliary switch (2A, 2B)	**V12-T3-128**	—	—	■	—	—	■	—
Auxiliary switch and alarm switch combination	**V12-T3-128**	—	—	■	—	—	■	—
Shunt trip—standard	**V12-T3-128**	—	—	●	—	—	●	—
Undervoltage release mechanism	**V12-T3-129**	—	—	●	—	—	●	—
External Accessories								
Base mounting hardware	**V12-T3-93**	●	●	●	●	●	●	●
Padlockable handle lock hasp	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Key interlock kit	**V12-T3-126**	❑	—	❑	❑	—	❑	—
Electrical operator	**V12-T3-126**	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●
Handle extension	**V12-T3-93**	●	●	●	●	●	●	●
Digitrip 310+ test kit	**V12-T3-125**	●	●	●	●	●	●	●
Modifications (Refer to Eaton)								
Moisture fungus treatment	**V12-T3-124**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application, UL 489 Supplement SA and SB	①	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

310+ Electronic Trip Unit Accessories

Description	Catalog Number
Electronic portable test kit	**MTST230V**
Trip unit tamper protection wire seal	**5108A03H01**
External neutral sensor (2500 A) ②	**RGFCT250A**
External neutral sensor (2000 A) ②	**RGFCT200A**
External neutral sensor (1600 A) ②	**RGFCT160A**
Breaker-mount cause-of-trip indication ③	—
Breaker-mount ammeter module	**DIGIVIEW**
Remote-mount ammeter module	**DIGIVIEWR06**

Notes

① Contact Eaton.
② Required for four-wire systems if neutral protection is desired. Sold separately.
③ Cause-of-trip indication LEDs integrated in RG 310+ trip units.

Shaded area denotes obsolete or discontinued products and services.

Specifications

RG 310+ Specifications

Description	Specification
Trip Unit Type	Digitrip RMS 310+
Breaker Type	
Frame designation	RG
Frames available	1600 A, 2000 A, 2500 A
Continuous current range (A)	800–2500 A
Ground fault pickup (A)	200–1200 A
Interrupting capacities at 480 Vac (kAIC)	65, 100
100% rated	Yes
Protection	
Ordering options	LS, LSI, LSG, LSIG, ALSI, ALSIG
Arcflash reduction maintenance system (or maintenance mode)	Yes
Interchangeable trip unit	Yes
High load alarm (suffix B20) ①	Yes
Ground fault alarm with trip (suffix B21) ①	Yes
Ground fault alarm, no trip (suffix B22) ①	Yes
Zone selective interlocking (suffix ZG)	LSI, LSIG, ALSI, ALSIG
Cause of trip indication	Yes
Thru-cover accessories	No

Note

① B2x suffixes cannot be combined with B2x suffixes.

See **Page V12-T3-87** for trip unit specifications.

Shaded area denotes obsolete or discontinued products and services.

RG 310+ Adjustability Specifications

310+ Settings		RG Frame 1600 A	2000 A	2500 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r			
	A	800	1000	1600
	B	900	1200	1700
	C	1000	1400	1800
	D	1100	1600	2000
	E	1200	1700	2100
	F	1400	1800	2200
	G	1500	1900	2400
	H (= I_n)	1600	2000	2500
t_r = long delay time (seconds) (All 310+)	Position 1	2	2	2
	Position 2	4	4	4
	Position 3	7	7	7
	Position 4	10	10	10
	Position 5	12	12	12
	Position 6	15	15	15
	Position 7	20	20	20
	Position 8	24	24	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x	2x	2x
	Position 2	3x	3x	2x
	Position 3	4x	4x	2x
	Position 4	5x	5x	3x
	Position 5	6x	6x	4x
	Position 6	7x	7x	5x
	Position 7	8x	8x	6x
	Position 8	8x	8x	6x
	Position 9	9x	9x	6x
t_{sd} = short delay time I^2t (milliseconds) (LS, LSG)	Fixed	67 at10x	67 at10x	67 at10x
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG) ①	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
I_g = ground fault pickup (amperes) (LSG, LSIG, ALSIG)	Position 1	200	200	200
	Position 2	400	400	400
	Position 3	600	600	600
	Position 4	800	800	800
	Position 5	1000	1000	1000
	Position 6	1200	1200	1200
t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG)	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
Independently Adjustable Instantaneous (I_i) setting (ALSI, ALSIG)	Yes	2.5x, 4x, 6x, 7x, 8x, 11x	2.5x, 4x, 6x, 7x, 8x, 9x	2.5x, 4x, 6x, 7x
Maintenance Mode (remote) pickup (2.5 x I_n) (ALSI, ALSIG) ②	Fixed	2.5x	2.5x	2.5x

Notes

① 50 ms for ALSI and ALSIG trip units.

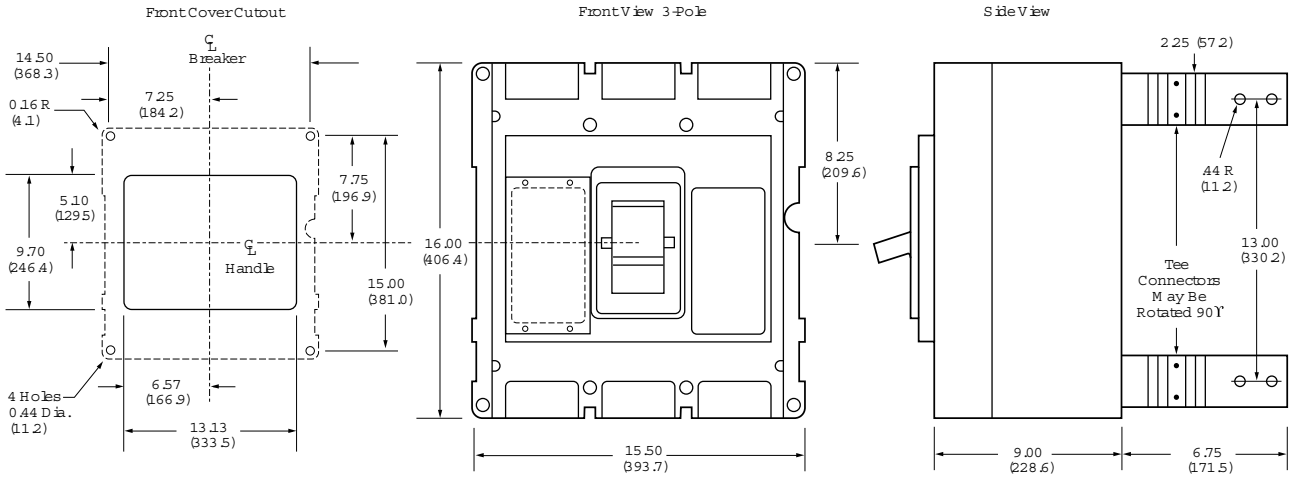
② Maintenance Mode is enabled remotely using a 24 Vdc circuit.

Dimensions and Weights

Approximate Dimensions in Inches (mm)

RG-Frame

Number of Poles	Width	Height	Depth
3	15.50 (393.7)	16.00 (406.4)	9.75 (247.7)
4	20.00 (508.0)	16.00 (406.4)	9.75 (247.7)



Approximate Shipping Weight in Lb (kg)

RG-Frame

Breaker Type	Complete Breaker Number of Poles Three-Pole	Four-Pole
1600 Amperes		
RGH, RGC	102 (46.3)	135 (61.2)
2000 Amperes		
RGH, RGC	102 (46.3)	135 (61.2)
2500 Amperes		
RGH, RGC	135 (61.2)	182 (82.6)

Molded Case Circuit Breakers

Series G

Application Data

Ratings

Frames EG, JG and LG

EG



JG



LG



Maximum rated current (amperes)			125, 160 ①								250						400, 630 ②					
Breaker type ③			B	B	E	S	S	H	H	C	E	S	H	C	U	X	E	S	H	C	U	X
Number of poles			1	2, 3, 4	2, 3, 4	1	2, 3, 4	1	2, 3, 4	3, 4	2, 3, 4	2, 3, 4	2, 3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4
Breaker Capacity (kA rms) Vac 50–60 Hz																						
NEMA®, UL, CSA	240 Vac		25	25	35	85	85	100	100	200	65	85	100	200	200	200	65	85	100	200	200	200
	480 Vac		—	18	25	—	35	—	65	100	25	35	65	100	150	200	35	50	65	100	150	200
	600 Vac ④		—	—	18	—	22	—	25	35	18	18	25	35	50	50	18	25	35	50	65	65
	125/250 Vdc ⑤		10 ⑥	10	10	35 ⑥	35	42 ⑥	42	42	10	22	22	42	50	50	22	22	42	42	50	50
IEC 60947-2	220–240 Vac	I_{cu}	25	25	35	85	85	100	100	200	65	85	100	200	200	200	65	85	100	200	200	200
		I_{cs}	25	25	35	43	43	50	50	200	65	85	100	200	200	200	65	85	100	200	200	200
	380–415 Vac	I_{cu}	—	18	25	—	40	—	70	100	25	40	70	100	150	200	35	50	70	100	150	200
		I_{cs}	—	18	25	—	30	—	35	100	25	40	70	100	150	200	35	50	53	100	150	200
	660–690 Vac	I_{cu}	—	—	—	—	—	—	—	—	12	12	14	16	18	18	12	20	25	30	35	35
		I_{cs}	—	—	—	—	—	—	—	—	6	6	7	12	14	14	6	10	13	15	18	18
	125/250 Vdc ⑤	I_{cu}	10 ⑥	10	10	35 ⑥	35	42 ⑥	42	42	10	22	22	42	50	50	22	22	42	42	50	50
		I_{cs}	10 ⑥	10	10	35 ⑥	35	42 ⑥	42	42	10	22	22	42	50	50	22	22	42	42	50	50
Ampere range			15–160 A ①								20–250 A						100–630 A ②					
Trip Units F = Fixed A = Adjustable T = Thermal M = Magnetic			FT-FM AT-FM								FT-AM AT-AM Electronic (Digitrip RMS 310)						FT-AM AT-AM Electronic (Digitrip RMS 310)					
	Interchangeable		—	—	—	—	—	—	—	—	■	■	■	■	■	■	■	■	■	■	■	■
	Built-in		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Thermal-magnetic	Fixed thermal		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Adjustable thermal		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	Magnetic		Fixed								Adjustable						Adjustable					
Electronic RMS ⑦	LS		—	—	—	—	—	—	—	—	■	■	■	■	■	■	■	■	■	■	■	■
	LSI		—	—	—	—	—	—	—	—	■	■	■	■	■	■	■	■	■	■	■	■
	LSG		—	—	—	—	—	—	—	—	■	■	■	■	■	■	■	■	■	■	■	■
	LSIG		—	—	—	—	—	—	—	—	■	■	■	■	■	■	■	■	■	■	■	■
	ALSI		—	—	—	—	—	—	—	—	—	—	—	—	—	—	■	■	■	■	■	■
	ALSIG		—	—	—	—	—	—	—	—	—	—	—	—	—	—	■	■	■	■	■	■
Utilization category			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A

Notes

① 125 amperes is the maximum UL and CSA rating for the EG.
② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA listed rating for the LG.
③ Breaker type C, U and X are current limiting per UL 489.
④ EG breaker rated 600/347 Vac.
⑤ Two poles in series.
⑥ 125 Vdc only for single-pole breakers.
⑦ Not suitable for DC application. Four-pole ground fault not available.

Shaded area denotes obsolete or discontinued products and services.

Frames NG and RG

NG



RG



Maximum rated current (amperes)			800, 1200	800, 1200	800, 1200	1600 ①	800	1600, 2000, 2500	1600, 2000, 2500
Breaker type			S	H	C ②	S	U	H	C ②
Number of poles			2, 3, 4	2, 3, 4	2, 3, 4	3	3	3, 4	3, 4
Breaker Capacity (kA rms) AC 50–60 Hz									
NEMA, UL, CSA	240 Vac		85	100	200	—	200	125	200
	480 Vac		50	65	100	—	150	65	100
	600 Vac		25	35	65	—	65	50	65
IEC 60947-2	220–240 Vac	I_{cu}	85	100	200	85	—	135	200
		I_{cs}	85	100	100	85	—	100	100
	380–415 Vac	I_{cu}	50	70	100	50	—	70	100
		I_{cs}	50	50	50	50	—	50	50
	660–690 Vac	I_{cu}	20 ③	25 ③	35	20 ③	—	25 ③	35 ③
		I_{cs}	10	13	18	10	—	13	18
	250 Vdc	I_{cu}	—	—	—	—	—	—	—
		I_{cs}	—	—	—	—	—	—	—
Ampere range			400–1200 A	400–1200 A	400–1200 A	1600 A	800 A	800–2500 A	800–2500 A
Trip units			Electronic (Digitrip RMS 310+)					Electronic (Digitrip RMS 310+ and 910)	
	Interchangeable		—	—	—	—	—	■ ⑤	■ ⑤
	Built-in		■	■	■	■	■	■	■
Electronic ④	LI		—	—	—	—	—	■ ⑥	■ ⑥
	LS		■	■	■	■	■	■	■
	LSI		■	■	■	■	■	■	■
	LIG		—	—	—	—	—	■ ⑥	■ ⑥
	LSG		■	■	■	■	■	■	■
	LSIG		■	■	■	■	■	■	■
	ALSI		■	■	■	■	—	■	■
	ALSIG		■	■	■	■	—	■	■
Utilization category			A	A	A	A	A	A	A

Notes

① NG 1600 ampere frame is not UL or CSA listed.
② Not KEMA-KEUR listed.
③ IEC 60947-2 H.5 Annex H is not KEMA-KEUR tested.
④ Not suitable for DC application. Four-pole ground fault not available.
⑤ RG 310+ are interchangeable with the exception of: FROM not ground fault equipped TO ground fault equipped
⑥ Available only on Digitrip 910 trip units.

Shaded area denotes obsolete or discontinued products and services.

General Specifications

All Series G Frames

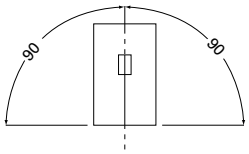
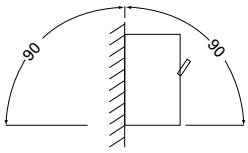
	EG		JG		LG		NG	RG
Maximum rated current I_n depending on the version	160 A ①		250 A		400, 630 A ②		800, 1200, 1600 A ③	1600, 2000, 2500 A
Rated insulation voltage U, according to IEC 60947-2								
Main conducting paths	500 Vac		750 Vac		750 Vac		750 Vac	750 Vac
Auxiliary circuits	500 Vac		690 Vac		690 Vac		690 Vac	690 Vac
Rated impulse withstand voltage U_{imp}								
Main conducting paths	6 kV		8 kV		8 kV		8 kV	8 kV
Auxiliary circuits	4 kV		4 kV		4 kV		4 kV	4 kV
Rated operational voltage U_e								
IEC	415 Vac		690 Vac		690 Vac		690 Vac	690 Vac
NEMA	600Y/347 Vac		600 Vac		600 Vac		600 Vac	600 Vac
UL and CSA listed	Yes ①		Yes		Yes ②		Yes ③	Yes
Permissible ambient temperature	–20 ° to 70 °C		–20 ° to 70 °C		–20 ° to 70 °C		–20 ° to 70 °C	–20 ° to 70 °C
Permissible load for various ambient temperatures close to the circuit breaker, related to the rated current of the circuit breaker	④	⑤	④	⑤	④	⑤	—	—
Circuit breakers for plant protection								
At 40 °C	100%	100%	100%	100%	100%	100%	100%	100%
At 50 °C	96%	92%	96%	94%	96%	91%	91%	91%
At 55 °C	93%	87%	94%	90%	93%	86%	85%	85%
At 60 °C	91%	83%	92%	87%	90%	82%	81%	81%
At 70 °C	86%	73%	88%	80%	84%	70%	70%	70%
Circuit breakers for motor protection								
At 40 °C	—		100%		100%		—	—
At 50 °C	—		100%		100%		—	—
At 55 °C	—		100%		100%		—	—
At 60 °C	—		100%		100%		—	—
At 70 °C	—		90%		90%		—	—
Circuit breakers for starter combinations and isolating circuit breakers								
At 40 °C	100%		100%		100%		100%	100%
At 50 °C	100%		100%		100%		91%	91%
At 55 °C	96%		96%		95%		85%	85%
At 60 °C	91%		82%		90%		81%	81%
At 70 °C	86%		88%		84%		—	—
Rated short-circuit breaking capacity (DC) Not for circuit breakers for motor protection (Time constant t = 10 rms)								
Two conducting paths in series For EG to LG up to 250 Vdc	42 kA max.		42 kA max.		42 kA max.		⑥	⑥
NEMA (time constant t = 8 rms) Two conducting paths in series 250 Vdc	42 kA max.		42 kA max.		42 kA max.		⑥	⑥

Notes

① 125 amperes is the maximum UL and CSA rating for the EG.
② 630 amperes is not a UL or CSA listed rating. 600 amperes is the maximum UL and CSA rating for the LG.
③ 1200 amperes is the maximum UL and CSA rating for the NG.
④ Thermal overload release set to the lower value.
⑤ Thermal overload release set to the upper value.
⑥ Not suitable for DC switching.

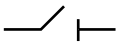
Shaded area denotes obsolete or discontinued products and services.

All Series G Frames, continued

	EG	JG	LG		NG	RG
Main switch characteristics according to IEC 60947-2 in combination with lockable rotary drives	Yes	Yes	Yes		Yes	Yes
Rated short circuit breaking capacity according to IEC 60947-2 (at AC 50/60 Hz)	For rated short circuit breaking capacity, see **Page V12-T3-98**.					
Endurance (operating cycles)	10,000	10,000	8,000		3,000	3,000
Maximum switching frequency	300 1/h	240 1/h	240 1/h		60 1/h	60 1/h
Conductor cross sections and terminal types for main conductors	Box terminals	Box terminals	Box terminals	Flat bar terminals	Flat bar terminals	Flat bar terminals
Solid or stranded	2.5 to 95 mm^2	50 to 150 mm^2	95 to 240 mm^2	—	—	—
Finely stranded with end sleeve	2.5 to 50/70 mm^2	35 to 120 mm^2	70 to 150 mm^2	—	—	—
Bus bar	—	—	—	600 A	Optional	Optional
Tightening torque for box terminals	5.6 Nm	20 Nm	42 Nm	31 Nm	31 Nm	—
Tightening torque for bus bar connection pieces	5.6 Nm	15 Nm	30 Nm	6 Nm	50 Nm	20 Nm
Conductor cross sections for auxiliary circuits with terminal connection or terminal strip						
Solid	0.75 to 2.5 mm^2	0.75 to 2.5 mm^2	0.75 to 2.5 mm^2		Up to 2x4 mm^2	Up to 2x4 mm^2
Finely stranded with end sleeve	0.75 to 2.5 mm^2	0.75 to 2.5 mm^2	0.75 to 2.5 mm^2		Up to 2x2.5 mm^2	Up to 2x2.5 mm^2
With brought-out cable ends	—	0.82 (AWG 18) mm^2	0.82 (AWG 18) mm^2		0.82 (AWG 18) mm^2	0.82 (AWG 18) mm^2
Tightening torque for fitting screws	—	0.8 to 1.4 Nm	0.8 to 1.4 Nm		0.8 to 1.4 Nm	0.8 to 1.4 Nm
Power loss per circuit breaker at maximum rated current I_n (the power losses of the undervoltage releases ("r" releases) must be observed if necessary) at three-phase symmetrical load)			**400 A:**	**600 A:**		
For plant protection	40 W	45 W	65 W	120 W	87/210 W	220/270/400 W
As isolating circuit breaker	40 W	45 W	65 W	120 W	87/210 W	220/270/400 W
For starter combinations	40 W	45 W	65 W	120 W	—	—
For motor protection	—	45 W	65 W	120 W	—	—
Permissible mounting position						
Arc spacing— suitable for reverse-feed applications	Yes (except HMCPE)	Yes	Yes		Yes	Yes
Auxiliary Switches						
Rated thermal current I_{th}	6 A	6 A	6 A		6 A	6 A
Rated making capacity	20 A	20 A	20 A		20 A	20 A
	AC-14	**AC-14**	**AC-14**		**AC-15**	**AC-15**
Rated operational voltage	230/400/600 V	230/400/600 V	230/400/600 V		600 V	600 V
Rated operational current	6/3/0.25 A	6/3/0.25 A	6/3/0.25 A		6A	6A
					DC-13	**DC-13**
Rated operational voltage	125/250 V	125/250 V	125/250 V		125/250 V	125/250 V
Rated operational current	0.5/0.15 A	0.5/0.15 A	0.5/0.15 A		0.5/0.25 A	0.5/0.25 A
Backup fuse	6/4/4 A	(4) 6/4/4 A	(4) 6/4/4 A		(4) 6/4/4 A	(4) 6/4/4 A
Miniature circuit breaker	6/4 A	6/4 A	6/4 A		6/4 A	6/4 A

All Series G Frames, continued

	EG	JG	LG	NG	RG
Releases					
Undervoltage releases ("r" releases)					
Response voltage:					
Drop (breaker tripped) U_s	35–70%	35–70%	35–70%	35–70%	35–70%
Pickup (breaker may be switched on) U_s	85–110%	85–110%	85–110%	85–110%	85–110%
Power consumption in continuous operation at:					
50/60 Hz 12 Vac	—	—	—	1.9 VA	2.9 VA
50/60 Hz 24 Vac	0.72 VA	3.9 VA	3.9 VA	2.4 VA	3.1 VA
50/60 Hz 48–60 Vac	1.15–1.78 VA	2.5–3.8 VA	2.5–3.8 VA	2.3–4.1 VA	3.4–6.0 VA
50/60 Hz 110–127 Vac	0.96–1.25 VA	1.8–2.4 VA	1.8–2.4 VA	3.4–4.2 VA	3.3–3.8 VA
50/60 Hz 208–240 Vac	1.28–1.68 VA	2.7–3.8 VA	2.7–3.8 VA	4.8–6.5 VA	4.2–7.2 VA
50/60 Hz 380–500 Vac	2.2–3.9 VA	3.4–5.8 VA	3.4–5.8 VA	6.8–12.0 VA	3.8–10.0 VA
50/60 Hz 525–600 Vac	3.4–4.3 VA	3.4–4.3 VA	3.4–4.3 VA	—	—
12 Vdc	—	—	—	2.6W	3.4W
24 Vdc	0.70 W	3.1W	3.1W	3.6W	4.3W
48–60 Vdc	1.12–1.76W	2.0–3.1W	2.0–3.1W	3.5–5.5W	4.8–7.2W
110–125 Vdc	0.94–1.21W	1.6–2.2W	1.6–2.2W	2.9–3.6W	3.3–3.8W
220–250 Vdc	1.45–1.86W	3.1–4W	3.1–4W	4.8–6.3W	6.6–7.5W
Maximum opening time	50 ms	50 ms	50 ms	62 ms	62 ms
Shunt Trips					
Shunt trips ("f" releases)					
Response voltage:					
Pickup (breaker tripped) U_s	70–110%	70–110%	70–110%	70–110%	70–110%
Power consumption in (short time) at:					
50/60 Hz 24 Vac	10–41 VA	87–405 VA	87–405 VA	98–475 VA	612 VA
50/60 Hz 48–60 Vac	139–210 VA	710–1105 VA	710–1105 VA	24–50 VA	403–666 VA
50/60 Hz 48–127 Vac	—	—	—	—	—
50/60 Hz 110–240 Vac	83–360 VA	66–432 VA	66–432 VA	67–432 VA	396–1896 VA
50/60 Hz 380–440 Vac	—	127–188 VA	127–188 VA	76–110 VA	1596–2156 VA
50/60 Hz 380–600 Vac	418–1080 VA	—	—	—	—
50/60 Hz 480–600 Vac	—	34–60 VA	34–60 VA	19–42 VA	230–384 VA
12–24 Vdc	29–120 W	164–631 W	164–631 W	145–610 W	396 W
48–60 Vdc	475–720 W	830–1580 W	830–1580 W	67–102 W	341–528 W
110–125 Vdc	99–121 W	112–150 W	112–150 W	121–150 W	264–350 W
220–250 Vdc	—	40–58 W	40–58 W	46–55 W	374–475 W
Maximum load duration	Interrupts automatically	Interrupts automatically	Interrupts automatically	Interrupts automatically	Interrupts automatically
Maximum opening time	50 ms	50 ms	50 ms	62 ms	62 ms
Molded Case Switch (with High Magnetic Trip)					
Unfused kAIC at 480 Vac (415 Vac)	65 (70)	65 (70)	65 (70)	65 (70)	65 (70)
Self-protected, will trip above	1250 for EG125; 1600 for EG160	2500	4000/6300	12,500	20,000



Dimensions and Weights

Approximate Dimensions in Inches (mm)

Series G—Frame EG, JG and LG

	EG			JG			LG		
	H	W	D	H	W	D	H	W	D
Single-pole	5.50 (139.7)	1.00 (25.4)	2.99 (76.0)	—	—	—	—	—	—
Two-pole	5.50 (139.7)	2.00 (50.8)	2.99 (76.0)	7.00 (177.8)	4.13 (105.0)	3.57 (87.4)	—	—	—
Three-pole	5.50 (139.7)	3.00 (76.2)	2.99 (76.0)	7.00 (177.8)	4.13 (105.0)	3.57 (87.4)	10.13 (258.0)	5.48 (140.0)	4.09 (104.0)
Four-pole	5.50 (139.7)	4.00 (101.6)	2.99 (76.0)	7.00 (177.8)	5.34 (135.6)	3.57 (87.4)	10.13 (258.0)	7.22 (183.0)	4.09 (104.0)

Series G—Frame NG and RG

	NG			RG		
	H	W	D	H	W	D
Single-pole	—	—	—	—	—	—
Two-pole	—	—	—	—	—	—
Three-pole	16.00 (406.0)	8.25 (210.0)	5.50 (140.0)	16.00 (406.0)	15.50 (394.0)	9.75 (229.0)
Four-pole	16.00 (406.0)	11.13 (280.0)	5.50 (140.0)	16.00 (406.0)	20.00 (508.0)	9.75 (229.0)

Approximate Shipping Weight in Lb (kg)

Series G—Frame EG, JG and LG

	EG	JG	LG	NG	RG
Single-pole	0.85 (0.39)	—	—	—	—
Two-pole	1.57 (0.71)	11.3 (5.13)	—	—	—
Three-pole	2.28 (1.04)	5.06 (2.30) T/M 5.31 (2.41) ETU	12.36 (5.61) T/M 13.04 (5.92) ETU	46.8 (21.3)	103.0 (47.0)
Four-pole	2.85 (1.29)	6.76 (3.07) T/M 7.12 (3.23) ETU	16.27 (7.39) T/M 16.92 (7.68) ETU	62.0 (28.3)	118.4 (54.0)

Motor Circuit 480 Vac, Protectors



Contents

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EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	**V12-T3-60**
NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP) Product Selection Guide and Ordering Information	**V12-T3-105**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

Motor Circuit Protectors (MCP)

Product Selection Guide and Ordering Information

EG-Frame—480 Vac, 600Y/347 Vac Maximum ①

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes ②	MCP Trip Setting ③	MCP Catalog Number
3	A	0.69 –0.91	9	**HMCPE003A0C**
	B	1.1–1.3	15	
	C	1.6–1.7	21	
	D	2.0–2.2	27	
	E	2.3–2.5	30	
	F	2.6– 2.8	33	
7	A	1.5–2.0	21	**HMCPE007C0C**
	B	2.6–3.1	35	
	C	3.7–3.9	49	
	D	4.8–5.2	63	
	E	5.3–5.7	70	
	F	5.8–6.1	77	
15	A	3.4–4.5	45	**HMCPE015E0C**
	B	5.7–6.8	75	
	C	8.0–9.1	105	
	D	10.4–11.4	135	
	E	11.5–12.6	150	
	F	12.7–13.0	165	
30	A	3.9–9.1	90	**HMCPE030H1C**
	B	11.5–13.7	150	
	C	16.1–18.3	210	
	D	20.7–22.9	270	
	E	23.0–25.2	300	
	F	25.3–26.1	330	

Notes

① UL listed for use with Eaton Motor Starters.

② Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

③ For DC applications, actual trip levels are approximately 40% higher than values shown.

EG-Frame—480 Vac, 600Y/347 Vac Maximum, continued ①

Continuous Amperes	Cam Setting	Motor Full Load Current Amperes ②	MCP Trip Setting ③	MCP Catalog Number
50	A	11.5–15.2	150	**HMCPE050K2C**
	B	19.2–22.9	250	
	C	26.9–30.6	350	
	D	34.6–38.3	450	
	E	38.4–42.1	500	
	F	42.2–43.5	550	
70	A	16.1–30.6	210	**HMCPE070M2C**
	B	26.9–32.2	350	
	C	37.6–42.9	490	
	D	48.4–53.7	630	
	E	53.8–59.1	700	
	F	59.2–60.9	770	
100	A	23.0–30.6	300	**HMCPE100R3C**
	B	38.4–46.0	500	
	C	53.8–61.4	700	
	D	69.2–76.8	900	
	E	76.9–84.5	1000	
	F	84.6–87.0	1100	
100	A	38.4–46.0	500	**HMCPE100T3C**
	B	57.6–65.2	750	
	C	76.9–84.5	1000	
	D	④	1250	
	E	④	1375	
	F	④	1500	

JG-Frame—600 Vac Maximum, 250 Vdc Maximum ①

Continuous Amperes	MCP Trip Range (Amperes)	MCP Catalog Number
250	500–1000	**HMCPJ250D5L**
	625–1250	**HMCPJ250F5L**
	750–1500	**HMCPJ250G5L**
	875–1750	**HMCPJ250J5L**
	1000–2000	**HMCPJ250K5L**
	1125–2250	**HMCPJ250L5L**
	1250–2500	**HMCPJ250W5L**

Notes

① UL listed for use with Eaton Motor Starters.

② Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

③ For DC applications, actual trip levels are approximately 40% higher than values shown.

④ Settings above 10 x I_n are for special applications. Where the ampere rating of the disconnecting means cannot be less than 115% of the motor full load ampere rating.

LG-Frame—600 Vac Maximum, 250 Vdc Maximum ①

Continuous Amperes	MCP Trip Range (Amperes)	MCP Catalog Number
600	1250–2500	**HMCPL600L6G**
	1500–3000	**HMCPL600N6G**
	1750–3500	**HMCPL600R6G**
	2000–4000	**HMCPL600X6G**
	2250–4500	**HMCPL600Y6G**
	2500–5000	**HMCPL600P6G**
	3000–6000	**HMCPL600M6G**

Notes

① UL listed for use with Eaton Motor Starters.

800 and 1200 ampere, 600 Vac maximum motor circuit protectors are available as Series C HMCP product.

Molded Case Circuit Breakers

Series G

Series G Motor Protector Circuit Breakers (MPCB)



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NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	
Product Selection	**V12-T3-109**
Technical Data and Specifications	**V12-T3-110**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

Motor Protector Circuit Breakers (MPCB)

Product Description

- Eliminates need for separate overload relay

Application Description

- Can be used with contactor to eliminate need for overload relay and still create manual motor control
- Meets requirement for motor branch protection, including:
  - Disconnecting means
  - Branch circuit short circuit protection
  - Overload protection

Features and Benefits

- Phase unbalance protection
- Phase loss protection
- Hot trip/cold trip
- High load alarm
- Pre-detection trip relay option
- Class 10, 15, 20, 30 protection

Standards and Certifications

- IEC 60947-2
- UL 489 100% rated
- UL 508
- CSA C22.2

Listed

Product Selection

JGMP Catalog Numbers

Continuous Amperes	35 kAIC Catalog Number	65 kAIC Catalog Number
50	**JGMPS050G**	**JGMPH050G**
100	**JGMPS100G**	**JGMPH100G**
160	**JGMPS160G**	**JGMPH160G**
250	**JGMPS250G**	**JGMPH250G**

JGMP FLA Ie Dial Setting

Continuous Amperes	A	B	C	D	E	F	G	H
50	20	20	25	30	32	40	45	50
100	40	45	50	63	70	80	90	100
160	63	80	90	100	110	125	150	160
250	100	125	150	160	175	200	225	250

LGMP Catalog Numbers

Continuous Amperes	50 kAIC Catalog Number	65 kAIC Catalog Number
250	**LGMPS250G**	**LGMPH250G**
400	**LGMPS400G**	**LGMPH400G**
600	**LGMPS600G**	**LGMPH600G**
630 ①	**LGMPS630G**	**LGMPH630G**

LGMP FLA Ie Dial Setting

Continuous Amperes	A	B	C	D	E	F	G	H
250	100	125	150	160	175	200	225	250
400	160	200	225	250	300	315	350	400
600	250	300	315	350	400	450	500	600
630 ①	250	300	315	350	400	500	600	630

Notes

① 630 amperes is not a UL listed rating. 600 amperes is the maximum UL or CSA for LG breaker.

For pre-trip alarm option, order Style Number 5721B31G02.

For additional breaker solutions, see **Page V12-T3-275**.

Technical Data and Specifications

JGMPS and JGMPH Rating and Ampere Range

Breaker Capacity (kA rms) AC 50–60 Hz			Maximum Rated Current—250 A Breaker Type JGMPS	JGMPH
IEC 60947-2	220–240 Vac	I cu	85	100
		I cs	85	100
	380–415 Vac	I cu	40	70
		I cs	40	70
	660–690 Vac	I cu	12	14
		I cs	6	7
NEMA UL 489	240 Vac		85	100
	480 Vac		35	65
	600 Vac		25	35
Number of poles			3	3
Ampere range			50–250	50 –250

LGMPS and LGMPH Rating and Ampere Range

Breaker Capacity (kA rms) AC 50–60 Hz			Maximum Rated Current—630 A ① Breaker Type LGMPS	LGMPH
IEC 60947-2	220–240 Vac	I cu	85	100
		I cs	85	100
	380–415 Vac	I cu	50	70
		I cs	50	53
	660–690 Vac	I cu	20	25
		I cs	10	13
NEMA UL 489	240 Vac		85	100
	480 Vac		50	65
	600 Vac		25	35
Number of poles			3	3
Ampere range			250–630 ①	250 –630 ①

Notes

① 630 amperes is not a UL listed rating. 600 amperes is the maximum UL or CSA for LG breaker.

For pre-trip alarm option, order Style Number 5721B31G02.



Clockwise from Left:
JG, LG, EG MCCBs Shown with
Ground Fault (Earth Leakage) Module

Contents

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EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
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Dimensions	**V12-T3-113**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
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30 mA Ground Fault (Earth Leakage) Module

Product Description

Eaton offers three- and four-pole 30 mA ground fault (earth leakage) protection modules for Series G E-, J- and L-frame molded case circuit breakers (MCCBs). Separate UL listed and IEC rated devices are available for each frame.

The modules are bottom mounted and are available for each frame circuits up to:

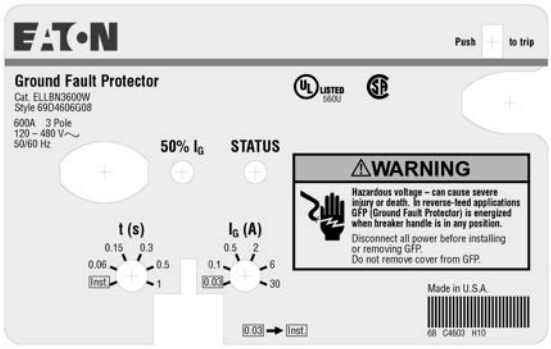
- EG: 125 amperes
- JG: 150 (UL), 160 (IEC) or 250 amperes
- LG: 400, 600 (UL) or 630 (IEC) amperes

The module is completely self contained, including a current sensor, relay and power supply inside the device. Current pickup settings are selectable from 0.03 to 10 amperes for all devices, except for the UL listed module, for which settings are selectable from 0.03 to 30 amperes. Time delays are also selectable from Instantaneous to 1.0 second for pickup settings of 0.10 amperes and above. The current pickup setting of 0.03 amperes defaults to an Instantaneous time setting regardless of the time dial's position.

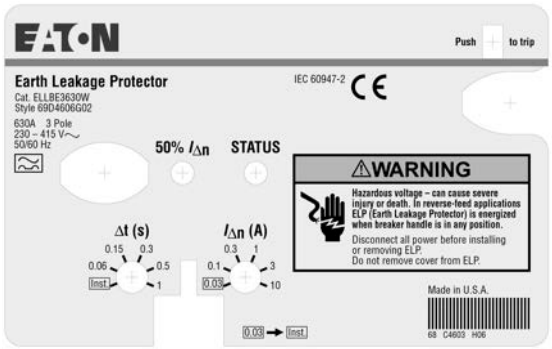
Two alarm contacts are included with each device, which can be wired externally for remote indication. Both of these are also indicated by an LED on the front of the device:

1. 50% pre-trip: alarms when the earth leakage current reaches 50% of the set pickup setting value.
2. 100% after trip: alarms when the breaker reaches the set pickup setting value and the breaker trips.

UL-Rated LG-Frame Earth Leakage Module Faceplate



IEC-Rated LG-Frame Earth Leakage Module Faceplate



Product Selection

EG-Frame



EG-Frame Ground Fault Modules, UL-Rated (Bottom Mounted, 120–480 Vac, 50/60 Hz) ①

Ampere Rating	Number of Poles	Catalog Number
125	3	**ELEBN3125G**
125	4	**ELEBN4125G**

EG-Frame Earth Leakage Modules, IEC-Rated (Bottom Mounted, 230–415 Vac, 50/60 Hz)

Ampere Rating	Number of Poles	Catalog Number
125	3	**ELEBE3125G**
125	4	**ELEBE4125G**

JG-Frame



JG-Frame Ground Fault Modules, UL-Rated (Bottom Mounted, 120–480 Vac, 50/60 Hz)

Ampere Rating	Number of Poles	Catalog Number
150	3	**ELJBN3150W**
150	4	**ELJBN4150W**
250	3	**ELJBN3250W**
250	4	**ELJBN4250W**

JG-Frame Earth Leakage Modules, IEC-Rated (Bottom Mounted, 230–415 Vac, 50/60 Hz)

Ampere Rating	Number of Poles	Catalog Number
160	3	**ELJBE3160W**
160	4	**ELJBE4160W**
250	3	**ELJBE3250W**
250	4	**ELJBE4250W**

Note

① Shunt trip and undervoltage release cannot be used in an EG breaker connected to an earth leakage module.

LG-Frame



LG-Frame Ground Fault Modules, UL-Rated (Bottom Mounted, 120–480 Vac, 50/60 Hz)

Ampere Rating	Number of Poles	Catalog Number
400	3	**ELLBN3400W**
400	4	**ELLBN4400W**
600	3	**ELLBN3600W**
600	4	**ELLBN4600W**

LG-Frame Earth Leakage Modules, IEC-Rated (Bottom Mounted, 230–415 Vac, 50/60 Hz)

Ampere Rating	Number of Poles	Catalog Number
400	3	**ELLBE3400W**
400	4	**ELLBE4400W**
630	3	**ELLBE3630W**
630	4	**ELLBE4630W**

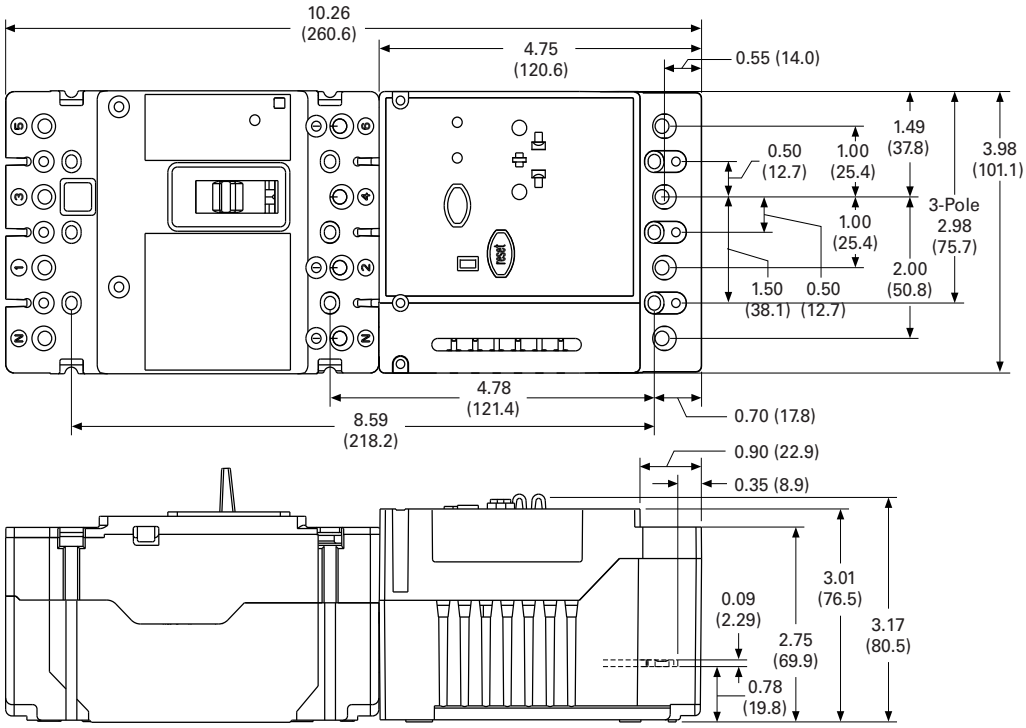
Dimensions

Approximate Dimensions in Inches (mm)

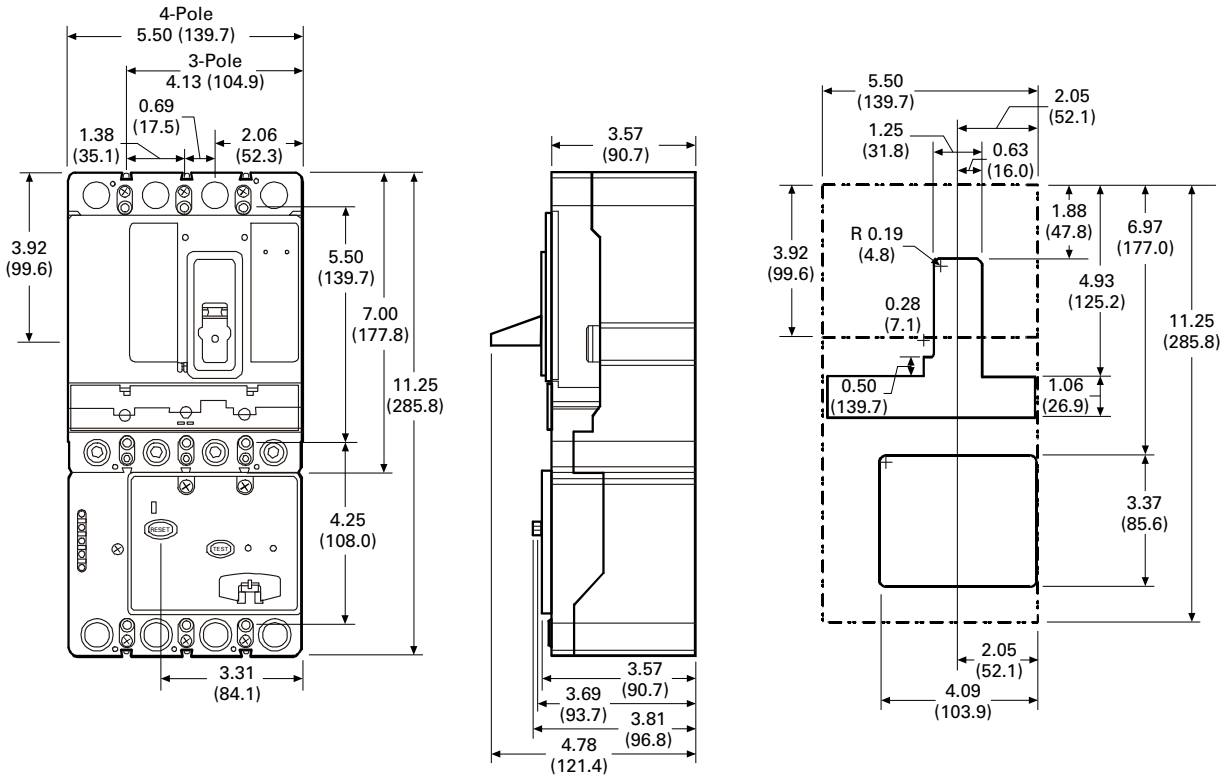
Assembled Breaker and Earth Leakage Module

Frame	Height	Width	Depth
Three-Pole			
EG	10.25 (260.3)	3.00 (76.2)	2.98 (75.8)
JG	11.25 (285.8)	4.13 (104.9)	3.57 (90.7)
LG	15.38 (390.7)	5.48 (139.2)	4.06 (103.1)
Four-Pole			
EG	10.25 (260.3)	4.00 (101.6)	2.98 (75.8)
JG	11.25 (285.8)	5.50 (139.7)	3.57 (90.7)
LG	15.38 (390.7)	7.23 (183.6)	4.06 (103.1)

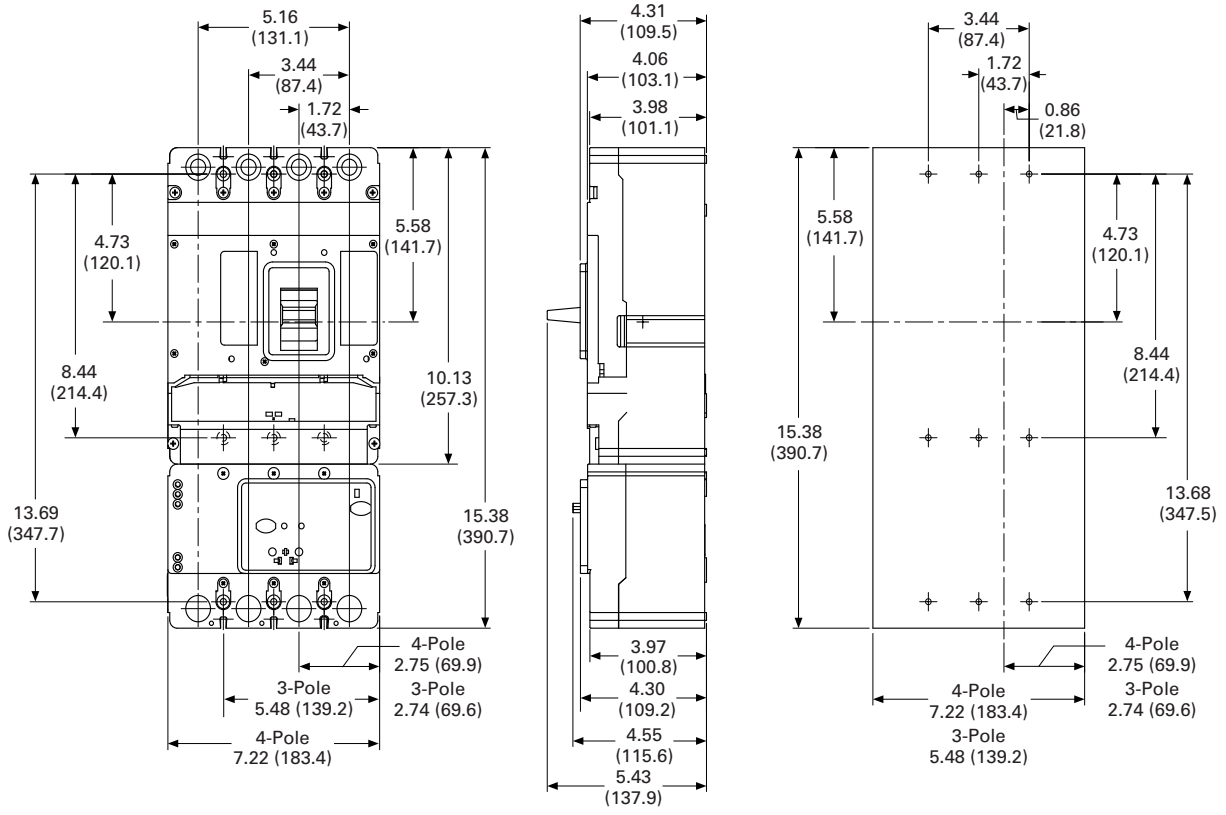
EG-Frame With Earth Leakage Module



JG-Frame With Earth Leakage Module



LG-Frame With Earth Leakage Module



Current-Limiting Circuit Breaker Modules



Contents

Description	*Page*
EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	**V12-T3-60**
NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	
Product Selection	**V12-T3-116**
Technical Data	**V12-T3-117**
Dimensions and Weights	**V12-T3-117**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

Current-Limiting Circuit Breaker Module

Product Overview

Power demand continues to grow in new and existing facilities. To meet increased demand, larger utility supplies, spot networks and large facility transformers are installed. The increased capacity of the electrical source results in increased fault currents in excess of 100 kA short-circuit protection. Eaton manufactures non-fused current-limiting modules with interrupting capacities up to 200 kA at 600 Vac or 70 kA at 690 Vac. Unlike fused current limiters with a one-time use, a current limiter module provides an automatic reset of the module after a short-circuit event. Resetting the molded-case circuit breaker is the only action required to restore critical power to the system; there is no time wasted with sourcing the correct replacement fuses or module to bring system back online.

Product Description

The current-limiting breaker modules use a unique contact design to enhance the system protection similar to that of the circuit breaker. When high short-circuit current is flowing through the contacts of these modules, the design results in very high interrupting capacities and improved current-limiting characteristics.

Application Description

High-performance breakers are most commonly applied when very high fault levels are available and with applications where the current-limiting capability is used upstream of the final load to limit current. Typical loads include lighting, power distribution, and motor control applications.

Features and Benefits

Superior system protection:

- Auto reset improves system uptime and eliminates the need for finding replacement parts
- No fuses to replace, reducing the overall cost of ownership and the waste created by fuses
- Overloads, by using inverse time current tripping characteristics of the molded-case circuit breaker
- Low-level short circuits, by using instantaneous and/or short-time delay tripping characteristics of the molded-case circuit breaker
- High-level short circuits, by using ultra-high-speed, blow-apart contacts of the current-limiting module in series with the circuit breaker contacts
- Let-through currents, by improved opening speed of the contacts, the resultant rapid rise of arc voltage introduces impedance into the system

Standards and Certifications

- IEC 60947-2
- UL 489
- CSA C22.2

Listed

Product Selection

Series G High Performance Family Offering

Type	Product	Amperes	480 Vac (UL)	600 Vac (UL)	415 Vac (IEC) I_{cu}	415 Vac (IEC) I_{cs}	690 Vac (IEC) I_{cu}	690 Vac (IEC) I_{cs}
EGC 3P thermal-magnetic	Breaker only	15–125	100	35 ①	100	100	—	—
	With limiter	15–100	150	100 ①	150	150	—	—
JG 3P thermal-magnetic	Breaker only	70–250	200	50	200	200	18	14
	With limiter	70–225	200	200	200	150	70	18
JG 3P electronic	Breaker only	20–250	200	50	200	200	18	14
	With limiter	100–250	200	200	200	150	70	18
LG 3P thermal-magnetic	Breaker only	250–600	200	65	200	200	35	18
LG 3P electronic	Breaker only	100–600	200	65	200	200	35	18

EG-Frame



EG IC Rating—150 kAIC at 415 and 480 Vac

UL Listed (NEMA/IEC Rated) Base Molded Case Circuit Breaker	Breaker with Line Side Mounted Current Limiter	Breaker with Load Side Mounted Current Limiter	Line and Load Terminations Included ②	Interphase Barrier Included for Limiter
EGC3015FFG	**EGC3015FFGQ01**	**EGC3015FFGQ02**	**T125EF**	**EIPBSK**
EGC3016FFG	**EGC3016FFGQ01**	**EGC3016FFGQ02**	**T125EF**	**EIPBSK**
EGC3020FFG	**EGC3020FFGQ01**	**EGC3020FFGQ02**	**T125EF**	**EIPBSK**
EGC3025FFG	**EGC3025FFGQ01**	**EGC3025FFGQ02**	**T125EF**	**EIPBSK**
EGC3030FFG	**EGC3030FFGQ01**	**EGC3030FFGQ02**	**T125EF**	**EIPBSK**
EGC3032FFG	**EGC3032FFGQ01**	**EGC3032FFGQ02**	**T125EF**	**EIPBSK**
EGC3035FFG	**EGC3035FFGQ01**	**EGC3035FFGQ02**	**T125EF**	**EIPBSK**
EGC3040FFG	**EGC3040FFGQ01**	**EGC3040FFGQ02**	**T125EF**	**EIPBSK**
EGC3045FFG	**EGC3045FFGQ01**	**EGC3045FFGQ02**	**T125EF**	**EIPBSK**
EGC3050FFG	**EGC3050FFGQ01**	**EGC3050FFGQ02**	**T125EF**	**EIPBSK**
EGC3060FFG	**EGC3060FFGQ01**	**EGC3060FFGQ02**	**T125EF**	**EIPBSK**
EGC3063FFG	**EGC3063FFGQ01**	**EGC3063FFGQ02**	**T125EF**	**EIPBSK**
EGC3070FFG	**EGC3070FFGQ01**	**EGC3070FFGQ02**	**T125EF**	**EIPBSK**
EGC3080FFG	**EGC3080FFGQ01**	**EGC3080FFGQ02**	**T125EF**	**EIPBSK**
EGC3090FFG	**EGC3090FFGQ01**	**EGC3090FFGQ02**	**T125EF**	**EIPBSK**
EGC3100FFG	**EGC3100FFGQ01**	**EGC3100FFGQ02**	**T125EF**	**EIPBSK**

Notes

① 600Y/347 V.

② Two interphase barriers included on line end mounted limiter; (2) line end of limiter. Four interphase barriers included on load end mounted limiter; (2) line end of breaker (2) load end of limiter.

Technical Data

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
EGC…Q	240 V/150 kA	21.80	0.277
EGC…Q	480 V/150 kA	21.80	0.277
EGC…Q	600 V/100 kA	22.60	0.387

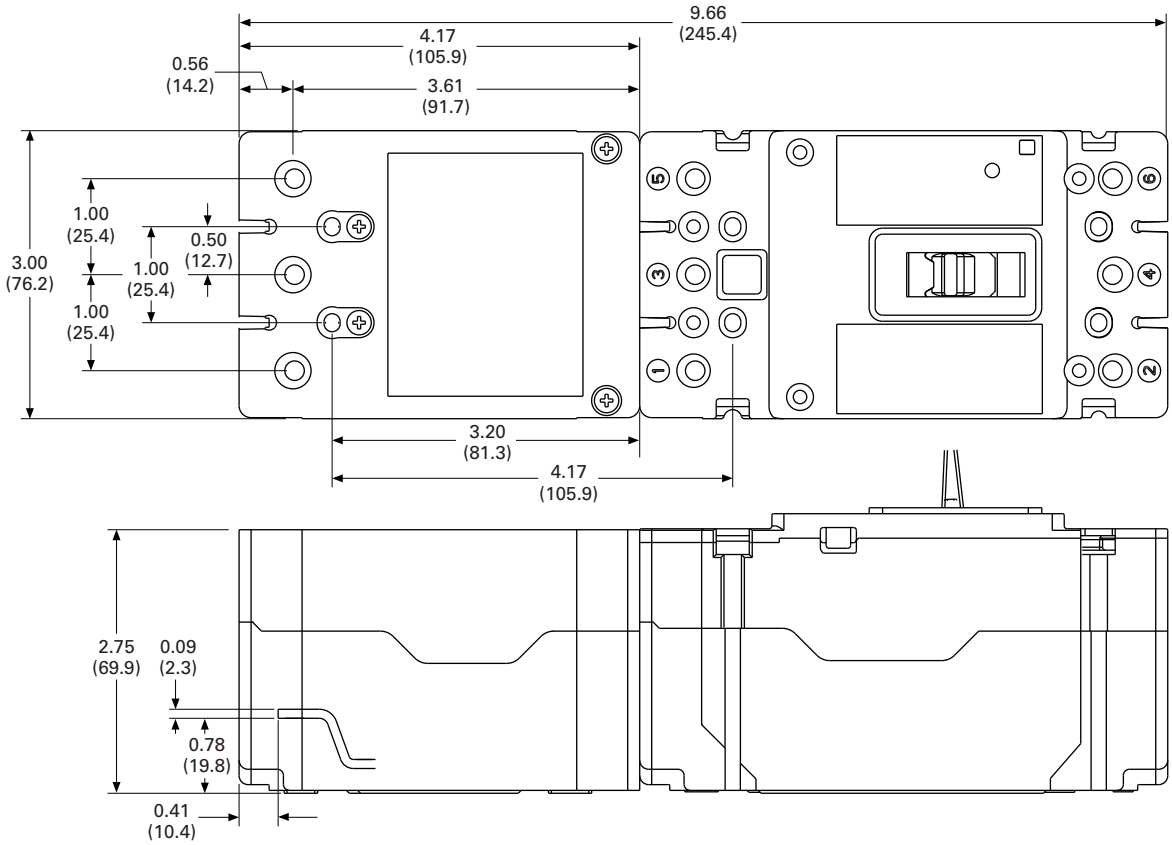
Dimensions and Weights

Approximate Dimensions in Inches (mm)

Assembled Breaker and Current-Limiting Module

Frame	Height	Width	Depth	Weight in lb (kg)
EG	9.66 (245.7)	3.00 (76.2)	2.98 (75.8)	2.91 (1.32)
HMCP	9.66 (245.7)	3.00 (76.2)	2.98 (75.8)	4.18 (1.90)

EG-Frame With Current Limiter Module



Molded Case Circuit Breakers

Series G

JG Frame



JG IC Rating—200 kAIC at 600 Vac and 70 kAIC at 690 Vac

Ampere Rating	Magnetic Range	UL Listed, IEC Rated Breaker With Line Side Mounted Current Limiter ①	UL Listed, IEC Rated Breaker With Load Side Mounted Current Limiter ②	IEC Rated Breaker With Line Side Mounted Current Limiter ①	IEC Rated Breaker With Load Side Mounted Current Limiter ②
		Fixed Thermal, Adjustable Magnetic		**Adjustable Thermal, Adjustable Magnetic**	
70	350–700	**JGH3070FAGQ01**	**JGH3070FAGQ02**	—	—
90	450–900	**JGH3090FAGQ01**	**JGH3090FAGQ02**	—	—
100	500–1000	**JGH3100FAGQ01**	**JGH3100FAGQ02**	**JGH3100AAGQ01**	**JGH3100AAGQ02**
125	625–1250	**JGH3125FAGQ01**	**JGH3125FAGQ02**	**JGH3125AAGQ01**	**JGH3125AAGQ02**
150	750–1550	**JGH3150FAGQ01**	**JGH3150FAGQ02**	—	—
160	800–1600	—	—	**JGH3160AAGQ01**	**JGH3160AAGQ02**
175	875–1750	**JGH3175FAGQ01**	**JGH3175FAGQ02**	—	—
200	1000–2000	**JGH3200FAGQ01**	**JGH3200FAGQ02**	**JGH3200AAGQ01**	**JGH3200AAGQ02**
225	1125–2250	**JGH3225FAGQ01**	**JGH3225FAGQ02**	—	—
		Electronic Trip LS			
250	—	**JGH325033GQ01**	**JGH325033GQ02**	—	—
		Electronic Trip LSI			
250	—	**JGH325032GQ01**	**JGH325032GQ02**	—	—
		Electronic Trip LSG			
250	—	**JGH325035GQ01**	**JGH325035GQ02**	—	—
		Electronic Trip LSIG			
250	—	**JGH325036GQ01**	**JGH325036GQ02**	—	—

Series G HMCP

Ampere Rating	Motor Circuit Protector with Line Side Mounted Current Limiter	Breaker with Load Side Mounted Current Limiter
250	**HMCPJ250D5LQ01**	**HMCPJ250D5LQ02**
250	**HMCPJ250F5LQ01**	**HMCPJ250F5LQ02**
250	**HMCPJ250G5LQ01**	**HMCPJ250G5LQ02**
250	**HMCPJ250J5LQ01**	**HMCPJ250J5LQ02**
250	**HMCPJ250K5LQ01**	**HMCPJ250K5LQ02**
250	**HMCPJ250L5LQ01**	**HMCPJ250L5LQ02**

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Metric Wire Range mm^2	AWG Wire Range/ Number of Conductors	Catalog Number
Standard Pressure Type Terminals					
250	Aluminum	Cu/Al	10–185	#8–350 (1)	**TA250FJ** ②

Notes

① Two interphase barriers provided, mounted on line end of limiter, catalog number **FJIPBK**.

② Four interphase barriers provided, (2) line end of breaker, (2) load end of limiter.

③ Line and load terminals included with products listed above.

Specifications

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
JGH…Q	240 V/200 kA	48.60	2.47
JGH…Q	480 V/200 kA	48.60	2.47
JGH…Q	600 V/200 kA	48.60	2.47

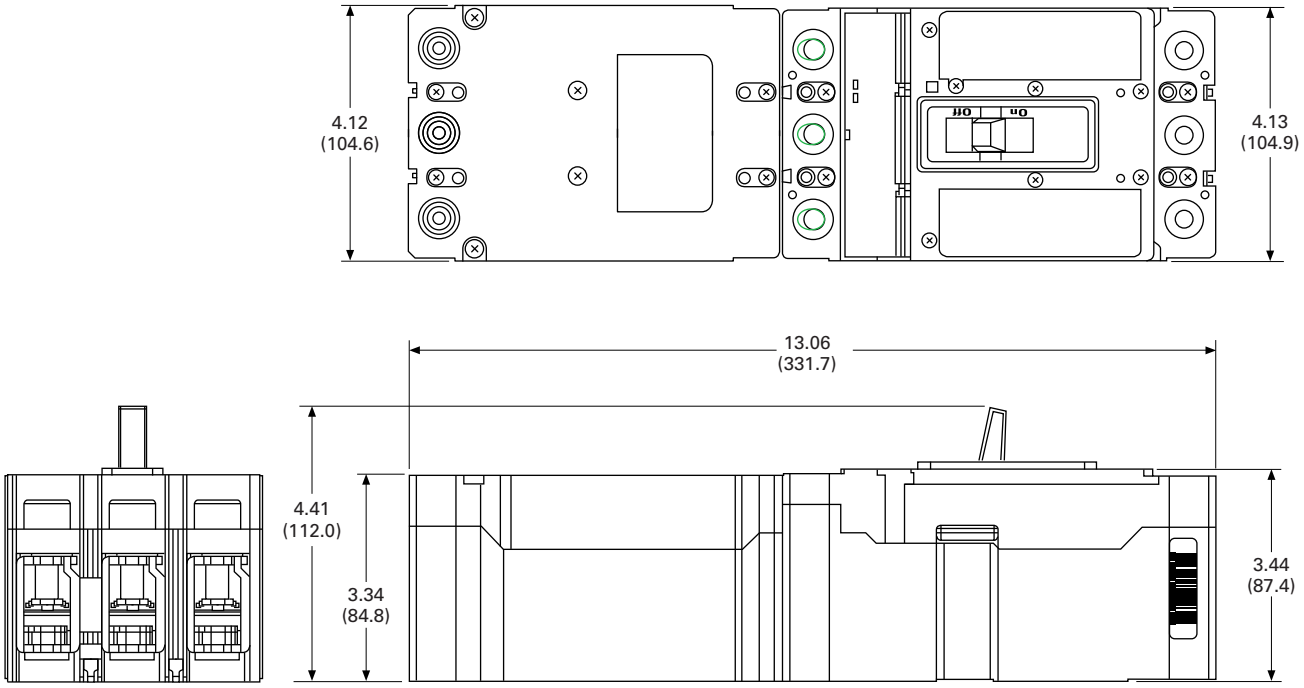
Dimensions and Weights

Approximate Dimensions in Inches (mm)

Assembled Breaker and Current-Limiting Module

Frame	Height	Width	Depth	Weight in lb (kg)
JG + limiter	13.06 (331.7)	4.13 (104.9)	3.44 (87.4)	9.87 (4.48)
HMCP	13.06 (331.7)	4.13 (104.9)	3.44 (87.4)	9.87 (4.48)

JG-Frame With Current Limiter Module



High Instantaneous Circuit Breaker for Selective Coordination



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JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	**V12-T3-60**
NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	
Product Selection	**V12-T3-121**
Technical Data and Specifications	**V12-T3-122**
Dimensions	**V12-T3-122**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

High Instantaneous Circuit Breaker for Selective Coordination

Product Description

Eaton offers high-magnetic withstand molded case circuit breakers, specifically designed for critical operations and selective coordination requirements. The high-magnetic withstand LHH and NHH frames continue the legacy of circuit breaker innovation for which Eaton is recognized throughout the world. The LHH and NHH breakers are equipped with 125 to 400 ampere trip units with high-magnetic capability. This design enables the breakers to withstand up to 90 times rated current before opening under short-circuit conditions.

The LHH and NHH circuit breakers incorporate a higher level of instantaneous pickup, thus allowing for higher current levels of selective coordination. Standard molded case circuit breakers typically are furnished with a magnetic pickup or electronic instantaneous adjustment or instantaneous override set at 10 times (10x) the continuous trip rating.

Features, Benefits and Functions

Eaton's new LHH and NHH molded case circuit breakers are furnished with a higher level of magnetic pickup or electronic instantaneous settings as indicated in table on **Page V12-T3-122**. These higher levels of magnetic pickup and electronic instantaneous values in turn allow the system designer to obtain selective coordination at fault current levels up to these higher ratings. Greater values of selective coordination are available based on manufacturer tested combinations using the LHH and NHH as line-side breakers and standard breakers as load-side devices. Refer to IA01200002E to determine the maximum fault values that selective coordination achieves. When the line-side and load-side molded case circuit breaker trip ratings are chosen to coordinate in the overload range, they also can be selectively coordinated in the fault range up to the values listed in the table on **Page V12-T3-122** or IA01200002E.

For overcurrents protected by circuit breakers on the load-side of the LHH or NHH, only the effected load-side circuit breaker will open, while the line-side LHH and/or NHH circuit breakers remain closed, thus providing continuity of power to the other critical loads supplied by the LHH or NHH circuit breakers.

Benefits of Using the LHH and NHH Molded Case Circuit Breakers

Customer expectations and codes are driving product development to protect customers' critical operations. NEC® 2005 and 2008 requires circuits with elevators, emergency systems, legally required standby systems, health care essential systems and critical operation power systems to be selectively coordinated. Simply stated, only the closest protective device directly protecting the circuit having an overcurrent (overload or fault) condition should open.

Shaded area denotes obsolete or discontinued products and services.

Proven Technology and Performance

The LHH is based on the Series G L-Frame circuit breaker, sharing the same small footprint and field-fit accessories as the L-Frame breaker. The NHH is based on the Series G N-Frame circuit breaker and shares the same footprint and accessories as the N-Frame breaker. NHH accessories must be factory installed.

The LHH incorporates a thermal-magnetic trip unit with fixed thermal and fixed magnetic settings. The NHH has an OPTIM™ electronic trip unit with LSI adjustment capabilities. The instantaneous setting is adjustable from 1000–4000 A or may be turned off to default to the frame override of 14,000 A. A hand-held OPTIMizer must be used with the NHH to adjust short-time delay and instantaneous, however, the long delay pickup is fixed and cannot be adjusted.

The LHH and NHH breakers are available in Eaton's panelboards and switchboards.

Standards and Certifications

- UL
- CSA

Listed

Product Selection

LHH



LHH and NHH Catalog Numbers

AmpereRating	Thermal-Magnetic Trip Unit LHH Frame	LSI Electronic Trip Unit NHH Frame
125	**LHH3125FFG**	—
150	**LHH3150FFG**	**NHH3150T52X15**
175	**LHH3175FFG**	**NHH3175T52X15**
200	**LHH3200FFG**	**NHH3200T52X15**
225	**LHH3225FFG**	**NHH3225T52X15**
250	**LHH3250FFG**	**NHH3250T52X15**
300	**LHH3300FFG**	**NHH3300T52X15**
350	**LHH3350FFG**	**NHH3350T52X15**
400	**LHH3400FFG**	—

Molded Case Circuit Breakers

Series G

Technical Data and Specifications

- Three-pole
- 65 kAIC at 480 Vac
- 125–400 ampere LHH
- 150–350 ampere NHH
- Trip units:
- LHH—thermal-magnetic
- NHH—LSI electronic trip unit
- No rating plugs required
- Factory-sealed breakers
- LHH uses same internal and external accessories as standard Series G L-Frame circuit breaker
- NHH uses same internal and external accessories as standard Series G N-Frame circuit breaker

LHH and NHH Electrical Characteristics

Short-Circuit Current Ratings (kA rms) AC 50–60 Hz

Description	Breaker Type LHH	NHH
Max. rated current (amperes)	400	350
NEMA UL 489		
240 Vac	100	100
480 Vac	65	65
600 Vac	35	35
250 Vac	42	—
IEC 60947-2		
220 Vac	100	100
415 Vac	70	70
690 Vac	25	25
125/250 Vdc	22	—
Number of poles	3	3
Ampere range	125–400 A	150–350 A

Continuous Current Ratings

Continuous Current Rating (I_r)	Magnetic Trip Point	Continuous Current Multiplier	Instantaneous Trip Point	Continuous Current Multiplier	Short Delay Pickup
125 A	2500 A	20x	—	—	—
150 A	2500 A	16x	14,000 A	93x	225–1200 A
175 A	4000 A	22x	14,000 A	80x	260–1400 A
200 A	4000 A	20x	14,000 A	70x	300–1600 A
225 A	6000 A	26x	14,000 A	62x	338–1800 A
250 A	6000 A	24x	14,000 A	56x	375–2000 A
300 A	6000 A	20x	14,000 A	47x	450–2400 A
350 A	6000 A	17x	14,000 A	40x	525–2800 A
400 A	6000 A	15x	—	—	—

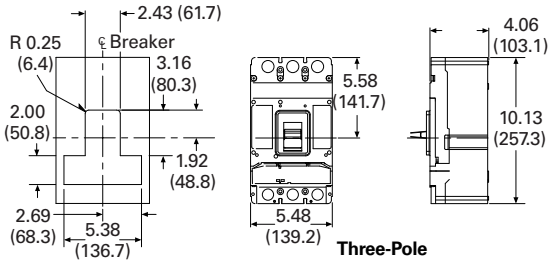
Dimensions

Approximate Dimensions in Inches (mm)

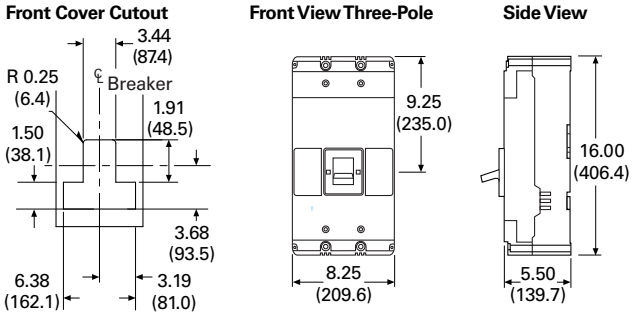
Dimensions

Description	Height	Width	Depth	Weight in Lb (kg)
LHH	10.13 (257.3)	5.48 (139.2)	4.09 (103.9)	12.36 (5.6)
NHH	16.00 (406.4)	8.25 (209.5)	5.50 (139.7)	46.80 (21.2)

L-Frame



N-Frame



Contents

Description	*Page*
EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	**V12-T3-60**
NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	
Internal Accessories	**V12-T3-125**
External Accessories and Test Kit	**V12-T3-126**
Accessories	**V12-T3-128**
Motor Operators	**V12-T3-131**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

Special Features and Accessories

Eaton's molded case circuit breakers are designed to provide circuit protection for low-voltage distribution systems. They are described by NEMA as, "... a device for closing and interrupting a circuit between separable contacts under both normal and abnormal conditions," and furthermore as, "... a breaker assembled as an integral unit in a supporting and enclosing housing of insulating material." The National Electrical Code (NEC) describes them as, "A device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating."

So designed, Eaton circuit breakers protect conductors against overloads and conductors and connected apparatus, such as motors and motor starters, against short circuits.

In low-voltage distribution systems, there are many varied applications of molded case circuit breakers. Eaton offers the most comprehensive family of molded case circuit breakers in the industry.

This section of circuit breakers includes:

- Thermal-magnetic trip breakers
- Electronic rms trip breakers
- Molded case switches
- Motor circuit protectors
- Current-limiting breakers
- Special application breakers

Modified Breakers

Eaton breakers can be ordered with internal accessories installed. These modified breakers will be subject to an addition charge.

Special Calibration

Special non-UL listed calibrations are available for certain ambient temperatures other than 40 °C and for frequencies other than 50/60 Hz or DC. Reduced interrupting ratings will apply for 400 Hz applications.

- Add suffix H01 to breaker catalog number for 400 Hz rating

50 °C Calibration

Note: Breakers equipped with electronic trip units can operate reliably in ambient temperatures of 50 °C. Add suffix "V3" to NG MCCBs to remove standard 40 °C labeling.

Add suffix "V" to catalog number for complete thermal-magnetic breaker when ordering listed ampere ratings for breakers to be used in 50 °C ambients. 50 °C ambient MCCBs are not UL listed.

Contact Eaton for availability.

Calibrations and Treatment

Description	Frame EG	JG	LG	NG	RG
Special calibration	■	■	■	■	■
Moisture-fungus treatment	■	■	■	■	■

Moisture-Fungus Treatment

All Eaton circuit breaker cases are molded from glass-polyester, which does not support the growth of fungus. Any parts that are susceptible to the growth of fungus will require special treatment.

Order by description.

- Add suffix J01 to breaker catalog number

Freeze-Tested Circuit Breakers

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at –40 °C.

- Add suffix F01 to catalog number –57 °F, F02 –30 °F

Marine Applications

E- to R-Framed circuit breakers can be supplied to meet the following marine specifications:

- U.S. Coast Guard CFR 46; ABS—American Bureau of Shipping, IEEE 45 and Lloyds

These specifications generally require molded case circuit breakers to be supplied with 50 °C ambient, and plug-in adapter kits. When plug-in adapter kits are used, no terminals need be supplied (switchboard applications).

Circuit breakers can also be supplied to meet UL 489 Supplement SA (Marine use) and UL 489 Supplement SB (Naval Use).

UL 489 Supplement SA applies to vessels over 65 feet (19.8m) in length.

Requirements include 40 °C ambient calibration, special labeling, and no use of aluminum conductors or terminals. (No 50 °C.)

- Add suffix H08

Or you can choose to add 50ºC ambient but then there is no "UL" mark.

- Add suffix VH08

UL 489 Supplement SB requires partial 50 °C ambient calibration, vibration testing, special nameplating and no use of aluminum conductors or terminals. Eaton chooses to always fully calibrate to 50 °C ambient. ("Naval" labeled per UL but no "UL" mark due to 50 °C label.)

- Add suffix VH09

Certified Test Reports

Eaton breakers can be ordered with certified test reports at the time of order entry. Test report documents the thermal and magnetic or electronic tripping characteristics of the individual breaker. Breaker and test report must be ordered together. Add suffix 12 to breaker catalog number and enter separate line item on order for certified test report.

Standards and Certifications

Molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories Inc., Standard UL 489, molded case circuit breakers and circuit breaker enclosures
- National Electrical Manufacturers Association (NEMA) Standards Publication No. AB1-1993, molded case circuit breakers
- Australian Standard AS 2184, molded case circuit breakers
- British Standards Institution Standard BS 4752: Part 1, switchgear and control gear Part 1: circuit breakers
- Canadian Standards Association (CSA) Standard C22.2 No. 5, service entrance and branch circuit breakers
- International Electrotechnical Commission Recommendations IEC 60947-2, circuit breakers
- Japanese T-Mark Standard molded case circuit breakers
- South African Bureau of Standards, Standard SABS 156, Standard Specification for molded case circuit breakers
- Swiss Electro-Technical Association Standard SEV 157-1, safety regulations for circuit breakers
- Union Technique de l'Electricite Standard NFC 63-120, low-voltage switchgear and control gear circuit breaker requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, low-voltage switchgear and control gear, circuit breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Open breakers do not have service entrance ratings. Service entrance rating is part of the enclosure.

Listed

Internal Accessories

Alarm Lockout

The alarm switches operate when the circuit breaker is tripped by a short circuit or overcurrent, but also when it is tripped by a shunt trip or undervoltage release.

Auxiliary Switches

Auxiliary switches are used for signaling and control purposes. The various functions of the auxiliary switches (changeover) are shown on **Page V12-T3-127**.

Shunt Trips

The shunt trip is used for remote tripping.

The coil of the shunt trip is rated only for short-time operation.

It is not permissible with the circuit breaker open to apply a continuous opening command to the shunt trip in order to prevent the breaker from closing. This means that interlocking circuits with continuous commands may not be set up with shunt trips.

Undervoltage Releases

The circuit breaker cannot be closed until the undervoltage release is energized. If the release is not energized, the circuit breaker can only perform an idle switching operation.

Frequent idle switching actions should be avoided as they shorten the endurance of the circuit breaker.

Digitrip 310+ Electronic Trip Unit Accessories

Cause of Trip Display/Remote Mount Cause of Trip Display

The Cause of Trip Display can be field-installed on any Digitrip RMS 310+ trip unit. The device provides breaker information through an LCD screen, such as cause of trip, phrase current, ground current and low loads. The display is ideal for troubleshooting common trips such as ground fault, long delay, and instantaneous/short delay. The DIGIVIEW version will provide a local display at the breaker without additional wiring by connecting directly onto the trip unit. The DIGIVIEWR06 version has a 6 foot cable that allows users to mount the display on the outside of an enclosure door and connect to the trip unit that is contained inside the enclosure.

The DIGIVIEWR06 is NEMA 3R rated.

Cause of Trip Display/ Remote Mount Cause of Trip Display

Catalog Number
DIGIVIEW
DIGIVIEWR06

Cause of Trip LED Module

The Cause of Trip LED Module can be field-installed on any Digitrip RMS 310+ trip unit. The device provides a cause of trip indication via LED. The Cause of Trip LED Module connects directly onto the trip unit. When the breaker trips, the module indicates the cause of trip (long delay, short delay, instantaneous and ground) via LED indication. The module is reset after the breaker is reset.

Cause of Trip LED Module

Catalog Number
TRIP-LED

Electronic Portable Test Kit

The electronic portable test kit provides a means to complete field tests using secondary injection on all 310+ trip units. The same test kit is also capable of secondary injection testing on Magnum and Series NRX low-voltage power circuit breakers' 520 and 1150 trip units.

Electronic Portable Test Kit

Catalog Number
MTST230V

Wire Seal

The wire seal can be used to secure the cover of the trip unit to prevent adjustments after settings are confirmed.

Wire Seal

Catalog Number
5108A03H01

External Accessories and Test Kit

External Accessories

Description	Fit Type	Frame EG	JG	LG	NG	RG
Non-padlockable handle block	Field	**EFHB**	—	—	**LKD4**	—
Padlockable handle block	Field	**EFPHB**	—	—	—	—
Padlockable handle block off-only	Field	**EFPHBOFF**	**FJPHBOFF**	**LBHPOFF**	—	—
Padlockable handle lock hasp	Field	**EFPLK**	**FJPHL**	**LPHL**	**PLK5**	**HLK6**
Padlockable handle lock hasp off-only	Field	**EFPHLOFF**	**FJPHLOFF**	**LPHLOFF**	**PLK5SOFF**	**HLK6OFF**
Kirk key interlock kit ①②	Field	—	**KYKJG**	**KYKLG**	**KYK4**	**KYK6**
Castell key interlock kit ②③	Field	—	**CTKJG**	**CTKLG**	**CTK4**	**CTK6**
Slide bar interlock ④	Field	**EFSBI**	**FJSBI**	**LGSBI**	**SBK5**	—
Walking beam interlock ④	Three-pole	**EG3WBI**	**JG3WBI**	**LG3WBI**	**WBL5**	**WBL6**
	Four-pole	**EG4WBI**	**JG4WBI**	**LG4WBI**	**WBL5**	—
Electrical operator ⑤	120 Vac	**MOPEG240C**	**MOPJG120C**	**MOPLG120C**	**EOP5T07**	**EOP6T08K**
	240 Vac	**MOPEG240C**	**MOPJG240C**	**MOPLG240C**	**EOP5T11**	**EOP6T11K**
	24 Vdc	**MOPEG48D**	**MOPJG24D**	**MOPLG24D**	**EOP5T21**	—
	48 Vdc	**MOPEG48D**	—	—	**EOP5T22**	**EOP6T21K**
	125 Vdc	**MOPEG120C**	**MOPJG120C**	**MOPLG120C**	**EOP5T26**	—
	220 Vdc	—	**MOPJG240C**	**MOPLG240C**	—	—
	250 Vdc	—	**MOPJG240C**	**MOPLG240C**	—	—
Plug-in adapters	Three-pole	**PAD3E**	**PAD3J**	**PAD3L**	**PAD53**	—
	Four-pole	**PAD4E**	**PAD4J**	**PAD4L**	—	—
Wohner bus bar adapter	Field top	**EG-BUS-T**	**JG-BUS-TB**	**LG-BUS-TB**	—	—
	Field bottom	**EG-BUS-B**	**JG-BUS-TB**	**LG-BUS-TB**	—	—

Series G MCCB Frames EG, JG, and LG to mount to the SASY 60 mm Wohner Classic System

- UL file # E197132
- Compact design
- UL508 tested and certified using Wohner system with Eaton breakers
- No line side wiring required
- Up to 630 A MCCB
- Reverse feed possible

Wohner Bus Bar Adapter



Wohner Bus Bar Adapters

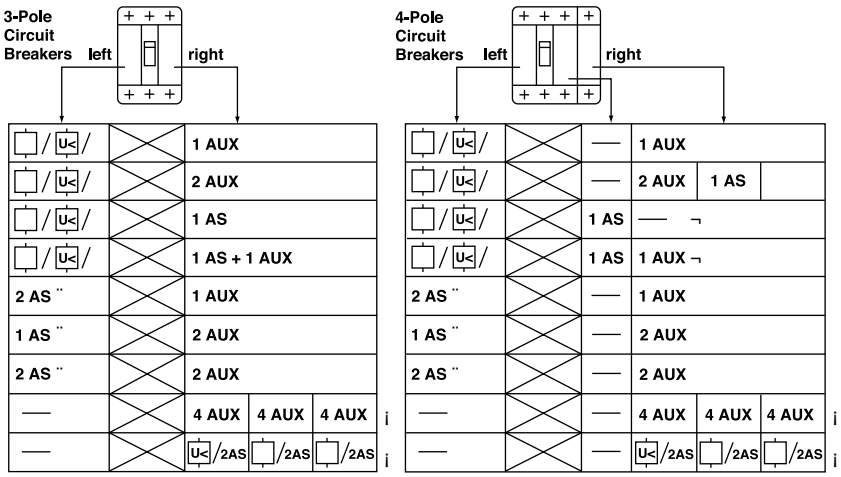
Breaker Frame	Bus Bar Adapter	Connection Point
EG	**EG-BUS-T**	Top
EG	**EG-BUS-B**	Bottom
JG	**JG-BUS-TB**	Top or bottom
LG	**LG-BUS-TB**	Top or bottom

Notes

① Provision only.
② See **Page V12-T3-326** for bolt projection dimensions.
③ Castell bolt mounting hole must be 10 mm.
④ Requires two breakers.
⑤ Contact Eaton for availability of operators for EG- and NG-Frames before December 2004.

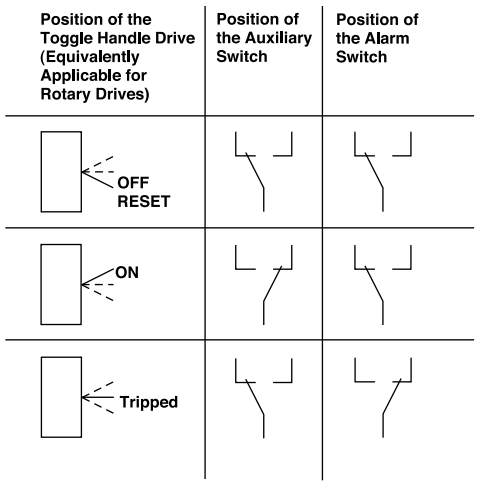
Accessory Configurations for EG–RG Circuit Breakers

Internal Accessory Configurations



/ = Shunt Trip or Undervoltage Release
AUX = Auxiliary Switch
AS = Alarm Switch
¨ = For N-Frame Circuit Breakers Only
≠ = For R-Frame Circuit Breakers Only
¬ = For N and R-Frame Circuit Breakers Only

Contact Making by the Auxiliary and Alarm Switches as a Function of the Switching Position of the Circuit Breaker



Accessories

Field Fit Kit Catalog Numbers

Alarm Lockout

Description	Pole Location	Frame EG, JG and LG	NG	RG ①
Make/Break	Left	—	**A1L5LPK**	—
	Right	**ALM1M1BEPK** ②	**A1L5RPK**	**A1L6RPK**
2 Make/2 Break	Left	—	**A2L5LPK**	—
	Right	**ALM2M2BEPK** ③	**A2L5RPK**	**A2L6RPK**

Description	Pole Location	For Use in Frame	Contact Type	Catalog Number
Make/Break	Right	EG	Silver	**ALM1M1BEPK**
2 Make/ 2 Break	Right	EG	Silver	**ALM2M2BEPK**
Make/Break	Right	JG and LG	Silver	**ALM1M1BJPK**
2 Make/ 2 Break	Right	JG and LG	Silver	**ALM2M2BJPK**
Make/Break	Right	EG	Gold	**ALM1M1BEEPK**
2 Make/ 2 Break	Right	EG	Gold	**ALM2M2BEEPK**
Make/Break	Right	JG and LG	Gold	**ALM1M1BEJPK**
2 Make/ 2 Break	Right	JG and LG	Gold	**ALM2M2BEJPK**

Auxiliary Switch

Description	Pole Location	Frame EG, JG and LG	NG	RG ①
1A, 1B	Left	—	**A1X5PK**	—
	Right	**AUX1A1BPK**	**A1X5PK**	—
2A, 2B	Left	—	**A2X5PK**	—
	Right	**AUX2A2BPK**	**A2X5PK**	**A2X6RPK**
3A, 3B	Left	—	**A3X5LPK**	—
	Right	—	**A3X5RPK**	—
4A, 4B	Left	—	—	—
	Right	—	—	**A4X6RPK**

Description	Pole Location	For Use in Frame	Contact Type	Catalog Number
1A, 1B	Right	EG/JG/LG	Silver	**AUX1A1BPK**
2A, 2B	Right	EG/JG/LG	Silver	**AUX2A2BPK**
1A, 1B	Right	EG/JG/LG	Gold	**AUX1E1BPK**
2A, 2B	Right	EG/JG/LG	Gold	**AUX2E2BPK**

Auxiliary Switch/Alarm Lockout

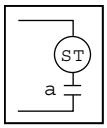
Description	Pole Location	Frame EG, JG and LG	NG	RG ①
—	Left	—	**AA115LPK**	—
	Right	**AUXALRMEPK** ④	**AA115RPK**	—

Description	Pole Location	For Use in Frame	Contact Type	Catalog Number
1A/1B & 1M/1B	Right	EG	Silver	**AUXALRMEPK**
1A/1B & 1M/1B	Right	JG and LG	Silver	**AUXALRMJPK**
1A/1B & 1M/1B	Right	EG	Gold	**AUXALRMEEPK**
1A/1B & 1M/1B	Right	JG and LG	Gold	**AUXALRMEJPK**

Notes

① All accessories mount in the RH cavity which will accept one each of shunt trip, UVR, auxiliary switch and alarm switch.
② Part number for JG and LG is ALM1M1BJPK.
③ Part number for JG and LG is ALM2M2BJPK.
④ Part number for JG and LG is AUXALRMJPK.

Shunt Trip—Standard



Shunt Trip—Standard

Description	Pole Location	Frame EG, JG and LG ①	NG	RG ②
48–60 Vac	Left	**SNT4860CPK**	**SNT5LP05K**	—
	Right	—	—	**SNT6P05K**
110–240 Vac	Left	**SNT120CPK**	**SNT5LP11K**	—
	Right	—	—	**SNT6P11K**
380–600 Vac	Left	**SNT480CPK** ③	—	—
	Right	—	—	—
220–250 Vdc or 380–440 Vac		—	**SNT5LP14K**	**SNT6P14K**
480–600 Vac		—	**SNT5LP18K**	**SNT6P18K**
12 Vdc	Left	**SNT012CPK**	—	—
	Right	—	—	—
24 Vac/dc	Left	**SNT024CPK**	**SNT5LP03K**	—
	Right	—	—	**SNT6P03K**
48–60 Vdc	Left	**SNT4860CPK**	**SNT5LP23K**	—
	Right	—	—	**SNT6P23K**
110–125 Vdc	Left	**SNT125DPK**	**SNT5LP26K**	—
	Right	—	—	**SNT6P26K**
250 Vdc	Left	**SNT250DPK**	—	—
	Right	—	—	—

Shunt Trip—Low Energy

Description	Pole Location	Frame EG, JG and LG	NG	RG ②
—	Left	—	**LST5LPK**	—
	Right	—	—	**LST6RPK**

Undervoltage Release Mechanism

Description	Pole Location	Frame EG, JG and LG ①	NG	RG ②
110–127 Vac	Left	**UVR120APK**	**UVH5LP08K**	—
	Right	—	—	**UVH6RP08K**
208–240 Vac	Left	**UVR240APK**	**UVH5LP11K**	—
	Right	—	—	**UVH6RP11K**
24 Vdc	Left	**UVR024DPK**	**UVH5LP21K** ④	—
	Right	—	—	**UVH6RP21K** ④
24 Vac	Left	**UVR024APK**	**UVH5LP21K** ④	—
	Right	—	—	**UVH6RP21K** ④
48–60 Vdc	Left	**UVR048DPK**	**UVH5LP23K**	—
	Right	—	—	**UVH6RP23K**
48–60 Vac	Left	**UVR048APK**	**UVH5LP05K**	—
	Right	—	—	**UVH6RP05K**
120 Vdc	Left	**UVR125DPK**	**UVH5LP26K**	—
	Right	—	—	**UVH6RP26K**
220–250 Vdc	Left	**UVR250DPK**	**UVH5LP28K**	—
	Right	—	—	**UVH6RP28K**
380–500 Vac	Left	**UVR480APK**	**UVH5LP29K**	—
	Right	—	—	**UVH6RP29K**
525–600 Vac	Left	**UVR600APK**	—	—
	Right	—	—	—
12 Vdc	Left	—	**UVH5LP20K**	—
	Right	—	—	**UVH6RP20K**
12 Vac	Left	—	**UVH5LP02K**	—
	Right	—	—	**UVH6RP02K**

Notes

① LH cavity not available for EG frame with earth leakage module.
② All accessories mount in the RH cavity which will accept one each of shunt trip, UVR, auxiliary switch and alarm switch.
③ 380–600 Vdc, 50/60 Hz.
④ 24 Vdc only use UVH5LP03K (NG) UVH6RP03K (RG) for 24 Vac.

Technical Data and Specifications

Note: Gold-plated contacts are well suited for switching low voltages and currents. Lead wires on accessories containing gold-plated contacts are marked with a yellow stripe.

Series G Gold Contact Accessory Switch Electrical Ratings

Max. Voltage (Ue)	Frequency	Max. Current (I_n)	Dielectric Withstand Voltage (UI)
125 V	50/60 Hz	0.1 A	2200 V
30 V	DC	0.25 A	2200 V
5 V	DC	5 mA	2200 V

Series G Silver Contact Accessory Switch Electrical Ratings

Max. Voltage (Ue)	Frequency	Max. Current (I_n)	Dielectric Withstand Voltage (UI)
600 V	50/60 Hz	2 A	2200 V
125/250 V	50/60 Hz	5 A	2200 V
125 V	DC	1 A	2200 V

Series GJ Frame: Terminal Extension Kits

	Extension Orientation			
	Edgewise	Right Angle	Spreader	Straight
Three-pole	FJTEE3	FJTER3	FJTEW3	FJTES3
Four-pole	FJTEE4	FJTER4	FJTEW4	FJTES4

Series G Motor Operators



Contents

Description	*Page*
EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	**V12-T3-60**
NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	
Features, Benefits and Functions	**V12-T3-132**
Standards and Certifications	**V12-T3-132**
Product Selection	**V12-T3-132**
Plug-In Blocks	**V12-T3-133**
Drawout Cassette	**V12-T3-134**

Motor Operators

Product Description

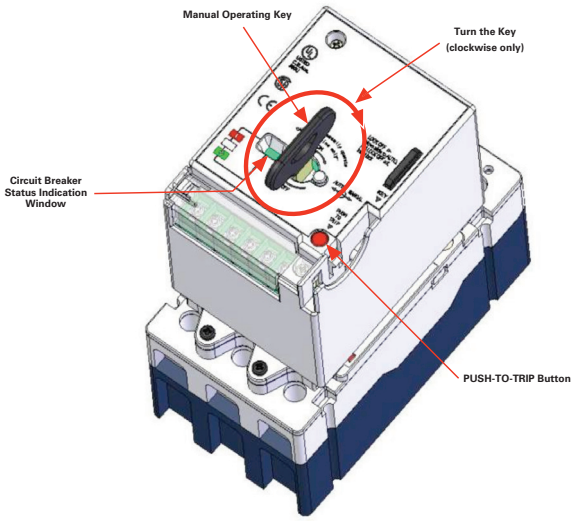
Eaton's motor operator mechanism enables local and remote ON, OFF and reset switching of a circuit breaker. The motor operator is mounted on the circuit breaker cover within the dimensions of the circuit breaker.

The robust motor operators offer various voltages to maximize customer flexibility. Standard load transfer switching can be accomplished through the use of two circuit breakers fitted with motor operators and a mechanical interlock.

Features, Benefits and Functions

The motor operator provides special features for ease of customer use and status indication.

- The motor operator allows the circuit breaker to be opened, closed or reset remotely
- The motor operator contains a motor connected to a cam drive mechanism. The cam drives a slide mechanism to operate the circuit breaker handle
- Internal limit switches and relays are used to control motor operation to prevent overdriving the circuit breaker handle and motor overload conditions
- A key is provided to manually operate the circuit breaker
- A special pull-out locking mechanism provides a method for padlocking the circuit breaker handle in the OFF position
- The locking device will accept three padlock shackles with a maximum diameter of 1/4-inch (6.4 mm) each
- The cover provides visual status of the circuit breaker: ON, OFF or TRIPPED. A PUSH-TO-TRIP button allows the user to manually trip the breaker



Standards and Certifications

The motor operators are UL and CSA listed, and CE marked.

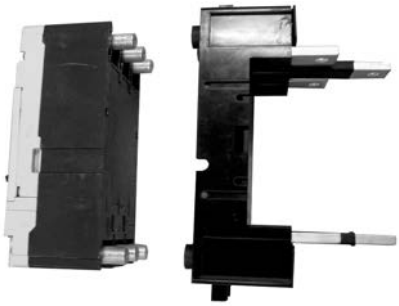
Listed

Product Selection

Motor Operators

Frame	Voltage	Frequency	Inrush Current	Catalog Number
Series G E-Frame	100–240 Vac	50/60 Hz	1 A	**MOPEG240C**
	100–220 Vdc	DC	1 A	**MOPEG240C**
	24/48 Vdc	DC	3 A	**MOPEG48D**
Series C F-Frame	208–240 Vac	50/60 Hz	1 A	**MOPFD240C**
	110–127 Vac	50/60 Hz	1 A	**MOPFD120C**
	220–250 Vdc	DC	1 A	**MOPFD240C**
	110–125 Vdc	DC	1 A	**MOPFD120C**
	24 Vdc	DC	3 A	**MOPFD24D**
Series G J-Frame	208–240 Vac	50/60 Hz	1 A	**MOPJG240C**
	110–127 Vac	50/60 Hz	1 A	**MOPJG120C**
	220–250 Vdc	DC	1 A	**MOPJG240C**
	110–125 Vdc	DC	1 A	**MOPJG120C**
	24 Vdc	DC	3 A	**MOPJG24D**
Series G L-Frame	208–240 Vac	50/60 Hz	2 A	**MOPLG240C**
	110–127 Vac	50/60 Hz	2 A	**MOPLG120C**
	220–250 Vdc	DC	2 A	**MOPLG240C**
	110–125 Vdc	DC	2 A	**MOPLG120C**
	24 Vdc	DC	6 A	**MOPLG24D**

LG Breaker with Plug-In Block



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EG-Frame (15–125 A)	**V12-T3-28**
JG-Frame (63–250 A)	**V12-T3-42**
LG-Frame (250–630 A)	**V12-T3-60**
NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
Special Features and Accessories	**V12-T3-123**
Motor Operators	**V12-T3-131**
Plug-In Blocks Drawout Cassette	**V12-T3-134**

Plug-In Blocks

Product Description

Plug-in adapters simplify installation and front removal of circuit breakers. Plug-ins are available for rear connection applications on three- and four-pole circuit breakers. Trip on drawout interlock kits are included. Stabs for EG, JG and LG plug-ins rotate 90 ° for flexible installation. Use terminal shields for IP30 protection.

Product Selection

Plug-In Blocks

Breaker Frame	Number of Poles	Catalog Number
EG-, JG- and LG-Frame Plug-In Blocks		
EG	3	**PAD3E**
EG	4	**PAD4E**
JG	3	**PAD3J**
JG	4	**PAD4J**
LG	4	**PAD4L**
Trip-On Drawout Interlock Kit ①		
EG	3, 4	**PIILEG**
JG	3, 4	**PIILJG**
LG	3, 4	**PIILLG**
Terminal Shields IP30		
EG	3	**EFTS3K**
EG	4	**EFTS4K**
JG	3	**FJTS3K**
JG	4	**FJTS4K**
LG	3	**LTS3K**
LG	4	**LTS4K**

Note

① Included with plug-in block. Trips the breaker when breaker is removed from plug-in block.

Drawout Cassettes



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NG-Frame (320–1200 A)	**V12-T3-78**
RG-Frame (800–2500 A)	**V12-T3-87**
Motor Circuit Protectors (MCP)	**V12-T3-104**
Motor Protector Circuit Breakers (MPCB)	**V12-T3-108**
30 mA Ground Fault (Earth Leakage) Module	**V12-T3-111**
Current-Limiting Circuit Breaker Module	**V12-T3-115**
High Instantaneous Circuit Breaker for Selective Coordination	**V12-T3-120**
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Drawout Cassette	

Drawout Cassette

Product Description

The drawout cassette is available for use with JG, LG and NG, three- and four-pole breakers. The cassettes consist of two separate components: the movable mechanism, which attaches to the breaker, and the stationary mechanism, which houses in the cassette. For the JG, LG and NG drawout cassettes, all necessary parts for installation are included in the one catalog number.

Features

Features of the drawout cassettes for the JG, LG and NG include:

- Trip on drawout—breaker will trip if it is in the ON position when withdrawn from the cassette
- Secondary terminal block—the drawout cassettes include a secondary terminal block for easier access when wiring low-voltage accessories, including shunts and undervoltage releases

The drawout mechanism has three primary positions:

- Connected—the breaker is fully connected to the primary stabs and secondary contacts
- Disconnected—both the primary stabs and the secondary contacts are disconnected
- Withdraw—the breaker can be removed from the cassette

Product Selection

JG Drawout Cassette



LG Drawout Cassette



JG, LG and NG Drawout Cassettes

Breaker Frame	Number of Poles	Catalog Number
JG	3	**JG3DOM**
LG	3	**LG3DOM**
NG	3	**NG3DOM**

Molded Case Circuit Breaker Product Family



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K-Frame (70–400 A)	**V12-T3-171**
L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

Learn Online Drawings Online

Product Overview

Eaton's molded case circuit breakers are designed to provide circuit protection for low-voltage distribution systems. They are described by NEMA as, "... a device for closing and interrupting a circuit between separable contacts under both normal and abnormal conditions," and furthermore as, "... a breaker assembled as an integral unit in a supporting and enclosing housing of insulating material." The National Electrical Code (NEC) describes them as, "A device designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overload of current, without injury to itself when properly applied within its rating."

So designed, Eaton circuit breakers protect conductors against overloads and conductors and connected apparatus, such as motors and motor starters, against short circuits.

In low-voltage distribution systems, there are many varied applications of molded case circuit breakers.

Eaton offers the most comprehensive family of molded case circuit breakers in the industry.

This section of circuit breakers includes:

- Thermal-magnetic trip breakers
- Electronic rms trip breakers
- Molded case switches
- Motor circuit protectors
- Current-limiting breakers
- Special application breakers

Modified Breakers

Eaton breakers can be ordered with internal accessories installed. These modified breakers will be subject to an addition charge.

Special Calibration

Special non-UL-listed calibrations are available for certain ambient temperatures other than 40 °C and for frequencies other than 50/60 Hz or DC. Reduced interrupting ratings will apply for 400 Hz applications.

50 °C Calibration

Add suffix **V** to catalog Number for complete breaker, listed above, when ordering listed ampere ratings for breakers to be used in 50 °C ambients. (No UL label.)

Moisture-Fungus Treatment

All circuit breaker cases are molded from glass-polyester which does not support the growth of fungus. Any parts which are susceptible to the growth of fungus will require special treatment.

Freeze-Tested Circuit Breakers

The circuit breakers may be ordered with freeze testing. This option uses special lubrication and mechanical operation is verified at –40 °C.

Marine Applications

E- to R-Framed circuit breakers can be supplied to meet the following marine specifications:

- U.S. Coast Guard CFR 46; ABS—American Bureau of Shipping; IEEE 45; DNV; Lloyds; and ABS/NVR

These specifications generally require molded case circuit breakers to be supplied with 50 °C ambient, and plug-in adapter kits. When plug-in adapter kits are used, no terminals need be supplied (switchboard applications).

Circuit breakers can also be supplied to meet UL 489 Supplement SA (Marine use) and UL 489 Supplement SB (Naval Use).

UL 489 Supplement SA applies to vessels over 65 feet (19.8 m) in length. Requirements include 40 °C ambient calibration, special labeling, and no use of aluminum conductors or terminals. (No 50 °C.)

- Suffix H08

Or you can choose to add 50 °C ambient but then there is no "UL" mark.

- Suffix VH08

UL 489 Supplement SB requires partial 50 °C ambient calibration, vibration testing, special nameplating and no use of aluminum conductors or terminals. Eaton chooses to always fully calibrate to 50 °C ambient. ("Naval" labeled per UL, and UL now allows 50 °C label here.)

- Suffix VH09

Certified Test Reports

Eaton breakers can be ordered with certified test reports at the time of order entry. Test report documents the thermal and magnetic or electronic tripping characteristics of the individual breaker. Breaker and test report must be ordered together. Add suffix 12 to breaker catalog number and enter separate line item on order for certified test report.

Standards and Certifications

Molded case circuit breakers are designed to conform with the following standards:

- Underwriters Laboratories Inc., Standard UL 489, molded case circuit breakers and circuit breaker enclosures
- National Electrical Manufacturers Association (NEMA) Standards Publication No. AB1-1993, molded case circuit breakers
- Australian Standard AS 2184, molded case circuit breakers
- British Standards Institution Standard BS 4752: Part 1, switchgear and control gear Part 1: circuit breakers
- Canadian Standards Association (CSA) Standard C22.2 No. 5, service entrance and branch circuit breakers
- International Electrotechnical Commission Recommendations IEC 60947-2, circuit breakers
- Japanese T-Mark Standard molded case circuit breakers
- South African Bureau of Standards, Standard SABS 156, Standard Specification for molded case circuit breakers
- Swiss Electro-Technical Association Standard SEV 157-1, safety regulations for circuit breakers
- Union Technique de l'Electricite Standard NFC 63-120, low-voltage switchgear and control gear circuit breaker requirements
- Verband Deutscher Elektrotechniker (Association of German Electrical Engineers) Standard VDE 0660, low-voltage switchgear and control gear, circuit breakers

Conformance with these standards satisfies most local and international codes, assuming user acceptability and simplified application.

Molded case circuit breakers equal or exceed Federal Specification Classification W-C-375b requirements for the particular class associated with the circuit breaker frame being considered.

Open breakers do not have service entrance ratings. Service entrance rating is part of the enclosure.

Listed

Molded Case Circuit Breaker Product Family



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L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

G-Frame (15–100 A)

Product Description

- All two- and three-pole circuit breakers are of the common trip type. On all three-phase delta (240 V) Grounded B phase applications, refer to Eaton
- Single-pole circuit breakers, 15 and 20 amperes. Switching duty rated (SWD) for fluorescent lighting applications
- All G-Frame circuit breakers are suitable for reverse feed use
- HACR rated
- Cable in, cable out
- Includes mounting hardware and BMHE

Standards and Certifications

These breakers meet the requirements of Federal Specification W-C-375b as follows:

- Type GHB, 120 and 240 V:
  - Single-pole: Class 11a
  - Two-, three-pole: Classes 10b, 11b, 12b, 14b, 15b
  - UL/CSA
- Type GHB, 277 and 480Y/277 V:
  - Single-pole: Classes 12c, 13a
  - Two-, three-pole: Class 13b
  - Type HGHB 277 V
  - Type GHQ 277 V

Listed

Technical Data

UL 489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 120	240	277	480	480Y/277	Volts DC 125 ①	250 ②③	Recommended Power Defense Replacement ④
GDB	2, 3	—	—	—	14	—	—	10	PD1XG
GD	2	—	65	—	14	—	—	10	PDG12G
GD	3	—	65	—	22	—	—	10	PDG13G
GHQ	—	65	—	14	—	—	—	—	PDXXXXX
GHB	1	65	—	14	—	—	14	—	PDXXXXX
GHB	2, 3	—	65	—	—	14	14	—	PDXXXXX
HGHB	1	65	—	25	—	—	14	—	PDXXXXX
GHC	1	65	—	14	—	—	14	—	PDXXXXX
GHC	2, 3	—	65	—	—	14	14	—	PDXXXXX
HGHC	1	65	—	25	—	—	14	—	PDXXXXX

Notes

① Single-pole breakers can be applied in DC systems up to 70 A.

② Time constant is 8 milliseconds minimum.

③ Two poles of three-pole circuit breaker.

④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame

GD 3 100 K

Circuit Breaker Type	
GD	**HGHB**
GDB	**HGHC**
GHB	**GHBGFEP**
GHC	**GHCGFEP**
GHQ	

Number of Poles
1 = 1 pole
2 = 2 poles
3 = 3 poles

Trip Amperes		
015	**035**	**070**
020	**040**	**080**
024	**045**	**090**
030	**050**	**100**
	060	

Suffix	
K = Molded case switch	**J01**= Fungus proofed
D = Ring type terminals	**R01**= Shock tested
C = Steel collars	**F01**= Freeze tester
V = 122 °F (50 °C)	**HID**= High intensity discharge ①

Product Selection

Type GD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Maximum Continuous Ampere Rating at 40 °C	480 Vac Maximum, 250 Vdc 14 kAIC at 480 Vac Includes Line and Load Terminals Two-Pole Catalog Number	22 kAIC at 480 Vac Three-Pole Catalog Number	Includes Binding Head Screws and Clamps 10–32 x 0.312 Three-Pole Catalog Number
15	**GD2015**	**GD3015**	**GD3015D**
20	**GD2020**	**GD3020**	**GD3020D**
25	**GD2025**	**GD3025**	**GD3025D**
30	**GD2030**	**GD3030**	**GD3030D**
35	**GD2035**	**GD3035**	**GD3035D**
40	**GD2040**	**GD3040**	**GD3040D**
45	**GD2045**	**GD3045**	**GD3045D**
50	**GD2050**	**GD3050**	**GD3050D**
60	—	**GD3060**	**GD3060D**
70	—	**GD3070**	**GD3070D**
80	—	**GD3080**	**GD3080D**
90	—	**GD3090**	**GD3090D**
100	—	**GD3100**	**GD3100D**

Type GHB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units ①

Continuous Ampere Rating at 40 °C	277/480 Vac Maximum, 125 Vdc Maximum ② Single-Pole Catalog Number	277/480 Vac Maximum, 125/250 Vdc Maximum Two-Pole Catalog Number	277/480 Vac Maximum, 125/250 Vdc Maximum ③ Three-Pole Catalog Number
15	**GHB1015** ④⑤	**GHB2015** ④	**GHB3015** ④
20	**GHB1020** ④⑤	**GHB2020** ④	**GHB3020** ④
25	**GHB1025**	**GHB2025**	**GHB3025**
30	**GHB1030**	**GHB2030**	**GHB3030**
35	**GHB1035**	**GHB2035**	**GHB3035**
40	**GHB1040**	**GHB2040**	**GHB3040**
45	**GHB1045**	**GHB2045**	**GHB3045**
50	**GHB1050**	**GHB2050**	**GHB3050**
60	**GHB1060**	**GHB2060**	**GHB3060**
70	**GHB1070**	**GHB2070**	**GHB3070**
80	**GHB1080**	**GHB2080**	**GHB3080**
90	**GHB1090**	**GHB2090**	**GHB3090**
100	**GHB1100**	**GHB2100**	**GHB3100**

Type HGHB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Continuous Ampere Rating at 40 °C	277 Vac Maximum, 125 Vdc Maximum Single-Pole Catalog Number
15	**HGHB1015** ⑥
20	**HGHB1020** ⑥
25	**HGHB1025**
30	**HGHB1030**

Notes

① 480Y/277 V, circuit breakers (Type GHB) not suitable for three-phase delta (480 V).
② Single-pole breakers can be applied in DC systems from 15 through 70 amperes; 80 through 100 amperes devices are not suitable for DC application.
③ Use two outside poles.
④ Uses 0.190 (4.83) –32 screw type clamp terminals.
⑤ Add suffix HID for High Intensity Discharge (HID) applications. 15 and 20 ampere, single-pole are SWD rated.
⑥ 15 and 20 ampere, single-pole are SWD rated.

Type GHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Continuous Ampere Rating at 40 °C	277 Vac Maximum, 125 Vdc Maximum [1] Single-Pole Catalog Number	480Y/277 Vac Maximum, 125/250 Vdc Maximum Two-Pole Catalog Number	480Y/277 Vac Maximum, 125/250 Vdc Maximum [2] Three-Pole Catalog Number
15	**GHC1015** [3][4]	**GHC2015** [3]	**GHC3015** [3]
20	**GHC1020** [3][4]	**GHC2020** [3]	**GHC3020** [3]
25	**GHC1025**	**GHC2025**	**GHC3025**
30	**GHC1030**	**GHC2030**	**GHC3030**
35	**GHC1035**	**GHC2035**	**GHC3035**
40	**GHC1040**	**GHC2040**	**GHC3040**
45	**GHC1045**	**GHC2045**	**GHC3045**
50	**GHC1050**	**GHC2050**	**GHC3050**
60	**GHC1060**	**GHC2060**	**GHC3060**
70	**GHC1070**	**GHC2070**	**GHC3070**
80	**GHC1080**	**GHC2080**	**GHC3080**
90	**GHC1090**	**GHC2090**	**GHC3090**
100	**GHC1100**	**GHC2100**	**GHC3100**

Type HGHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Continuous Ampere Rating at 40 °C	277 Vac Maximum, 125 Vdc Maximum Single-Pole Catalog Number
15	**HGHC1015** [5]
20	**HGHC1020** [5]
25	**HGHC1025**
30	**HGHC1030**

Notes

[1] 15 through 70 ampere circuit breakers only.
[2] Single-pole breakers can be applied in DC systems from 15 through 70 ampere; 80 through 100 ampere devices are not suitable for DC application.
[3] Uses 0.190–32 screw type clamp terminals.
[4] Add suffix HID for High Intensity Discharge (HID) applications. 15 and 20 ampere, single-pole are SWD rated.
[5] 15 and 20 ampere, single-pole are SWD rated.

Technical Data and Specifications

Terminal Types

For line and load-side. Terminals are UL listed as suitable for wire type and size given below.

Terminal Types

Circuit Breaker Amperes	Terminal Type Material	Screw Head Type	Wire Type	AWG Wire Range	Metric Wire Range (mm^2) ②
Standard					
15–20	Clamp (plated steel)	Slotted	Cu/Al	14–10	2.5–4
25–100	Pressure (aluminum body)	Slotted	Cu/Al	10–1/0	4–50
Optional—GD, GHB, GHC					
15–100	Pressure (steel body)	Slotted	Cu	14–3	—

Notes

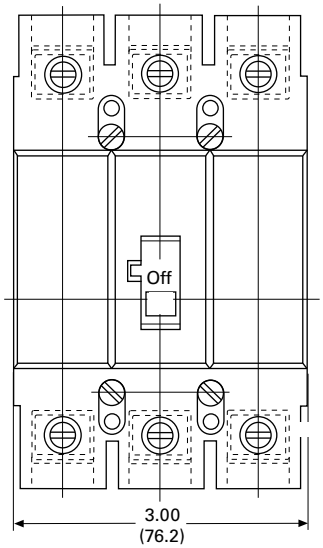
① HID suffix only applies to the GHB and GHC single-pole, 15–20 A circuit breakers.
② Not UL listed sizes.

Dimensions

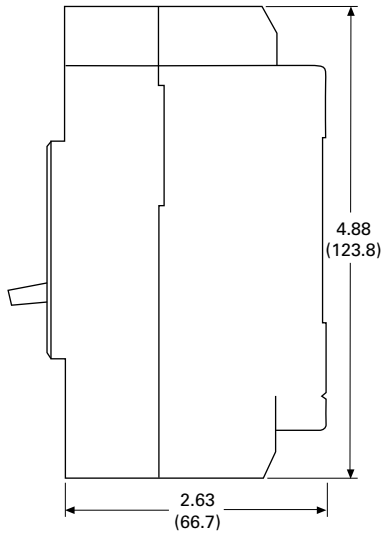
Approximate Dimensions in Inches (mm)

GD-Frame, Three-Pole

Front View

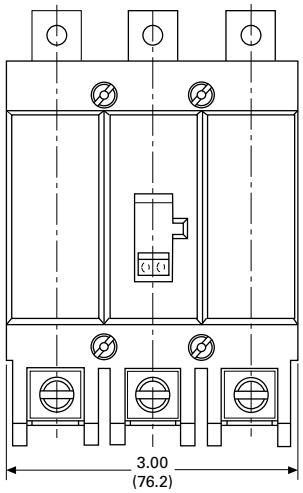


Side View

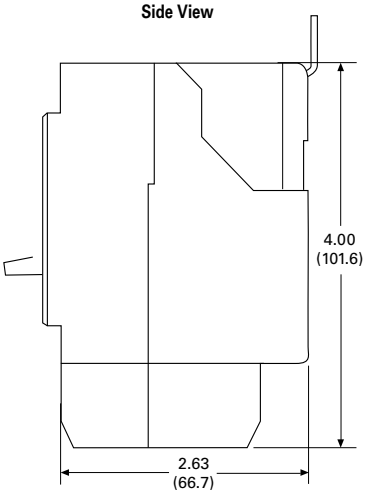


GDB-Frame, Three-Pole

Front View

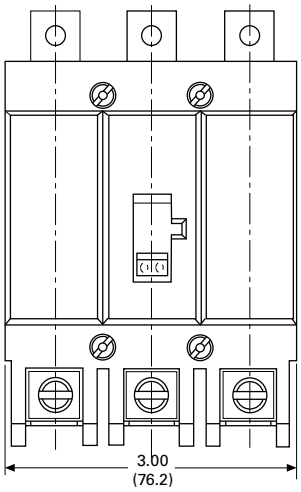


Side View

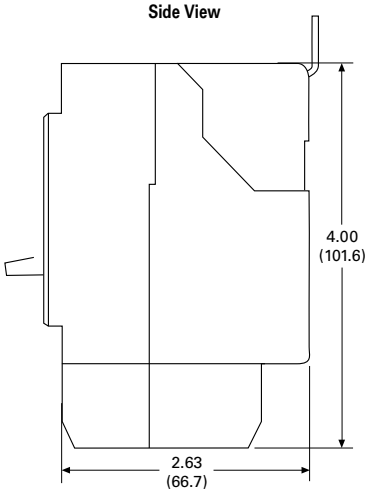


GHB-Frame, Three-Pole

Front View



Side View



Single-Phase (requires two poles)



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L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
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Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

Type GHBGFEP Bolt-On Panelboard 30 mA Industrial Ground Fault Circuit Protectors (15–100 A)

Product Description

- 15–60 amperes, 277 V, 50/60 Hz
- Operational voltage 240 V to 305 V

Standards and Certifications

These circuit breakers meet the requirements of UL 489 and UL 1053.

UL Listed

Product Selection

Type GHBGFEP Bolt-On Panelboard 30 mA Industrial Ground Fault Circuit Protectors with Non-Interchangeable Trip Units

Continuous Ampere Rating at 40 °C	Single-Phase (Requires Two Poles) 277 Vac, 30 mA Catalog Number
15	**GHBGFEP1015**
20	**GHBGFEP1020**
30	**GHBGFEP1030**
40	**GHBGFEP1040**
50	**GHBGFEP1050**
60	**GHBGFEP1060**

Technical Data and Specifications

Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (Symmetrical Amperes) 277 Vac (50/60 Hz)
GHBGFEP	1	14,000

Special Purpose Circuit Breakers



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Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

Special Purpose GHC Circuit Breakers (15–100 A)

Product Description

Eaton's Type GHC circuit breakers have binding head screw-type terminals on line and load side. These circuit breakers with screw-type terminals (0.190–32) will be marked "Special purpose breaker not for general use." To order this special breaker, use the catalog number from the tables on this page.

Product Selection

Type GHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Continuous Ampere Rating at 40 °C	277 Vac Maximum, 125 Vdc Maximum ① Single-Pole Catalog Number	480Y/277 Vac Maximum, 125/250 Vdc Maximum Two-Pole Catalog Number	480Y/277 Vac Maximum, 125/250 Vdc Maximum ② Three-Pole Catalog Number
25	**GHC1025D**	**GHC2025D**	**GHC3025D**
30	**GHC1030D**	**GHC2030D**	**GHC3030D**
35	**GHC1035D**	**GHC2035D**	**GHC3035D**
40	**GHC1040D**	**GHC2040D**	**GHC3040D**
45	**GHC1045D**	**GHC2045D**	**GHC3045D**
50	**GHC1050D**	**GHC2050D**	**GHC3050D**
60	**GHC1060D**	**GHC2060D**	**GHC3060D**
70	**GHC1070D**	**GHC2070D**	**GHC3070D**
80	**GHC1080D**	**GHC2080D**	**GHC3080D**
90	**GHC1090D**	**GHC2090D**	**GHC3090D**
100	**GHC1100D**	**GHC2100D**	**GHC3100D**

Type GHB and GHC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units for HID Lighting Applications

Type	Continuous Ampere Rating at 40 °C	277 Vac Maximum Single-Pole Catalog Number
Cable-in	15	**GHC1015HID**
	20	**GHC1020HID**
Bolt-on	15	**GHB1015HID**
	20	**GHB1020HID**

Notes

① Single-pole breakers can be applied in DC systems from 15 through 70 amperes; 80 through 100 amperes devices are not suitable for DC application.

② Use two outside poles.

Typical F-Frame Breaker
F-Frame Breaker with Electronic Trip Unit





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F-Frame (10–225 A)

Product Description

- All Eaton's F-Frame circuit breakers are HACR rated
- All circuit breakers 10 through 30 amperes are suitable for HID (high intensity discharge) use
- All F-Frame circuit breakers are suitable for reverse feed use

Technical Data

UL 489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	277	480	600	Volts DC ① 125	250 ②③	Recommended Power Defense Replacement
EDB	2, 3	22	—	—	—	10	—	PDD2xF
EDS	2, 3	42	—	—	—	10	—	PDD2xG
ED	2, 3	65	—	—	—	10	—	PDD2xk
EDH	2, 3	100	—	—	—	10	—	PDD2xM
EDC	2, 3	200	—	—	—	10	—	PDD2xP
EHD	1	—	4	—	—	10	—	PDG21F
	2, 3	18	—	14	—	—	10	PDG2xF
FDB	2, 3, 4	18	—	14	14	—	10	PDG2xF
FD	1	—	35	—	—	10	—	PDG21G
	2, 3, 4	65	—	35	18	—	10	PDG2xG
FDE ④	3	65	—	35	18	—	—	PDG23G PXR ETU
HFD	1	—	65	—	—	10	—	PDG21M
	2, 3, 4	100	—	65	25	—	22	PDG2xM
HFDE ④	3	100	—	65	25	—	—	PDG23M PXR ETU
FDC ⑤	2, 3, 4	200	—	100	35	—	22	PDG2xP
FDCE ④⑤⑥	3	200	—	100	25	—	—	PDG2xP PXR ETU

IEC 157-1 (P1) Interrupting Capacity Ratings (P1)

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 220, 240	380, 415	440	500	Volts DC ① 125	250 ②③	Recommended Power Defense Replacement
EDB	2, 3	22	—	—	—	10	—	—
EDS	2, 3	42	—	—	—	10	—	—
ED	2, 3	65	—	—	—	10	—	—
EDH	2, 3	100	—	—	—	10	—	—
EDC	2, 3	200	—	—	—	10	—	—
EHD	1	—	14	—	—	10	—	PDG21F
	2, 3	18	—	14	—	—	10	PDG2xF
FDB	2, 3, 4	18	14	14	14	—	10	PDG2xF
FD	1	35	—	—	—	10	—	PDG21G
	2, 3, 4	65	35	35	18	—	10	PDG2xG
HFD	1	65	—	—	—	10	—	PDG21M
	2, 3, 4	100	65	65	25	—	22	PDG2xM
FDC	2, 3, 4	200	100	100	35	—	22	PDG2xP

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
FDC	240 V/200 kA	41.4	1.41
FDC	480 V/100 kA	38.9	2.50
FDC	600 V/35 kA	29.0	3.00

Notes

① DC ratings apply to substantially non-inductive circuits.
② Two-pole circuit breaker, or two poles of three-pole circuit breaker.
③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
④ Electronics available on three-pole only, no DC rating for FDE, HFDE, FDCE.
⑤ Current limiting.
⑥ Check with Eaton for availability.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

FD-Frame Circuit Breakers with Thermal-Magnetic Trip Unit Technology

FDC 3 100 L

Circuit Breaker Type
EHD
FDB
FD
HFD
FDC

Number of Poles
1 = 1 pole
2 = 2 poles
3 = 3 poles
4 = 4 poles

Trip Amperes
010
015
020
025
030
035
040
045
050
060
070
080
090
100
110
125
150
175 (FD, HFD, FDC, two-, three-, four-pole only)
200 (FD, HFD, FDC, two-, three-, four-pole only)
225 (FD, HFD, FDC, two-, three-, four-pole only)

Suffix
E = 100% protected (four-pole only) neutral pole
EH = 50% protected (four-pole only)
K = High magnetic molded case switch
L = Line and load terminals
S = Stainless steel terminals
V = 50 °C calibration
W = Without terminals
Y = Line terminals only
Z = Aluminum terminals (≤100 amperes)

EDC 3 200 L

Circuit Breaker Type
EDB
EDS
ED
EDH
EDC

Number of Poles
2 = 2 poles
3 = 3 poles

Trip Amperes
100
125
150
175
200
225

Suffix
L = Line and load terminals
W = Without terminals
Y = Line terminals only
Z = Aluminum terminals (100 amperes)

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

FD-Frame Circuit Breakers with 210+ Electronic Trip Unit Technology

HFDE 3 225 22 L

Performance at 480 Vac	Number of Poles	Trip Units	Trip Unit	Features
FDE= 35 kAIC **HFDE**= 65 kAIC **FDCE**= 100 kAIC	**3** = 3 poles	**100** **150** **225**	**21** = 210+ LI **22** = 210+ LSI	**W**= Without terminals **L**= Line and load terminals **Blank**= Load side terminals only

FD-Frame Circuit Breakers with 310+ Electronic Trip Unit Technology

HFDE 3 225 32 ZG W

Performance at 480 Vac	Number of Poles	Trip Units	Trip Unit	Trip Unit Features	Features
FDE= 35 kAIC **HFDE**= 65 kAIC **FDCE**= 100 kAIC	**3** = 3 poles	**080** **160** **225**	**32** = 310+ LSI **33** = 310+ LS **35** = 310+ LSG **36** = 310+ LSIG	**ZG**= Zone selective interlocking **Blank**= No option	**W**= Without terminals **L**= Line and load terminals **Blank**= Load side terminals only

Product Selection

Type ED Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 65 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
15	**ED2015**	**ED3015**
20	**ED2020**	**ED3020**
25	**ED2025**	**ED3025**
30	**ED2030**	**ED3030**
35	**ED2035**	**ED3035**
40	**ED2040**	**ED3040**
50	**ED2050**	**ED3050**
60	**ED2060**	**ED3060**
100	**ED2100**	**ED3100**
125	**ED2125**	**ED3125**
150	**ED2150**	**ED3150**
175	**ED2175**	**ED3175**
200	**ED2200**	**ED3200**
225	**ED2225**	**ED3225**

Type EDH Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 100 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
15	—	—
20	—	—
25	—	—
30	—	—
35	—	—
40	—	—
50	—	—
60	—	—
100	**EDH2100**	**EDH3100**
125	**EDH2125**	**EDH3125**
150	**EDH2150**	**EDH3150**
175	**EDH2175**	**EDH3175**
200	**EDH2200**	**EDH3200**
225	**EDH2225**	**EDH3225**

Type EDC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 200 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
15	—	—
20	—	—
25	—	—
30	—	—
35	—	—
40	—	—
50	—	—
60	—	—
100	**EDC2100**	**EDC3100**
125	**EDC2125**	**EDC3125**
150	**EDC2150**	**EDC3150**
175	**EDC2175**	**EDC3175**
200	**EDC2200**	**EDC3200**
225	**EDC2225**	**EDC3225**

Type EDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 22 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
100	**EDB2100**	**EDB3100**
110	**EDB2110**	**EDB3110**
125	**EDB2125**	**EDB3125**
150	**EDB2150**	**EDB3150**
175	**EDB2175**	**EDB3175**
200	**EDB2200**	**EDB3200**
225	**EDB2225**	**EDB3225**

Type EDS Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units Suitable for Reverse Feed

	240 Vac Maximum, 125 Vdc (Includes Terminals on Load End Only) 42 kAIC at 240 Vac	
	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number
100	**EDS2100**	**EDS3100**
110	**EDS2110**	**EDS3110**
125	**EDS2125**	**EDS3125**
150	**EDS2150**	**EDS3150**
175	**EDS2175**	**EDS3175**
200	**EDS2200**	**EDS3200**
225	**EDS2225**	**EDS3225**

Type EHD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	277 Vac Maximum, 125 Vdc 14 kAIC at 277 Vac	480 Vac Maximum, 250 Vdc 14 kAIC at 480 Vac	
	Single-Pole	Two-Pole	Three-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
10 ①	**EHD1010**	**EHD2010**	**EHD3010**
15	**EHD1015** ②	**EHD2015**	**EHD3015**
20	**EHD1020** ②	**EHD2020**	**EHD3020**
25	**EHD1025**	**EHD2025**	**EHD3025**
30	**EHD1030**	**EHD2030**	**EHD3030**
35	**EHD1035**	**EHD2035**	**EHD3035**
40	**EHD1040**	**EHD2040**	**EHD3040**
45	**EHD1045**	**EHD2045**	**EHD3045**
50	**EHD1050**	**EHD2050**	**EHD3050**
60	**EHD1060**	**EHD2060**	**EHD3060**
70	**EHD1070**	**EHD2070**	**EHD3070**
80	**EHD1080**	**EHD2080**	**EHD3080**
90	**EHD1090**	**EHD2090**	**EHD3090**
100	**EHD1100**	**EHD2100**	**EHD3100**

Notes

① Not UL listed. 5 kAIC interrupting rating.

② UL listed for SWD applications, see NEC Article 240.83(d).

Type FDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	600 Vac Maximum, 250 Vdc 14 kAIC at 600 Vac		
	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
10 ①	**FDB2010**	**FDB3010**	**FDB4010**
15	**FDB2015**	**FDB3015**	**FDB4015**
20	**FDB2020**	**FDB3020**	**FDB4020**
25	**FDB2025**	**FDB3025**	**FDB4025**
30	**FDB2030**	**FDB3030**	**FDB4030**
35	**FDB2035**	**FDB3035**	**FDB4035**
40	**FDB2040**	**FDB3040**	**FDB4040**
45	**FDB2045**	**FDB3045**	**FDB4045**
50	**FDB2050**	**FDB3050**	**FDB4050**
60	**FDB2060**	**FDB3060**	**FDB4060**
70	**FDB2070**	**FDB3070**	**FDB4070**
80	**FDB2080**	**FDB3080**	**FDB4080**
90	**FDB2090**	**FDB3090**	**FDB4090**
100	**FDB2100**	**FDB3100**	**FDB4100**
110	**FDB2110**	**FDB3110**	**FDB4110**
125	**FDB2125**	**FDB3125**	**FDB4125**
150	**FDB2150**	**FDB3150**	**FDB4150**

Note

① Not UL listed. 5 kAIC interrupting rating.

Type FD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	277 Vac Maximum, 125 Vdc 35 kAIC at 277 Vac	600 Vac Maximum, 250 Vdc 35 kAIC at 480 Vac		
	Single-Pole	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number	Catalog Number
10 ①	**FD1010**	—	—	—
15	**FD1015** ②	**FD2015**	**FD3015**	**FD4015**
20	**FD1020** ②	**FD2020**	**FD3020**	**FD4020**
25	**FD1025**	**FD2025**	**FD3025**	**FD4025**
30	**FD1030**	**FD2030**	**FD3030**	**FD4030**
35	**FD1035**	**FD2035**	**FD3035**	**FD4035**
40	**FD1040**	**FD2040**	**FD3040**	**FD4040**
45	**FD1045**	**FD2045**	**FD3045**	**FD4045**
50	**FD1050**	**FD2050**	**FD3050**	**FD4050**
60	**FD1060**	**FD2060**	**FD3060**	**FD4060**
70	**FD1070**	**FD2070**	**FD3070**	**FD4070**
80	**FD1080**	**FD2080**	**FD3080**	**FD4080**
90	**FD1090**	**FD2090**	**FD3090**	**FD4090**
100	**FD1100**	**FD2100**	**FD3100**	**FD4100**
110	**FD1110**	**FD2110**	**FD3110**	**FD4110**
125	**FD1125**	**FD2125**	**FD3125**	**FD4125**
150	**FD1150**	**FD2150**	**FD3150**	**FD4150**
175	—	**FD2175**	**FD3175**	**FD4175**
200	—	**FD2200**	**FD3200**	**FD4200**
225	—	**FD2225**	**FD3225**	**FD4225**

Notes

① Not UL listed. 5 kAIC interrupting rating.

② UL listed for SWD applications, see NEC Article 240.83(d).

Type HFD Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	277 Vac Maximum, 125 Vdc 65 kAIC at 277 Vac	600 Vac Maximum, 250 Vdc 65 kAIC at 480 Vac		
	Single-Pole	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number	Catalog Number
15	HFD1015 ①	HFD2015	HFD3015	HFD4015
20	HFD1020 ①	HFD2020	HFD3020	HFD4020
25	HFD1025	HFD2025	HFD3025	HFD4025
30	HFD1030	HFD2030	HFD3030	HFD4030
35	HFD1035	HFD2035	HFD3035	HFD4035
40	HFD1040	HFD2040	HFD3040	HFD4040
45	HFD1045	HFD2045	HFD3045	HFD4045
50	HFD1050	HFD2050	HFD3050	HFD4050
60	HFD1060	HFD2060	HFD3060	HFD4060
70	HFD1070	HFD2070	HFD3070	HFD4070
80	HFD1080	HFD2080	HFD3080	HFD4080
90	HFD1090	HFD2090	HFD3090	HFD4090
100	HFD1100	HFD2100	HFD3100	HFD4100
110	HFD1110	HFD2110	HFD3110	HFD4110
125	HFD1125	HFD2125	HFD3125	HFD4125
150	HFD1150	HFD2150	HFD3150	HFD4150
175	—	HFD2175	HFD3175	HFD4175
200	—	HFD2200	HFD3200	HFD4200
225	—	HFD2225	HFD3225	HFD4225

Note

① UL listed for SWD applications, see NEC Article 240.83(d).

Type FDC Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units (Includes Terminals on Load End Only)

	600 Vac Maximum, 250 Vdc 100 kAIC at 480 Vac		
	Two-Pole	Three-Pole	Four-Pole
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
15	**FDC2015**	**FDC3015**	**FDC4015**
20	**FDC2020**	**FDC3020**	**FDC4020**
25	**FDC2025**	**FDC3025**	**FDC4025**
30	**FDC2030**	**FDC3030**	**FDC4030**
35	**FDC2035**	**FDC3035**	**FDC4035**
40	**FDC2040**	**FDC3040**	**FDC4040**
45	**FDC2045**	**FDC3045**	**FDC4045**
50	**FDC2050**	**FDC3050**	**FDC4050**
60	**FDC2060**	**FDC3060**	**FDC4060**
70	**FDC2070**	**FDC3070**	**FDC4070**
80	**FDC2080**	**FDC3080**	**FDC4080**
90	**FDC2090**	**FDC3090**	**FDC4090**
100	**FDC2100**	**FDC3100**	**FDC4100**
110	**FDC2110**	**FDC3110**	**FDC4110**
125	**FDC2125**	**FDC3125**	**FDC4125**
150	**FDC215**	**FDC3150**	**FDC4150**
175	**FDC2175**	**FDC3175**	**FDC4175**
200	**FDC2200**	**FDC3200**	**FDC4200**
225	**FDC2225**	**FDC3225**	**FDC4225**

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Types FDE, HFDE and FDCE 310+ Electronic Circuit Breakers with Non-Interchangeable Trip Units

See 310+ adjustability specifications on **Page V12-T3-162**.

	Digitrip RMS 310+ Trip Unit Only				
	Standard	Optional			
	LS	LSI	LSG	LSIG	
Maximum Ampere Rating	Adjustable Short Time Pickup with I^2t Short Delay Ramp Catalog Number	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG Catalog Number
35 kAIC at 480 Vac / 18 kAIC at 600 Vac					
80	**FDE308033**	**FDE308032**	**FDE308035**	**FDE308036**	**CTF080**
160	**FDE316033**	**FDE316032**	**FDE316035**	**FDE316036**	**CTF160**
225	**FDE322533**	**FDE322532**	**FDE322535**	**FDE322536**	**CTF225**
65 kAIC at 480 Vac / 25 kAIC at 600 Vac					
80	**HFDE308033**	**HFDE308032**	**HFDE308035**	**HFDE308036**	**CTF080**
160	**HFDE316033**	**HFDE316032**	**HFDE316035**	**HFDE316036**	**CTF160**
225	**HFDE322533**	**HFDE322532**	**HFDE322535**	**HFDE322536**	**CTF225**
100 kAIC at 480 Vac / 25 kAIC at 600 Vac					
80	**FDCE308033**	**FDCE308032**	**FDCE308035**	**FDCE308036**	**CTF080**
160	**FDCE316033**	**FDCE316032**	**FDCE316035**	**FDCE316036**	**CTF160**
225	**FDCE322533**	**FDCE322532**	**FDCE322535**	**FDCE322536**	**CTF225**

Types FDE, HFDE, and FDCE 210+ Electronic Circuit Breakers with Non-Interchangeable Trip Units

	Digitrip RMS 210+ Trip Unit Only	
	Standard	Optional
	LI	LSI
	Adjustable Instantaneous	Adjustable Short Time Pickup and Delay
Maximum Ampere Rating	Catalog Number	Catalog Number
35 kAIC at 480 Vac / 18 kAIC at 600 Vac		
100	**FDE310021**	**FDE310022**
150	**FDE315021**	①
225	**FDE322521**	**FDE322522**
65 kAIC at 480 Vac / 25 kAIC at 600 Vac		
100	**HFDE310021**	**HFDE310022**
150	**HFDE315021**	①
225	**HFDE322521**	**HFDE322522**

210+ Trip Electronic Trip Units Amperage Settings

Circuit Breaker Type	Frame	Ratings
FDE, HFDE	225	100, 110, 125, 150, 175, 200, 225
FDE, HFDE	150	70, 80, 90, 100, 110, 125, 150
FDE, HFDE	100	40, 50, 60, 70, 80, 90, 100

FDE 310+ Electronic Breaker with Zone Selective Interlocking

Ampere Rating	LSI w/ZSI Catalog Number	LSIG w/ZSI Catalog Number
35 kAIC at 480 Vac / 18 kAIC at 600 Vac		
80	**FDE308032ZG**	**FDE308036ZG**
160	**FDE316032ZG**	**FDE316036ZG**
225	**FDE322532ZG**	**FDE322536ZG**
65 kAIC at 480 Vac / 25 kAIC at 600 Vac		
80	**HFDE308032ZG**	**HFDE308036ZG**
160	**HFDE316032ZG**	**HFDE316036ZG**
225	**HFDE322532ZG**	**HFDE322536ZG**
100 kAIC at 480 Vac / 25 kAIC at 600 Vac		
80	**FDCE308032ZG**	**FDCE308036ZG**
160	**FDCE316032ZG**	**FDCE316036ZG**
225	**FDCE322532ZG**	**FDCE322536ZG**

Digitrip 310+ Electronic Trip Units Amperage Settings

Circuit Breaker Type	Frame	Ratings
FDE, HFDE, FDCE	225	100, 110, 125, 150, 160, 175, 200, 225
FDE, HFDE, FDCE	160	60, 70, 80, 90, 100, 125, 150, 160
FDE, HFDE, FDCE	80	15, 20, 30, 40, 50, 60, 70, 80

Note

① For 210+ trip unit, 150 A not available with LSI trip unit; entire range is covered by 100 A and 225 A frames.

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

	Complete Circuit Breaker with Load Side Terminals Only		
	480 Vac Maximum, 250 Vdc	600 Vac Maximum, 250 Vdc	
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Catalog Number	Catalog Number
Two-Pole			
100	**EHD2100K**	**FD2100K**	**HFD2100K**
150	—	**FD2150K**	**HFD2150K**
225	—	**FD2225K**	**HFD2225K**
Three-Pole			
100	**EHD3100K**	**FD3100K**	**HFD3100K**
150	—	**FD3150K**	**HFD3150K**
225	—	**FD3225K**	**HFD3225K**
Four-Pole			
100	—	**FD4100K**	**HFD4100K**
150	—	**FD4150K**	**HFD4150K**
225	—	**FD4225K**	**HFD4225K**

Note

Molded case switches will open above 1800 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. Except as noted, terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B. Unless otherwise specified, F-Frame circuit breakers are factory equipped with load terminals only.

Ordering Information

F-Frame circuit breakers and molded case switches have load terminals only as standard equipment. When standard line-end terminals (same as standard load-end terminals) are required, add Suffix **L** to the circuit breaker catalog number. When non-standard or optional line and/or load terminals are required, order by style number. Specify if factory installation is required.

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range	Metric Wire Range mm^2	Package of Three Terminals Catalog Number
Standard Pressure Type Terminals					
20 (EHD)	Steel	Cu/Al	14–10	2.5–4	**3T20FB** ①
100	Steel	Cu/Al	14–1/0	2.5–50	**3T100FB**
225	Aluminum	Cu/Al	4–4/0	25–95	**3TA225FD**
Optional Pressure Terminals					
50	Aluminum	Cu/Al	14–4	2.5–25	**3TA50FB** ①
100	Aluminum	Cu/Al	14–1/0	2.5–50	**3TA100FD**
200	Stainless steel	Cu	4–4/0	25–95	**3T150FB**
225	Copper	Cu	4–4/0	25–95	**3T225FD**
225	Aluminum	Cu/Al	6–300 kcmil	16–150	**3TA225FDK3** ②
225	Aluminum	Cu/Al	6–300 kcmil	16–150	**3TA225FDK** ②③

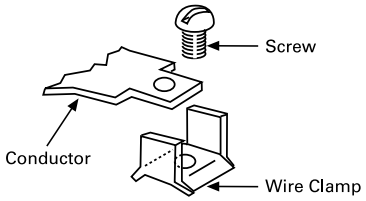
Notes

① Not for use with ED, EDH, EDC breakers.

② Includes terminal shield kit. Adds approximately 3 inches (76.2) to breaker height. Available for use on three-pole breaker only.

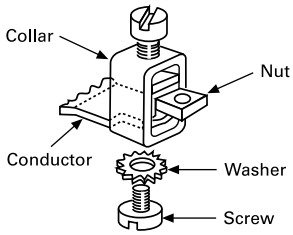
③ Replacement use only.

Line and Load Terminals



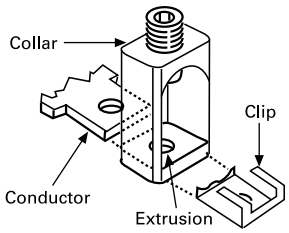
3T20FB

Assemble wire clamp to bottom of conductor as shown.



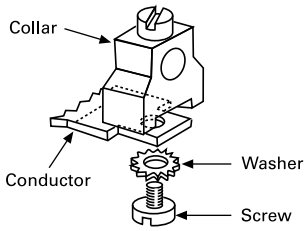
3T100FB, 3T150FB

Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer.
Caution: Collar must surround conductor.



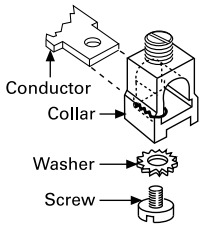
3TA225FD

Insert collar enclosing conductor and center on extrusion on collar. Install clip with legs on top of conductor and snap end around bottom of collar.



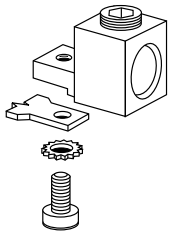
3TA50FB

Assemble collar on top of conductor as shown. Tighten securely with screw and washer.



3TA100FD

Collar slides onto conductor and is held in position by a screw and lockwasher.



3TA225FDK3 (Up to 150 mm^2)

Assemble collar on top of conductor as shown. Tighten securely with screw and washer. Terminal shield must be used with this collar.
Note: For 185 mm^2, use 3TA225FDK1.
Same illustration for 3TA225FDK

Accessories

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

Allowable Accessory Combinations

FD Frame Accessories

Description	Reference Page	Single-Pole	Two-Pole		Three-Pole ①			Four-Pole			
		Center	Left	Right	Left	Center	Right	Left	Center	Right	Neutral
Internal Accessories (Only one internal accessory per pole)											
Alarm lockout switch (make only)	**V12-T3-283**	■	—	—	—	—	—	—	—	—	—
Alarm lockout (Make/Break)	**V12-T3-283**	—	—	■	❑	—	❑	■	—	—	—
Alarm lockout (2Make/2Break)	**V12-T3-283**	—	—	■	❑	—	❑	■	—	—	—
Auxiliary switch (1A, 1B)	**V12-T3-285**	—	—	■	■	—	■	■	—	—	■
Auxiliary switch (2A, 2B)	**V12-T3-285**	—	—	■	■	—	■	■	—	—	■
Auxiliary switch and alarm switch combination	**V12-T3-287**	—	—	■	❑	—	❑	■	—	—	—
Shunt trip—standard	**V12-T3-289**	—	—	■	■	—	■	■	—	—	■
Shunt trip—low energy	**V12-T3-293**	—	—	■	■	—	■	■	—	—	—
Undervoltage release mechanism	**V12-T3-295**	—	—	■	■	—	■	■	—	—	—
External Accessories											
End cap kit	**V12-T3-318**	—	●	●	●	●	●	●	●	●	●
Keeper nut	**V12-T3-318**	●	●	●	●	●	●	●	●	●	●
Control wire terminal kit	**V12-T3-319**	●	●	●	●	●	●	●	●	●	●
Multiwire connectors	**V12-T3-320**	●	●	●	●	●	●	●	●	●	●
Rear fed terminals	**V12-T3-320**	●	●	●	●	●	●	●	●	●	●
Base mounting hardware	**V12-T3-320**	●	●	●	●	●	●	●	●	●	●
Terminal shields	**V12-T3-322**	●	●	●	●	●	●	●	●	●	●
Terminal end covers	**V12-T3-323**	—	—	—	●	●	●	—	—	—	—
Interphase barriers	**V12-T3-323**	—	●	●	●	●	●	●	●	●	●
Non-padlockable handle block	**V12-T3-324**	■	■	—	—	■	—	—	■	—	—
Snap-on padlockable handle lock hasp	**V12-T3-324**	■	■	—	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V12-T3-325**	—	—	■	❑	—	❑	❑	—	❑	—
Cylinder lock	**V12-T3-325**	—	—	—	■	—	—	—	—	—	—
Key interlock kit	**V12-T3-326**	—	—	■	❑	—	❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V12-T3-327**	—	—	—	●	●	●	—	—	—	—
Walking beam interlock—requires two breakers	**V12-T3-327**	—	—	—	●	●	●	●	●	●	●
Electrical (solenoid and motor) operators	**V12-T3-328**	—	—	—	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-329**	—	●	●	●	●	●	●	●	●	●
Rear connecting studs	**V12-T3-331**	●	●	●	●	●	●	●	●	●	●
Panelboard connecting straps	**V12-T3-332**	●	●	●	●	●	●	●	●	●	●
Handle mechanisms	—	—	—	—	●	●	●	—	—	—	—
LFD current limiter	**V12-T3-334**	—	—	—	●	●	●	—	—	—	—
IQ Energy Sentinel	**V12-T3-334**	—	●	●	●	●	●	—	—	—	—
Cause of trip display	**V12-T3-125**	—	—	—	●	—	—	●	—	—	—
Remote mount cause of trip display	**V12-T3-125**	—	—	—	●	—	—	●	—	—	—
Cause of trip LED	**V12-T3-335**	—	—	—	●	—	—	●	—	—	—
Modifications (Refer to Eaton)											
Special calibration	—	●	●	●	●	●	●	●	●	●	●
Moisture fungus treatment	**V12-T3-135**	●	●	●	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Note

① Internal accessories are listed with Underwriters Laboratories (UL) for factory installation. They are not listed with UL for field installation.

Specifications

210+ and 310+ Electronic Trip Unit Accessories

Description	210+	310+	Catalog number
Electronic portable test kit	■	■	**MTST230V**
Trip unit tamper protection wire seal	■	■	**5108A03H01**
External neutral sensor (80 A) ①		■	**CTF080**
External neutral sensor (160 A) ①		■	**CTF160**
External neutral sensor (225 A) ①		■	**CTF225**
Compact external neutral sensor (80 A) ①		■	**CTFD080**
Compact external neutral sensor (160 A) ①		■	**CTFD160**
Compact external neutral sensor (225 A) ①		■	**CTFD225**
Breaker-mount cause-of-trip indication		■	**TRIP-LED**
Breaker-mount ammeter module		■	**DIGIVIEW**
Remote-mount ammeter module		■	**DIGIVIEWR06**

FDE 210+ and 310+ Specifications

Description	Digitrip RMS 210+	Digitrip RMS 310+
Breaker type		
Frame designation	FD	FD
Frames available	100 A, 150 A, 225 A	80 A, 160 A, 225 A
Continuous current range (A)	40–225 A	15–225 A
Ground fault pickup (A)	N/A	16–225 A
Interrupting capacities at 480 Vac (kAIC)	35, 65, 100	35, 65, 100
Protection		
Ordering options	LI, LSI	LS, LSI, LSG, LSIG
Arcflash Reduction Maintenance System™ (or Maintenance Mode)	No	No
Interchangeable trip unit	No	No
High load alarm (suffix B20)	No	No
Ground fault alarm with trip (suffix B21)	No	No
Ground fault alarm, no trip (suffix B22)	No	No
Zone selective interlocking (suffix ZG)	No	LSI, LSIG
Cause of trip indication	No	Yes
Thru-cover accessories	No	No
Test kit available	Yes	Yes

FDE 210+ Adjustability Specifications

210+ settings		FD Frame 100 A	150 A	225 A
I_r = continuous current or long delay pickup (amperes) (all 210+)	I_r			
	A	40	70	100
	B	50	80	110
	C	60	90	125
	D	70	100	150
	E	80	110	175
	F	90	125	200
	G (= I_n)	100	150	225
I_i (x I_n)= Instantaneous pickup (210+ LI version)	I_i	100	150	225
	J–2x	200	300	450
	K–2.5x	250	375	565
	L–3x	300	450	675
	M–3.5x	350	525	790
	N–4x	400	600	900
	O–5x	500	750	1125
	P–6x	600	900	1350
	Q–8x	800	1200	1800
	R–10x	1000	1500	2250
	S–12x ②	1200	1800	2400
Fixed instantaneous override (all 210+)		2400	2400	2400
"Isd (x Ir) / tsd = SD profile ③ (210+ LSI version)	I_{sd} / t_{sd}	100	150	225
	J	2x / 150	N/A	2x / 150
	K	2x / 300	N/A	2x / 300
	L	2x / I^2t	N/A	2x / I^2t
	M	4x / Inst	N/A	4x / Inst
	N	4x / 150	N/A	4x / 150
	O	4x / I^2t	N/A	4x / I^2t
	P	6x / Inst	N/A	6x / Inst
	Q	6x / 300	N/A	6x / 300
	R	10x / 150	N/A	10x / 150
	S	10x / 300	N/A	10x / 300

Notes

① Neutral sensor required for four-wire systems if neutral protection is desired; sold separately.

② Not available for FD. Independently adjustable I_i setting available in LG, NG and RG ALSI and ALSIG trip units.

③ Maintenance Mode not available for FD frames. It is available for KD, LD, MDL, LG, NG and RG.

FDE 310+ Adjustability Specifications

310+ Settings		FD Frame 80 A	160 A	225 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r			
	A	15	60	100
	B	20	70	110
	C	30	80	125
	D	40	90	150
	E	50	100	160
	F	60	125	175
	G	70	150	200
	H (= I_n)	80	160	225
t_r = long delay time (seconds) (All 310+)	Position 1	2	2	2
	Position 2	4	4	4
	Position 3	7	7	7
	Position 4	10	10	10
	Position 5	12	12	12
	Position 6	15	15	15
	Position 7	20	20	20
	Position 8	24	24	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x	2x	2x
	Position 2	3x	3x	3x
	Position 3	4x	4x	4x
	Position 4	5x	5x	5x
	Position 5	6x	6x	6x
	Position 6	7x	7x	7x
	Position 7	8x	8x	8x
	Position 8	10x	10x	10x
	Position 9	12x	12x	12x
t_{sd} = short delay time I^2t (milliseconds) (LS, LSG)	Fixed	67 at10x	67 at10x	67 at10x
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG)	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
I_g = ground fault pickup (amperes) (LSG, LSIG)	Position 1	16	32	45
	Position 2	24	48	67
	Position 3	32	64	90
	Position 4	48	96	135
	Position 5	64	128	180
	Position 6	80	160	225
t_g = ground fault delay time (milliseconds) (LSG, LSIG)	Position 1	Inst	Inst	Inst
	Position 2	120	120	120
	Position 3	300	300	300
Independently Adjustable Instantaneous (I_i) setting	①			
Maintenance Mode pickup (2.5 x I_n) (amperes)	②			

Notes

① Not available for FD. Independently adjustable I_i setting available in LG, NG and RG ALSI and ALSIG trip units.

② Maintenance Mode not available for FD frames. It is available for KD, LD, MDL, LG, NG and RG.

Dimensions and Weights

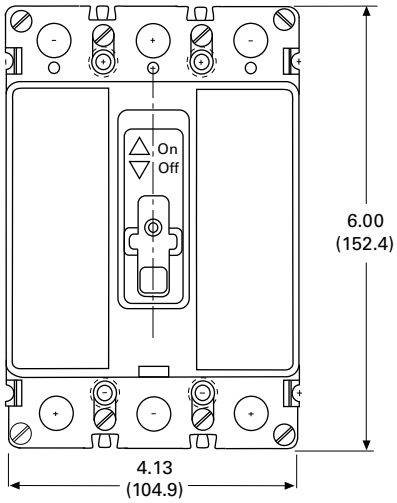
Approximate Dimensions in Inches (mm)

FD Frame

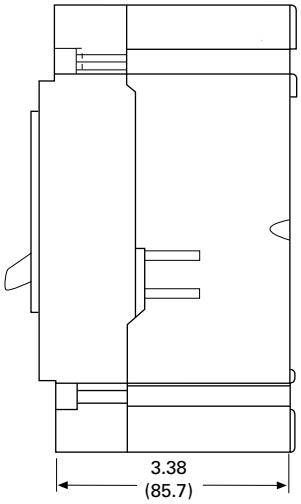
Number of Poles	Width	Height	Depth
1	1.38 (35.1)	6.00 (152.4)	3.38 (86.0)
2	2.75 (70.0)	6.00 (152.4)	3.38 (86.0)
3	4.13 (105.0)	6.00 (152.4)	3.38 (86.0)
4	5.50 (139.7)	6.00 (152.4)	3.38 (86.0)

FD Frame, Three-Pole

Front View



Side View



Approximate Shipping Weight Lb (kg)

FD Frame

	Number of Poles			
Breaker Type	1	2	3	4
ED, EDB, EDS, EDH, EDC	—	3 (1.4)	4.5 (2.0)	—
EHD, FDB, FD, HFD, FDC	2 (0.9)	3 (1.4)	4.5 (2.0)	6 (2.7)
FDE, HFDE, FDCE	—	—	4.5 (2.0)	—

Typical J-Frame Breaker



Contents

Description	Page
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Standards and Certifications	V12-T3-136
G-Frame (15–100 A)	V12-T3-137
F-Frame (10–225 A)	V12-T3-145
J-Frame (70–250 A)	
Catalog Number Selection	V12-T3-165
Product Selection	V12-T3-166
Accessories	V12-T3-169
Dimensions and Weights	V12-T3-170
K-Frame (70–400 A)	V12-T3-171
L-Frame (125–600 A)	V12-T3-195
M-Frame (300–800 A)	V12-T3-221
N-Frame (400–1200 A)	V12-T3-232
R-Frame (800–2500 A)	V12-T3-246
Motor Circuit Protectors (MCP)	V12-T3-264
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Type ELC Current Limiter Attachment (Size 0–4)	V12-T3-277
Current-Limiting Circuit Breaker Module	V12-T3-278
Internal Accessories	V12-T3-281
External Accessories	V12-T3-314

J-Frame (70–250 A)

Product Description

- All Eaton's J-Frame circuit breakers are HACR rated
- J-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- J-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

Technical Data and Specifications

UL 489 Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Volts DC 250 ①②	Recommended Power Defense Replacement ③
JDB	2, 3	65	35	18	10	PDG2xG or PDG3xG
JD	2, 3, 4	65	35	18	10	PDG2xG or PDG3xG
HJD	2, 3, 4	100	65	25	22	PDG2xM or PDG3xM
JDC ④	2, 3, 4	200	100	35	22	PDG2xP or PDG3xP

IEC 157-1 (P1) Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	380	415	Volts DC 250 ①②	Recommended Power Defense Replacement ③
JD	2, 3, 4	65	35	35	10	PDXXXXX
HJD	2, 3, 4	100	65	65	22	PDXXXXX
JDC	2, 3, 4	200	100	100	22	PDXXXXX

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
JDC	240 V/200 kA	42.6	1.36
JDC	480 V/100 kA	40.0	3.00
JDC	600 V/35 kA	31.9	3.10

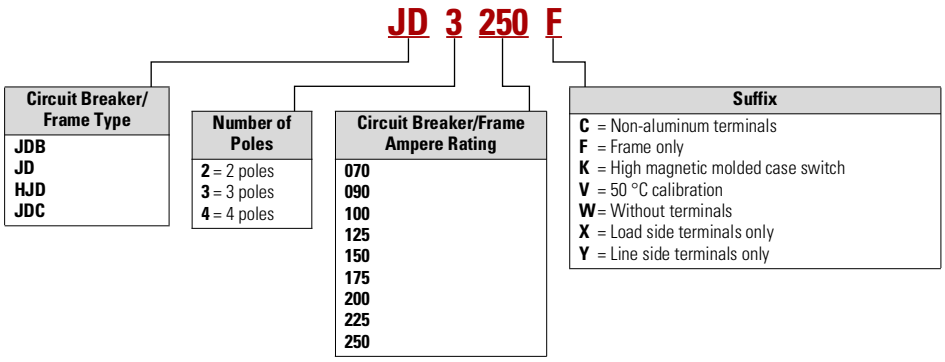
Notes

① Two-pole circuit breaker or two outside poles of three-pole circuit breaker.
② Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.
③ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.
④ Current limiting.

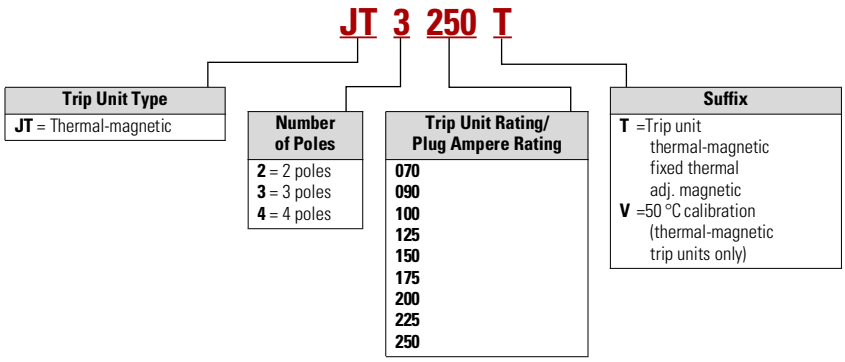
Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame



Trip Unit



Product Selection

Types JD, HJD and JDC Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units

Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① Catalog Number	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① Catalog Number	Thermal-Magnetic Trip Unit Only ① For Use with Standard or High or Ultra High Interrupting Frames Catalog Number	Standard Terminals Only See Page V12-T3-168 for Optional Terminals Catalog Number
Two-Pole					
70	**JD2070**	**HJD2070**	**JDC2070**	**JT2070T**	**TA250KB** ②
90	**JD2090**	**HJD2090**	**JDC2090**	**JT2090T**	
100	**JD2100**	**HJD2100**	**JDC2100**	**JT2100T**	
125	**JD2125**	**HJD2125**	**JDC2125**	**JT2125T**	
150	**JD2150**	**HJD2150**	**JDC2150**	**JT2150T**	
175	**JD2175**	**HJD2175**	**JDC2175**	**JT2175T**	
200	**JD2200**	**HJD2200**	**JDC2200**	**JT2200T**	
225	**JD2225**	**HJD2225**	**JDC2225**	**JT2225T**	
250	**JD2250**	**HJD2250**	**JDC2250**	**JT2250T**	
Three-Pole					
70	**JD3070**	**HJD3070**	**JDC3070**	**JT3070T**	**TA250KB** ②
90	**JD3090**	**HJD3090**	**JDC3090**	**JT3090T**	
100	**JD3100**	**HJD3100**	**JDC3100**	**JT3100T**	
125	**JD3125**	**HJD3125**	**JDC3125**	**JT3125T**	
150	**JD3150**	**HJD3150**	**JDC3150**	**JT3150T**	
175	**JD3175**	**HJD3175**	**JDC3175**	**JT3175T**	
200	**JD3200**	**HJD3200**	**JDC3200**	**JT3200T**	
225	**JD3225**	**HJD3225**	**JDC3225**	**JT3225T**	
250	**JD3250**	**HJD3250**	**JDC3250**	**JT3250T**	
Four-Pole ③④					
125	—	**HJD4125**	—	**JT4125T**	**TA250KB** ②
150	—	—	—	—	
175	—	—	—	—	
200	**JD4200**	—	—	**JT4200T**	
225	—	—	—	—	
250	**JD4250**	**HJD4250**	—	**JT4250T**	

Notes

① Magnetic trip adjustable 5–10 times continuous ampere rating.
② Individually packed.
③ Fully rated neutral pole with no protection.
④ Neutral is in right pole.

Types JD, HJD and JDC Thermal-Magnetic Circuit Breakers—Frame Only

Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac
Catalog Number	Catalog Number	Catalog Number
Two-Pole		
JD2250F	HJD2250F	JDC2250F
Three-Pole		
JD3250F	HJD3250F	JDC3250F
Four-Pole		
JD4250F	HJD4250F	JDC4250F

Type JDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Thermal-Magnetic Trip Units Suitable for Reverse Feed Application

	600 Vac Rated, 250 Vdc Complete Circuit Breaker	
Maximum Continuous Ampere Rating at 40 °C	Without Line and Load Terminals Catalog Number	With Standard Line and Load Terminals Only Catalog Number
Two-Pole		
70	JDB2070W	JDB2070
90	JDB2090W	JDB2090
100	JDB2100W	JDB2100
125	JDB2125W	JDB2125
150	JDB2150W	JDB2150
175	JDB2175W	JDB2175
200	JDB2200W	JDB2200
225	JDB2225W	JDB2225
250	JDB2250W	JDB2250
Three-Pole		
70	JDB3070W	JDB3070
90	JDB3090W	JDB3090
100	JDB3100W	JDB3100
125	JDB3125W	JDB3125
150	JDB3150W	JDB3150
175	JDB3175W	JDB3175
200	JDB3200W	JDB3200
225	JDB3225W	JDB3225
250	JDB3250W	JDB3250

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

	600 Vac Maximum, 250 Vdc Complete Circuit Breaker Only Without Line and Load Terminals		Standard Terminals Only
Maximum Continuous Ampere Rating at 40 °C	Catalog Number	Suitable for Reverse Feed Use Catalog Number	See PageV12-T3-168 for Optional Terminals Catalog Number
Two-Pole			
250	JD2250KW	JDB2250KW	TA250KB ①
	HJD2250KW	HJDB2250KW	—
Three-Pole			
250	JD3250KW	JDB3250KW	TA250KB ①
	HJD3250KW	HJDB3250KW	—
Four-Pole			
250	JD4250KW	JDB4250KW	TA250KB ①
	HJD4250KW	HJDB4250KW	—

Notes

① Individually packed.

Molded case switches may open above 2500 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

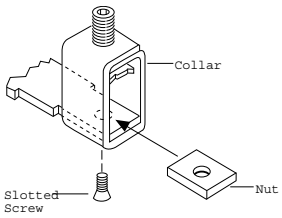
Eaton's line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165.

Unless otherwise specified, J-Frame circuit breaker line and load terminals are shipped separately for field installation.

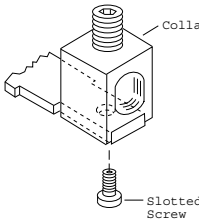
The bottom of the standard TA250KB terminal contains a recess that is positioned over the J-Frame circuit breaker terminal conductor.

Ordering Information

J-Frame circuit breakers use Cu/Al terminals as standard. When optional copper-only terminals are required, order by catalog number. Specify if factory installation is required.



T250KB Terminal



TA250KB Terminal (Standard)

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range/ No. Conductors	Metric Wire Range mm^2	Catalog Number
Standard Cu/Al Pressure Terminals					
250	Aluminum	Cu/Al	4–350 kcmil	25–185	**TA250KB**
Optional Cu Pressure Terminals					
250	Stainless Steel	Cu	4–350 kcmil	25–185	**T250KB**

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

JD Frame Accessories

Description	Reference Page	Two-, Three-Pole Left	Center	Right	Four-Pole Left	Center	Right	Neutral
Internal Accessories (Only One Internal Accessory Per Pole)								
Alarm lockout (Make/Break)	**V12-T3-283**	❑	—	❑	❑	—	❑	—
Auxiliary switch (1A, 1B)	**V12-T3-285**	■	—	■	■	—	■	—
Auxiliary switch (2A, 2B)	**V12-T3-285**	■	—	■	■	—	■	—
Auxiliary switch and alarm switch combination	**V12-T3-287**	❑	—	❑	❑	—	❑	—
Shunt trip—standard	**V12-T3-290**	■	—	■	■	—	■	—
Shunt trip—low energy	**V12-T3-293**	■	—	■	■	—	■	—
Undervoltage release mechanism	**V12-T3-297**	■	—	■	■	—	■	—
External Accessories								
End cap kit	**V12-T3-318**	●	●	●	●	●	●	●
Plug nut	**V12-T3-319**	●	●	●	●	●	●	●
Control wire terminal kit	**V12-T3-319**	●	●	●	●	●	●	●
Multiwire connectors	**V12-T3-320**	●	●	●	●	●	●	●
Base mounting hardware	**V12-T3-321**	●	●	●	●	●	●	●
Terminal shields	**V12-T3-322**	●	●	●	●	●	●	●
Interphase barriers	**V12-T3-323**	●	●	●	●	●	●	●
Non-padlockable handle block	**V12-T3-324**	—	■	—	—	■	—	—
Padlockable handle block	**V12-T3-324**	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V12-T3-325**	❑	—	❑	❑	—	❑	—
Cylinder lock	**V12-T3-325**	❑	—	❑	—	—	—	—
Key interlock kit	**V12-T3-326**	❑	—	❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V12-T3-327**	●	●	●	—	—	—	—
Electrical (solenoid) operator	**V12-T3-329**	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-329**	●	●	●	●	●	●	●
Rear connecting studs	**V12-T3-331**	●	●	●	●	●	●	●
Panelboard connecting straps	**V12-T3-332**	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●
Handle extension	—	●	●	●	●	●	●	●
IQ Energy Sentinel	**V12-T3-334**	●	●	●	—	—	—	—
Modifications (Refer to Eaton)								
Special calibration	—	●	●	●	●	●	●	●
Moisture fungus treatment	**V12-T3-135**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Dimensions and Weights

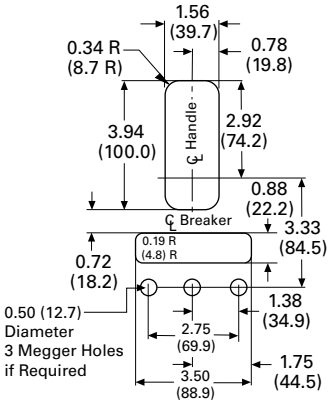
Approximate Dimensions in Inches (mm)

JD Frame

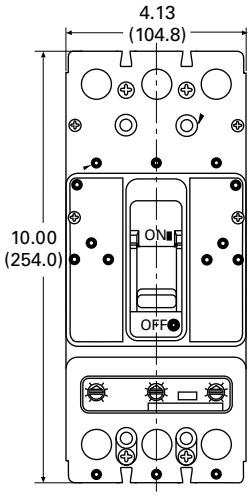
Number of Poles	Width	Height	Depth
2, 3	4.13 (105.0)	10.00 (254.0)	4.06 (104.1)
4	5.50 (139.7)	10.00 (254.0)	4.06 (104.1)

JD-Frame, Three-Pole

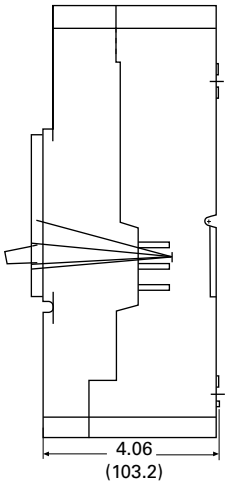
Front View Cutout



Front View



Side View



Approximate Shipping Weight in Lb (kg)

JD Frame

Breaker Type	Complete Breaker			Frame Only			Trip Unit		
	Two-Pole	Three-Pole	Four-Pole	Two-Pole	Three-Pole	Four-Pole	Two-Pole	Three-Pole	Four-Pole
JDB	11.25 (5.1)	12.50 (5.7)	—	—	—	—	—	—	—
JD	11.25 (5.1)	12.50 (5.7)	13.25 (6.0)	9.00 (4.1)	10.00 (4.5)	10.50 (4.8)	2.00 (0.9)	2.00 (0.9)	2.25 (1.0)
HJD	11.25 (5.1)	12.50 (5.7)	13.25 (6.0)	9.00 (4.1)	10.00 (4.5)	10.50 (4.8)	2.00 (0.9)	2.00 (0.9)	2.25 (1.0)
JDC	12.25 (5.6)	13.50 (6.1)	14.25 (6.5)	10.00 (4.5)	11.00 (5.0)	11.50 (5.2)	2.00 (0.9)	2.00 (0.9)	2.25 (1.0)

Typical K-Frame Circuit Breaker



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Description	*Page*
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F-Frame (10–225 A)	**V12-T3-145**
J-Frame (70–250 A)	**V12-T3-164**
K-Frame (70–400 A)	
Catalog Number Selection	**V12-T3-172**
Product Selection	**V12-T3-174**
Accessories	**V12-T3-190**
Specification	**V12-T3-192**
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L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

K-Frame (70–400 A)

Product Description

- All Eaton K-Frame circuit breakers are HACR rated
- K-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- K-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

Technical Data

NEMA/UL 489/CSA Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles ①	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Volts DC 250 ②③	Recommended Power Defense Replacement ④
DK	2, 3	65	—	—	10	PDD3xG
KDB	2, 3, 4	65	35	25	10	PDG3xG
KD	2, 3, 4	65	35	25	10	PDG3xG
HKD, HKDB	2, 3, 4	100	65	35	22	PDG3xM
KDC ⑤	2, 3, 4	200	100	65	22	PDG3xP
CKD	3	65	35	25	—	PDG3xG
CHKD	3	100	65	35	—	PDF3xM

IEC 157-1 (P1) Interrupting Capacity Ratings

Circuit Breaker Type	Number of Poles ①	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	380	415	Volts DC 250 ②③	Recommended Power Defense Replacement ④
DK	2, 3	65	—	—	10	PDD3xG
KDB	2, 3, 4	65	40	40	10	PDG3xG
KD	2, 3, 4	65	40	40	10	PDG3xG
HKD, HKDB	2, 3, 4	100	65	65	22	PDG3xM
KDC	2, 3, 4	200	100	100	22	PDG3xP

Notes

① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.

② Two-pole circuit breaker or two outside poles of three-pole circuit breaker.

③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds minimum at 22 kA.

④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

⑤ Current limiting.

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
KDC	240 V/200 kA	56.00	2.30
KDC	480 V/100 kA	53.30	5.60
KDC	600 V/50 kA	43.40	5.40

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

K-Frame with Thermal-Magnetic Trip Unit Technology

Thermal-Magnetic Breakers and Frames ①

KD 3 400 F

Circuit Breaker/ Frame Type	Number of Poles	Circuit Breaker/ Frame Ampere Rating	Suffix
DK	**2** = Two-pole	**100**	**C** = Copper terminals
KD	**3** = Three-pole	**125**	**E** = 50% protected neutral pole (four-pole electronic trip unit circuit breaker only)
KDB	**4** = Four-pole	**150**	**F** = Frame only (400 A only)
HKD		**175**	**K** = High-magnetic molded-case switch
KDC		**200**	**V** = 50 ° calibration (thermal-magnetic trip units only)
		225	**W** = Without terminals
		250	**X** = Load terminals only
		300	**Y** = Line side terminals only
		350	**Blank** = Standard load and line side terminals
		400	

Thermal-Magnetic Trip Unit ①

KT 3 400 F

Trip Unit Type	Number of Poles	Circuit Breaker/ Frame Ampere Rating	Suffix
KT = Thermal-magnetic	**2** = Two-pole	**100**	**T** = Trip unit only
	3 = Three-pole	**125**	
	4 = Four-pole	**150**	
		175	
		200	
		225	
		250	
		300	
		350	
		400	

Notes

① Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **KD3400F** or **HKD3400F**.
Ampere rating available with electronic trip unit only.

Shaded area denotes obsolete or discontinued products and services.

K-Frame with 310+ Electronic Trip Unit Technology ①

310+ Circuit Breakers ②

KDB 3 400 F T36 ZG W

Performance at 480 Vac	Number of Poles	Ampere Rating	Frame Designation	Trip Unit	Feature	Terminals
KDB= 35 kAIC **HKDB**= 65 kAIC **CKDB**= 35 kAIC 100% rated **CHKDB**= 65 kAIC 100% rated	**3** = Three-pole	**125** **250** **400**	**F**	**T33**=310+ Electronic LS **T32**=310+ Electronic LSI **T35**=310+ Electronic LSG **T36**=310+ Electronic LSIG **T38**=310+ Electronic ALSI with Maintenance Mode **T39**=310+ Electronic ALSIG with Maintenance Mode	**Blank**= No feature **B20** = High load alarm **B21** = Ground fault alarm, with trip **B22** = Ground fault alarm, no trip **ZG** = Zone selective interlocking	**W** = No terminals **L** = Line and load

310+ Electronic Trip Units ③

KES 3 400 LSIG ZG

Trip Unit Type	Number of Poles	Ampere Rating	Trip Unit	Feature
KES	**3** = Three-pole **4** = Four-pole	**125** **250** **400**	**LS**= 310+ Electronic LS **LSI**=310+ Electronic LSI **LSG**=310+ Electronic LSG ② **LSIG**=310+ Electronic LSIG ② **ALSI**=310+ Electronic LSI with Maintenance Mode **ALSIG**=310+ Electronic LSIG with Maintenance Mode ②	**Blank**= No feature **B20** = High load alarm **B21** = Ground fault alarm, with trip ② **B22** = Ground fault alarm, no trip ② **ZG** = Zone selective interlocking

K-Frame with OPTIM Trip Unit Technology

OPTIM Circuit Breakers

KD 3 125 T5 7 W

Circuit Breaker/ Frame Type	Number of Poles	Circuit Breaker/Frame Ampere Rating	Trip Model	Trip Type	Suffix
KD **HKD** **KDC** **CKD** **CHKD**	**3** = Three-pole	**125** **250** **400**	**T5**= Model 550 **T10**= Model 1050	**2** = LSI **6** = LSIG **7** = LSIA	**W** = Without terminals

Notes

① Cannot combine 'B2X' suffixes with 'B2X' suffixes.

② Not available in four-pole configurations.

③ Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **KD3400F**, **HKD3400F**, etc.

Product Selection

Types KD, HKD and KDC Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units

Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① Catalog Number	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals ① Catalog Number	Thermal-Magnetic Trip Unit Only ① For Use with Standard or High or Ultra High Interrupting Frames Catalog Number	Standard Terminals Only See Page V12-T3-189 for Optional Terminals Catalog Number
Two-Pole					
100	**KD2100**	**HKD2100**	**KDC2100**	**KT2100T**	**TA300K** ②
125	**KD2125**	**HKD2125**	**KDC2125**	**KT2125T**	**TA300K** ②
150	**KD2150**	**HKD2150**	**KDC2150**	**KT2150T**	**TA300K** ②
175	**KD2175**	**HKD2175**	**KDC2175**	**KT2175T**	**TA300K** ②
200	**KD2200**	**HKD2200**	**KDC2200**	**KT2200T**	**TA300K** ②
225	**KD2225**	**HKD2225**	**KDC2225**	**KT2225T**	**TA300K** ②
250	**KD2250**	**HKD2250**	**KDC2250**	**KT2250T**	**TA350K** ②
300	**KD2300**	**HKD2300**	**KDC2300**	**KT2300T**	**TA350K** ②
350	**KD2350**	**HKD2350**	**KDC2350**	**KT2350T**	**TA350K** ②
400	**KD2400**	**HKD2400**	**KDC2400**	**KT2400T**	**2TA400K** ③
Three-Pole					
100	**KD3100**	**HKD3100**	**KDC3100**	**KT3100T**	**TA300K** ②
125	**KD3125**	**HKD3125**	**KDC3125**	**KT3125T**	**TA300K** ②
150	**KD3150**	**HKD3150**	**KDC3150**	**KT3150T**	**TA300K** ②
175	**KD3175**	**HKD3175**	**KDC3175**	**KT3175T**	**TA300K** ②
200	**KD3200**	**HKD3200**	**KDC3200**	**KT3200T**	**TA300K** ②
225	**KD3225**	**HKD3225**	**KDC3225**	**KT3225T**	**TA300K** ②
250	**KD3250**	**HKD3250**	**KDC3250**	**KT3250T**	**TA350K** ②
300	**KD3300**	**HKD3300**	**KDC3300**	**KT3300T**	**TA350K** ②
350	**KD3350**	**HKD3350**	**KDC3350**	**KT3350T**	**TA350K** ②
400	**KD3400**	**HKD3400**	**KDC3400**	**KT3400T**	**3TA400K** ③
Four-Pole					
100	**KD4100**	**HKD4100**	**KDC4100**	**KT3100T**	**TA300K** ②
125	**KD4125**	**HKD4125**	**KDC4125**	**KT3125T**	**TA300K** ②
175	**KD4175**	**HKD4175**	**KDC4175**	**KT3175T**	**TA300K** ②
200	**KD4200**	**HKD4200**	**KDC4200**	**KT3200T**	**TA300K** ②
225	**KD4225**	**HKD4225**	**KDC4225**	**KT3225T**	**TA300K** ②
250	**KD4250**	**HKD4250**	**KDC4250**	**KT3250T**	**TA350K** ②
300	**KD4300**	**HKD4300**	**KDC4300**	**KT3300T**	**TA350K** ②
350	**KD4350**	**HKD4350**	**KDC4350**	**KT3350T**	**TA350K** ②
400	**KD4400**	**HKD4400**	**KDC4400**	**KT3400T**	**4TA400K** ③

Notes

① Magnetic trip adjustable 5–10 times continuous ampere rating.
② Individually packed.
③ 2TA400K, 3TA400K and 4TA400K terminal kits contain one terminal for each pole and one terminal cover.

Types KD, HKD and KDC Thermal-Magnetic Circuit Breakers—Frame Only

Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Catalog Number	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Catalog Number
Two-Pole		
KD2400F	HKD2400F	KDC2400F
Three-Pole		
KD3400F	HKD3400F	KDC3400F
Four-Pole		
KD4400F	HKD4400F	KDC4400F

Types KD, HKD and KDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units

Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on **Page V12-T3-192**.

Types KD, HKD and KDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Three-Pole

	Circuit Breaker Frame Only			Digitrip RMS 310+ Trip Unit Only ①					
				Standard	Options				
			Ultra High Interrupting	LS	LSI	LSG	LSIG		
Max. Cont. Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac	Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac	Adjustable Short Time Pickup with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number	Terminal Information
125	KD3400F	HKD3400F	KDC3400F	KES3125LS	KES3125LSI	KES3125LSG	KES3125LSIG	LGFCT125	See **Page V12-T3-189**
250	KD3400F	HKD3400F	KDC3400F	KES3250LS	KES3250LSI	KES3250LSG	KES3250LSIG	LGFCT250	
400	KD3400F	HKD3400F	KDC3400F	KES3400LS	KES3400LSI	KES3400LSG	KES3400LSIG	LGFCT400	

Types KD, HKD and KDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Four-Pole ④⑤

	Circuit Breaker Frame Only			Digitrip RMS 310+ Trip Unit Only ①					
				Standard	Options				
			Ultra High Interrupting	LS	LSI	LSG	LSIG		
Max. Cont. Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac	Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac	Adjustable Short Time Pickup with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number	Terminal Information
125	KD4400F	HKD4400F	KDC4400F	KES4125LS	KES4125LSI	—	—	—	See **Page V12-T3-189**
250	KD4400F	HKD4400F	KDC4400F	KES4250LS	KES4250LSI	—	—	—	
400	KD4400F	HKD4400F	KDC4400F	KES4400LS	KES4400LSI	—	—	—	

Notes

① For AC use only.
② Required for four-wire systems if neutral protection is desired.
③ Included with LSG and LSIG trip units.
④ Trip unit includes protected neutral pole. Use corresponding three-pole trip unit if protected neutral pole is not required.
⑤ Fully rated neutral pole protection is standard. For 50% rated protection on neutral pole, add Suffix **E** to four-pole trip unit catalog number.

Type KDB with Digitrip 310+ Non-Interchangeable Trip Unit Suitable for Reverse Feed

See 310+ adjustability specifications on **Page V12-T3-192**.

		Factory Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals ①					
		Standard LS	Optional LSI	LSG	LSIG		
Maximum Continuous Ampere Rating at 40 °C	Number of Poles	Adjustable Short Time Pickup with I^2t Short Delay Ramp Catalog Number	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number	Terminal Information
125	3	KDB3125FT33W	KDB3125FT32W	KDB3125FT35W	KDB3125FT36W	LGFCT125	See Page V12-T3-190
250	3	KDB3250FT33W	KDB3250FT32W	KDB3250FT35W	KDB3250FT36W	LGFCT250	
400	3	KDB3400FT33W	KDB3400FT32W	KDB3400FT35W	KDB3400FT36W	LGFCT400	

Type HKDB with Digitrip 310+ Non-Interchangeable Trip Unit Suitable for Reverse Feed

See 310+ adjustability specifications on **Page V12-T3-192**.

		Factory Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals ①					
		Standard LS	Optional LSI	LSG	LSIG		
Maximum Continuous Ampere Rating at 40 °C	Number of Poles	Adjustable Short Time Pickup with I^2t Short Delay Ramp Catalog Number	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number	Terminal Information
125	3	HKDB3125FT33W	HKDB3125FT32W	HKDB3125FT35W	HKDB3125FT36W	LGFCT125	See Page V12-T3-190
250	3	HKDB3250FT33W	HKDB3250FT32W	HKDB3250FT35W	HKDB3250FT36W	LGFCT250	
400	3	HKDB3400FT33W	HKDB3400FT32W	HKDB3400FT35W	HKDB3400FT36W	LGFCT400	

100% Rated Types CKD and CHKD Electronic Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at the 75 °C ampacity. All 100% rated circuit breakers have electronic trip units.

100% Rated Types CKD and CHKD Electronic Circuit Breakers—Three-Pole

See 310+ adjustability specifications on **Page V12-T3-192**.

	Circuit Breaker Frame Only		Digitrip RMS 310+ Trip Unit Only					
			Standard	Options				
Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 35 kAIC at 480 Vac Catalog Number	High Interrupting Capacity 65 kAIC at 480 Vac	Adjustable Short Time Pickup with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Delay and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number	Terminal Information
125	CKD3400F	CHKD3400F	KES3125LS	KES3125LSI	KES3125LSG	KES3125LSIG	LGFCT125	See Page V12-T3-189
250	CKD3400F	CHKD3400F	KES3250LS	KES3250LSI	KES3250LSG	KES3250LSIG	LGFCT250	
400	CKD3400F	CHKD3400F	KES3400LS	KES3400LSI	KES3400LSG	KES3400LSIG	LGFCT400	

Notes

① For AC use only.
② Required for four-wire systems if neutral protection is desired.
③ Included with LSG and LSIG trip units.

Types DK and KDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Suitable for reverse feed application.

Types DK and KDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units

Maximum Continuous Ampere Rating at 40 °C	240 Vac Rated, 250 Vdc Complete Circuit Breaker			600 Vac Rated, 250 Vdc Complete Circuit Breaker	
	Without Line and Load Terminals	With Line Terminals Only	With Standard Line and Load Terminals Only	Without Line and Load Terminals	With Standard Line and Load Terminals
	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number
Two-Pole					
100	—	—	—	**KDB2100W**	**KDB2100**
125	—	—	—	**KDB2125W**	**KDB2125**
150	—	—	—	**KDB2150W**	**KDB2150**
175	—	—	—	**KDB2175W**	**KDB2175**
200	—	—	—	**KDB2200W**	**KDB2200**
225	—	—	—	**KDB2225W**	**KDB2225**
250	**DK2250W**	**DK2250Y**	**DK2250**	**KDB2250W**	**KDB2250**
300	**DK2300W**	**DK2300Y**	**DK2300**	**KDB2300W**	**KDB2300**
350	**DK2350W**	**DK2350Y**	**DK2350**	**KDB2350W**	**KDB2350**
400	**DK2400W**	**DK2400Y**	**DK2400**	**KDB2400W**	**KDB2400**
Three-Pole					
100	—	—	—	**KDB3100W**	**KDB3100**
125	—	—	—	**KDB3125W**	**KDB3125**
150	—	—	—	**KDB3150W**	**KDB3150**
175	—	—	—	**KDB3175W**	**KDB3175**
200	—	—	—	**KDB3200W**	**KDB3200**
225	—	—	—	**KDB3225W**	**KDB3225**
250	**DK3250W**	**DK3250Y**	**DK3250**	**KDB3250W**	**KDB3250**
300	**DK3300W**	**DK3300Y**	**DK3300**	**KDB3300W**	**KDB3300**
350	**DK3350W**	**DK3350Y**	**DK3350**	**KDB3350W**	**KDB3350**
400	**DK3400W**	**DK3400Y**	**DK3400**	**KDB3400W**	**KDB3400**

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

Maximum Continuous Ampere Rating at 40 °C	240 Vac Maximum, 250 Vdc Complete Circuit Breaker with Standard Line and Load Terminals Catalog Number	600 Vac Maximum, 250 Vdc Complete Circuit Breaker with Standard Line and Load Terminals Catalog Number	600 Vac Maximum, 250 Vdc Complete Circuit Breaker with Standard Line and Load Terminals. Suitable for Reverse Feed Use Catalog Number
Two-Pole			
400	**DK2400K**	**KD2400K**	**KDB2400K**
	—	**HKD2400K**	**HKDB2400K**
Three-Pole			
400	**DK3400K**	**KD3400K**	**KDB3400K**
	—	**HKD3400K**	**HKDB3400K**
Four-Pole			
400	—	**KD4400K**	**KDB4400K**
	—	**HKD4400K**	**HKDB4400K**

Note

Molded case switches may open above 4000 amperes.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac					
125	**KD3125T52W**	**KD3125T56W**	**KD3125T57W**	70	**ORPK125A70**
				90	**ORPK125A90**
				100	**ORPK125A100**
				110	**ORPK125A110**
				125	**ORPK125A125**
250	**KD3250T52W**	**KD3250T56W**	**KD3250T57W**	125	**ORPK025A125**
				150	**ORPK025A150**
				175	**ORPK025A175**
				200	**ORPK025A200**
				225	**ORPK025A225**
				250	**ORPK025A250**
400	**KD3400T52W**	**KD3400T56W**	**KD3400T57W**	200	**ORPK40A200**
				225	**ORPK40A225**
				250	**ORPK40A250**
				300	**ORPK40A300**
				350	**ORPK40A350**
				400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
125	**HKD3125T52W**	**HKD3125T56W**	**HKD3125T57W**	70	**ORPK125A70**
				90	**ORPK125A90**
				100	**ORPK125A100**
				110	**ORPK125A110**
				125	**ORPK125A125**
250	**HKD3250T52W**	**HKD3250T56W**	**HKD3250T57W**	125	**ORPK025A125**
				150	**ORPK025A150**
				175	**ORPK025A175**
				200	**ORPK025A200**
				225	**ORPK025A225**
				250	**ORPK025A250**
400	**HKD3400T52W**	**HKD3400T56W**	**HKD3400T57W**	200	**ORPK40A200**
				225	**ORPK40A225**
				250	**ORPK40A250**
				300	**ORPK40A300**
				350	**ORPK40A350**
				400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ②				
	LSI	LSIG	LSIA		Fixed Rating Plug
	Catalog Number	Catalog Number	Catalog Number	Ampere Rating	Catalog Number
Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac					
125	**KDC3125T52W**	**KDC3125T56W**	**KDC3125T57W**	70	**ORPK125A70**
				90	**ORPK125A90**
				100	**ORPK125A100**
				110	**ORPK125A110**
				125	**ORPK125A125**
250	**KDC3250T52W**	**KDC3250T56W**	**KDC3250T57W**	125	**ORPK025A125**
				150	**ORPK025A150**
				175	**ORPK025A175**
				200	**ORPK025A200**
				225	**ORPK025A225**
				250	**ORPK025A250**
400	**KDC3400T52W**	**KDC3400T56W**	**KDC3400T57W**	200	**ORPK40A200**
				225	**ORPK40A225**
				250	**ORPK40A250**
				300	**ORPK40A300**
				350	**ORPK40A350**
				400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)		Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ② LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac				
125	**KD3125T106W**	**KD3125T107W**	70	**ORPK125A70**
			90	**ORPK125A90**
			100	**ORPK125A100**
			110	**ORPK125A110**
			125	**ORPK125A125**
250	**KD3250T106W**	**KD3250T107W**	125	**ORPK025A125**
			150	**ORPK025A150**
			175	**ORPK025A175**
			200	**ORPK025A200**
			225	**ORPK025A225**
			250	**ORPK025A250**
400	**KD3400T106W**	**KD3400T107W**	200	**ORPK40A200**
			225	**ORPK40A22**
			250	**ORPK40A250**
			300	**ORPK40A300**
			350	**ORPK40A350**
			400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Digitrip OPTIM Rating Plug Only

Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ② LSIG Catalog Number	LSIA Catalog Number	Fixed Rating Plug Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
125	**HKD3125T106W**	**HKD3125T107W**	70	**ORPK125A70**
			90	**ORPK125A90**
			100	**ORPK125A100**
			110	**ORPK125A110**
			125	**ORPK125A125**
250	**HKD3250T106W**	**HKD3250T107W**	125	**ORPK025A125**
			150	**ORPK025A150**
			175	**ORPK025A175**
			200	**ORPK025A200**
			225	**ORPK025A225**
			250	**ORPK025A250**
400	**HKD3400T106W**	**HKD3400T107W**	200	**ORPK40A200**
			225	**ORPK40A225**
			250	**ORPK40A250**
			300	**ORPK40A300**
			350	**ORPK40A350**
			400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)		Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②			
	LSIG	LSIA		Fixed Rating Plug
	Catalog Number	Catalog Number	Ampere Rating	Catalog Number
Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac				
125	KDC3125T106W	KDC3125T107W	70	ORPK125A70
			90	ORPK125A90
			100	ORPK125A100
			110	ORPK125A110
			125	ORPK125A125
250	KDC3250T106W	KDC3250T107W	125	ORPK025A125
			150	ORPK025A150
			175	ORPK025A175
			200	ORPK025A200
			225	ORPK025A225
			250	ORPK025A250
400	KDC3400T106W	KDC3400T107W	200	ORPK40A200
			225	ORPK40A225
			250	ORPK40A250
			300	ORPK40A300
			350	ORPK40A350
			400	ORPK40A400

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

100% Rated Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac					
125	**CKD3125T52W**	**CKD3125T56W**	**CKD3125T57W**	70	**ORPK125A70**
				90	**ORPK125A90**
				100	**ORPK125A100**
				110	**ORPK125A110**
				125	**ORPK125A125**
250	**CKD3250T52W**	**CKD3250T56W**	**CKD3250T57W**	125	**ORPK025A125**
				150	**ORPK025A150**
				175	**ORPK025A175**
				200	**ORPK025A200**
				225	**ORPK025A225**
				250	**ORPK025A250**
400	**CKD3400T52W**	**CKD3400T56W**	**CKD3400T57W**	200	**ORPK40A200**
				225	**ORPK40A225**
				250	**ORPK40A250**
				300	**ORPK40A300**
				350	**ORPK40A350**
				400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number (refer to **Page V12-T3-301**).

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
125	**CHKD3125T52W**	**CHKD3125T56W**	**CHKD3125T57W**	70	**ORPK125A70**
				90	**ORPK125A90**
				100	**ORPK125A100**
				110	**ORPK125A110**
				125	**ORPK125A125**
250	**CHKD3250T52W**	**CHKD3250T56W**	**CHKD3250T57W**	125	**ORPK025A125**
				150	**ORPK025A150**
				175	**ORPK025A175**
				200	**ORPK025A200**
				225	**ORPK025A225**
				250	**ORPK025A250**
400	**CHKD3400T52W**	**CHKD3400T56W**	**CHKD3400T57W**	200	**ORPK40A200**
				225	**ORPK40A225**
				250	**ORPK40A250**
				300	**ORPK40A300**
				350	**ORPK40A350**
				400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)		Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ② LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac				
125	**CKD3125T106W**	**CKD3125T107W**	70	**ORPK125A70**
			90	**ORPK125A90**
			100	**ORPK125A100**
			110	**ORPK125A110**
			125	**ORPK125A125**
250	**CKD3250T106W**	**CKD3250T107W**	125	**ORPK025A125**
			150	**ORPK025A150**
			175	**ORPK025A175**
			200	**ORPK025A200**
			225	**ORPK025A225**
			250	**ORPK025A250**
400	**CKD3400T106W**	**CKD3400T107W**	200	**ORPK40A200**
			225	**ORPK40A225**
			250	**ORPK40A250**
			300	**ORPK40A300**
			350	**ORPK40A350**
			400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plug, continued

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response) OPTIM 1050 ②		Digitrip OPTIM Rating Plug Only	
	LSIG	LSIA		Fixed Rating Plug
	Catalog Number	Catalog Number	Ampere Rating	Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
125	**CHKD3125T106W**	**CHKD3125T107W**	70	**ORPK125A70**
			90	**ORPK125A90**
			100	**ORPK125A100**
			110	**ORPK125A110**
			125	**ORPK125A125**
250	**CHKD3250T106W**	**CHKD3250T107W**	125	**ORPK025A125**
			150	**ORPK025A150**
			175	**ORPK025A175**
			200	**ORPK025A200**
			225	**ORPK025A225**
			250	**ORPK025A250**
400	**CHKD3400T106W**	**CHKD3400T107W**	200	**ORPK40A200**
			225	**ORPK40A225**
			250	**ORPK40A250**
			300	**ORPK40A300**
			350	**ORPK40A350**
			400	**ORPK40A400**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Factory sealed.

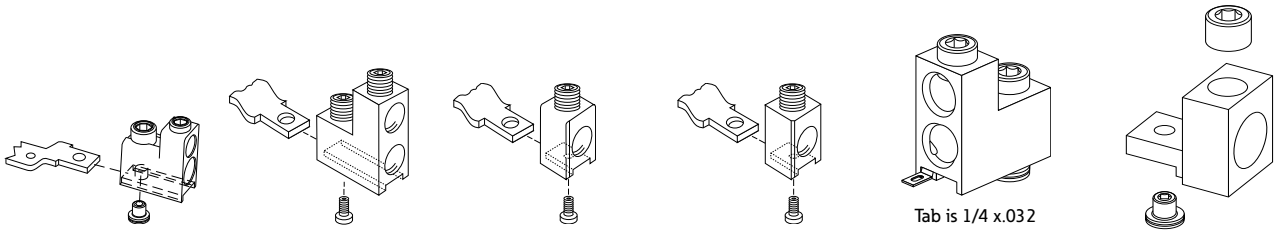
Accessories Selection Guide and Ordering Guide

Line and Load Terminals

Eaton's line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B and CSA Standard C22.2 No. 65, or Electrical Bulletin 1165. Unless otherwise specified, K-Frame circuit breaker line and load terminals are shipped separately for field installation.

Ordering Information

K-Frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.



TA401K | **TA400K, T400K** | **TA350K, T350K** | **TA300K, T300K** | **T400KCW, TA400KCW, TA401KCW** | **TA402K, T402K**

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	Metric Wire Range mm²	Terminal Catalog Number	Terminals with Control Wire Termination Catalog Number
Standard Cu/Al Pressure Terminals						
225	Aluminum	Cu/Al	3–350 (1)	35–185	**TA300K** ①	—
400	Aluminum	Cu/Al	250–500 (1)	120–240	**TA350K** ①	—
400	Aluminum	Cu/Al	3/0–250 (2)	95–120	**2TA400K** ②③	**2TA400KCW** ②③
400	Aluminum	Cu/Al	3/0–250 (2)	95–120	**3TA400K** ②④	**3TA400KCW** ②④
400	Aluminum	Cu/Al	3/0–250 (2)	95–120	**4TA400K** ⑤⑥	**4TA400KCW** ⑤⑥
Optional Copper and Cu/Al Pressure Type Terminals						
225	Copper	Cu	3–350 (1)	35–185	**T300K** ①	—
400	Copper	Cu	250–500 (1)	120–240	**T350K** ①	—
400	Copper	Cu	3/0–250 (2)	95–120	**2T400K** ③	**2T400KCW** ②③
					3T400K ④	**3T400KCW** ②④
					4T400K ⑤	**4T400KCW** ⑤⑥
400	Aluminum	Cu/Al	2/0–250 (2) or 2/0–500 (1)	70–120	**2TA401K** ②③	**2TA401KCW** ②③
				70–240	**3TA401K** ②④	**3TA401KCW** ②④
				70–240	**4TA401K** ⑤⑥	**4TA401KCW** ⑤⑥
400	Aluminum	Cu/Al	500–750 (1)	300–400	**2TA402K** ②③	—
					3TA402K ②④	—
					4TA402K ⑤⑥	—
400	Copper	Cu	500–750 (1)	—	**2T402K** ②③	—
					3T402K ②④	—
					4T402K ⑤⑥	—

Notes

① Individually packed.
② Terminal kits contain one terminal for each pole and one terminal cover.
③ Two-pole kit.
④ Three-pole kit.
⑤ Four-pole kit.
⑥ Terminal kits contain one terminal for each pole and three interphase barriers.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

3

KD Frame Accessories

Description	Reference Page	Two-Pole ①		Three-Pole			Four-Pole			
		Left	Right	Left	Center	Right	Left	Center	Right	Neutral
Internal Accessories (Only One Internal Accessory Per Pole)										
Alarm lockout (Make/Break)	V12-T3-284	—	■	❑	—	❑	■	—	—	—
Alarm lockout (2Make/2Break)	V12-T3-284	—	—	❑	—	❑	■	—	—	—
Auxiliary switch (1A, 1B)	V12-T3-286	—	■	■	—	■	■	—	■	—
Auxiliary switch (2A, 2B)	V12-T3-286	—	—	■	—	■	■	—	■	—
Auxiliary switch (3A, 3B)	V12-T3-286	—	—	■	—	■	■	—	■	—
Auxiliary switch and alarm switch combination	V12-T3-287	—	—	❑	—	❑	❑	—	❑	—
Shunt trip—standard ②	V12-T3-290	—	■	■	—	■	■	—	■	—
Shunt trip—low energy ②	V12-T3-293	—	—	■	—	■	■	—	—	—
Undervoltage release mechanism ②	V12-T3-298	—	■	■	—	■	■	—	—	—
PowerNet or zone interlock kit (OPTIM 550)	V12-T3-301	—	—	—	—	■		—	—	—
External Accessories										
End cap kit	V12-T3-318	●	●	●	●	●	●	●	●	●
Keeper nut	V12-T3-318	●	●	●	●	●	●	●	●	●
Control wire terminal kit	V12-T3-319	●	●	●	●	●	●	●	●	●
Terminal adapter	V12-T3-319	●	●	●	●	●	●	●	●	●
Multiwire connectors	V12-T3-320	●	●	●	●	●	●	●	●	●
Rear fed terminals	V12-T3-320	●	●	●	●	●	●	●	●	●
Base mounting hardware	V12-T3-321	●	●	●	●	●	●	●	●	●
Terminal shields	V12-T3-323	●	●	●	●	●	●	●	●	●
Interphase barriers	V12-T3-323	●	●	●	●	●	●	●	●	●
Non-padlockable handle block	V12-T3-324	■	—	—	■	—	—	■	—	—
Padlockable handle block	V12-T3-324	—	—	—	■	—	—	—	—	—
Padlockable handle lock hasp	V12-T3-325	—	■	❑		❑	❑	—	❑	—
Cylinder lock	V12-T3-325	❑	❑	❑		❑	—	—	—	—
Key Interlock kit	V12-T3-326	■	❑	❑		❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	V12-T3-327	—	—	●	●	●	—	—	—	—
Walking beam interlock—requires two breakers	V12-T3-327	—	—	●	●	●	●	●	●	●
Electrical (solenoid) operator	V12-T3-328	—	—	●	●	●	●	●	●	●
Plug-in adapters	V12-T3-329	●	●	●	●	●	●	●	●	●
Rear connecting studs	V12-T3-331	●	●	●	●	●	●	●	●	●
Panelboard connecting straps	V12-T3-332	●	●	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●	●	●
Handle extension	—	●	●	●	●	●	●	●	●	●
IQ Energy Sentinel	V12-T3-334	—	—	●	●	●	●	●	●	●
Solid-state (electronic) portable test kit	V12-T3-334	●	●	●	●	●	●	●	●	●
OPTIM System Components Three Poles										
Breaker interface module (BIM)	V12-T3-334	—	—	—	—	—	—	—	—	—
Digitrip OPTIMizer	V12-T3-335	—	—	—	—	—	—	—	—	—
Auxiliary power module	V12-T3-335	—	—	—	—	—	—	—	—	—
Modifications (Refer to Eaton)										
Special calibration	—	●	●	●	●	●	●	●	●	●
Moisture fungus treatment	V12-T3-135	●	●	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Notes

① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.

② Shunt trip and UVR cannot be mounted in right poles on KES or OPTIM trip units. Standard internal accessories cannot be mounted in right pole on any K-Frame OPTIM trip units. Special OPTIM ground fault and zone interlock accessories are available for field installation in the right pole of K-Frame 550 OPTIM trip units. Factory installed 2a/2b and bell/aux are available for factory installation. K-Frame breakers equipped with OPTIM 1050 trip units include aux-bell alarm in the right pole.

310+ Electronic Trip Unit Accessories

Description	Catalog Number
Electronic portable test kit	**MTST230V** ①
Trip unit tamper protection wire seal	**5108A03H01**
External neutral sensor, 400 A	**LGFCT400** ②
External neutral sensor, 250 A	**LGFCT250** ②
External neutral sensor, 125 A	**LGFCT125** ②
Breaker-mount cause-of-trip indication	**TRIP-LED**
Breaker-mount ammeter module	**DIGIVIEW**
Remote-mount ammeter module	**DIGIVIEWR06** ③

Notes

① MTST230V applies to 100–230 Vac.
② Included with all LD LSG and LSIG trip units and breakers.
③ Includes 6 ft cable for remote mounting; NEMA 3R rated.

Specification

310+ Specifications

Trip Unit Type	Digitrip RMS 310+
Breaker Type	
Frame	K
Frames available	125 A, 250 A, 400 A
Continuous current range (A)	55–400 A
Ground fault pickup (A)	50–400 A
Interrupting capacities at 480 Vac (kAIC)	35, 65, 100
100% rated	Yes
Protection	
Ordering options	LS, LSI, LSG, LSIG, ALSI, ALSIG
Arcflash Reduction Maintenance System	Remote enabled on ALSI, ALSIG
Interchangeable trip unit	Yes
High load alarm, trip (suffix B20) ①	Yes
Ground fault alarm with trip (suffix B21) ①	LSG, LSIG, ALSIG
Ground fault alarm, no trip (suffix B22)	LSG, LSIG, ALSIG
Zone selective interlock (suffix ZG) ①	LSI, LSIG, ALSI, ALSIG
Cause of trip indication	Yes (via TRIP-LED or DIGIVIEW)
Thru-cover accessories	No

310+ Adjustability Specifications

		K-Frame		
310+ Settings		**125 A**	**250 A**	**400 A**
I_r = continuous current or long delay pickup (amperes) (All 310+)	Ir \ In			
	A (=Ir)	55	100	160
	B (=Ir)	60	125	200
	C (=Ir)	70	150	225
	D (=Ir)	80	160	250
	E (=Ir)	90	175	300
	F (=Ir)	100	200	315
	G (=Ir)	110	225	350
	H (=Ir=In)	125	250	400
t_r = long delay time (seconds) (All 310+)	2	2	2	2
	4	4	4	4
	7	7	7	7
	10	10	10	10
	12	12	12	12
	15	15	15	15
	20	20	20	20
	24	24	24	24
I_{sd} (x $I_{r)}$ = short delay pickup (amperes) (All 310+)	Position 1	2	2x	2x
	Position 2	3	3x	3x
	Position 3	4	4x	4x
	Position 4	5	5x	5x
	Position 5	6	6x	6x
	Position 6	7	7x	7x
	Position 7	8	8x	8x
	Position 8	10	10x	10x
	Position 9	12	12x	12x
t_{sd} = short delay time I^2t (milliseconds) (LS and LSG)	Fixed	67 @10x		
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG)	Position 1	Inst		
	Position 2	120		
	Position 3	300		
I_g (x $I_{n)}$ = ground fault pickup (amperes) (LSG, LSIG, ALSIG)	Position 1	25	50	80
	Position 2	37.5	75	120
	Position 3	50	100	160
	Position 4	75	150	240
	Position 5	100	200	320
	Position 6	125	250	400
t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG)	Position 1	Inst		
	Position 2	120		
	Position 3	300		
Independently adjustable Instantaneous (Ii) setting	②			
Maintenance Mode pickup (2.5 x I_{n}) (amperes) (310+ with Maintenance Mode—ALSI and ALSIG)	Fixed	312	625	1000

Notes

① B2x suffixes cannot be combined with B2x suffixes.

② Not available for KD. Independently adjustable I_i setting available in LG, NG and RG ALSI and ALSIG trip units.

Specifications

Trip Unit Type	Digitrip OPTIM 550	Digitrip OPTIM 1050
rms sensing	Yes	Yes
Breaker Type		
Frame	K	K
Ampere range	125–400 A	125–400 A
Interrupting rating at 480 volts	35, 65, 100 (kA)	35, 65, 100 (kA)
Protection		
Ordering options	LSI, LSI(A), LSIG	LSI(A), LSIG
Fixed rated plug (I_n)	Yes	Yes
Overtemperature trip	Yes	Yes
Long Delay Protection (L)		
Adjustable rating plug (I_n)	No	No
Long delay pickup	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)
Long delay time I^2t	2–24 seconds	2–24 seconds
Long delay time I^4t	1–5 seconds	1–5 seconds
Long delay thermal memory	Yes	Yes
High load alarm	0.5–1.0 x I_r	0.5–1.0 x I_r
Short Delay Protection (S)		
Short delay pickup	150–800% x (I_r)	150–800% x (I_r)
Short delay time I^2t	100–500 ms	100–500 ms
Short delay time flat	100–500 ms	100–500 ms
Short delay time zone selective interlocking	Yes ①	Yes
Instantaneous Protection (I)		
Instantaneous pickup	200–800% x (I_n)	200–800% x (I_n)
Discriminator	Yes	Yes
Instantaneous override	Yes	Yes
Ground Fault Protection (G)		
Ground fault alarm	20–100% x (I_s)	20–100% x (I_s)
Ground fault pickup	20–100% x (I_s)	20–100% x (I_s)
Ground fault delay I^2t	100–500 ms	100–500 ms
Ground fault delay flat	100–500 ms	100–500 ms
Ground fault zone selective interlocking	Yes ①	Yes
Ground fault thermal memory	Yes	Yes
System Diagnostics		
Status LEDs	Yes	Yes
Cause of trip LEDs	Yes	Yes
Magnitude of trip information	Yes	Yes
Remote signal contact—ground alarm	Yes ①	Yes
Local auxiliary and bell alarm contact	Optional	Included
System Monitoring		
Digital display	Yes ②	Yes ②
Current	Yes	Yes
Power and energy	No	Yes
Power quality—harmonics	No	Yes
Power factor	No	Yes
Communications		
PowerNet	Yes ③	Yes
Testing		
Testing method	OPTIMizer, BIM, PowerNet	OPTIMizer, BIM, PowerNet

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
I_s = Sensor Rating
I_n = Rating Plug
I_r = Long Delay Pickup Setting

Notes

① Zone interlock kit.
② Not OPTIMizer/BIM.
③ Eaton's PowerNet kit.

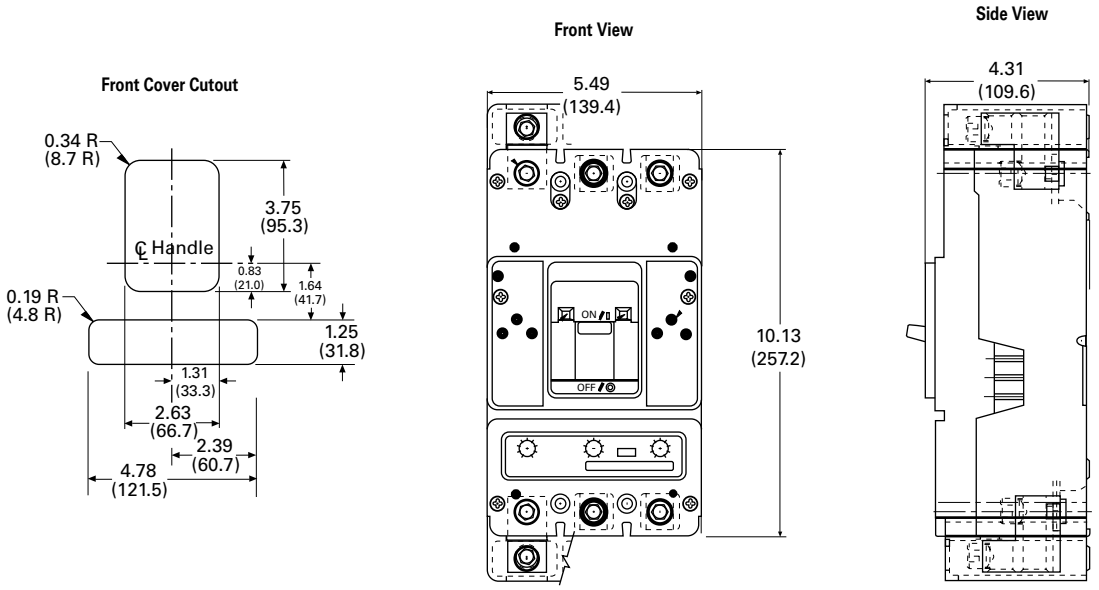
Dimensions and Weights

Approximate Dimensions in Inches (mm)

KD Frame

Number of Poles	Width	Height	Depth
2, 3	5.50 (149.7)	10.13 (257.3)	4.10 (104.1)
4	7.22 (183.4)	10.13 (257.3)	4.10 (104.1)

KD-Frame, Two- and Three-Pole



Approximate Shipping Weight, Lb (kg)

KD Frame

Breaker Type	Complete Breaker		Frame Only		Trip Unit ①	
	Two-Pole	Three-Pole	Two-Pole	Three-Pole	Two-Pole	Three-Pole
DK	10.0 (4.5)	11.5 (5.2)	—	—	—	—
KDB	10.0 (4.5)	11.5 (5.2)	—	—	—	—
KD	10.0 (4.5)	11.5 (5.2)	7.5 (3.4)	8.5 (3.9)	1.5 (0.7)	1.5 (0.7)
HKD, HKDB	10.0 (4.5)	11.5 (5.2)	7.5 (3.4)	8.5 (3.9)	1.5 (0.7)	1.5 (0.7)
KDC	10.0 (4.5)	11.5 (5.2)	7.5 (3.4)	8.5 (3.9)	1.5 (0.7)	1.5 (0.7)

Note

① Weights shown are for thermal-magnetic trip units. Three-pole electronic trip units weigh 2.5 lb (1.1 kg).

Typical L-Frame Circuit Breaker



Contents

Description	*Page*
Product Overview	**V12-T3-135**
Standards and Certifications	**V12-T3-136**
G-Frame (15–100 A)	**V12-T3-137**
F-Frame (10–225 A)	**V12-T3-145**
J-Frame (70–250 A)	**V12-T3-164**
K-Frame (70–400 A)	**V12-T3-171**
L-Frame (125–600 A)	
Catalog Number Selection	**V12-T3-197**
Product Selection	**V12-T3-199**
Accessories	**V12-T3-215**
Specifications	**V12-T3-217**
Dimensions and Weights	**V12-T3-220**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

L-Frame (125–600 A)

Product Description

- All Eaton L-Frame circuit breakers are HACR rated
- L-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- L-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

Standards and Certifications

- CE marked

CE

Shaded area denotes obsolete or discontinued products and services.

Technical Data and Specifications

UL 489 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA rms Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Volts DC 250 ②③	Recommended Power Defense Replacement
LDB	2, 3	65	35	25	22	PDG3xG
LD	2, 3, 4	65	35	25	22	PDG3xG
CLD ④	2, 3, 4	65	35	25	—	PDF3xG
HLD, HLDB	2, 3, 4	100	65	35	25	PDG3xM
CHLD ④	2, 3, 4	100	65	35	—	PDG3xM
LDC, LDCB ⑤	2, 3, 4	200	100	50	30	PDG3xP
CLDC ④⑤	2, 3, 4	200	100	50	—	PDF3xP

IEC 947-2 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240		415		690		Volts DC 250 ②③		Recommended Power Defense Replacement
		I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	
LDB	2, 3	85	85	45	45	20	10	20	10	PDG3xG
LD	2, 3, 4	85	85	45	45	20	10	20	10	PDG3xG
CLD ④	2, 3, 4	85	85	45	45	20	10	—	—	PDF3xG
HLD, HLDB	2, 3, 4	100	100	70	70	25	13	20	10	PDG3xM
CHLD ④	2, 3, 4	100	100	70	70	25	13	—	—	PDG3xM
LDC, LDCB	2, 3, 4	200	100	100	75	35	18	20	10	PDG3xP
CLDC ④	2, 3, 4	200	100	100	75	35	18	—	—	PDF3xP

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
LDC	240 V/200 kA	64.80	6.80
LDC	480 V/100 kA	66.90	9.33
LDC	600 V/50 kA	54.30	8.92

Notes

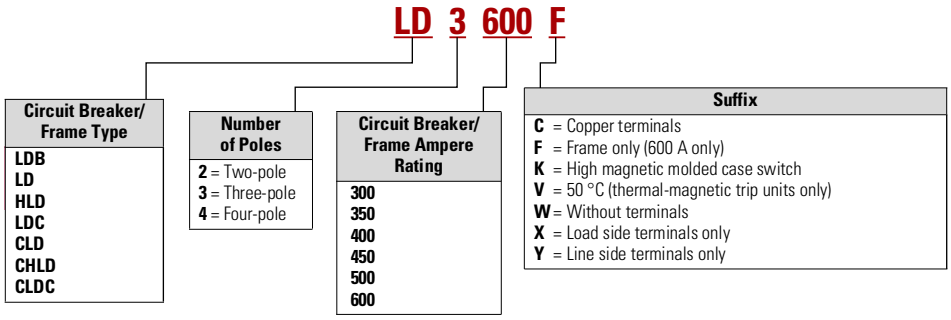
① Utilization Category A circuit breakers.
② L/R = 8 milliseconds minimum.
③ Two-pole circuit breaker or two poles of three-pole circuit breaker. Incorporating thermal-magnetic trip unit only.
④ 100% rated breakers.
⑤ Current limiting.

Catalog Number Selection

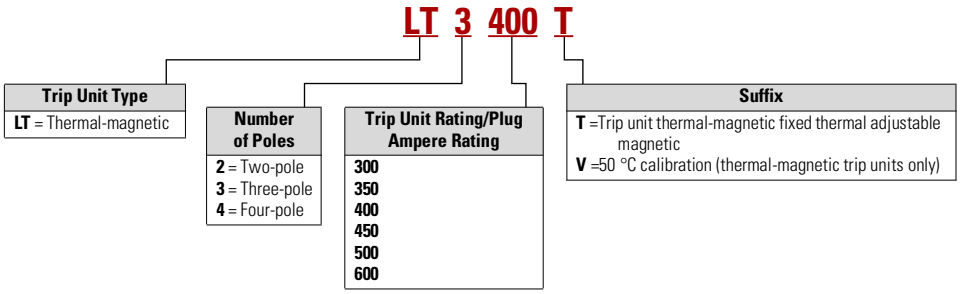
This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

LD-Frame with Thermal-Magnetic Trip Unit Technology

Thermal-Magnetic Breakers and Frame ①



Thermal-Magnetic Trip Unit ①



Note

① Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **LD3600F**, **HLD3600F**, etc.

3

LD-Frame with 310+ Electronic Trip Unit Technology

310+ Circuit Breakers

LDB 3 600 F T36 B22ZG W

Performance at 480 Vac
LDB=35 kAIC
HLDB=65 kAIC
LDCB=100 kAIC
CLDB=35 kAIC, 100% rated
CHLDB=65 kAIC, 100% rated
CLDCB=100 kAIC, 100% rated

Number of Poles
3 = Three-pole
4 = Four-pole

Amperes
600

Designation
F

Trip Unit
T33=310+ Electronic LS
T32=310+ Electronic LSI
T35=310+ Electronic LSG ①
T36=310+ Electronic LSIG ①
T38=310+ Electronic LSI with Maintenance Mode
T39=310+ Electronic LSIG with Maintenance Mode ①

Features
Blank=No feature
B20=High load alarm
B21=Ground fault alarm, with trip ①
B22=Ground fault alarm, no trip ①
ZG= Zone selective interlocking

Terminals
W = No terminals

310+ Electronic Trip Units ②

LES 3 600 LSIG B22ZG

Trip Unit Type
LES

Number of Poles
3 = Three-pole
4 = Four-pole

Amperes
600

Trip Unit
LS= 310+ Electronic LS
LSI=310+ Electronic LSI
LSG=310+ Electronic LSG ①
LSIG=310+ Electronic LSIG ①
ALSI=310+ Electronic LSI with Maintenance Mode
ALSIG=310+ Electronic LSIG with Maintenance Mode ①

Features
Blank=No feature
B20=High load alarm
B21=Ground fault alarm, with trip ①
B22=Ground fault alarm, no trip ①
ZG= Zone selective interlocking

LD-Frame with OPTIM Electronic Trip Unit Technology

OPTIM Circuit Breakers

LD 3 125 T5 7 W

Circuit Breaker/ Frame Type -
LD
HLD
LDC
CLD
CHLD
CLDC

Number of Poles -
3 = Three-pole

Circuit Breaker/ Frame Ampere Rating -
125 (Available on Model 1050 only)
250 (Available on Model 1050 only)
400
600

Trip Mode -
T5 = Model 550
T10 = Model 1050

Trip Type -
2 = LSI (550 only)
6 = LSIG
7 = LSIA

Suffix -
W = Without terminals

Notes

① Not available in four-pole configurations.

② Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **LD3600F**, **HLD3600F**, etc.

Shaded area denotes obsolete or discontinued products and services.

Product Selection

Types LD, HLD and LDC Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units

Maximum Continuous Ampere Rating at 40 °C ①	Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Thermal-Magnetic Trip Unit Only For Use with Standard or High or Ultra High Interrupting Frames Catalog Number	Standard Terminals Only See Page V12-T3-214 for Optional Terminals Catalog Number
Two-Pole					
300	LD2300	HLD2300	LDC2300	LT2300T	TA602LD ②
350	LD2350	HLD2350	LDC2350	LT2350T	TA602LD ②
400	LD2400	HLD2400	LDC2400	LT2400T	TA602LD ②
450	LD2450	HLD2450	LDC2450	LT2450T	TA602LD ②
500	LD2500	HLD2500	LDC2500	LT2500T	TA602LD ②
600	LD2600	HLD2600	LDC2600	LT2600T	2TA603LDK ③
Three-Pole					
300	LD3300	HLD3300	LDC3300	LT3300T	TA602LD ②
350	LD3350	HLD3350	LDC3350	LT3350T	TA602LD ②
400	LD3400	HLD3400	LDC3400	LT3400T	TA602LD ②
450	LD3450	HLD3450	LDC3450	LT3450T	TA602LD ②
500	LD3500	HLD3500	LDC3500	LT3500T	TA602LD ②
600	LD3600	HLD3600	LDC3600	LT3600T	3TA603LDK ③
Four-Pole ④					
300	LD4300	HLD4300	LDC4300	LT4300T	TA602LD ②
350	LD4350	HLD4350	LDC4350	LT4350T	TA602LD ②
400	LD4400	HLD4400	LDC4400	LT4400T	TA602LD ②
450	LD4450	HLD4450	LDC4450	LT4450T	TA602LD ②
500	LD4500	HLD4500	LDC4500	LT4500T	TA602LD ②
600	LD4600	HLD4600	LDC4600	LT4600T	4TA603LDK ③

Types LD, HLD and LDC Thermal-Magnetic Circuit Breakers—Frame Only

Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Catalog Number	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac Catalog Number
Two-Pole		
LD2600F	HLD2600F	LDC2600F
Three-Pole		
LD3600F	HLD3600F	LDC3600F
Four-Pole		
LD4600F	HLD4600F	LDC4600F

Notes

① Magnetic trip range 5–10 times continuous ampere rating.
② Individually packed.
③ Terminal kits contain one terminal for each pole and one terminal cover.
④ Neutral is in right pole.
⑤ For complete breaker order as Frame Only, Trip Unit, and Terminals.

Shaded area denotes obsolete or discontinued products and services.

Types LD, HLD and LDC Electronic Circuit Breakers with Interchangeable Trip Units

Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on **Page V12-T3-192**.

Types LD, HLD and LDC Electronic Circuit Breakers with Interchangeable 310+ Trip Units

	Circuit Breaker Frame Only -			Digitrip RMS 310+ Trip Unit Only ① -					
				Standard LS	Optional LSI	LSG	LSIG		
Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac	Adjustable Short Time Pickup with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③	Terminal Information
	Catalog Number			Catalog Number				Catalog Number	
Three-Pole									
600	LD3600F	HLD3600F	LDC3600F	LES3600LS	LES3600LSI	LES3600LSG	LES3600LSIG	LGFCT600	See Page V12-T3-190
Four-Pole ④									
600	LD4600F	HLD4600F	LDC4600F	LES4600LS	LES4600LSI	—	—	—	See Page V12-T3-190

Types LDB, HLDB and LDCB Electronic Circuit Breakers with Non-Interchangeable 310+ Electronic Trip Units Suitable for Reverse Feed

See 310+ adjustability specifications on **Page V12-T3-192**.

Circuit Breaker Frame Including Digitrip RMS 310+ Electronic Trip Unit Less Terminals Types LDB, HLDB and LDCB with Digitrip 310+ Non-Interchangeable Trip Units

		Factory Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals ①					
		Standard LS	Optional LSI	LSG	LSIG		
Maximum Continuous Ampere Rating at 40 °C	Number of Poles	Adjustable Short Time Pickup with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③	Terminal Information
		Catalog Number				Catalog Number	
600	3	LDB3600FT33W	LDB3600FT32W	LDB3600FT35W	LDB3600FT36W	LGFCT600	See Page V12-T3-190
600	3	HLDB3600FT33W	HLDB3600FT32W	HLDB3600FT35W	HLDB3600FT36W		
600	3	LDCB3600FT33W	LDCB3600FT32W	LDCB3600FT35W	LDCB3600FT36W		

100% Rated Types CLD, CHLD and CLDC Electronic Circuit Breakers with Interchangeable Trip Units

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at the 75 °C ampacity. All 100% rated circuit breakers have electronic trip units. Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on **Page V12-T3-192**.

100% Rated Types CLD, CHLD and CLDC Electronic Circuit Breakers with 310+ Interchangeable Trip Units

	Circuit Breaker Frame Only			Digitrip RMS 310+ Trip Unit Only					
				Standard LS	Optional LSI	LSG	LSIG		
Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac	Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac	Adjustable Short Time Pickup with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③	Terminal Information
	Catalog Number							Catalog Number	
Three-Pole									
600	CLD3600F	CHLD3600F	CLDC3600F	LES3600LS	LES3600LSI	LES3600LSG	LES3600LSIG	LGFCT600	See Page V12-T3-190

Notes

① For AC use only.
② Required for four-wire systems if neutral protection is desired.
③ Included with LSG and LSIG trip units.
④ Neutral is in right pole.

Shaded area denotes obsolete or discontinued products and services.

Type LDB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units ①

Maximum Continuous Ampere Rating	600 Vac Rated, 250 Vdc Complete Circuit Breaker Without Line and Load Terminals Catalog Number	With Standard Line and Load Terminals Only Catalog Number
Two-Pole		
300	LDB2300W	LDB2300
350	LDB2350W	LDB2350
400	LDB2400W	LDB2400
450	LDB2450W	LDB2450
500	LDB2500W	LDB2500
600	LDB2600W	LDB2600
Three-Pole		
300	LDB3300W	LDB3300
350	LDB3350W	LDB3350
400	LDB3400W	LDB3400
450	LDB3450W	LDB3450
500	LDB3500W	LDB3500
600	LDB3600W	LDB3600

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

Maximum Continuous Ampere Rating at 40 °C	600 Vac Maximum, 250 Vdc Circuit Breaker Only without Line and Load Terminals Catalog Number	Standard Terminals Only See Page V12-T3-214 for Optional Terminals Catalog Number
Two-Pole		
600	LD2600WK	2TA603LDK
600	LDB2600WK ①	2TA603LDK
600	HLD2600WK	2TA603LDK
Three-Pole		
600	LD3600WK	3TA603LDK
600	LDB3600WK ①	3TA603LDK
600	HLD3600WK	3TA603LDK
Four-Pole		
600	LD4600WK	4TA603LDK
600	LDB4600WK ①	4TA603LDK
600	HLD4600WK	4TA603LDK

Notes

① Factory sealed—suitable for reverse feed application.

Molded case switch will trip above 6000 amperes.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM Electronic Circuit Breaker with Interchangeable Rating Plug

Order as individual components: Breaker Frame (which includes Trip Unit), Rating Plug, Terminals.

Digitrip OPTIM 550 Electronic Circuit Breaker with Interchangeable Rating Plug

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac					
125	**LD3125T52W**	**LD3125T56W**	**LD3125T57W**	—	**ORPL125A070**
				—	**ORPL125A090**
				—	**ORPL125A100**
				—	**ORPL125A110**
				—	**ORPL125A125**
250	**LD3250T52W**	**LD3250T56W**	**LD3250T57W**	—	**ORPL025A125**
				—	**ORPL025A150**
				—	**ORPL025A175**
				—	**ORPL025A200**
				—	**ORPL025A225**
				—	**ORPL025A250**
400	**LD3400T52W**	**LD3400T56W**	**LD3400T57W**	200	**ORPL40A200**
				225	**ORPL40A225**
				250	**ORPL40A250**
				300	**ORPL40A300**
				350	**ORPL40A350**
				400	**ORPL40A400**
600	**LD3600T52W**	**LD3600T56W**	**LD3600T57W**	300	**ORPL60A300**
				350	**ORPL60A350**
				400	**ORPL60A400**
				500	**ORPL60A500**
				600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 550 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Digitrip OPTIM Rating Plug Only Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
125	**HLD3125T52W**	**HLD3125T56W**	**HLD3125T57W**	70	**ORPL125A070**
				90	**ORPL125A090**
				100	**ORPL125A100**
				110	**ORPL125A110**
				125	**ORPL125A125**
250	**HLD3250T52W**	**HLD3250T56W**	**HLD3250T57W**	125	**ORPL025A125**
				150	**ORPL025A150**
				175	**ORPL025A175**
				200	**ORPL025A200**
				225	**ORPL025A225**
				250	**ORPL025A250**
400	**HLD3400T52W**	**HLD3400T56W**	**HLD3400T57W**	200	**ORPL40A200**
				225	**ORPL40A225**
				250	**ORPL40A250**
				300	**ORPL40A300**
				350	**ORPL40A350**
				400	**ORPL40A400**
600	**HLD3600T52W**	**HLD3600T56W**	**HLD3600T57W**	300	**ORPL60A300**
				350	**ORPL60A350**
				400	**ORPL60A400**
				500	**ORPL60A500**
				600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 550 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

	Circuit Breaker Frame Only			Digitrip OPTIM Rating Plug Only	
	L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①				
	S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)				
	I – Adjustable Instantaneous Pickup				
	G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)				
	A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)				
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ②				
	LSI	LSIG	LSIA		Fixed Rating Plug
	Catalog Number	Catalog Number	Catalog Number	Ampere Rating	Catalog Number
Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac					
125	LDC3125T52W	LDC3125T56W	LDC3125T57W	—	ORPL125A070
				—	ORPL125A090
				—	ORPL125A100
				—	ORPL125A110
				—	ORPL125A125
250	LDC3250T52W	LDC3250T56W	LDC3250T57W	—	ORPL025A125
				—	ORPL025A150
				—	ORPL025A175
				—	ORPL025A200
				—	ORPL025A225
				—	ORPL025A250
400	LDC3400T52W	LDC3400T56W	LDC3400T57W	200	ORPL40A200
				225	ORPL40A225
				250	ORPL40A250
				300	ORPL40A300
				350	ORPL40A350
				400	ORPL40A400
600	LDC3600T52W	LDC3600T56W	LDC3600T57W	300	ORPL60A300
				350	ORPL60A350
				400	ORPL60A400
				500	ORPL60A500
				600	ORPL60A600

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM Electronic Circuit Breaker with Interchangeable Rating Plug

Order as individual components: Breaker Frame (which includes Trip Unit), Rating Plug, Terminals.

Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)		Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac				
125	**LD3125T106W**	**LD3125T107W**	70	**ORPL125A070**
			90	**ORPL125A090**
			100	**ORPL125A100**
			110	**ORPL125A110**
			125	**ORPL125A125**
250	**LD3250T106W**	**LD3250T107W**	125	**ORPL025A125**
			150	**ORPL025A150**
			175	**ORPL025A175**
			200	**ORPL025A200**
			225	**ORPL025A225**
			250	**ORPL025A250**
400	**LD3400T106W**	**LD3400T107W**	200	**ORPL40A200**
			225	**ORPL40A225**
			250	**ORPL40A250**
			300	**ORPL40A300**
			350	**ORPL40A350**
			400	**ORPL40A400**
600	**LD3600T106W**	**LD3600T107W**	300	**ORPL60A300**
			350	**ORPL60A350**
			400	**ORPL60A400**
			500	**ORPL60A500**
			600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
③ Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)		Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
125	**HLD3125T106W**	**HLD3125T107W**	70	**ORPL125A070**
			90	**ORPL125A090**
			100	**ORPL125A100**
			110	**ORPL125A110**
			125	**ORPL125A125**
250	**HLD3250T106W**	**HLD3250T107W**	125	**ORPL025A125**
			150	**ORPL025A150**
			175	**ORPL025A175**
			200	**ORPL025A200**
			225	**ORPL025A225**
			250	**ORPL025A250**
400	**HLD3400T106W**	**HLD3400T107W**	200	**ORPL40A200**
			225	**ORPL40A225**
			250	**ORPL40A250**
			300	**ORPL40A300**
			350	**ORPL40A350**
			400	**ORPL40A400**
600	**HLD3600T106W**	**HLD3600T107W**	300	**ORPL60A300**
			350	**ORPL60A350**
			400	**ORPL60A400**
			500	**ORPL60A500**
			600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
③ Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)		Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac				
125	**LDC3125T106W**	**LDC3125T107W**	70	**ORPL125A070**
			90	**ORPL125A090**
			100	**ORPL125A100**
			110	**ORPL125A110**
			125	**ORPL125A125**
250	**LDC3250T106W**	**LDC3250T107W**	125	**ORPL025A125**
			150	**ORPL025A150**
			175	**ORPL025A175**
			200	**ORPL025A200**
			225	**ORPL025A225**
			250	**ORPL025A250**
400	**LDC3400T106W**	**LDC3400T107W**	200	**ORPL40A200**
			225	**ORPL40A225**
			250	**ORPL40A250**
			300	**ORPL40A300**
			350	**ORPL40A350**
			400	**ORPL40A400**
600	**LDC3600T106W**	**LDC3600T107W**	300	**ORPL60A300**
			350	**ORPL60A350**
			400	**ORPL60A400**
			500	**ORPL60A500**
			600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
③ Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plug

Order as individual components: Breaker Frame (which includes Trip Unit), Rating Plug, Terminals.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plug

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Digitrip OPTIM Rating Plug Only Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac					
125	**CLD3125T52W**	**CLD3125T56W**	**CLD3125T57W**	70	**ORPL125A070**
				90	**ORPL125A090**
				100	**ORPL125A100**
				110	**ORPL125A110**
				125	**ORPL125A125**
250	**CLD3250T52W**	**CLD3250T56W**	**CLD3250T57W**	125	**ORPL025A125**
				150	**ORPL025A150**
				175	**ORPL025A175**
				200	**ORPL025A200**
				225	**ORPL025A225**
				250	**ORPL025A250**
400	**CLD3400T52W**	**CLD3400T56W**	**CLD3400T57W**	200	**ORPL40A200**
				225	**ORPL40A225**
				250	**ORPL40A250**
				300	**ORPL40A300**
				350	**ORPL40A350**
				400	**ORPL40A400**
600	**CLD3600T52W**	**CLD3600T56W**	**CLD3600T57W**	300	**ORPL60A300**
				350	**ORPL60A350**
				400	**ORPL60A400**
				500	**ORPL60A500**
				600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plug, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Digitrip OPTIM Rating Plug Only Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
125	**CHLD3125T52W**	**CHLD3125T56W**	**CHLD3125T57W**	70	**ORPL125A070**
				90	**ORPL125A090**
				100	**ORPL125A100**
				110	**ORPL125A125**
				125	**ORPL125A125**
250	**CHLD3250T52W**	**CHLD3250T56W**	**CHLD3250T57W**	125	**ORPL025A125**
				150	**ORPL025A150**
				175	**ORPL025A175**
				200	**ORPL025A200**
				225	**ORPL025A225**
				250	**ORPL025A250**
400	**CHLD3400T52W**	**CHLD3400T56W**	**CHLD3400T57W**	200	**ORPL40A200**
				225	**ORPL40A225**
				250	**ORPL40A250**
				350	**ORPL40A350**
				400	**ORPL40A400**
600	**CHLD3600T52W**	**CHLD3600T56W**	**CHLD3600T57W**	300	**ORPL60A300**
				350	**ORPL60A350**
				400	**ORPL60A400**
				500	**ORPL60A500**
				600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plug, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Digitrip OPTIM Rating Plug Only Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac					
125	**CLDC3125T52W**	**CLDC3125T56W**	**CLDC3125T57W**	70	**ORPL125A070**
				90	**ORPL125A090**
				100	**ORPL125A100**
				110	**ORPL125A110**
				125	**ORPL125A125**
250	**CLDC3250T52W**	**CLDC3250T56W**	**CLDC3250T57W**	125	**ORPL025A125**
				150	**ORPL025A150**
				175	**ORPL025A175**
				200	**ORPL025A200**
				225	**ORPL025A225**
				250	**ORPL025A250**
400	**CLDC3400T52W**	**CLDC3400T56W**	**CLDC3400T57W**	200	**ORPL40A200**
				225	**ORPL40A225**
				250	**ORPL40A250**
				300	**ORPL40A300**
				350	**ORPL40A350**
				400	**ORPL40A400**
600	**CLDC3600T52W**	**CLDC3600T56W**	**CLDC3600T57W**	300	**ORPL60A300**
				350	**ORPL60A350**
				400	**ORPL60A400**
				500	**ORPL60A500**
				600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plug

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Digitrip OPTIM Rating Plug Only

Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 35 kAIC at 480 Vac				
125	**CLD3125T106W**	**CLD3125T107W**	70	**ORPL125A070**
			90	**ORPL125A090**
			100	**ORPL125A100**
			110	**ORPL125A110**
			125	**ORPL125A125**
250	**CLD3250T106W**	**CLD3250T107W**	125	**ORPL025A125**
			150	**ORPL025A150**
			175	**ORPL025A175**
			200	**ORPL025A200**
			225	**ORPL025A225**
			250	**ORPL025A250**
400	**CLD3400T106W**	**CLD3400T107W**	200	**ORPL40A200**
			225	**ORPL40A225**
			250	**ORPL40A250**
			300	**ORPL40A300**
			350	**ORPL40A350**
			400	**ORPL40A400**
600	**CLD3600T106W**	**CLD3600T107W**	300	**ORPL60A300**
			350	**ORPL60A350**
			400	**ORPL60A400**
			500	**ORPL60A500**
			600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
③ Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plug, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Digitrip OPTIM Rating Plug Only Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
125	**CHLD3125T106W**	**CHLD3125T107W**	70	**ORPL125A070**
			90	**ORPL125A090**
			100	**ORPL125A100**
			110	**ORPL125A110**
			125	**ORPL125A125**
250	**CHLD3250T106W**	**CHLD3250T107W**	125	**ORPL025A125**
			150	**ORPL025A150**
			175	**ORPL025A175**
			200	**ORPL025A200**
			225	**ORPL025A225**
			250	**ORPL025A250**
400	**CHLD3400T106W**	**CHLD3400T107W**	200	**ORPL40A200**
			225	**ORPL40A225**
			250	**ORPL40A250**
			300	**ORPL40A300**
			350	**ORPL40A350**
			400	**ORPL40A400**
600	**CHLD3600T106W**	**CHLD3600T107W**	300	**ORPL60A300**
			350	**ORPL60A350**
			400	**ORPL60A400**
			500	**ORPL60A500**
			600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
③ Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 1050 Electronic Circuit Breaker with Interchangeable Rating Plug, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time (I^2t or Flat Response)

Digitrip OPTIM Rating Plug Only

Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Ultra High Interrupting Capacity Current Limiting 600 Vac Rated 100 kAIC at 480 Vac				
125	**CLDC3125T106W**	**CLDC3125T107W**	70	**ORPL125A070**
			90	**ORPL125A090**
			100	**ORPL125A100**
			110	**ORPL125A110**
			125	**ORPL125A125**
250	**CLDC3250T106W**	**CLDC3250T107W**	125	**ORPL025A125**
			150	**ORPL025A150**
			175	**ORPL025A175**
			200	**ORPL025A200**
			225	**ORPL025A225**
			250	**ORPL025A250**
400	**CLDC3400T106W**	**CLDC3400T107W**	200	**ORPL40A200**
			225	**ORPL40A225**
			250	**ORPL40A250**
			300	**ORPL40A300**
			350	**ORPL40A350**
			400	**ORPL40A400**
600	**CLDC3600T106W**	**CLDC3600T107W**	300	**ORPL60A300**
			350	**ORPL60A350**
			400	**ORPL60A400**
			500	**ORPL60A500**
			600	**ORPL60A600**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch and one Form C bell alarm switch supplied with breaker as standard.
③ Factory sealed.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

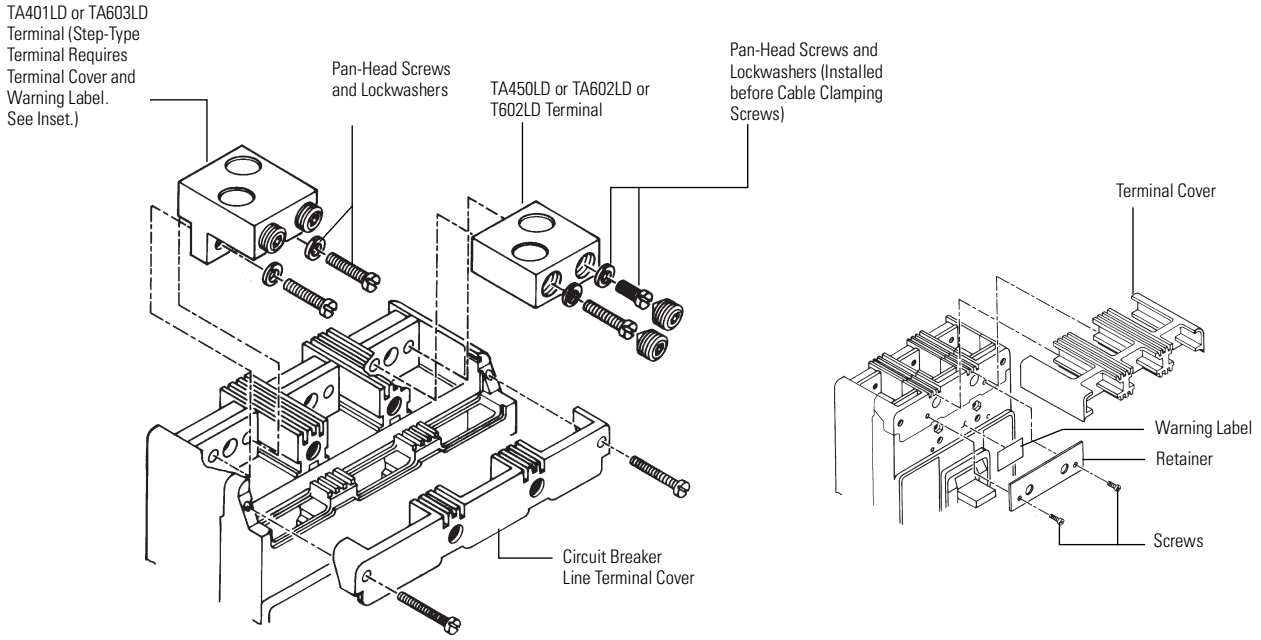
Eaton's line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B and CSA Standard C22.2 No. 65M. Unless otherwise specified, L-Frame circuit breaker line and load terminals are shipped separately for field installation.

The wire connecting terminal is secured with two pan-head, slotted screws and lockwashers that can be checked for the correct torque loading or retightened from the front of the circuit breaker before installation of the conductors. (Applies to all styles.) The circuit breaker line/load terminal conductors are positioned in the conducting holes in the wire connecting terminal and are secured with recessed socket screws that are tightened to the correct torque loading from the front of the circuit breaker.

Ordering Information

L-Frame circuit breakers use Cu/Al terminals as standard. When optional copper terminals are required, order by catalog Number. Specify if factory installation is required.

Terminals



Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range/Number of Conductors	Metric Wire Range mm²	Terminal Poles	Catalog Number	Terminals with Control Wire Termination Catalog Number
Standard Cu/Al Pressure Terminals							
400	Aluminum	Cu/Al	4/0–600 (1)	120–300	Two-pole kit ①	**2TA401LDK**	—
400	Aluminum	Cu/Al	4/0–600 (1)	120–300	Three-pole kit ①	**3TA401LDK**	—
400	Aluminum	Cu/Al	4/0–600 (1)	120–300	Four-pole kit ①	**4TA401LDK**	—
450	Aluminum	Cu/Al	4–4/0 (2)	25–95	②	**TA450LD**	—
500	Aluminum	Cu/Al	3/0–350 (2)	95–150	②	**TA602LD**	**TA602LDCW**
600	Aluminum	Cu/Al	400–500 (2)	185–240	Two-pole kit ①	**2TA603LDK**	**2TA603LDKCW**
600	Aluminum	Cu/Al	400–500 (2)	185–240	Three-pole kit ①	**3TA603LDK**	**3TA603LDKCW**
600	Aluminum	Cu/Al	400–500 (2)	185–240	Four-pole kit ①	**4TA603LDK**	**4TA603LDKCW**
Optional Copper and Cu/Al Pressure Type Terminals							
600	Copper	Cu	250–350 (2)	120–250	②	**T602LD**	**T602LDCW**

Notes

① Terminal kits contain one terminal for each pole and one terminal cover.
② Individually packed.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

LD Frame Accessories

Description	Reference Page	Two-Pole ①, Three-Pole Left	Center	Right	Four-Pole Left	Center	Right	Neutral ②
Internal Accessories (Only One Internal Accessory Per Pole) ③								
Alarm lockout (Make/Break)	**V12-T3-284**	■	—	■	■	—	■	—
Alarm lockout (2Make/2Break)	**V12-T3-284**	■	—	■	■	—	■	—
Auxiliary switch (1A, 1B)	**V12-T3-286**	■	—	■	■	—	■	—
Auxiliary switch (2A, 2B)	**V12-T3-286**	■	—	■	■	—	■	—
Auxiliary switch (3A, 3B)	**V12-T3-286**	■	—	■	■	—	■	—
Auxiliary switch (1A, 1B) and alarm switch combination	**V12-T3-288**	■	—	■	■	—	■	—
Auxiliary switch (2A, 2B) and alarm switch combination	**V12-T3-288**	■	—	■	■	—	■	—
Shunt trip—standard ④	**V12-T3-290**	■	—	■	■	—	■	—
Shunt trip—low energy ④	**V12-T3-293**	■	—	■	■	—	■	—
Undervoltage release mechanism ④	**V12-T3-299**	■	—	■	■	—	■	—
Eaton PowerNet communications kit (OPTIM 550)	**V12-T3-301**	—	—	■	—	—	—	—
External Accessories								
End cap kit	**V12-T3-318**	●	●	●	●	●	●	●
Control wire terminal kit	**V12-T3-319**	●	●	●	●	●	●	●
Base mounting hardware	**V12-T3-321**	●	●	●	●	●	●	●
Terminal shields	**V12-T3-323**	●	●	●	●	●	●	●
Interphase barriers	**V12-T3-323**	●	●	●	●	●	●	●
Non-padlockable handle block	**V12-T3-324**	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V12-T3-325**	❑	—	❑	❑	—	❑	—
Key interlock kit	**V12-T3-326**	❑	—	❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V12-T3-327**	●	●	●	—	—	—	—
Walking beam interlock—requires two breakers	**V12-T3-327**	●	●	●	●	●	●	●
Electrical (motor) operator	**V12-T3-328**	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-330**	●	●	●	●	●	●	●
Rear connecting studs	**V12-T3-331**	●	●	●	●	●	●	●
Panelboard connecting straps	**V12-T3-332**	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●
Handle extension	—	●	●	●	●	●	●	●
Solid-state (electronic) portable test kit	**V12-T3-334**	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Notes

① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
② Refer to Eaton for appropriate neutral pole accessory combinations.
③ OPTIM model 1050 is factory sealed and does not have the right pole space available for accessories.
④ Shunt trip and UVR cannot be mounted in right poles on LES or OPTIM trip units. Standard non-tripping internal accessories can be mounted in the left or right poles of LES and 550 OPTIM trip units.

Shaded area denotes obsolete or discontinued products and services.

LD Frame Accessories, continued

Description	Reference Page	Two-Pole ①, Three-Pole Left	Center	Right	Four-Pole Left	Center	Right	Neutral ②
OPTIM System Components Three Poles								
Ground fault alarm unit	**V12-T3-334**	—	—	—	—	—	—	—
Potential transformer module	**V12-T3-334**	—	—	—	—	—	—	—
Breaker interface module (BIM)	**V12-T3-334**	—	—	—	—	—	—	—
Digitrip OPTIMizer	**V12-T3-335**	—	—	—	—	—	—	—
Auxiliary power module	**V12-T3-335**	—	—	—	—	—	—	—
Modifications (Refer to Eaton)								
Special calibration	—	●	●	●	●	●	●	●
Moisture fungus treatment	**V12-T3-135**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

310+ Electronic Trip Unit Accessories

Description	Catalog Number
Electronic portable test kit	**MTST230V** ③
Trip unit tamper protection wire seal	**5108A03H01**
External neutral sensor	**LGFCT600** ④
Breaker-mount cause-of-trip indication	**TRIP-LED**
Breaker-mount ammeter module	**DIGIVIEW**
Remote-mount ammeter module	**DIGIVIEWR06** ⑤

Notes

① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
② Refer to Eaton for appropriate neutral pole accessory combinations.
③ MTST230V applies to 100–230 Vac.
④ Included with all LD LSG and LSIG trip units and breakers.
⑤ Includes 6 ft cable for remote mounting; NEMA 3R rated.

Specifications

310+ Specifications

Description	Specification
Trip Unit Type	Digitrip RMS 310+
Breaker Type	
Frame designation	LD
Frames available	600 A
Continuous current range (A)	250–600 A
Ground fault pickup (A)	120–600 A
Interrupting capacities at 480 Vac (kAIC)	35, 65, 100
100% rated	Yes
Protection	
Ordering options	LS, LSI, LSG, LSIG, ALSI, ALSIG
Arcflash Reduction Maintenance System (or Maintenance Mode)	Remote enabled on ALSI, ALSIG
Interchangeable trip unit	Yes
High load alarm (suffix B20) ①	Yes
Ground fault alarm with trip (suffix B21) ①	LSG, LSIG, ALSIG
Ground fault alarm, no trip (suffix B22) ①	LSG, LSIG, ALSIG
Zone selective interlocking (suffix ZG)	LSI, LSIG, ALSI, ALSIG
Cause of trip indication	Yes (via TRIP-LED or DIGIVIEW)
Thru-cover accessories	No

310+ Adjustability Specifications

Description		LD Frame Specification
310+ settings		600 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r	
	A	250
	B	300
	C	315
	D	350
	E	400
	F	450
	G	500
	H (= I_n)	600
t_r = long delay time (seconds) (All 310+)	2	2
	4	4
	7	7
	10	10
	12	12
	15	15
	20	20
	24	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x
	Position 2	3x
	Position 3	4x
	Position 4	5x
	Position 5	6x
	Position 6	7x
	Position 7	8x
	Position 8	8x
	Position 9	8x
t_{sd} = short delay time I^2t (milliseconds) (LS and LSG)	Fixed	67 @10x
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG)	Position 1	Inst
	Position 2	120
	Position 3	300
I_g (x I_n) = ground fault pickup (amperes) (LSG, LSIG, ALSIG)	Position 1	120
	Position 2	180
	Position 3	240
	Position 4	360
	Position 5	480
	Position 6	600
t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG)	Position 1	Inst
	Position 2	120
	Position 3	300
Independently adjustable Instantaneous (Ii) setting	②	
Maintenance Mode pickup (2.5 x I_n) (amperes) (310+ with Maintenance Mode—ALSI and ALSIG)	Fixed	1500

Notes

① B2x suffixes cannot be combined with B2x suffixes.

② Not available for LD. Independently adjustable Ii setting available in LG, NG, and RG ALSI and ALSIG trip units.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM Specifications

Trip Unit Type	Digitrip OPTIM 550	Digitrip OPTIM 1050
rms sensing	Yes	Yes
Breaker Type		
Frame	L	L
Ampere range	200–600 A	200–600 A
Interrupting rating at 480 volts	35, 65, 100 (kA)	35, 65, 100 (kA)
Protection		
Ordering options	LSI, LSI(A), LSIG	LSI(A), LSIG
Fixed rated plug (I_n)	Yes	Yes
Overtemperature trip	Yes	Yes
Long Delay Protection (L)		
Adjustable rating plug (I_n)	No	No
Long delay pickup	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)
Long delay time I^2t	2–24 seconds	2–24 seconds
Long delay time I^4t	1–5 seconds	1–5 seconds
Long delay thermal memory	Yes	Yes
High load alarm	0.5–1.0 x I_r	0.5–1.0 x I_r
Short Delay Protection (S)		
Short delay pickup	150–800% x (I_r)	150–800% x (I_r)
Short delay time I^2t	100–500 ms	100–500 ms
Short delay time flat	100–500 ms	100–500 ms
Short delay time zone selective interlocking	Yes ①	Yes
Instantaneous Protection (I)		
Instantaneous pickup	200–800% x (I_n)	200–800% x (I_n)
Discriminator	Yes	Yes
Instantaneous override	Yes	Yes
Ground Fault Protection (G)		
Ground fault alarm	20–100% x (I_s)	20–100% x (I_s)
Ground fault pickup	20–100% x (I_s)	20–100% x (I_s)
Ground fault delay I^2t	100–500 ms	100–500 ms
Ground fault delay flat	100–500 ms	100–500 ms
Ground fault zone selective interlocking	Yes ①	Yes
Ground fault thermal memory	Yes	Yes

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
I_s = Sensor Rating
I_n = Rating Plug
I_r = Long Delay Pickup Setting

Note

① Zone interlock kit.

Digitrip OPTIM Specifications, continued

Trip Unit Type	Digitrip OPTIM 550	Digitrip OPTIM 1050
System Diagnostics		
Status LEDs	Yes	Yes
Cause of trip LEDs	Yes	Yes
Magnitude of trip information	Yes	Yes
Remote signal contact—ground alarm	Yes ①	Yes
Local auxiliary and bell alarm contact	Optional	Included
System Monitoring		
Digital display	Yes ②	Yes ②
Current	Yes	Yes
Power and energy	No	Yes
Power quality—harmonics	No	Yes
Power factor	No	Yes
Communications		
PowerNet	Yes ③	Yes
Testing		
Testing method	OPTIMizer, BIM, PowerNet	OPTIMizer, BIM, PowerNet

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
I_s = Sensor Rating
I_n = Rating Plug
I_r = Long Delay Pickup Setting

Notes

① Zone interlock kit.
② By OPTIMizer/BIM.
③ Eaton's PowerNet kit.

Dimensions and Weights

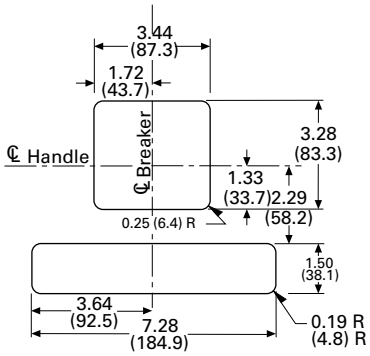
Dimensions in Inches (mm)

LD Frame

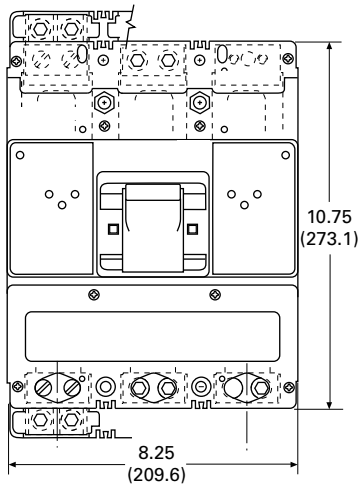
Number of Poles	Width	Height	Depth
2, 3	8.25 (209.6)	10.75 (273.1)	4.06 (103.1)
4	11.00 (279.4)	10.75 (273.1)	4.06 (103.1)

LD-Frame, Two- and Three-Pole

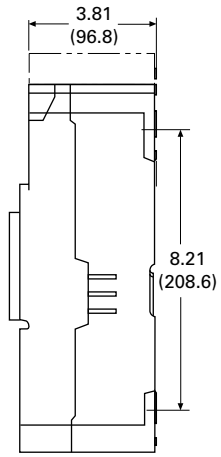
Front Cover Cutout



Front View



Side View



Approximate Shipping Weight, Lb (kg)

LD Frame

Breaker Type	Complete Breaker			Frame Only			Trip Unit		
	Two-Pole	Three-Pole	Four-Pole	Two-Pole	Three-Pole	Four-Pole	Two-Pole	Three-Pole	Four-Pole
LD, HLD, LDC	18 (8.2)	20 (9.1)	25 (11.3)	14 (6.4)	15 (6.8)	20 (9.1)	3 (1.4)	4 (1.8)	5 (2.3)
LDB	18 (8.2)	20 (9.1)	25 (11.3)	—	—	—	—	—	—

Shaded area denotes obsolete or discontinued products and services.

Typical M-Frame Circuit Breaker



Contents

Description	*Page*
Product Overview	**V12-T3-135**
Standards and Certifications	**V12-T3-136**
G-Frame (15–100 A)	**V12-T3-137**
F-Frame (10–225 A)	**V12-T3-145**
J-Frame (70–250 A)	**V12-T3-164**
K-Frame (70–400 A)	**V12-T3-171**
L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	
Catalog Number Selection	**V12-T3-222**
Product Selection	**V12-T3-223**
Accessories	**V12-T3-228**
Specifications	**V12-T3-230**
Dimensions and Weights	**V12-T3-231**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

M-Frame (300–800 A)

Product Description

- All Eaton M-Frame circuit breakers are HACR rated
- MDL-Frame circuit breakers are available as individual components (frame, trip unit, terminals), or factory assembled complete breakers
- MDLB, HMDLB-Frame circuit breakers with non-interchangeable trip units are suitable for reverse feed use

Standards and Certifications

- CE marked

CE

Technical Data

Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity rms (kA Symmetrical Amperes) $I_{cu} = I_{cs}$ Volts AC (50/60 Hz) 240	415	690	Volts DC ②③ 250	Recommended Power Defense Replacement ④
MDL, MDLB	2, 3	65/65	50/50	20/10	20/10	PDG4xK
CMDL	2, 3	65/65	50/50	20/10	—	PDF4xK
HMDL, HMDLB	2, 3	100/100	70/50	25/13	20/10	PDG4xM
CHMDL	2, 3	100/100	70/50	25/13	—	PDF4xM

Notes

① Utilization Category A circuit breakers.

② Two-pole or two poles of three-pole circuit breaker. Thermal-magnetic trip units only, MDL, HMDL breakers with electronic trip unit are not DC rated.

③ Time constant is 3 milliseconds minimum at 10 kA and 8 milliseconds at 22 kA.

④ Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

UL 489/CSA Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Volts DC ②③ 250	Recommended Power Defense Replacement ④
MDL, MDLB	2, 3	65	50	25	22	PDG4xK
CMDL	2, 3	65	50	25	—	PDF4xK
HMDL, HMDLB	2, 3	100	65	35	25	PDG4xM
CHMDL	2, 3	100	65	35	—	PDF4xM

IEC 947-2 Interrupting

Shaded area denotes obsolete or discontinued products and services.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers. It is not to be used to build catalog numbers for circuit breakers or trip units.

MDL Frame with Thermal-Magnetic Trip Unit Technology

Thermal-Magnetic Breakers and Frame ①

MDL 3 800 F

Circuit Breaker/ Frame Type	Number of Poles	Circuit Breaker/ Frame Ampere Rating		Suffix
MDL, MDLB HMDL, HMDLB	**2** = Two-pole **3** = Three-pole	**300** ① **350** ① **400** **450**	**500** **600** **700** **800**	**F** = Frame only (800 A only) **K** = High magnetic molded case switch **V** = 50 °C (thermal-magnetic trip units only) **W** = Without terminals **X** = Load side terminals only **Y** = Line side terminals only

Thermal-Magnetic Trip Unit ①

MT 3 800 T

Trip Unit Type	Number of Poles	Trip Unit Rating/ Plug Ampere Rating		Suffix
MT	**2** = Two-pole **3** = Three-pole	**300** ① **350** ① **400** **450**	**500** **600** **700** **800**	**T** = Thermal-magnetic **V** = 50 °C (thermal-magnetic trip units only)

MDL Frame with 310+ Electronic Trip Unit Technology

310+ Circuit Breaker

MDLB 3 800 F T36 B21 W

Performance at 480 Vac	Number of Poles	Amperes	Designation	Trip Unit	Features	Terminals
MDLB=50 kAIC **HMDLB**=65 kAIC **CMDLB**=50 kAIC, 100% rated **CHMDLB**=65 kAIC, 100% rated	**3** = Three-pole	**800**	**F**	**T33**=310+ Electronic LS **T32**=310+ Electronic LSI **T35**=310+ Electronic LSG **T36**=310+ Electronic LSIG **T38**=310+ Electronic LSI with Maintenance Mode **T39**=310+ Electronic LSIG with Maintenance Mode	**Blank**=No feature **B20**=High load alarm **B21**=Ground fault alarm, with trip **B22**=Ground fault alarm, no trip **ZG**= Zone selective interlocking	**W** = No terminals

310+ Electronic Trip Unit ①

MES 3 800 ALSIG B21

Trip Unit Type	Number of Poles	Amperes	Trip Unit	Features
MES	**3** = Three-pole	**800**	**LS**= 310+ Electronic LS **LSI**=310+ Electronic LSI **LSG**=310+ Electronic LSG **LSIG**=310+ Electronic LSIG **ALSI**=310+ Electronic LSI with Maintenance Mode **ALSIG**=310+ Electronic LSIG with Maintenance Mode	**Blank**=No feature **B20**=High load alarm **B21**=Ground fault alarm, with trip **B22**=Ground fault alarm, no trip **ZG**= Zone selective interlocking

Note

① Frames are the same for thermal-magnetic or 310+ electronic trip units, e.g., **MDL3800F**, **HMDL3800F**, etc.

Shaded area denotes obsolete or discontinued products and services.

Product Selection

Types MDL and HMDL Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units—Two-Pole

Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Frame Only Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Frame Only Catalog Number	Thermal-Magnetic Trip Unit Only For Use with Standard or High or Ultra High Interrupting Frames Magnetic Trip Range is 5–10 Up Through 600 A; 4–8 on 700 and 800 A x Continuous Ampere Rating Catalog Number	Standard Terminals Only ① See Page V12-T3-227 for Optional Terminals Catalog Number
300	MDL2300	MDL2800F	HMDL2300	HMDL2800F	MT2300T	TA700MA1
350	MDL2350		HMDL2350		MT2350T	TA700MA1
400	MDL2400		HMDL2400		MT2400T	TA700MA1
450	MDL2450		HMDL2450		MT2450T	TA700MA1
500	MDL2500		HMDL2500		MT2500T	TA700MA1
600	MDL2600		HMDL2600		MT2600T	TA700MA1
700	MDL2700		HMDL2700		MT2700T	TA700MA1
800	MDL2800		HMDL2800		MT2800T	TA800MA2

Types MDL and HMDL Thermal-Magnetic Circuit Breakers with Interchangeable Trip Units—Three-Pole

Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Frame Only Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Frame Only Catalog Number	Thermal-Magnetic Trip Unit Only For Use with Standard or High or Ultra High Interrupting Frames Magnetic Trip Range is 5–10 Up Through 600 A; 4–8 on 700 and 800 A x Continuous Ampere Rating Catalog Number	Standard Terminals Only ① See Page V12-T3-227 for Optional Terminals Catalog Number
300	MDL3300	MDL3800F	HMDL3300	HMDL3800F	MT3300T	TA700MA1
350	MDL3350		HMDL3350		MT3400T	TA700MA1
400	MDL3400		HMDL3400		MT3400T	TA700MA1
450	MDL3450		HMDL3450		MT3450T	TA700MA1
500	MDL3500		HMDL3500		MT3500T	TA700MA1
600	MDL3600		HMDL3600		MT3600T	TA700MA1
700	MDL3700		HMDL3700		MT3700T	TA700MA1
800	MDL3800		HMDL3800		MT3800T	TA800MA2

Note

① Two terminals are required per pole.

Shaded area denotes obsolete or discontinued products and services.

Types MDLB and HMDLB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units—Two-Pole ①

Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Standard Terminals Only ② See Page V12-T3-227 for Optional Terminals Catalog Number
300	MDLB2300	HMDLB2300	TA700MA1
350	MDLB2350	HMDLB2350	TA700MA1
400	MDLB2400	HMDLB2400	TA700MA1
450	MDLB2450	HMDLB2450	TA700MA1
500	MDLB2500	HMDLB2500	TA700MA1
600	MDLB2600	HMDLB2600	TA700MA1
700	MDLB2700	HMDLB2700	TA700MA1
800	MDLB2800	HMDLB2800	TA800MA2

Types MDLB and HMDLB Thermal-Magnetic Circuit Breakers with Non-Interchangeable Trip Units—Three-Pole ①

Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Factory Assembled Circuit Consisting of Frame, Trip Unit and Terminals Catalog Number	Standard Terminals Only ② See Page V12-T3-227 for Optional Terminals Catalog Number
300	MDLB3300	HMDLB3300	TA700MA1
350	MDLB3350	HMDLB3350	TA700MA1
400	MDLB3400	HMDLB3400	TA700MA1
450	MDLB3450	HMDLB3450	TA700MA1
500	MDLB3500	HMDLB3500	TA700MA1
600	MDLB3600	HMDLB3600	TA700MA1
700	MDLB3700	HMDLB3700	TA700MA1
800	MDLB3800	HMDLB3800	TA800MA2

Notes

① Factory sealed for reverse feed application.

② Two terminals are required per pole.

Shaded area denotes obsolete or discontinued products and services.

Types MDL and HMDL Electronic Circuit Breakers with Interchangeable Trip Units

Order as Individual Components: breaker frame, trip unit and terminals.
See 310+ adjustability specifications on **Page V12-T3-230**.

Types MDL and HMDL Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Three-Pole

	Circuit Breaker Frame Only		Digitrip RMS 310+ Trip Unit Only ①						
			Standard LS	Optional LSI	LSG	LSIG			
Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac Catalog Number	Adjustable Short Time Pickup with I^2t Short Delay Ramp Catalog Number	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number	Terminal Information	
800	MDL3800F	HMDL3800F	MES3800LS	MES3800LSI	MES3800LSG	MES3800LSIG	LGFCT600	See Page V12-T3-228	

Types MDLB and HMDLB Electronic Circuit Breakers with Non-Interchangeable 310+ Trip Units ④

	Factory-Assembled Circuit Breaker Consisting of Frame and Trip Unit Less Terminals				
	LS	LSI	LSG	LSIG	
Maximum Continuous Ampere Rating at 40 °C	Adjustable Short Time Pickup with I^2t Short Delay Ramp Catalog Number	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac					
800	MDLB3800FT33W	MDLB3800FT32W	MDLB3800FT35W	MDLB3800FT36W	LGFCT600
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
800	HMDLB3800FT33W	HMDLB3800FT32W	HMDLB3800FT35W	HMDLB3800FT36W	LGFCT600

100% Rated Types CMDL and CHMDL Electronic Circuit Breakers with Interchangeable Trip Units

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at the 75 °C ampacity. All 100% rated circuit breakers have electronic trip units. Order as individual components: breaker frame, trip unit and terminals. See 310+ adjustability specifications on **Page V12-T3-230**.

100% Rated Types CMDL and CHMDL Electronic Circuit Breakers with Interchangeable 310+ Trip Units—Three-Pole

	Circuit Breaker Frame Only		Digitrip RMS 310+ Trip Unit Only ①						
			Standard LS	Options LSI	LSG	LSIG			
Maximum Continuous Ampere Rating at 40 °C	Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac Catalog Number	High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac	Adjustable Short Time Pickup with I^2t Short Delay Ramp	Independently Adjustable Short Time Pickup and Delay	Adjustable Short Time Pickup with I^2t Short Delay and Ground Fault Protection	Independently Adjustable Short Time Pickup and Ground Fault Protection	Neutral CT for LSG and LSIG ②③ Catalog Number	Terminal Information	
800	CMDL3800F	CHMDL3800F	MES3800LS	MES3800LSI	MES3800LSG	MES3800LSIG	LGFCT600	See Page V12-T3-228	

Notes

① For AC use only.
② Required for four-wire systems if neutral protection is desired.
③ Included with LSG and LSIG trip units or breakers.
④ Factory sealed, suitable for reverse feed application. CMDLB and CHMDLB are also available.

Shaded area denotes obsolete or discontinued products and services.

Molded Case Switches

Eaton's molded case switches are used as compact switches in applications requiring high current switching capabilities. Molded case switches are constructed of circuit breaker components and are of the high instantaneous automatic type. Molded case switches are listed in accordance with Underwriters Laboratories Standard UL 489.

Molded Case Switches

Maximum Continuous Ampere Rating at 40 °C	600 Vac Maximum, 250 Vdc Circuit Breaker Only without Line and Load Terminals Catalog Number
Two-Pole	
800	**MDL2800WK**
	MDLB2800WK ①
	HMDL2800WK
Three-Pole	
800	**MDL3800WK**
	MDLB3800WK ①
	HMDL3800WK

Notes

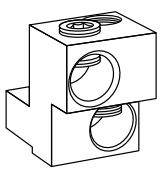
① MDLB and HMDLB are suitable for reverse feed applications.

Molded case switch may trip above 6000 amperes.

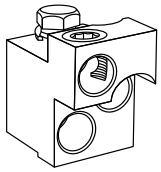
Accessories Selection Guide and Ordering Information

Line and Load Terminals

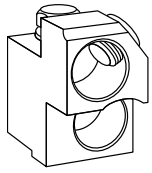
M-Frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.



TA700MA1



TA800MA2



TA801MA

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range/No. Conductors	Terminal Catalog Number	Terminals with Control Wire Termination Catalog Number
Standard Cu/Al Pressure Terminals					
700	Aluminum	Cu/Al	1–500 kcmil (2)	**TA700MA1**	**TA700MA1CWT**
800 std.	Aluminum	Cu/Al	3/0–400 kcmil (3)	**TA800MA2**	**TA800MA2CWT**
800	Aluminum	Cu/Al	500–750 kcmil (2)	**TA801MA**	**TA801MACWT**
Optional Copper and Cu/Al Pressure Type Terminals					
600	Copper	Cu	2/0–500 kcmil (2)	**T600MA1**	—
800	Copper	Cu	3/0–300 kcmil (3)	**T800MA1**	—

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

3

MD Frame Accessories

Description	Reference Page	Two-Pole ① Left	Two-Pole ① Right	Three-Pole Left	Three-Pole Center	Three-Pole Right
Internal Accessories (Only One Internal Accessory Per Pole)						
Alarm lockout (Make/Break)	**V12-T3-284**	■	■	■	—	■
Alarm lockout (2Make/2Break)	**V12-T3-284**	■	■	■	—	■
Auxiliary switch (1A, 1B)	**V12-T3-286**	■	■	■	—	■
Auxiliary switch (2A, 2B)	**V12-T3-286**	■	■	■	—	■
Auxiliary switch (3A, 3B)	**V12-T3-286**	■	■	■	—	■
Auxiliary switch (1A, 1B) and alarm switch combination	**V12-T3-288**	■	■	■	—	■
Auxiliary switch (2A, 2B) and alarm switch combination	**V12-T3-288**	■	■	■	—	■
Shunt trip—standard ②	**V12-T3-291**	■	■	■	—	■
Shunt trip—low energy ②	**V12-T3-293**	■	■	■	—	■
Undervoltage release mechanism ②	**V12-T3-299**	■	■	■	—	■
External Accessories						
Rear fed terminals	**V12-T3-320**	—	—	●	●	●
Base mounting hardware	**V12-T3-321**	—	—	—	●	—
Terminal shields	**V12-T3-323**	—	—	—	●	—
Interphase barriers	**V12-T3-323**	—	—	—	●	—
Non-padlockable handle block	**V12-T3-324**	—	—	—	■	—
Padlockable handle lock hasp	**V12-T3-325**	❑	—	❑	—	❑
Key interlock kit	**V12-T3-326**	❑	—	❑	—	❑
Sliding bar interlock—requires two breakers	**V12-T3-327**	●	●	●	●	●
Walking beam interlock—requires two breakers	**V12-T3-327**	●	●	●	●	●
Electrical (motor) operator	**V12-T3-328**	●	●	●	●	●
Plug-in adapters	**V12-T3-330**	●	●	●	●	●
Rear connecting studs	**V12-T3-331**	●	●	●	●	●
Panelboard connecting straps	**V12-T3-332**	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●
Handle extension	—	●	●	●	●	●
Solid-state (electronic) portable test kit	**V12-T3-334**	●	●	●	●	●
Modifications (Refer to Eaton)						
Special calibration	—	●	●	●	●	●
Moisture fungus treatment	**V12-T3-135**	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Notes

① Two-pole breaker supplied in three-pole frame. Current carrying parts omitted from center pole.
② Shunt trip and UVR cannot be mounted in right poles on MES trip units.

Shaded area denotes obsolete or discontinued products and services.

310+ Electronic Trip Unit Accessories

Description	Catalog Number
Electronic portable test kit	**MTST230V** ①
Trip unit tamper protection wire seal	**5108A03H01**
External neutral sensor	**LGFCT600** ②
Breaker-mount cause-of-trip indication	**TRIP-LED**
Breaker-mount ammeter module	**DIGIVIEW**
Remote-mount ammeter module	**DIGIVIEWR06** ③

Notes

① MTST230V applies to 100–230 Vac.
② Included with all LD LSG and LSIG trip units and breakers.
③ Includes 6 ft cable for remote mounting; NEMA 3R rated.

Specifications

310+ Specifications

Description	Specification
Trip Unit Type	Digitrip RMS 310+
Breaker Type	
Frame designation	MDL
Frames available	800 A
Continuous current range (A)	320–800 A
Ground fault pickup (A)	160–800 A
Interrupting capacities at 480 Vac (kAIC)	50, 65
100% rated	Yes
Protection	
Ordering options	LS, LSI, LSG, LSIG, ALSI, ALSIG
Arcflash Reduction Maintenance System (or Maintenance Mode)	Remote enabled on ALSI, ALSIG
Interchangeable trip unit	Yes
High load alarm (suffix B20) ①	Yes
Ground fault alarm with trip (suffix B21) ①	LSG, LSIG, ALSIG
Ground fault alarm, no trip (suffix B22) ①	LSG, LSIG, ALSIG
Zone selective interlocking (suffix ZG)	LSI, LSIG, ALSI, ALSIG
Cause of trip indication	Yes (via TRIP-LED or DIGIVIEW)
Thru-cover accessories	No

310+ Adjustability Specifications

Description		MDL Frame Specification
310+ settings		800 A
I_r = continuous current or long delay pickup (amperes) (All 310+)	I_r	
	A	320
	B	400
	C	450
	D	500
	E	600
	F	630
	G	700
	H (= I_n)	800
t_r = long delay time (seconds) (All 310+)	2	2
	4	4
	7	7
	10	10
	12	12
	15	15
	20	20
	24	24
I_{sd} (x I_r) = short delay pickup (All 310+)	Position 1	2x
	Position 2	3x
	Position 3	4x
	Position 4	5x
	Position 5	6x
	Position 6	7x
	Position 7	8x
	Position 8	8x
	Position 9	8x
t_{sd} = short delay time I^2t (milliseconds) (LS and LSG)	Fixed	67 @10x
t_{sd} = short delay time flat (milliseconds) (LSI, LSIG, ALSI, ALSIG)	Position 1	Inst
	Position 2	120
	Position 3	300
I_g (x I_n) = ground fault pickup (amperes) (310+ w/ ground fault)	Position 1	160
	Position 2	240
	Position 3	320
	Position 4	480
	Position 5	640
	Position 6	800
t_g = ground fault delay time (milliseconds) (LSG, LSIG, ALSIG)	Position 1	Inst
	Position 2	120
	Position 3	300
Independently adjustable Instantaneous (Ii) setting	②	
Maintenance Mode pickup (2.5 x I_n) (amperes) (310+ with Maintenance Mode—ALSI and ALSIG)	Fixed	2000

Notes

① B2x suffixes cannot be combined with B2x suffixes.

② Not available for MDL. Independently adjustable Ii setting available in LG, NG, and RG ALSI and ALSIG trip units.

Dimensions and Weights

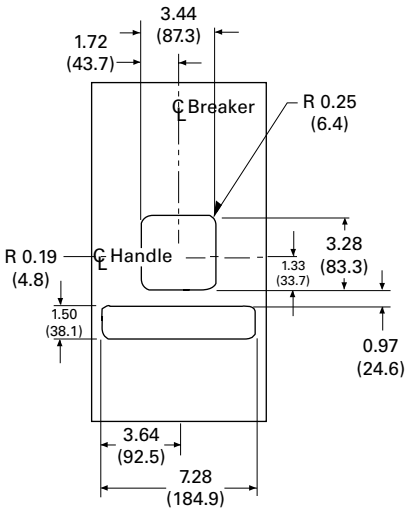
Dimensions in Inches (mm)

MD Frame

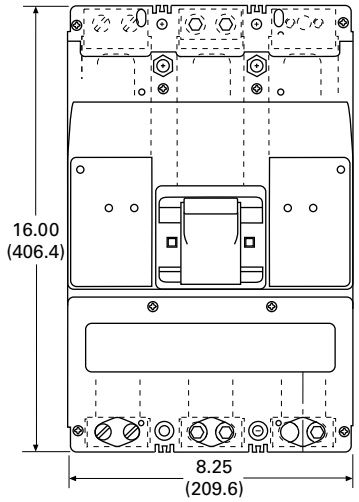
Number of Poles	Width	Height	Depth
2, 3	8.25 (209.6)	16.00 (406.4)	4.06 (103.1)

MDL-Frame, Two- and Three-Pole

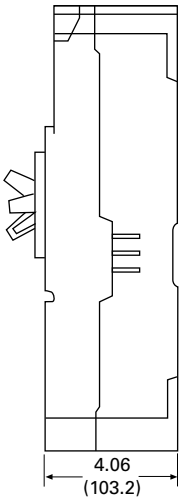
Drilling Plan



Front View



Side View



Approximate Shipping Weight, Lb (kg)

MD Frame

Breaker Type	Complete Breaker		Frame Only		Trip Unit ①	
	Two-Pole	Three-Pole	Two-Pole	Three-Pole	Two-Pole	Three-Pole
MDL, HMDL (T/M T.U.)	26.5 (12.0)	29.0 (13.2)	24.5 (11.1)	26.0 (11.8)	2.5 (1.1)	3.0 (1.4)
MDL, HMDL (Elec. T.U.)	—	30.0 (13.6)	—	26.0 (11.8)	—	4.0 (1.8)

Note

① Thermal-magnetic only.

Shaded area denotes obsolete or discontinued products and services.

Typical N-Frame Breaker



Contents

Description	*Page*
Product Overview	**V12-T3-135**
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G-Frame (15–100 A)	**V12-T3-137**
F-Frame (10–225 A)	**V12-T3-145**
J-Frame (70–250 A)	**V12-T3-164**
K-Frame (70–400 A)	**V12-T3-171**
L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	
Catalog Number Selection	**V12-T3-233**
Product Selection	**V12-T3-234**
Accessories	**V12-T3-242**
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R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

N-Frame (400–1200 A)

Product Description

- All Eaton N-Frame circuit breakers are suitable for reverse feed use
- All N-Frame circuit breakers are HACR rated

Technical Data

UL 489 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Recommended Power Defense Replacement ②
ND	2, 3, 4	65	50	25	PDG53K
CND ③	2, 3, 4	65	50	25	PDF53K
HND	2, 3, 4	100	65	35	PDG53M
CHND ③	2, 3, 4	100	65	35	PDF53M
NDC	2, 3, 4	200	100	65	PDG53P
CNDC ③	2, 3, 4	200	100	65	PDF53P
NDU ④	3	300 ⑤	150	75 ⑥	PDG53* Verify application

Notes

① Utilization Category A circuit breakers.

② Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

③ 100% rated breakers.

④ 800 amperes maximum rating.

⑤ Successfully tested at 300 kAIC, although UL recognizes maximum of 200 kAIC at 240 Vac.

⑥ Successfully tested at 75 kAIC, although UL recognizes maximum of 65 kAIC at 600 Vac.

Shaded area denotes obsolete or discontinued products and services.

IEC 947-2 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	415	690	Recommended Power Defense Replacement ②
ND					
I_{cu}	2, 3, 4	85	50	20	PDXXXX
I_{cs}	2, 3, 4	85	50	10	PDXXXXX
CND ③					
I_{cu}	2, 3, 4	85	50	20	PDXXXX
I_{cs}	2, 3, 4	85	50	10	PDXXXX
HND					
I_{cu}	2, 3, 4	100	70	25	PDXXXX
I_{cs}	2, 3, 4	100	50	13	PDXXXX
CHND ③					
I_{cu}	2, 3, 4	100	70	25	PDXXXX
I_{cs}	2, 3, 4	100	50	13	PDXXXX
NDC					
I_{cu}	2, 3, 4	200	100	35	PDXXXX
I_{cs}	2, 3, 4	100	50	18	PDXXXX
CNDC ③					
I_{cu}	2, 3, 4	200	100	35	PDXXXX
I_{cs}	2, 3, 4	100	50	18	PDXXXX

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame

ND 3 12 T3 2 W

Circuit Breaker/ Frame Type	Number of Poles	Circuit Breaker/Frame Ampere Rating	Trip Model	Trip Type	Suffix
ND	**2** = Two-pole	**800**= 800 amperes	**T3**= Model 310	**2** = LSI	**E** = 100% R.P. protected (four-pole)
HND	**3** = Three-pole	**12** = 1200 amperes	**T5** = Model 550	**3** = LS	**EH** = 50% R.P. protected (four-pole)
NDC	**4** = Four-pole		**T7**= Model 750	**5** = LSG	**K** = High magnetic molded case switch
NDU			**T10** = Model 1050	**6** = LSIG	**W** = Without terminals
CND				**7** = LSIA	**X** = Load only terminals
CHND					**Y** = Line only terminals
CNDC					

Notes

① Utilization Category A circuit breakers.

② Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

③ 100% rated breakers.

Shaded area denotes obsolete or discontinued products and services.

Product Selection

Digitrip OPTIM Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plugs

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac					
800	**ND3800T52W**	**ND3800T56W**	**ND3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200	**ND312T52W**	**ND312T56W**	**ND312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
800	**HND3800T52W**	**HND3800T56W**	**HND3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200	**HND312T52W**	**HND312T56W**	**HND312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 550 Electronic Circuit Breakers with Interchangeable Rating Plugs, continued

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)			Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac					
800	**NDC3800T52W**	**NDC3800T56W**	**NDC3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200	**NDC312T52W**	**NDC312T56W**	**NDC312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**

Notes

① Long delay I^4t response selection limits short delay time to flat response.

② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM 1050 Electronic Circuit Breakers with Interchangeable Rating Plugs

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L– Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ① S– Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I– Adjustable Instantaneous Pickup G– Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A– Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response) OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Digitrip OPTIM Rating Plug Only Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac				
800	**ND3800T106W**	**ND3800T107W**	400	**ORPN80A400**
			450	**ORPN80A450**
			500	**ORPN80A500**
			550	**ORPN80A550**
			600	**ORPN80A600**
			700	**ORPN80A700**
			800	**ORPN80A800**
1200	**ND312T106W**	**ND312T107W**	600	**ORPN12A600**
			700	**ORPN12A700**
			800	**ORPN12A800**
			1000	**ORPN12A100**
			1200	**ORPN12A120**
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
800	**HND3800T106W**	**HND3800T107W**	400	**ORPN80A400**
			450	**ORPN80A450**
			500	**ORPN80A500**
			550	**ORPN80A550**
			600	**ORPN80A600**
			700	**ORPN80A700**
			800	**ORPN80A800**
1200	**HND312T106W**	**HND312T107W**	600	**ORPN12A600**
			700	**ORPN12A700**
			800	**ORPN12A800**
			1000	**ORPN12A100**
			1200	**ORPN12A120**
Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac				
800	**NDC3800T106W**	**NDC3800T107W**	400	**ORPN80A400**
			450	**ORPN80A450**
			500	**ORPN80A500**
			550	**ORPN80A550**
			600	**ORPN80A600**
			700	**ORPN80A700**
			800	**ORPN80A800**
1200	**NDC312T106W**	**NDC312T107W**	600	**ORPN12A600**
			700	**ORPN12A700**
			800	**ORPN12A800**
			1000	**ORPN12A100**
			1200	**ORPN12A120**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch and one Form C bell (trip) alarm switch supplied with breaker as standard.
③ Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit), rating plug, terminals.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plugs

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)

Digitrip OPTIM Rating Plug Only

Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac					
800	**CND3800T52W**	**CND3800T56W**	**CND3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200 ③	**CND312T52W**	**CND312T56W**	**CND312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac					
800	**CHND3800T52W**	**CHND3800T56W**	**CHND3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200 ③	**CHND312T52W**	**CHND312T56W**	**CHND312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.
③ Includes conductor extension kit, which increases breaker length 3.75 on each end. Terminal ordered separate.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 550 Circuit Breakers with Interchangeable Rating Plugs, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)

Maximum Continuous Ampere Rating at 40 °C	OPTIM 550 ② LSI Catalog Number	LSIG Catalog Number	LSIA Catalog Number	Digitrip OPTIM Rating Plug Only Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac					
800	**CNDC3800T52W**	**CNDC3800T56W**	**CNDC3800T57W**	400	**ORPN80A400**
				450	**ORPN80A450**
				500	**ORPN80A500**
				550	**ORPN80A550**
				600	**ORPN80A600**
				700	**ORPN80A700**
				800	**ORPN80A800**
1200 ③	**CNDC312T52W**	**CNDC312T56W**	**CNDC312T57W**	600	**ORPN12A600**
				700	**ORPN12A700**
				800	**ORPN12A800**
				1000	**ORPN12A100**
				1200	**ORPN12A120**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② Zone interlocking, PowerNet, or both features can be added at the factory by adding suffixes **ZG**, **PN** or **ZGP** respectively to above catalog number.
③ Includes conductor extension kit, which increases breaker length 3.75 on each end. Terminal ordered separate.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plugs

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)

Digitrip OPTIM Rating Plug Only

Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 50 kAIC at 480 Vac				
800	**CND3800T106W**	**CND3800T107W**	400	**ORPN80A400**
			450	**ORPN80A450**
			500	**ORPN80A500**
			550	**ORPN80A550**
			600	**ORPN80A600**
			700	**ORPN80A700**
			800	**ORPN80A800**
1200	**CND312T106W**	**CND312T107W**	600	**ORPN12A600**
			700	**ORPN12A700**
			800	**ORPN12A800**
			1000	**ORPN12A100**
			1200	**ORPN12A120**
Three-Pole High Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
800	**CHND3800T106W**	**CHND3800T107W**	400	**ORPN80A400**
			450	**ORPN80A450**
			550	**ORPN80A550**
			600	**ORPN80A600**
			700	**ORPN80A700**
			800	**ORPN80A800**
1200	**CHND312T106W**	**CHND312T107W**	600	**ORPN12A600**
			700	**ORPN12A700**
			800	**ORPN12A800**
			1000	**ORPN12A100**
			1200	**ORPN12A120**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch one Form C bell (trip) alarm switch supplied with breaker as standard.
③ Factory sealed.

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip OPTIM 1050 Circuit Breakers with Interchangeable Rating Plugs, continued

Circuit Breaker Frame Only

L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time (I^2t or I^4t Response) ①
S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response)
I – Adjustable Instantaneous Pickup
G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)
A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)

Digitrip OPTIM Rating Plug Only

Maximum Continuous Ampere Rating at 40 °C	OPTIM 1050 ②③ LSIG Catalog Number	LSIA Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Ultra High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac				
800	**CNDC3800T106W**	**CNDC3800T107W**	400	**ORPN80A400**
			450	**ORPN80A450**
			500	**ORPN80A500**
			550	**ORPN80A550**
			600	**ORPN80A600**
			700	**ORPN80A700**
			800	**ORPN80A800**
1200	**CNDC312T106W** ④	**CNDC312T107W**	600	**ORPN12A600**
			700	**ORPN12A700**
			800	**ORPN12A800**
			1000	**ORPN12A100**
			1200	**ORPN12A120**

Type ND Molded Case Switches

Type ND High Instantaneous (K)

Continuous Ampere Rating at 40 °C	Three-Pole Catalog Number	Four-Pole ⑤ Catalog Number
800	**ND3800WK**	**ND4800WK**
	HND3800WK	**HND4800WK**
1200	**ND312WK**	**ND412WK**
	HND312WK	**HND412WK**

Notes

① Long delay I^4t response selection limits short delay time to flat response.
② One Form C auxiliary switch one Form C bell (trip) alarm switch supplied with breaker as standard.
③ Factory sealed.
④ Includes conductor extension kit, which increases breaker length 3.75 on each end. Terminal ordered separate.
⑤ Neutral is in right pole.

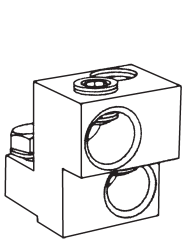
Molded case switch will trip above 14,000 amperes.

For UL listed, series tested molded case switch application data, refer to Eaton.

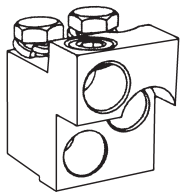
Accessories Selection Guide and Ordering Information

Line and Load Terminals—Ordering Information

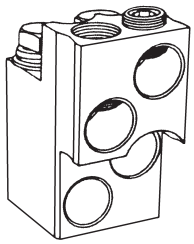
N-Frame circuit breakers use Cu/Al terminals as standard. When optional copper or Cu/Al terminals are required, order by catalog number. Specify if factory installation is required.



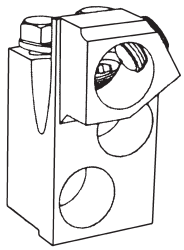
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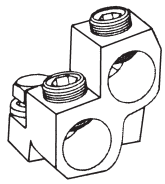
TA1000NB1



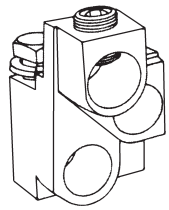
TA1200NB1



TA1201NB1



T700NB1



T1000NB1

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range/ No. Conductors	Metric Wire Range mm^2	Catalog Number
Standard Cu/Al Pressure Terminals					
700	Aluminum	Cu/Al	1–500 kcmil (2)	50–240	**TA700NB1**
1000	Aluminum	Cu/Al	3/0–400 kcmil (3)	95–185	**TA1000NB1** ①
1200	Aluminum	Cu/Al	4/0–500 kcmil (4)	120–240	**TA1200NB1** ①
1200	Aluminum	Cu/Al	500–750 kcmil (3)	300–400	**TA1201NB1** ②
Optional Copper and Cu/Al Pressure Type Terminals					
700	Copper	Cu	2/0–500 kcmil (2)	70–240	**T700NB1**
1000	Copper	Cu	3/0–500 kcmil (3)	95–240	**T1000NB1**
1200	Copper	Cu	3/0–400 kcmil (4)	95–185	**T1200NB3**

Notes

① Terminal rating is AL9CU.
② Terminal rating is AL7CU.

Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

3

ND Frame Accessories

Description	Reference Page	Three-Pole Left	Three-Pole Center	Three-Pole Right	Four-Pole Left	Four-Pole Center	Four-Pole Right	Four-Pole Neutral
Internal Accessories (Only One Internal Accessory Per Pole) ①								
Alarm lockout (Make/Break)	**V12-T3-284**	■	—	■	■	—	■	—
Alarm lockout (2Make/2Break)	**V12-T3-284**	■	—	■	■	—	■	—
Auxiliary switch (1A, 1B)	**V12-T3-286**	■	—	■	■	—	■	—
Auxiliary switch (2A, 2B)	**V12-T3-286**	■	—	■	■	—	■	—
Auxiliary switch (3A, 3B)	**V12-T3-286**	■	—	■	■	—	■	—
Auxiliary switch (1A, 1B) and alarm switch combination	**V12-T3-288**	■	—	■	■	—	■	—
Auxiliary switch (2A, 2B) and alarm switch combination	**V12-T3-288**	■	—	■	■	—	■	—
Shunt trip—standard	**V12-T3-292**	■	—	—	■	—	—	—
Shunt trip—low energy	**V12-T3-293**	■	—	—	■	—	—	—
Undervoltage release mechanism	**V12-T3-300**	■	—	—	■	—	—	—
Eaton PowerNet communications kit (OPTIM 550)	**V12-T3-301**	—	—	■	—	—	—	—
External Accessories								
Base mounting hardware	**V12-T3-321**	●	●	●	●	●	●	●
Interphase barriers	**V12-T3-323**	●	●	●	●	●	●	●
Terminal shield	**V12-T3-323**	■	■	■	—	—	—	—
Non-padlockable handle block	**V12-T3-324**	—	■	—	—	■	—	—
Padlockable handle lock hasp	**V12-T3-325**	❑		❑	❑	—	❑	—
Key interlock kit	**V12-T3-326**	❑		❑	❑	—	❑	—
Sliding bar interlock—requires two breakers	**V12-T3-327**	●	●	●				
Walking beam interlock—requires two breakers	**V12-T3-327**	●	●	●	●	●	●	●
Electrical (motor) operator	**V12-T3-329**	●	●	●	●	●	●	●
Plug-in adapters	**V12-T3-330**	●	●	●	●	●	●	●
Rear connecting studs	**V12-T3-331**	●	●	●	●	●	●	●
Panelboard connecting straps	**V12-T3-332**	●	●	●	●	●	●	●
Handle mechanisms	—	●	●	●	●	●	●	●
Handle extension	—	●	●	●	●	●	●	●
Solid-state (electronic) portable test kit	**V12-T3-335**	●	●	●	●	●	●	●
OPTIM System Components Three Poles								
Ground fault alarm unit	**V12-T3-334**	—	—	—	—	—	—	—
Potential transformer module	**V12-T3-334**	—	—	—	—	—	—	—
Breaker interface module (BIM)	**V12-T3-334**	—	—	—	—	—	—	—
Digitrip OPTIMizer	**V12-T3-335**	—	—	—	—	—	—	—
Auxiliary power module	**V12-T3-335**	—	—	—	—	—	—	—
Modifications (Refer to Eaton)								
Special calibration	—	●	●	●	●	●	●	●
Moisture fungus treatment	**V12-T3-135**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position
❑ May be mounted on left or right pole—not both
● Accessory available/modification available

Note

① OPTIM 550 and 1050 are factory sealed and do not have the right pole available for accessories.

Shaded area denotes obsolete or discontinued products and services.

Technical Data and Specifications

N-Frame Digitrip

Trip Unit Type	Digitrip OPTIM 550	Digitrip OPTIM 1050
rms sensing	Yes	Yes
Breaker Type		
Frame	N	N
Ampere range	400–1200 A	400–1200 A
Interrupting rating at 480 volts	50, 65, 100 (kA)	50, 65, 100 (kA)
Protection		
Ordering options	LSI, LSIG, LSI(A)	LSI(A), LISG
Fixed rated plug (I_n)	Yes	Yes
Overtemperature trip	Yes	Yes
Long Delay Protection (L)		
Adjustable rating plug (I_n)	No	No
Long delay pickup	0.4–1.0 x (I_n)	0.4–1.0 x (I_n)
Long delay time I^2t	2–24 seconds	2–24 seconds
Long delay time I^4t	1–5 seconds	1–5 seconds
Long delay thermal memory	Yes	Yes
High load alarm	No	0.5–1.0 x I_r
Short Delay Protection (S)		
Short delay pickup	150–800% x (I_r)	150–800% x (I_r)
Short delay time I^2t	100–500 ms	100–500 ms
Short delay time flat	100–500 ms	100–500 ms
Short delay time zone selective interlocking	Yes	Yes
Instantaneous Protection (I)		
Instantaneous pickup	200–800% x (I_n)	200–800% x (I_n)
Discriminator	Yes	Yes
Instantaneous override	Yes	Yes
Ground Fault Protection (G)		
Ground fault alarm	20–100% x (I_s)	20–100% x (I_s)
Ground fault pickup	20–100% x (I_s)	20–100% x (I_s)
Ground fault delay I^2t	100–500 ms	100–500 ms
Ground fault delay flat	100–500 ms	100–500 ms
Ground fault zone selective interlocking	Yes ①	Yes
Ground fault thermal memory	Yes	Yes
System Diagnostics		
Status LEDs	Yes	Yes
Cause of trip LEDs	Yes	Yes
Magnitude of trip information	Yes	Yes
Remote signal contact—ground alarm	Yes ①	Yes
Local auxiliary and bell alarm contact	Optional	Included

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
I_s = Sensor Rating
I_n = Rating Plug
I_r = Long Delay Pickup Setting

Note

① Zone interlock kit.

Shaded area denotes obsolete or discontinued products and services.

N-Frame Digitrip, continued

Trip Unit Type	Digitrip OPTIM 550	Digitrip OPTIM 1050
System Monitoring		
Digital display	Yes ①	Yes ①
Current	Yes	Yes
Power and energy	No	Yes
Power quality—harmonics	No	Yes
Power factor	No	Yes
Communications		
Eaton PowerNet	No ②	Yes
Testing		
Testing method	OPTIMizer, BIM, PowerNet	OPTIMizer, BIM, PowerNet

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
I_s = Sensor Rating
I_n = Rating Plug
I_r = Long Delay Pickup Setting

Notes

① By OPTIMizer/BIM.
② Eaton's PowerNet kit.

Dimensions and Weights

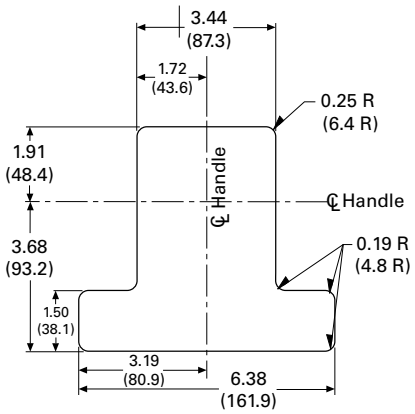
Approximate Dimensions in Inches (mm)

ND Frame

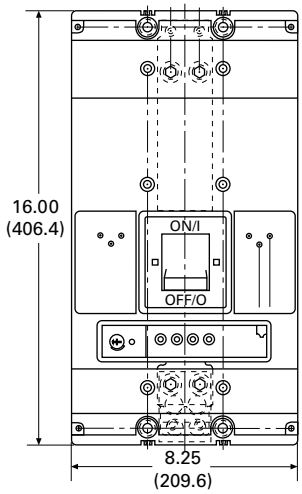
Number of Poles	Width	Height	Depth
2, 3	8.25 (209.6)	16.00 (406.4)	5.50 (139.7)
4	11.13 (282.6)	16.00 (406.4)	5.50 (139.7)

ND-Frame, Two- and Three-Pole

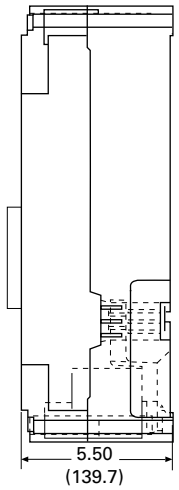
Front Cover Cutout



Front View



Side View



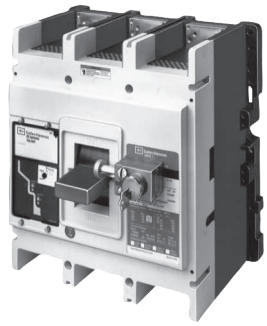
Approximate Shipping Weight in Lb (kg)

ND Frame

	Complete Breaker		
Breaker Type	Two-Pole	Three-Pole	Four-Pole
ND, HND, NDC, NDU	37 (16.8)	45 (20.4)	58 (26.3)

Shaded area denotes obsolete or discontinued products and services.

Typical R-Frame Breaker



Contents

Description	*Page*
Product Overview	**V12-T3-135**
Standards and Certifications	**V12-T3-136**
G-Frame (15–100 A)	**V12-T3-137**
F-Frame (10–225 A)	**V12-T3-145**
J-Frame (70–250 A)	**V12-T3-164**
K-Frame (70–400 A)	**V12-T3-171**
L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	
Catalog Number Selection	**V12-T3-247**
Product Selection	**V12-T3-248**
Accessories	**V12-T3-260**
Specifications	**V12-T3-261**
Dimensions and Weights	**V12-T3-263**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

R-Frame (800–2500 A)

Product Description

- Eaton R-Frame circuit breakers are available as frame (which includes trip unit), rating plug and terminals
- All R-Frame circuit breakers are suitable for reverse feed use

Technical Data

UL 489/CSA Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	480	600	Recommended Power Defense Replacement ②
RD	3, 4	125	65	50	PDXXXXX
CRD ③	3	125	65	50	PDXXXXX
RDC	3, 4	200	100	65	PDXXXXX
CRDC ③	3	200	100	65	PDXXXXX

IEC 947-2 Interrupting Capacity Ratings ①

Circuit Breaker Type	Number of Poles	Interrupting Capacity (kA Symmetrical Amperes) Volts AC (50/60 Hz) 240	415	690	Recommended Power Defense Replacement ②
RD					
I_{cu}	3, 4	135	70	25	PDXXXXX
I_{cs}	3, 4	100	50	13	PDXXXXX
RDC					
I_{cu}	3, 4	200	100	35	PDXXXXX
I_{cs}	3, 4	100	50	18	PDXXXXX

Notes

① Utilization Category A circuit breakers.

② Recommended Power Defense replacement breaker catalog number prefix only. Number of poles represented by "x". Use supplied tables to select replacement product. Recommended replacements are electrical equivalent only. Please ensure Power Defense replacement meets original product requirements and specifications.

③ 100% rated breakers.

See **Page V12-T3-261** for Trip Unit Specifications.

Shaded area denotes obsolete or discontinued products and services.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Circuit Breaker/Frame

RD 3 16 T53 W

Circuit Breaker/ Frame Type	Number of Poles	Circuit Breaker/Frame Ampere Rating	Trip Type ①	Suffix
RD **RDC** **CRD** ② **CRDC** ②	**3** = Three-pole **4** = Four-pole	**16** = 1600 amperes **20** = 2000 amperes **25** = 2500 amperes	**T53**= Digitrip RMS 510 LS **T65**= Digitrip RMS 610 LSG **T86**= Digitrip RMS 810 LSIG **T96**= Digitrip RMS 910 LSIG **T106** = Digitrip OPTIM 1050 LSIG **T107** = Digitrip OPTIM 1050 LSIA	**W** =Without terminals **P** =100% protected neutral pole **R** =Ground fault remote (310 only) **K** =Molded case switch

Notes

① For complete list of available trip types, refer to **Pages V12-T3-248** to **V12-T3-257**.
② No four-pole for CRD and CRDC.

Shaded area denotes obsolete or discontinued products and services.

Product Selection

Digitrip RMS 510 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 510 Electronic Circuit Breakers with Interchangeable Rating Plugs

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) LI Catalog Number	LS	LSI	LIG	LSG	LSIG	Digitrip Rating Plug Only Rated Current (I_n)	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	RD316T51W	RD316T53W	RD316T52W	RD316T54W	RD316T55W	RD316T56W	800	RP6R16A080
							1000	RP6R16A100
							1200	RP6R16A120
							1600	RP6R16A160
2000	RD320T51W	RD320T53W	RD320T52W	RD320T54W	RD320T55W	RD320T56W	1000	RP6R20A100
							1200	RP6R20A120
							1600	RP6R20A160
							2000	RP6R20A200
2500	RD325T51W	RD325T53W	RD325T52W	RD325T54W	RD325T55W	RD325T56W	1600	RP6R25A160
							2000	RP6R25A200
							2500	RP6R25A250
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	RDC316T51W	RDC316T53W	RDC316T52W	RDC316T54W	RDC316T55W	RDC316T56W	800	RP6R16A080
							1000	RP6R16A100
							1200	RP6R16A120
							1600	RP6R16A160
2000	RDC320T51W	RDC320T53W	RDC320T52W	RDC320T54W	RDC320T55W	RDC320T56W	1000	RP6R20A100
							1200	RP6R20A120
							1600	RP6R20A160
							2000	RP6R20A200
2500	RDC325T51W	RDC325T53W	RDC325T52W	RDC325T54W	RDC325T55W	RDC325T56W	1600	RP6R25A160
							2000	RP6R25A200
							2500	RP6R25A250

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip RMS 510 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

100% Rated Digitrip RMS 510 Circuit Breakers

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) LI Catalog Number						Digitrip Rating Plug Only Rated Current (I_n)	 Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	**CRD316T51W**	**CRD316T53W**	**CRD316T52W**	**CRD316T54W**	**CRD316T55W**	**CRD316T56W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000 ①	**CRD320T51W**	**CRD320T53W**	**CRD320T52W**	**CRD320T54W**	**CRD320T55W**	**CRD320T56W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	—	**CRDC316T53W**	**CRDC316T52W**	**CRDC316T54W**	**CRDC316T55W**	**CRDC316T56W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000 ①	**CRDC320T51W**	**CRDC320T53W**	**CRDC320T52W**	**CRDC320T54W**	**CRDC320T55W**	**CRDC320T56W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**

Note

① Includes B2016RDL rear connectors.

Shaded area denotes obsolete or discontinued products and services.

Digitrip RMS 610 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 610 Electronic Circuit Breakers with Interchangeable Rating Plugs

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) LI Catalog Number						Digitrip Rating Plug Only Rated Current (I_n)	 Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	**RD316T61W**	**RD316T63W**	**RD316T62W**	**RD316T64W**	**RD316T65W**	**RD316T66W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000	**RD320T61W**	**RD320T63W**	**RD320T62W**	**RD320T64W**	**RD320T65W**	**RD320T66W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**
2500	**RD325T61W**	**RD325T63W**	**RD325T62W**	**RD325T64W**	**RD325T65W**	**RD325T66W**	1600	**RP6R25A160**
							2000	**RP6R25A200**
							2500	**RP6R25A250**
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	**RDC316T61W**	**RDC316T63W**	**RDC316T62W**	**RDC316T64W**	**RDC316T65W**	**RDC316T66W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000	**RDC320T61W**	**RDC320T63W**	**RDC320T62W**	**RDC320T64W**	**RDC320T65W**	**RDC320T66W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**
2500	**RDC325T61W**	**RDC325T63W**	**RDC325T62W**	**RDC325T64W**	**RDC325T65W**	**RDC325T66W**	1600	**RP6R25A160**
							2000	**RP6R25A200**
							2500	**RP6R25A250**

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip RMS 610 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

100% Rated Digitrip RMS 610 Circuit Breakers

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)						Digitrip Rating Plug Only	
	LI	LS	LSI	LIG	LSG	LSIG	Rated Current (I_n)	Fixed Rating Plug
	Catalog Number							Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	CRD316T61W	CRD316T63W	CRD316T62W	CRD316T64W	CRD316T65W	CRD316T66W	800	RP6R16A080
							1000	RP6R16A100
							1200	RP6R16A120
							1600	RP6R16A160
2000 ①	CRD320T61W	CRD320T63W	CRD320T62W	CRD320T64W	CRD320T65W	CRD320T66W	1000	RP6R20A100
							1200	RP6R20A120
							1600	RP6R20A160
							2000	RP6R20A200
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	CRDC316T61W	CRDC316T63W	CRDC316T62W	CRDC316T64W	CRDC316T65W	CRDC316T66W	800	RP6R16A080
							1000	RP6R16A100
							1200	RP6R16A120
							1600	RP6R16A160
2000 ①	CRDC320T61W	CRDC320T63W	CRDC320T62W	CRDC320T64W	CRDC320T65W	CRDC320T66W	1000	RP6R20A100
							1200	RP6R20A120
							1600	RP6R20A160
							2000	RP6R20A200

Note

① Includes B2016RDL rear connectors.

Shaded area denotes obsolete or discontinued products and services.

Digitrip RMS 810 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 810 Electronic Circuit Breakers with Interchangeable Rating Plugs

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) LI Catalog Number	LS	LSI	LIG	LSG	LSIG	Digitrip Rating Plug Only Rated Current (I_n)	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	**RD316T81W**	**RD316T83W**	**RD316T82W**	**RD316T84W**	**RD316T85W**	**RD316T86W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000	**RD320T81W**	**RD320T83W**	**RD320T82W**	**RD320T84W**	**RD320T85W**	**RD320T86W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**
2500	**RD325T81W**	**RD325T83W**	**RD325T82W**	**RD325T84W**	**RD325T85W**	**RD325T86W**	1600	**RP6R25A160**
							2000	**RP6R25A200**
							2500	**RP6R25A250**
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	**RDC316T81W**	**RDC316T83W**	**RDC316T82W**	**RDC316T84W**	**RDC316T85W**	**RDC316T86W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000	**RDC320T81W**	**RDC320T83W**	**RDC320T82W**	**RDC320T84W**	**RDC320T85W**	**RDC320T86W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**
2500	**RDC325T81W**	**RDC325T83W**	**RDC325T82W**	**RDC325T84W**	**RDC325T85W**	**RDC325T86W**	1600	**RP6R25A160**
							2000	**RP6R25A200**
							2500	**RP6R25A250**

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip RMS 810 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

100% Rated Digitrip RMS 810 Circuit Breakers

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) LI Catalog Number						Digitrip Rating Plug Only Rated Current (I_n)	 Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	**CRD316T81W**	**CRD316T83W**	**CRD316T82W**	**CRD316T84W**	**CRD316T85W**	**CRD316T86W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000 ①	**CRD320T81W**	**CRD320T83W**	**CRD320T82W**	**CRD320T84W**	**CRD320T85W**	**CRD320T86W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	**CRDC316T81W**	**CRDC316T83W**	**CRDC316T82W**	**CRDC316T84W**	**CRDC316T85W**	**CRDC316T86W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000 ①	**CRDC320T81W**	**CRDC320T83W**	**CRDC320T82W**	**CRDC320T84W**	**CRDC320T85W**	**CRDC320T86W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**

Note

① Includes B2016RDL rear connectors.

Shaded area denotes obsolete or discontinued products and services.

Digitrip RMS 910 Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip RMS 910 Electronic Circuit Breakers with Interchangeable Rating Plugs

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response)						Digitrip Rating Plug Only	
	LI	LS	LSI	LIG	LSG	LSIG	Rated Current (I_n)	Fixed Rating Plug
	Catalog Number							Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	RD316T91W	RD316T93W	RD316T92W	RD316T94W	RD316T95W	RD316T96W	800	RP6R16A080
							1000	RP6R16A100
							1200	RP6R16A120
							1600	RP6R16A160
2000	RD320T91W	RD320T93W	RD320T92W	RD320T94W	RD320T95W	RD320T96W	1000	RP6R20A100
							1200	RP6R20A120
							1600	RP6R20A160
							2000	RP6R20A200
2500	RD325T91W	RD325T93W	RD325T92W	RD325T94W	RD325T95W	RD325T96W	1600	RP6R25A160
							2000	RP6R25A200
							2500	RP6R25A250
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	RDC316T91W	RDC316T93W	RDC316T92W	RDC316T94W	RDC316T95W	RDC316T96W	800	RP6R16A080
							1000	RP6R16A100
							1200	RP6R16A120
							1600	RP6R16A160
2000	RDC320T91W	RDC320T93W	RDC320T92W	RDC320T94W	RDC320T95W	RDC320T96W	1000	RP6R20A100
							1200	RP6R20A120
							1600	RP6R20A160
							2000	RP6R20A200
2500	RDC325T91W	RDC325T93W	RDC325T92W	RDC325T94W	RDC325T95W	RDC325T96W	1600	RP6R25A160
							2000	RP6R25A200
							2500	RP6R25A250

Shaded area denotes obsolete or discontinued products and services.

100% Rated Digitrip RMS 910 Circuit Breakers

The NEC allows the breaker to be rated at 100% of its frame size in an assembly, provided that 90 °C wire is applied at 75 °C ampacity. Order as individual components: breaker frame (which includes trip unit) and rating plug.

100% Rated Digitrip RMS 910 Circuit Breakers

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) LI Catalog Number						Digitrip Rating Plug Only	
	LS	LSI	LIG	LSG	LSIG		Rated Current (I_n)	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac								
1600	**CRD316T91W**	**CRD316T93W**	**CRD316T92W**	**CRD316T94W**	**CRD316T95W**	**CRD316T96W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
							1600	**RP6R16A160**
2000 ①	**CRD320T91W**	**CRD320T93W**	**CRD320T92W**	**CRD320T94W**	**CRD320T95W**	**CRD320T96W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac								
1600	**CRDC316T91W**	**CRDC316T93W**	**CRDC316T92W**	**CRDC316T94W**	**CRDC316T95W**	**CRDC316T96W**	800	**RP6R16A080**
							1000	**RP6R16A100**
							1000	**RP6R16A100**
							1200	**RP6R16A120**
2000 ①	**CRDC320T91W**	**CRDC320T93W**	**CRDC320T92W**	**CRDC320T94W**	**CRDC320T95W**	**CRDC320T96W**	1000	**RP6R20A100**
							1200	**RP6R20A120**
							1600	**RP6R20A160**
							2000	**RP6R20A200**

Note

① Includes B2016RDL rear connectors.

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIM Electronic Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

Digitrip OPTIM Electronic Circuit Breakers with Interchangeable Rating Plugs

	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response)		Digitrip OPTIM Rating Plug Only	
Maximum Continuous Ampere Rating at 40 °C	LSIA 1050 Catalog Number	LSIG 1050 Catalog Number	Ampere Rating	Fixed Rating Plug Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
1600	**RD316T107W**	**RD316T106W**	800	**ORPR16A080**
			1000	**ORPR16A100**
			1200	**ORPR16A120**
			1600	**ORPR16A160**
2000	**RD320T107W**	**RD320T106W**	1000	**ORPR20A100**
			1200	**ORPR20A120**
			1600	**ORPR20A160**
			2000	**ORPR20A200**
2500	**RD325T107W**	**RD325T106W**	1600	**ORPR25A160**
			2000	**ORPR25A200**
			2500	**ORPR25A250**
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac				
1600	**RDC316T107W**	**RDC316T106W**	800	**ORPR16A080**
			1000	**ORPR16A100**
			1200	**ORPR16A120**
			1600	**ORPR16A160**
2000	**RDC320T107W**	**RDC320T106W**	1000	**ORPR20A100**
			1200	**ORPR20A120**
			1600	**ORPR20A160**
			2000	**ORPR20A200**
2500	**RDC325T107W**	**RDC325T106W**	1600	**ORPR25A160**
			2000	**ORPR25A200**
			2500	**ORPR25A250**

Shaded area denotes obsolete or discontinued products and services.

100% Rated 600 Volts AC Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plugs

Order as individual components: breaker frame (which includes trip unit) and rating plug.

100% Rated 600 Volts AC Digitrip OPTIM Circuit Breakers with Interchangeable Rating Plugs

Maximum Continuous Ampere Rating at 40 °C	Circuit Breaker Frame Only L – Adjustable Long Delay Pickup (I_r) with Adjustable Long Delay Time S – Adjustable Short Delay Pickup with Adjustable Short Delay Time (I^2t or Flat Response) I – Adjustable Instantaneous Pickup G – Adjustable Ground Fault Pickup with Adjustable Ground Fault Time Delay (I^2t or Flat Response) A – Adjustable Ground Fault Alarm with Adjustable Ground Fault Time Delay (I^2t or Flat Response) LSIA 1050 Catalog Number	LSIG 1050 Catalog Number	Digitrip OPTIM Rating Plug Only Fixed Rating Plug Ampere Rating	Catalog Number
Three-Pole Standard Interrupting Capacity 600 Vac Rated 65 kAIC at 480 Vac				
1600	**CRD316T107W**	**CRD316T106W**	800	**ORPR16A080**
			1000	**ORPR16A100**
			1200	**ORPR16A120**
			1600	**ORPR16A160**
2000 ①	**CRD320T107W**	**CRD320T106W**	1000	**ORPR20A100**
			1200	**ORPR20A120**
			1600	**ORPR20A160**
			2000	**ORPR20A200**
Three-Pole High Interrupting Capacity 600 Vac Rated 100 kAIC at 480 Vac				
1600	**CRDC316T107W**	**CRDC316T106W**	800	**ORPR16A080**
			1000	**ORPR16A100**
			1200	**ORPR16A120**
			1600	**ORPR16A160**
2000 ①	**CRDC320T107W**	**CRDC320T106W**	1000	**ORPR20A100**
			1200	**ORPR20A120**
			1600	**ORPR20A160**
			2000	**ORPR20A200**

Molded Case Switches

Refer to Eaton for UL listed, series tested Molded Case Switch application data.

Type RD—High Instantaneous (K)

Continuous Ampere Rating at 40 °C	Complete without Terminals Three-Pole Catalog Number	Four-Pole Catalog Number
1600	**RD316WK**	**RD416WK**
2000	**RD320WK**	**RD420WK**

Notes

① Includes B2016RDL rear connectors.

Molded case switch may trip above 17,500 amperes.

Accessories Selection Guide and Ordering Information

Line and Load Terminals

Line and load terminals provide wire connecting capabilities for specific ranges of continuous current ratings and wire types. All terminals comply with Underwriters Laboratories Standards UL 486A and UL 486B and CSA C22.2 No. 65M. Unless otherwise specified, R-Frame circuit breaker line load terminals are shipped separately for field installation.

Ordering Information

R-Frame circuit breakers have Cu/Al terminals as standard and Cu only terminals as an option. Specify if factory installation is required.

Line and Load Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Hardware	AWG/kcmil Wire Range/ No. Conductors	Metric Wire Range mm^2	Catalog Number
Wire Terminals						
1600	Aluminum	Cu/Al	English	500–1000 (4)	300–500	**TA1600RD**
1600	Copper	Cu	English	1–600 (4)	50–300	**T1600RD**
2000	Aluminum	Cu/Al	English	2–600 (6)	35–300	**TA2000RD** ①
Rear Connectors						
2000	Copper	—	English	—	—	**B2016RD**
2000	Copper	—	English	—	—	**B2016RDL** ②
2500	Copper	—	English	—	—	**B2500RD** ③

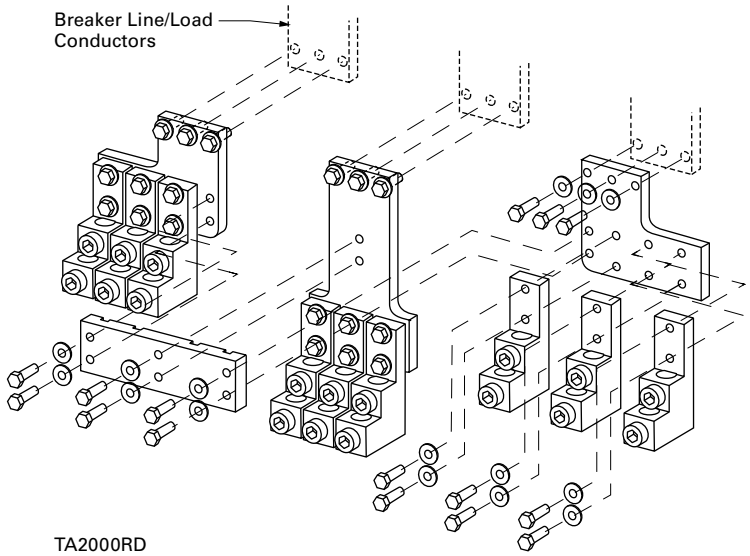
Notes

① Catalog Number includes bus connection, terminals and hardware for either line side or load side of three-pole breaker.

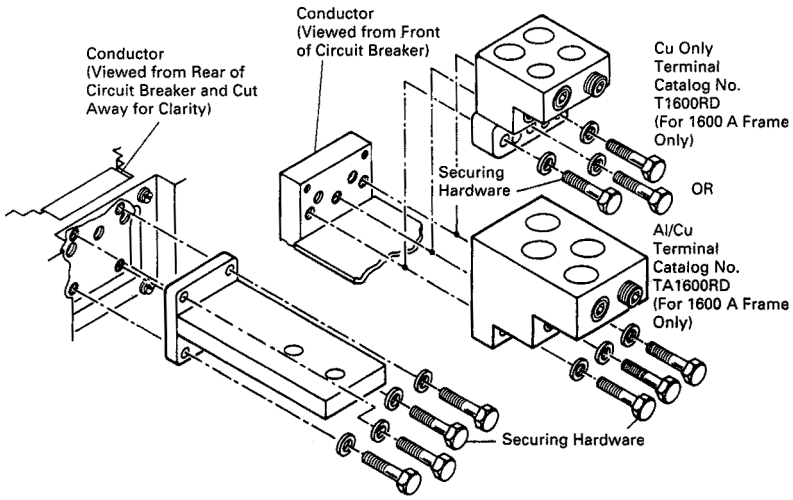
② For use with 100% rated 1600 A and 2000 A frame. Do not order separately unless for replacement purposes. Included in breaker carton when 100% rated device is ordered.

③ For use with 2500 A frame. Do not order separately unless for replacement purposes. Included in breaker carton when 2500 A breaker is ordered.

Mounting Hardware



TA2000RD



Accessories

Allowable Accessory Combinations

Different combinations of accessories can be supplied, depending on the types of accessories and the number of poles in the circuit breaker.

RD Frame Accessories

Description	Reference Page	Three-Pole Left	Three-Pole Center	Three-Pole Right	Four-Pole Left	Four-Pole Center	Four-Pole Right	Four-Pole Neu.
Internal Accessories ①								
Alarm lockout (Make/Break)	**V12-T3-284**	—	—	■	—	—	■	—
Alarm lockout (2Make/2Break)	**V12-T3-284**	—	—	■	—	—	■	—
Auxiliary switch (2A, 2B)	**V12-T3-284**	—	—	■	—	—	■	—
Auxiliary switch (4A, 4B)	**V12-T3-284**	—	—	■	—	—	■	—
Shunt trip—standard	**V12-T3-292**	—	—	■	—	—	■	—
Shunt trip—low energy	**V12-T3-293**	—	—	■	—	—	■	—
Undervoltage release mechanism	**V12-T3-300**	—	—	■	—	—	■	—
Accessory terminal block ②	**V12-T3-301**	—	—	■	—	—	—	■
External Accessories								
Base mounting hardware	**V12-T3-321**	—	—	—	—	—	—	—
Padlockable handle lock hasp	**V12-T3-324**	—	●	—	—	●	—	—
Key interlock kit	**V12-T3-326**	■	■	■	—	■	—	—
Walking beam interlock	**V12-T3-327**	—	—	—	—	—	—	—
Electrical (motor) operator	**V12-T3-329**	■	■	■	—	■	—	—
Handle mechanisms	—	●	●	●	—	●	—	—
Handle extension ③	—	—	●	—	—	●	—	—
OPTIM System Components								
Breaker interface module (BIM)	**V12-T3-334**	●	●	●	—	—	—	—
Digitrip OPTIMizer	**V12-T3-335**	●	●	●	—	—	—	—
Auxiliary power module	**V12-T3-335**	●	●	●	—	—	—	—
Modifications (Refer to Eaton)								
Special calibration	—	●	●	●	●	●	●	●
Moisture fungus treatment	**V12-T3-135**	●	●	●	●	●	●	●
Freeze-tested circuit breakers	—	●	●	●	●	●	●	●
Marine/naval application	—	●	●	●	●	●	●	●

Legend

■ Applicable in indicated pole position

● Accessory available/modification available

Notes

① All accessories mount in the RH cavity which will accept one each shunt trip, UVR, auxiliary switch and alarm switch.

② Mounts outside breaker.

③ Included with breaker.

Shaded area denotes obsolete or discontinued products and services.

Specifications

Specifications

R-Frame Digitrip

Trip Unit Type	Digitrip RMS 510	Digitrip RMS 610	Digitrip RMS 810	Digitrip RMS 910	Digitrip OPTIM 1050
rms sensing	Yes	Yes	Yes	Yes	Yes
Breaker Type					
Frame	R	R	R	R	R
Ampere range	800–2500 A	800–2500 A	800–2500 A	800–2500 A	800–2500 A
Interrupting rating at 480 volts	65, 100 (kA)	65, 100 (kA)	65, 100 (kA)	65, 100 (kA)	65, 100 (kA)
Protection					
Ordering options	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LI, LS, LSI, LIG, LSG, LSIG	LSI(A), LISG
Fixed rated plug (I_n)	Yes	Yes	Yes	Yes	Yes
Overtemperature trip	Yes	Yes	Yes	Yes	Yes
Long Delay Protection (L)					
Adjustable rating plug (I_n)	No	No	No	No	No
Long delay pickup	0.5–1.0 x (I_n)	0.5–1.0 x (I_n)	0.5–1.0 x (I_n)	0.5 –1.0 x (I_n)	0.4–1.0 x (I_n)
Long delay time I^2t	2–24 seconds	2–24 seconds	2–24 seconds	2–24 seconds	2–24 seconds
Long delay time I^4t	No	No	No	No	1–5 Seconds
Long delay thermal memory	Yes	Yes	Yes	Yes	Yes
High load alarm	No	0.85 x I_r	0.85 x I_r	0.85 x I_r	0.5-1.0 x I_r
Short Delay Protection (S)					
Short delay pickup	200–600% S1 and S2 x (I_r)	200–600% S1 and S2 x (I_r)	200–600% S1 and S2 x (I_r)	200–600% S1 and S2 x (I_r)	150-800% x (I_r) ①②
Short delay time I^2t	100–500 ms	100–500 ms	100–500 ms	100–500 ms	100–500 ms
Short delay time flat	100–500 ms	100–500 ms	100–500 ms	100–500 ms	100–500 ms
Short delay time zone selective interlocking	Yes	Yes	Yes	Yes	Yes
Instantaneous Protection (I)					
Instantaneous pickup	200–600% M1and M2 x (I_n)	200–600% M1and M2 x (I_n)	200–600% M1and M2 x (I_n)	200–600% M1and M2 x (I_n)	200–800% x (I_n) ②
Discriminator	Yes ③	Yes ③	Yes ③	Yes ③	Yes
Instantaneous override	Yes	Yes	Yes	Yes	Yes
Ground Fault Protection (G)					
Ground fault alarm ④	No	No	No	No	25–100% x (I_n)
Ground fault pickup ④	25–100% x (I_s)	25-100% x (I_s)	25–100% x (I_s)	25–100% x (I_s)	25–100% x (I_n)
Ground fault delay I^2t	100–500 ms	100–500 ms	100–500 ms	100–500 ms	100–500 ms
Ground fault delay flat	100–500 ms	100–500 ms	100–500 ms	100–500 ms	100–500 ms
Ground fault zone selective interlocking	Yes	Yes	Yes	Yes	Yes
Ground fault thermal memory	Yes	Yes	Yes	Yes	Yes

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
I_s = Sensor Rating
I_n = Rating Plug
I_r = Long Delay Pickup Setting x I_n

Notes

① Except 2500 ampere frame is 200–600%.
② Varies by frame.
③ LS/LSG only.
④ Not to exceed 1200 amperes.

Shaded area denotes obsolete or discontinued products and services.

R-Frame Digitrip, continued

Trip Unit Type	Digitrip RMS 510	Digitrip RMS 610	Digitrip RMS 810	Digitrip RMS 910	Digitrip OPTIM 1050
System Diagnostics					
Status LEDs	Yes	Yes	Yes	Yes	Yes
Cause of trip LEDs	Yes	Yes	Yes	Yes	Yes
Magnitude of trip information	No	Yes	Yes	Yes	Yes
Remote signal contacts	No	Yes	Yes	Yes	Yes
System Monitoring					
Digital display	No	Yes	Yes	Yes	Yes ①
Current	No	Yes	Yes	Yes	Yes
Voltage	No	No	No	Yes	No
Power and energy	No	No	Yes	Yes	Yes
Power quality—harmonics	No	No	No	Yes	Yes
Power factor	No	No	Yes (over Eaton PowerNet only)	Yes	Yes
Communications					
Eaton PowerNet	No	No	Yes	Yes	Yes
Testing					
Testing method	Integral	Integral	Integral	Integral	OPTIMizer, BIM, PowerNet

Legend

BIM = Breaker Interface Module
(A) = GF Alarm
I_s = Sensor Rating
I_n = Rating Plug
I_r = Long Delay Pickup Setting x I_n

Note

① By OPTIMizer/BIM.

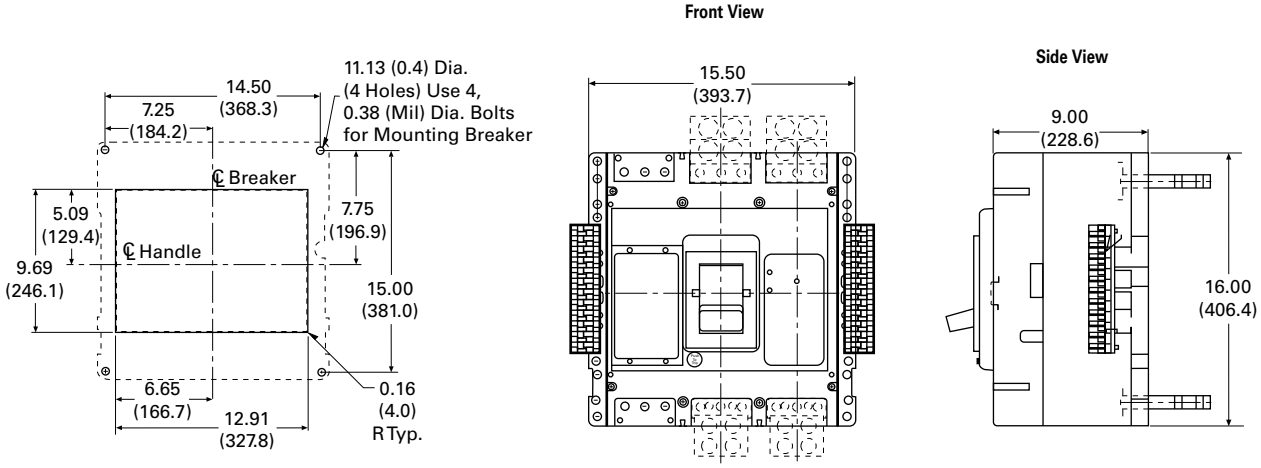
Dimensions and Weights

Dimensions in Inches (mm)

RD Frame

Number of Poles	Width	Height	Depth
3	15.50 (393.7)	16.00 (406.4)	9.75 (247.7)
4	20.00 (508.0)	16.00 (406.4)	9.75 (247.7)

RD-Frame, Three-Pole, 1600 and 2000 Amperes



Approximate Shipping Weight in Lb (kg)

RD Frame

Breaker Type	Complete Breaker Three-Pole	Four-Pole
1600 Amperes		
RD, CRD ①, RDC, CRDC ①	102 (46.3)	135 (61.2)
2000 Amperes		
RD, RDC	102 (46.3)	135 (61.2)
CRD, CRDC	130 (59.0)	175 (79.4)
2500 Amperes		
RD, RDC	135 (61.2)	182 (82.6)

Note

① No four-pole for CRD and CRDC.

Molded Case Circuit Breakers

Series C

Motor Circuit Protectors



Contents

Description	*Page*
Product Overview	**V12-T3-135**
Standards and Certifications	**V12-T3-136**
G-Frame (15–100 A)	**V12-T3-137**
F-Frame (10–225 A)	**V12-T3-145**
J-Frame (70–250 A)	**V12-T3-164**
K-Frame (70–400 A)	**V12-T3-171**
L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	
Catalog Number Selection	**V12-T3-265**
Product Selection	**V12-T3-266**
Accessories	**V12-T3-267**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
Type ELC Current Limiter Attachment (Size 0–4)	**V12-T3-277**
Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

Motor Circuit Protectors (MCP)

Product Description

Designated as Eaton's Types GMCP and HMCP, the instantaneous-only motor circuit protector (MCP) is available in ratings from 3 A to 1200 A for motor starter sizes 0 through 8.

An innovative design of internal components allows higher MCP-starter combination interrupting ratings. The MCP is marked to permit proper electrical application within the assigned equipment ratings.

Standards and Certifications

The MCP is designed to comply with the applicable requirements of Underwriters Laboratories Standard UL 489, Canadian Standards Association Standard C22.2 No. 5.1, and International Electrotechnical Commission Recommendations IEC 157-1.

The MCP is a recognized component (UL File E7819) and complies with the applicable requirements of Underwriters Laboratories Standard UL 489. It is also designed to comply with the applicable requirements of Canadian Standards Association Standard C22.2 No. 5.1, International Electrotechnical Commission Recommendations IEC 157-1, and nameplates bear the CE marking.

Listed

Note: Interrupting ratings are dependent on starter it is used with.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

Motor Circuit Protector

HMCP 003 A0 C

Motor Circuit Protective Type
HMCP = Three-pole
HM2P = Two-pole ①
HMCPS = Three-pole

Continuous Ampere Rating
003
007
015
025
030
050
070
100
150
250
400
600
800
1200

Magnetic Trip Range/ NEMA Starter Size
A0=9–30/0
C0=21–70/0
E0=45–150/0
D0=40–60/0
H1=90–300/1
G2=80–120/2
K2=50–500/2
J2=115–170/2
M2=210–700/2
L3=160–240/3
R3=300–1000/3
T4=450–1500/4
U4=750–2500/4
A5=350–700/5
C5=450–900/5
D5=500–1000/5
F5=625–1250/5
G5=750–1500/5
J5=875–1750/5
K5=1000–2000/5
L5=1125–2250/5
W5=1250–2500/5
N5=1500–3000/5
R5=1750–3500/5
X5=2000–4000/5
Y5=2250–4500/5
L6=1800–6000/6 (electronic)
X6=500–2500/6 (electronic)
Y6=1000–4000/6 (electronic)
X7=1600–6400/7 (electronic)
Y8=2400–9600/8 (electronic)

Suffix
C =Non-aluminum terminals
W =Without terminals
X =Load terminals only
Y =Line terminals only
S =Stainless steel terminals (150 A frame only)
No Suffix: Standard terminals on line and load

Motor Circuit Protector

GMCP 003 A0 C

Motor Circuit Protective Device
GMCP = Three-pole

Continuous Ampere Rating
003
007
015
030
050
060
063

Magnetic Trip Range/NEMA Starter Size
A0=15–30/0
C0=35–70/0
E0=75–150/0
H1=150–300/1
K2=250–500/2
J2=300–600/2
M2=320–630/2

Suffix
C = Non-aluminum terminals

Note

① On J- and K-Frame HMCPs only.

Product Selection

G-Frame

480 Vac Maximum, 600Y/347 Vac

3

NEMA Starter Size	Continuous Amperes	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting	MCP Catalog Number
0	3	A	1.1–1.2	15	**GMCP003A0C**
		B	1.3–1.5	18	
		C	1.6–1.7	21	
		D	1.8–1.9	24	
		E	2.0–2.2	27	
		F	2.3–2.5	30	
0	7	A	2.6–3.1	35	**GMCP007C0C**
		B	3.2–3.6	42	
		C	3.7–3.9	49	
		D	4.3–4.7	56	
		E	4.8–5.2	63	
		F	5.3–5.7	70	
0	15	A	5.7–6.8	75	**GMCP015E0C**
		B	6.9–7.9	90	
		C	8.0–9.1	105	
		D	9.2–10.3	120	
		E	10.4–11.4	135	
		F	11.5–12.6	150	
1	30	A	11.5–13.7	150	**GMCP030H1C**
		B	13.8–16.0	180	
		C	16.1–18.3	210	
		D	18.4–20.6	240	
		E	20.7–22.9	270	
		F	23.0–25.2	300	
2	50	A	19.3–22.9	250	**GMCP050K2C**
		B	23.0–26.8	300	
		C	26.9–30.6	350	
		D	30.7–34.5	400	
		E	34.6–38.3	450	
		F	38.4–42.1	500	
3	60	A	23.1–27.5	300	**GMCP060J2C**
		B	27.7–32.2	360	
		C	32.3–36.7	420	
		D	36.9–41.4	480	
		E	41.5–46.0	540	
		F	46.2–50.5	600	
3	63	A	24.2–32.1	320	**GMCP063M2C**
		B	29.1–34.8	380	
		D	38.8–46.4	500	
		E	43.6–48.9	570	
		F	48.5–53.7	630	

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate Cam settings and/or MCP ratings should be used.

All GMCP 3–63A come with line and load steel body terminals for Cu only wire. Refer to **Page V12-T3-141** under Optional Terminal Types.

UL recognized and CSA approved.

Accessories

Modifications for GMCP

Internal accessories must be factory installed.

Internal Accessories ①

Type Accessory	Electrical Ratings Volts	Frequency	Amperes	Contact Arrangement	Factory Suffix	Style Number
Shunt trip ②	120	50/60 Hz	1.1	—	S5	**1373D62G18**
Shunt trip ②	240	50/60 Hz	2.1	—	S6	**1373D62G19**
Auxiliary switch ③	240	50/60 Hz	6.0	1A/1B	A3	**1288C74G03**
Auxiliary switch ③	240	50/60 Hz	6.0	2A/2B	A6	**1288C73G03**
Alarm switch ③	240	50/60 Hz	6.0	Make/Break	B3	**1288C75G03**
Auxiliary switch/alarm switch combination ③	240	50/60 Hz	6.0	1A/1B Make/Break	B13	**1288C76G09**

External Mounted Accessories

Description	Number Units in Package	Style Number
Lock dog (non-padlockable)	1	**1294C01H01**
Mounting hardware	1	**624B375G23**
DIN rail adapter ④	10	**1225C79G02**

Modifications for HMCP

See Internal Accessories starting on **Page V12-T3-281**.

Handle Mechanisms for Series C Frames

Kits Only (Kit Includes Shaft, Mechanism and Handle)—GMCP-Frame

	Description	Rating Type NEMA	IP	GMCP-Frame Catalog Number
S01 Blue Handle 	S01 blue handle, 12-inch shaft	1/3R/12	54	**GMHMVD12B / 68C6039G05**
		4/4X	65	**GMHMVD12BX / 68C6039G07**
S01 Red Handle 	S01 red handle, 12-inch shaft	1/3R/12	54	**GMHMVD12R / 68C6039G06**
		4/4X	65	**GMHMVD12RX / 68C6039G08**

Direct (Close-Coupled) Handle Mechanisms

G Direct ⑤

Frame	Black Handle With Shroud Catalog Number	Without Shroud Catalog Number	Yellow Handle With Shroud Catalog Number	Without Shroud Catalog Number
GMCP	**HRGMC1S**	**HRGMC10**	**HRGMC3S**	**HRGMC30**

Notes

① Only one accessory may be installed in GMCP.
② LH only.
③ RH only.
④ For use with standard 35 mm DIN rail such as, 35 x 7.5 or 15 mm per DIN EN50022.
⑤ Suitable for use on two- or three-pole G-Frame.

No UVR available on GMCP.

F-Frame

600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number
0	3	A	0.69–0.91	9	**HMCP003A0C**
		B	0.92–1.0	12	
		C	1.1–1.2	15	
		D	1.3–1.5	18	
		E	1.6–1.7	21	
		F	1.8–1.9	24	
		G	2.0–2.2	27	
		H	2.3–2.5	30	
0	7	A	1.5–2.0	21	**HMCP007C0C**
		B	2.1–2.5	28	
		C	2.6–3.1	35	
		D	3.2–3.6	42	
		E	3.7–3.9	49	
		F	4.3–4.7	56	
		G	4.8–5.2	63	
		H	5.3–5.7	70	
0	15	A	3.4–4.5	45	**HMCP015E0C**
		B	4.6–5.6	60	
		C	5.7–6.8	75	
		D	6.9–7.9	90	
		E	8.0–9.1	105	
		F	9.2–10.3	120	
		G	10.4–11.4	135	
		H	11.5 –12.6	150	
1	30	A	6.9–9.1	90	**HMCP030H1C**
		B	9.2–11.4	120	
		C	11.5–13.7	150	
		D	13.8–16.0	180	
		E	16.1–18.3	210	
		F	18.4–20.6	240	
		G	20.7–22.9	270	
		H	23.0–25.2	300	
2	50	A	11.5–15.2	150	**HMCP050K2C**
		B	15.3–19.1	200	
		C	19.2–22.9	250	
		D	23.0–26.8	300	
		E	26.9–30.6	350	
		F	30.7–4.5	400	
		G	34.6–38.3	450	
		H	38.4–42.1	500	

600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number
2	70	A	16.1–21.4	210	**HMCP070M2C**
		B	21.5 –26.8	280	
		C	26.9 –32.2	350	
		D	32.3–37.5	420	
		E	37.6–42.9	490	
		F	43.0–48.3	560	
		G	48.4–53.7	630	
		H	53.8–59.1	700	
3	100	A	23.0–30.6	300	**HMCP100R3C**
		B	30.7–38.3	400	
		C	38.4–46.0	500	
		D	46.1–53.7	600	
		E	53.8 –61.4	700	
		F	61.5 –69.1	800	
		G	69.2–76.8	900	
		H	76.9–84.5	1000	
4	150	A	34.6–46.0	450	**HMCP150T4C**
		B	46.1–57.5	600	
		C	57.6–69.1	750	
		D	69.2–80.6	900	
		D	69.2–80.6	900	
		E	80.7–92.2	1050	
		F	92.3–103.7	1200	
		G	103.8–115.2	1350	
		H	115.3–126.7	1500	
4	150	A	57.0 –75.0	750	**HMCP150U4C**
		B	76.0–95.0	1000	
		C	96.0–114.0	1250	
		D	115.0–130.7	1500	
		E	③	1750	
		F	③	2000	
		G	③	2250	
		H	③	2500	

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate Cam settings and/or MCP ratings should be used.

② For DC applications, actual trip levels are approximately 40% higher than values shown.

③ Settings above 130 A are for special applications. NEC Article 430.110(a) requires the ampere rating of the disconnecting means to be not less than 115% of the motor full load ampere rating.

HMCP 3–100 A come with line and load steel body terminals, 3T100FB. HMCP 150 A come with line and load steel body terminals, 3T150FB.

Special Low Magnetic Protection Application MCP

600 Vac Maximum, 250 Vdc Maximum

Cont. Amps	Cam Setting	MCP Trip Setting ①	MCP Catalog Number
25	A	40	**HMCP025D0C**
	B	43	
	D	49	
	E	52	
	F	55	
	G	58	
	H	60	
50	A	80	**HMCP050G2C**
	B	87	
	C	93	
	D	98	
	E	103	
	F	109	
	G	115	
	H	120	
70	A	115	**HMCP070J2C**
	B	122	
	C	130	
	D	139	
	E	145	
	F	153	
	G	160	
	H	170	
100	A	160	**HMCP100L3C**
	B	174	
	C	185	
	D	196	
	E	207	
	F	218	
	G	229	
	H	240	

Notes

① For DC applications, actual trip levels are approximately 40% higher than values shown.

HMCP 25–100 A come with line and load steel body terminals, 3T100FB.

MCPs for Application with Motor Starters Equipped with Electronic Overload Relays

600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number
0	3	A	0.69–0.91	9	**HMCPS003A0C**
		B	0.92–1.0	12	
		C	1.1–1.2	15	
		D	1.3–1.5	18	
		E	1.6–1.7	21	
		F	1.8–1.9	24	
		G	2.0–2.2	27	
		H	2.3–2.5	30	
0	7	A	1.5–2.0	21	**HMCPS007C0C**
		B	2.1–2.5	28	
		C	2.6–3.1	35	
		D	3.2–3.6	42	
		E	3.7–3.9	49	
		F	4.3–4.7	56	
		G	4.8–5.2	63	
		H	5.3–5.7	70	
0	15	A	3.4–4.5	45	**HMCPS015E0C**
		B	4.6–5.6	60	
		C	5.7–6.8	75	
		D	6.9–7.9	90	
		E	8.0–9.1	105	
		F	9.2–10.3	120	
		G	10.4–11.4	135	
		H	11.5–12.6	150	
1	30	A	6.9–9.1	90	**HMCPS030H1C**
		B	9.2–11.4	120	
		C	11.5–13.7	150	
		D	13.8–16.0	180	
		E	16.1–18.3	210	
		F	18.4–20.6	240	
		G	20.7–22.9	270	
		H	23.0–25.2	300	
2	50	A	11.5–15.2	150	**HMCPS050K2C**
		B	15.3–19.1	200	
		C	19.2–22.9	250	
		D	23.0–26.8	300	
		E	26.9–30.6	350	
		F	30.7–34.5	400	
		G	34.6–38.3	450	
		H	38.4–42.1	500	

600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number
3	100	A	23.0–30.6	300	**HMCPS100R3C**
		B	30.7–38.3	400	
		C	38.4–46.0	500	
		D	46.1–53.7	600	
		E	53.8–61.4	700	
		F	61.5–69.1	800	
		G	69.2–76.8	900	
		H	76.9–84.5	1000	
4	150	A	34.6–46.0	450	**HMCPS150T4C**
		B	46.1–57.5	600	
		C	57.6–69.1	750	
		D	69.2–80.6	900	
		E	80.7–92.2	1050	
		F	92.3–103.7	1200	
		G	103.8–115.2	1350	
		H	115.3–126.7	1500	
4	150	A	57.0–75.0	750	**HMCPS150U4C**
		B	76.0–95.0	1000	
		C	96.0–114.0	1250	
		D	115.0–130.7	1500	
		E	③	1750	
		F	③	2000	
		G	③	2250	
		H	③	2500	

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For DC applications, actual trip levels are approximately 40% higher than values shown.

③ Settings above 130 A are for special applications. NEC Article 430.110(a) requires the ampere rating of the disconnecting means to be not less than 115% of the motor full load ampere rating.

HMCP 25–100 A come with line and load steel body terminals, 3T100FB.

HMCPS 3–100 A come with line and load steel body terminals, 3T100FB. HMCPS 150 A come with line and load steel body terminals, 3T150FB.

J-Frame

600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number ③
4	250	A	27.0–30.7	350	**HMCP250A5C**
		B	30.8–33.8	400	
		C	33.9–36.9	440	
5	250	D	37.0–40.3	480	
		E	40.4–43.8	525	
		F	43.9–46.9	570	
		G	47.0–50.7	610	
		H	47.0–50.7	660	
		I	47.0–50.7	700	
5	250	A	34.7–38.8	450	**HMCP250C5C**
		B	38.9–43.4	505	
		C	43.5–47.6	565	
		D	47.7–52.2	620	
		E	52.3–56.5	680	
		F	56.6–60.7	735	
		G	60.8–64.9	790	
		H	65.0–69.2	845	
		I	69.3–73.5	900	
5	250	A	38.5–43.4	500	**HMCP250D5C**
		B	43.5–48.0	565	
		C	48.1–53.0	625	
		D	53.1–57.6	690	
		E	57.7–62.3	750	
		F	62.4–67.3	810	
		G	67.4–71.9	875	
		H	72.0–76.9	935	
		I	77.0–81.6	1000	
5	250	A	48.1–53.8	625	**HMCP250F5C**
		B	53.9–59.9	700	
		C	60.0–66.1	780	
		D	66.2–72.3	860	
		E	72.4–78.4	940	
		F	78.5–83.8	1020	
		G	83.9–89.9	1090	
		H	90.0–96.1	1170	
		I	96.2–102.0	1250	
5	250	A	57.7–64.6	750	**HMCP250G5C**
		B	64.7–71.9	840	
		C	72.0–79.2	935	
		D	79.3–86.5	1030	
		E	86.6–93.8	1125	
		F	93.9–101.1	1220	
		G	101.2–108.4	1315	
		H	108.5–115.3	1410	
		I	115.4–122.4	1500	

600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number ③
5	250	A	67.4–75.3	875	**HMCP250J5C**
		B	75.4–83.8	980	
		C	83.9–92.3	1090	
		D	92.4–100.7	1200	
		E	100.8–109.2	1310	
		F	109.3–117.6	1420	
		G	117.7–126.1	1530	
		H	126.2–134.6	1640	
		I	134.7–142.8	1750	
5	250	A	77.0–86.6	1000	**HMCP250K5C**
		B	86.6–96.1	1125	
		C	96.2–105.7	1250	
		D	105.8–115.3	1375	
		E	115.4–124.9	1500	
		F	125.0–134.6	1625	
		G	134.7–144.2	1750	
		H	144.3–153.8	1875	
		I	153.9–163.3	2000	
5	250	A	86.6–97.3	1125	**HMCP250L5C**
		B	97.4–108.4	1265	
		C	108.5–118.8	1410	
		D	118.9–129.9	1545	
		E	130.0–140.7	1690	
		F	140.8–151.5	1830	
		G	151.6–162.3	1970	
		H	162.4–173.0	2110	
		I	173.1–183.6	2250	
5	250	A	96.2–108.0	1250	**HMCP250W5C**
		B	108.1–119.9	1405	
		C	120.0–132.3	1560	
		D	132.4–144.2	1720	
		E	144.3–156.1	1875	
		F	156.2–168.0	2030	
		G	168.1–179.9	2185	
		H	180.0–192.3	2340	
		I	192.4–204.0	2500	

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 times the minimum FLA value shown. Where a 13 times setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For DC applications, actual trip levels are approximately 40% higher than values shown.

③ Three-pole catalog numbers shown. Two-pole catalog numbers begin with **HM2P** in place of **HMCP**.

All HMCP and HM2P 250 A come with line and load steel body terminals, T250KB. (With suffix "C," without "C" comes with TA250KB.)

K-Frame

600 Vac Maximum, 250 Vdc Maximum

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number ③
4	400	A	27.0–30.7	350	**HMCP400A5C**
		B	30.8–33.8	400	
		C	33.9–36.9	440	
5	400	D	37.0–40.3	480	**HMCP400A5C**
		E	40.4–43.8	525	
		F	43.9–46.9	570	
		G	47.0–50.7	610	
		H	50.8–53.8	660	
		I	53.9–57.2	700	
5	400	A	38.5–43.4	500	**HMCP400D5C**
		B	43.5–48.0	565	
		C	48.1–53.0	626	
		D	53.1–57.6	690	
		E	57.7–62.3	750	
		F	62.4–67.3	810	
		G	67.4–71.9	875	
		H	72.0–76.9	935	
		I	77.0–81.6	1000	
5	400	A	48.1–53.8	625	**HMCP400F5C**
		B	53.9–59.9	700	
		C	60.0–66.1	780	
		D	66.2–72.3	860	
		E	72.4–78.4	940	
		F	78.5–83.8	1020	
		G	83.9–89.9	1090	
		H	90.0–96.1	1170	
		I	96.2–102.0	1250	
5	400	A	57.7–64.6	750	**HMCP400G5C**
		B	64.7–71.9	840	
		C	72.0–79.2	935	
		D	79.3–86.5	1030	
		E	86.6–93.8	1125	
		F	93.9–101.1	1220	
		G	101.2–108.4	1315	
		H	108.5–115.3	1410	
		I	115.4–122.4	1500	
5	400	A	67.4–75.3	875	**HMCP400J5C**
		B	75.4–83.8	980	
		C	83.9–92.3	1090	
		D	92.4–100.7	1200	
		E	100.8–109.2	1310	
		F	109.3–117.6	1420	
		G	117.7–126.1	1530	
		H	126.2–134.6	1640	
		I	134.7–142.8	1750	

600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number ③
5	400	A	77.0–86.5	1000	**HMCP400K5C**
		B	86.6–96.1	1125	
		C	96.2–105.7	1250	
		D	105.8–115.3	1375	
		E	115.4–124.9	1500	
		F	125.0–134.6	1625	
		G	134.7–144.2	1750	
		H	144.3–153.8	1875	
		I	153.9–163.3	2000	
5	400	A	86.6–97.3	1125	**HMCP400L5C**
		B	97.4–108.4	1265	
		C	108.5–118.8	1410	
		D	118.9–129.9	1545	
		E	130.0–140.7	1690	
		F	140.8–151.5	1830	
		G	151.6–162.3	1970	
		H	162.4–173.0	2110	
		I	173.1–183.6	2250	
5	400	A	96.2–108.0	1250	**HMCP400W5C**
		B	108.1–119.9	1405	
		C	120.0–132.3	1560	
		D	132.4–144.2	1720	
		E	144.3–156.1	1875	
		F	156.2–168.0	2030	
		G	168.1–179.9	2185	
		H	180.0–192.3	2340	
		I	192.4–204.0	2500	
5	400	A	115.4–129.9	1500	**HMCP400N5C**
		B	130.0–144.2	1690	
		C	144.3–158.4	1875	
		D	158.5–173.0	2060	
		E	173.1–187.6	2250	
		F	187.7–201.9	2440	
		G	202.0–216.1	2625	
		H	216.2–230.7	2810	
		I	230.8–244.9	3000	

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For DC applications, actual trip levels are approximately 40% higher than values shown.

③ Three-pole catalog numbers shown. Two-pole catalog numbers begin with **HM2P** in place of **HMCP**.

All HMCP and HM2P 400 A come with aluminum body terminals, 3TA400K. Catalog numbers with suffix "C" as shown above come with copper body terminals 3T400K.

K-Frame, continued

600 Vac Maximum, 250 Vdc Maximum, continued

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting ②	MCP Catalog Number ③
5	400	A	134.7–151.5	1750	**HMCP400R5C**
		B	151.6–168.4	1970	
		C	168.5–185.3	2190	
		D	185.4–201.9	2410	
		E	202.0–218.8	2625	
		F	218.9–235.7	2845	
		G	235.8–252.6	3065	
		H	252.7–269.2	3285	
		I	269.3–285.7	3500	
5	400	A	153.9–173.0	2000	**HMCP400X5C**
		B	173.1–192.3	2250	
		C	192.4–211.5	2500	
		D	211.6–230.7	2750	
		E	230.8–249.9	3000	
		F	250.0–269.2	3250	
		G	269.3–288.4	3500	
		H	288.5–307.6	3750	
		I	307.7–326.9	4000	
5	400	A	173.1–194.5	2250	**HMCP400Y5C**
		B	194.6–216.1	2530	
		C	216.2–237.6	2810	
		D	237.7–259.5	3090	
		E	259.6–281.1	3375	
		F	281.2–302.6	3655	
		G	302.7–324.1	3935	
		H	324.2–346.1	4215	
		I	346.2–368.1	4500	

L-Frame

600 Vac Maximum ④

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ①	MCP Trip Setting	MCP Catalog Number
6	600	A	138.5–184.5	1800	**HMCP600L6W**
		B	184.6–230.7	2400	
		C	230.8–276.8	3000	
		D	276.9–323.0	3600	
		E	323.1–369.1	4200	
		F	369.2–415.3	4800	
		G	415.4–461.4	5400	
		H	461.5–507.7	6000	
6	600	A	38.5–46.1	500	**HMCP600X6W**
		B	46.2–61.4	600	
		C	61.5–76.8	800	
		D	76.9–96.1	1000	
		E	96.2–115.3	1250	
		F	115.4–153.7	1500	
		G	153.8–192.2	2000	
		H	192.3–230.7	2500	
6	600	A	76.9–96.1	1000	**HMCP600Y6W**
		B	96.2–115.3	1250	
		C	115.4–153.7	1500	
		D	153.8–192.2	2000	
		E	192.3–230.7	2500	
		F	230.8–269.1	3000	
		G	269.2–307.6	3500	
		H	307.7–346.1	4000	

Notes

① Motor FLA ranges are typical. The corresponding trip setting is at 13 x the minimum FLA value shown. Where a 13 x setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

② For DC applications, actual trip levels are approximately 40% higher than values shown.

③ Three-pole catalog numbers shown. Two-pole catalog numbers begin with **HM2P** in place of **HMCP**.

④ Equipped with electronic trip device.

All HMCP and HM2P 400 A come with aluminum body terminals, 3TA400K. Catalog numbers with suffix "C" as shown above come with copper body terminals 3T400K.

All HMCP 600 A come without terminals. For terminals, see **Page V12-T3-214.**

N-Frame

600 Vac Maximum ①

NEMA Starter Size	Cont. Amps	Cam Setting	Motor Full Load Current Amperes (FLA) ②	MCP Trip Setting	MCP Catalog Number
7	800	A	123.1–184.5	1600	**HMCP800X7W**
		B	184.6–246.1	2400	
		C	246.2–307.6	3200	
		D	307.7–369.1	4000	
		E	369.2–430.7	4800	
		F	430.8–492.2	5600	
		G	492.3–553.7	6400	
8	1200	A	184.6–276.8	2400	**HMCP12Y8W**
		B	276.9–369.1	3600	
		C	369.2–461.4	4800	
		D	461.5–553.7	6000	
		E	553.8–646.1	7200	
		F	646.2–738.4	8400	
		G	738.5–830.7	9600	

Notes

① Equipped with electronic trip device.

② Motor FLA ranges are typical. The corresponding trip setting is at 13X the minimum FLA value shown. Where a 13X setting is required for an intermediate FLA value, alternate cam settings and/or MCP ratings should be used.

Motor Protection Circuit Breakers



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Motor Protection Circuit Breakers (MPCB)

Product Description

Motor protection circuit breakers (MPCBs) provide UL 489 branch circuit protection, UL 508 and CSA C22.2 No. 14 motor protection, and meet IEC 60947-2 and 50947-4 requirements. Typical branch motor loads are protected by three-component starters, consisting of breaker, contactor and overload relay, or fuse, contactor and overload relay. The MPCB application-specific protection eliminates the need for motor overload relay found in the traditional three-component starter assembly. The branch motor load protection is simplified to an MPCB and contactor, reducing both space requirements and heat generation in customer panels. Protection is provided by application-specific electronic trip units.

The electronic trip unit provides typical motor overload relay functionality and short-circuit protection against potential phase-to-phase or phase-to-ground faults.

- Disconnecting means
- Branch circuit short-circuit protection
- Overload protection
  - Class 5, 10, 15 and 20
- Phase unbalance protection
  - FDMP breaker trips when there is a 40% difference between any phase compared to the calculated three-phase average
- Phase loss protection
  - Active when the maximum phase current is greater than 50% of FLA setting
  - Breaker will trip when minimum phase current is 25% or less than the maximum phase current
  - Time delay of 1 or 2 seconds before breaker trips
- Thermal memory to prevent immediate restart after overload trip to allow motor to cool down

The MPCB is based on the Series C F-Frame. Accessories for standard Series C breakers apply to the MPCB. Unlike Motor Circuit Protectors (MCPs), MPCBs are UL 489 listed with 35 kA and 65 kA interruption ratings.

Product Selection

FDMP and HFDMP

Continuous Amperes	35 kA Without Phase Unbalance, Class 10 Motor Protection Only	35 kA With Phase Unbalance and Adjustable Motor Class Protection	65 kA Without Phase Unbalance, Class 10 Motor Protection Only	65 kA With Phase Unbalance and Adjustable Motor Class Protection
80	**FDMP3080L**	**FDMP3080JL**	**HFDMP3080L**	**HFDMP3080JL**
100	**FDMP3100L**	**FDMP3100JL**	**HFDMP3100L**	**HFDMP3100JL**
160	**FDMP3160L**	**FDMP3160JL**	**HFDMP3160L**	**HFDMP3160JL**
205	**FDMP3205L**	**FDMP3205JL**	**HFDMP3205L**	**HFDMP3205JL**

FLA Ie Dial Setting

Continuous Amperes	A	B	C	D	E	F	G	H
80	40	50	60	70	80	—	—	—
100	80	—	90	—	100	—	—	—
160	100	115	130	145	160	—	—	—
205	160	170	180	195	205	—	—	—

Technical Data and Specifications

Specifications

Feature	FDMP	HFDMP
Interruption rating at 240 V	65 kA	100 kA
Interruption rating at 480 V	35 kA	65 kA
Interruption rating at 600 V	18 kA	25 kA
Icu/Ics at 240 V	65 kA/33 kA ①	100 kA/50 kA ①
Icu/Ics at 415 V	35 kA/18 kA ①	65 kA/33 kA ①
100% rated	No	No
FLA range (A)	40–205	40–205
Motor class protection	5, 10, 15, 20	5, 10, 15, 20
Phase unbalance protection (current)—active for phase current >0.5 FLA setting	≥ 40% delta (single-phase): (three-phase avg.) for 5 seconds	≥ 40% delta (single-phase): (three-phase avg.) for 5 seconds
Phase loss protection (current)—active for phase current >0.5 FLA setting	Min. phase ≤0.25 max. phase for 1 second	Min. phase ≤0.25 max. phase for 1 second
Thermal memory protection	Yes	Yes
High load indicator	—	—
Pre-detection relays	—	—
Internal accessories	Factory installed	Factory installed
	Aux. alarm, shunt trip, UVR	Aux. alarm, shunt trip, UVR

Notes

① IEC ratings available only on FWMP and HFWMP.

For additional breaker solutions, see **Page V12-T3-108**.

Type ELC Current Limiter Attachment



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Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
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Internal Accessories	**V12-T3-281**
External Accessories	**V12-T3-314**

Type ELC Current Limiter Attachment (Size 0–4)

Product Description

Eaton's Type ELC current limiter attachment for the MCP is designed to provide increased interrupting capacity. The combination may be used for the application up to 200,000 A symmetrical at 600 Vac, making the MCP suitable for use in network distribution systems or other applications where unusually high fault currents are available. The current limiter connects to the load end of the MCP and is provided with terminals suitable for copper or aluminum conductors. (See table at right.)

Limiters are coordinated with the MCP so that normal fault currents are interrupted automatically by the MCP without any damage to the limiter. Only the rare very high fault is opened by the limiter. Faults that are interrupted by the limiter also magnetically trip the MCP, opening all three poles, preventing single-phase operation.

Each of the three poles of the Type ELC limiter is equipped with an indicator that extends when a fault is interrupted by the limiter.

Product Selection

Type ELC Current Limiter Attachment



ELC Current Limiter Attachment

MCP Rating (Amperes)	Catalog Number
3	**ELC3003R**
7	**ELC3007R**
15	**ELC3015R**
30	**ELC3030R**
50	**ELC3050R**
100	**ELC3100R**
150	**ELC3150R**

Technical Data and Specifications

Type ELC Current Limiter Terminal Wire Sizes ①

Type ELC Current Limiter Maximum Amperes	Wire Range AWG	Metric (mm^2)
Standard Aluminum Terminals		
50	14–2	2.5–35
100	1–4/0	50–95
150	1–4/0	50–95
Non-Standard Terminals (Steel)		
50	14–2 ②	2.5–35
100	—	—
150	—	—

Notes

① Terminal wire connectors are UL listed for standard stranded wire sizes as defined in UL 486A or UL 486B.

② Optional on special order for copper cable only.

All HMCP 800 A and 1200 A come without terminals. For terminals, see **Page V12-T3-227.**

Molded Case Circuit Breakers

Series C

Current-Limiting Circuit Breaker Module



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Current-Limiting Circuit Breaker Module	
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Current-Limiting Circuit Breaker Module

Product Overview

Power demand continues to grow in new and existing facilities. To meet increased demand, larger utility supplies, spot networks and large facility transformers are installed. The increased capacity of the electrical source results in increased fault currents in excess of 100 kA short-circuit protection. Eaton manufactures non-fused current-limiting modules with interrupting capacities up to 200 kA at 600 Vac. Unlike fused current limiters with a one-time use, a current limiter module provides an automatic reset of the module after a short-circuit event. Resetting the molded-case circuit breaker is the only action required to restore critical power to the system; there is no time wasted with sourcing the correct replacement fuses or module to bring the system back online.

Product Description

The current-limiting breaker modules use a unique contact design to enhance the system protection similar to that of the circuit breaker. When high short-circuit current is flowing through the contacts of these modules, the design results in very high interrupting capacities and improved current-limiting characteristics.

Application Description

High-performance breakers are most commonly applied when very high fault levels are available and with applications where the current-limiting capability is used upstream of the final load to limit current. Typical loads include lighting, power distribution, and motor control applications.

Features and Benefits

Superior system protection:

- Auto reset improves system uptime and eliminates the need for finding replacement parts
- No fuses to replace, reducing the overall cost of ownership and the waste created by fuses
- Overloads, by using inverse time current tripping characteristics of the molded-case circuit breaker
- Low-level short circuits, by using instantaneous and/or short-time delay tripping characteristics of the molded-case circuit breaker
- High-level short circuits, by using ultra-high-speed, blow-apart contacts of the current-limiting module in series with the circuit breaker contacts
- Let-through currents, by improved opening speed of the contacts, the resultant rapid rise of arc voltage introduces impedance into the system

Standards and Certifications

- UL 489
- CSA C22.2

Listed

Product Selection

Series C High Performance Ratings

Type	Product	Amperes	480 Vac (UL)	600 Vac (UL)
FDC 3P thermal-magnetic	Breaker only	15–225	100	35
	With limiter	40–200	200	200

FD Frame



FD IC Rating—200 kAIC at 600 Vac ①

Ampere Rating	Breaker with Line Side Mounted Current Limiter ②	Breaker with Load Side Mounted Current Limiter ③
Thermal-Magnetic		
40	**FDC3040Q01**	**FDC3040YQ02**
45	**FDC3045Q01**	**FDC3045YQ02**
50	**FDC3050Q01**	**FDC3050YQ02**
60	**FDC3060Q01**	**FDC3060YQ02**
70	**FDC3070Q01**	**FDC3070YQ02**
80	**FDC3080Q01**	**FDC3080YQ02**
90	**FDC3090Q01**	**FDC3090YQ02**
100	**FDC3100Q01**	**FDC3100YQ02**
110	**FDC3110Q01**	**FDC3110YQ02**
125	**FDC3125Q01**	**FDC3125YQ02**
150	**FDC3150Q01**	**FDC3150YQ02**
175	**FDC3175Q01**	**FDC3175YQ02**
200	**FDC3200Q01**	**FDC3200YQ02**

Limiter Terminals

Maximum Breaker Amperes	Terminal Body Material	Wire Type	Metric Wire Range mm^2	AWG Wire Range/ Number of Conductors	Catalog Number
Standard Pressure Type Terminals					
250	Aluminum	Cu/Al	10–185	#8–350 (1)	**TA250FJ** ④

Breaker Load Terminals (For Line Mounted Limiters Only)

Maximum Breaker Amperes	Terminal Body Material	Wire Type	AWG Wire Range	Metric Wire Range mm^2	Package of Three Terminals Catalog Number
Standard Pressure Type Terminals					
100	Steel	Cu/Al	14–1/0	2.5–50	**3T100FB**
225	Aluminum	Cu/Al	4–4/0	25–95	**3TA225FD**

Notes

① Line and load terminal included.
② Two interphase barriers provided, mounted on line end of limiter, catalog number **FJ1PBK**.
③ Four interphase barriers provided, (2) line end of breaker, (2) load end of limiter.
④ Load side breaker terminations included for units configured with line mounted limiters.

Technical Data and Specifications

UL 489 Current-Limiting Data

Frame	Circuit	Ip (kA)	I^2T (10^6A^2S)
FDC	240 V/200 kA	64.80	6.80
FDC	480 V/100 kA	66.90	9.33
FDC	600 V/50 kA	54.30	8.92

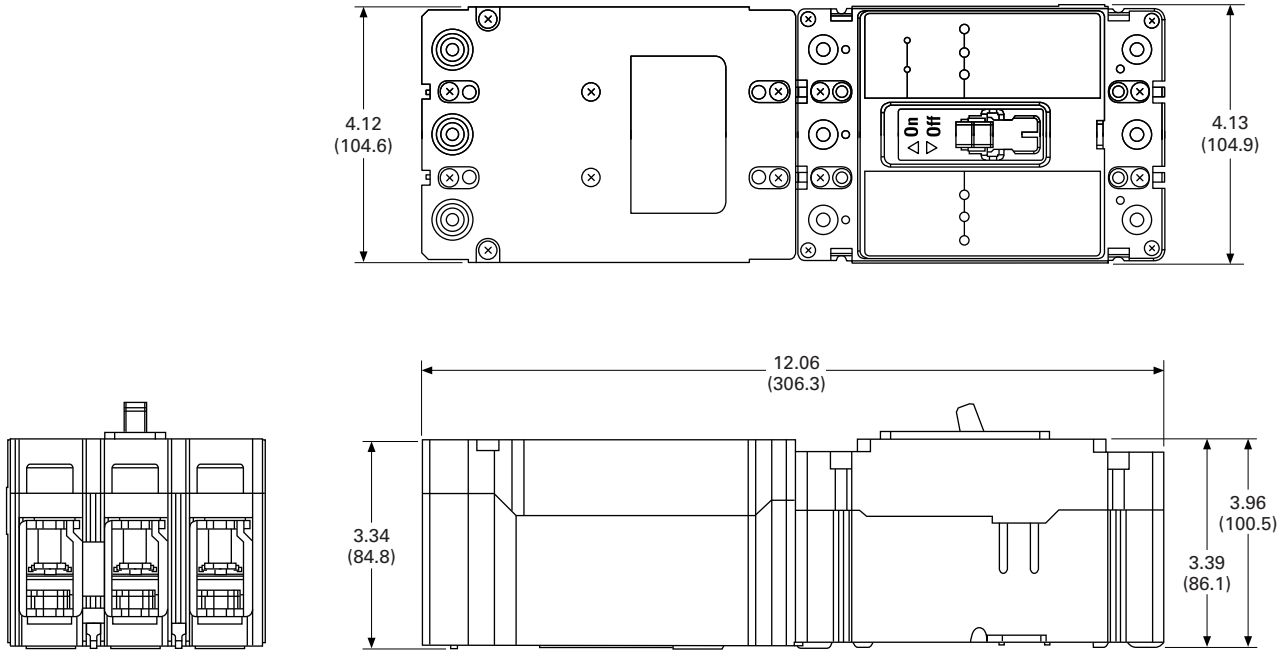
Dimensions and Weights

Approximate Dimensions in Inches (mm)

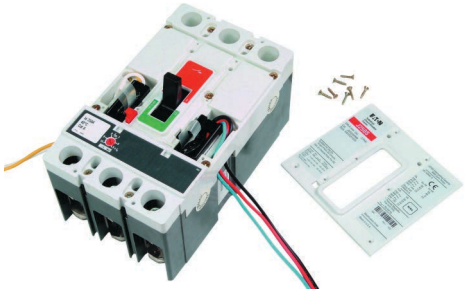
Assembled Breaker and Current-Limiting Module

Frame	Height	Width	Depth	Weight in lb (kg)
FD + limiter	12.06 (306.3)	4.13 (104.9)	3.39 (86.1)	8.50 (3.86)

FD-Frame With Current Limiter Module



Series C Internal Accessories



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K-Frame (70–400 A)	**V12-T3-171**
L-Frame (125–600 A)	**V12-T3-195**
M-Frame (300–800 A)	**V12-T3-221**
N-Frame (400–1200 A)	**V12-T3-232**
R-Frame (800–2500 A)	**V12-T3-246**
Motor Circuit Protectors (MCP)	**V12-T3-264**
Motor Protection Circuit Breakers (MPCB)	**V12-T3-275**
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Current-Limiting Circuit Breaker Module	**V12-T3-278**
Internal Accessories	
Product Selection	**V12-T3-283**
Technical Data and Specifications	**V12-T3-302**
External Accessories	**V12-T3-314**

Internal Accessories

Product Overview

Alarm Switch

For remote indication of automatic trip operation. Does not function with manual switching; however, it will operate when either a shunt trip or undervoltage release is operated. A “make” contact closes and a “break” contact opens when the alarm/lockout switch operates. The switch automatically resets when the circuit breaker is reset.

Auxiliary Switch

The auxiliary switch provides circuit breaker contact status information by monitoring the position of the molded cross bar that contains the moving contact arms. The auxiliary switch is used for remote indication and interlock system verification, and consists of one or two SPDT switches housed in a plug-in module. Each SPDT switch has one “a” and one “b” contact. When the circuit breaker contacts are open, the “a” contact is open and the “b” contact is closed.

Auxiliary Switch and Alarm Switch Combination

Each catalog number listed in tables on **Pages V12-T3-286** and **V12-T3-287** includes one auxiliary switch and one alarm switch. In an auxiliary switch ASL switch combination, the auxiliary switch is always mounted on the side of the plug-in module next to the center pole of the circuit breaker.

Shunt Trip

The shunt trip provides remote controlled tripping of the circuit breaker. The shunt trip consists of an intermittent rated solenoid with a tripping plunger and a cutoff switch assembled to a plug-in module. When required for ground fault protection applications, certain AC rated shunt trips, as noted in the electrical rating table, are suitable for operation at 55 percent of rated voltage.

Select shunt trip catalog number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific AC or DC voltages within the voltage range shown. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip

Low energy shunt trip devices are designed to operate from low energy output signals from dedicated current sensors typically applied in ground fault protection schemes. However, with a proper control voltage source, they may be applied in place of conventional trip devices for special applications. Flux paths surrounding permanent magnets used in the shunt trip assembly hold a charged spring poised in readiness to operate the circuit breaker trip mechanism.

When a 100 microfarad capacitor charged to 28 Vdc is discharged through the shunt trip coil, the resultant flux opposes the permanent magnet flux field, which releases the stored energy in the spring to trip the circuit breaker. As the circuit breaker resets, the shunt trip reset arm is actuated by the circuit breaker handle, resetting the shunt trip. The plug-in module is mounted in retaining slots in the top of the trip unit. Coil is intermittent-rated only. Cutoff provisions required in control circuit.

Undervoltage Release Mechanism

The undervoltage release mechanism monitors a voltage (typically a line voltage) and trips the circuit breaker when the voltage falls to between 70 and 35 percent of the solenoid coil rating.

The undervoltage release mechanism consists of a continuous rated solenoid with a plunger and tripping lever mounted in a plug-in module. The tab on the tripping lever resets the undervoltage release mechanism when normal voltage has been restored and the circuit breaker handle is moved to the reset (or OFF) position. With less than pickup voltage applied to the undervoltage release mechanism, the circuit breaker contacts will not touch when a closing operation is attempted.

Note: Undervoltage release mechanism accessories are not designed for, and should not be used as, circuit interlocks.

Accessory Terminal Block (R-Frame)

(For fixed-mounted configuration.)

Internal accessory wiring leads are normally supplied with pigtail leads (18 AWG) that exit from the right side of the circuit breaker. Where specified, fixed-mounted accessory terminal blocks are available. A maximum of one 24-point terminal block can be installed on the right side of the circuit breaker for the internal accessories.

For convenience in determining the appropriate number of terminal block points required, refer to **Page V12-T3-282**.

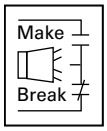
PowerNet and Zone Interlock Kits (OPTIM 550 only) K-, L- and N-Frames

Eaton's PowerNet Communications Kit can be ordered to add PowerNet communications to an existing OPTIM 550 breaker in the field. An 18-inch (457.2 mm) wiring pigtail is routed to the rear of the breaker: two wires for PowerNet and two wires for 24 Vdc (45 mA load). It is recommended that the power supply be an "isolated high quality" unit.

Product Selection

Alarm Switch

Alarm Switch



G-Frame Alarm Switch (RH Only) ①

Electrical Ratings			Contact Arrangement	Factory Suffix	Catalog Number ②③④
Volts	Frequency	Amperes			
Alarm Switch					
240	50/60 Hz	6	1 Make/1 Break	**B3**	**1288C75G03**
Alarm Switch Auxiliary Switches Combination					
240	50/60 Hz	6	1 Make/1 Break and 1A/1B	**B13**	**1288C76G09**

F-Frame Alarm Switch ①

		Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads				Factory Installation Kit ⑤	
Number of Contacts (Make and Break)	Mounting Location (Pole)	Same Side Suffix Number	Rear ⑥ Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left ⑦	**B01**	**B02**	**B03**	**B04**	**A1L1LPK**	**A1L1LTK**
	Right	**B05**	**B06**	**B07**	**B08**	**A1L1RPK**	**A1L1RTK**
2	Left ⑦	**B09**	**B10**	—	**B11**	**A2L1LPK**	**A2L1LTK**
	Right	**B12**	**B13**	—	**B14**	**A2L1RPK**	**A2L1RTK**
1	Single-pole	**B15** ⑧	—	—	—	—	—

F-Frame HMCP Alarm Switch ①

		Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads				Factory Installation Kit ⑤	
Number of Contacts (Make and Break)	Mounting Location (Pole)	Same Side Suffix Number	Rear ⑥ Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left ⑦	**B01**	**B02**	**B03**	**B04**	**MA1L1LPK**	**MA1L1LTK**
	Right	**B05**	**B06**	**B07**	**B08**	**MA1L1RPK**	**MA1L1RTK**
2	Left ⑦	**B09**	**B10**	—	**B11**	**MA2L1LPK**	**MA2L1LTK**
	Right	**B12**	**B13**	—	**B14**	**MA2L1RPK**	**MA2L1RTK**

J-Frame and HMCP (J) Alarm Switch

		Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads				Field Mounted Field Installation Kits ⑨	
Number of Contacts (Make and Break)	Mounting Location (Pole)	Same Side Suffix Number	Rear ⑦ Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left ⑩	**B01**	**B02**	**B03**	**B04**	**A1L2LPK**	**A1L2LTK**
	Right	**B05**	**B06**	**B07**	**B08**	**A1L2RPK**	**A1L2RTK** ⑥

Notes

① F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819. Where local codes and standards permit and UL listing is not required, internal accessories can be field installed; however, this is not recommended for FDE breakers. Accessory installation should be done before the circuit breaker is mounted and connected.

② Includes 24-inch (609.6 mm) external pigtail leads,18 AWG (16–0.010).

③ A maximum of two internal accessories may be mounted in a three-pole circuit breaker.

④ Suitable for mounting in right pole only of two- or three-pole breaker.

⑤ Not listed with Underwriters Laboratories; for field installation.

⑥ Standard pigtail lead exit location.

⑦ Standard mounting location.

⑧ Factory installation only. Leads exit load end of circuit breaker.

⑨ Listed with Underwriters Laboratories; for field installation on interchangeable trip unit breakers under E64983.

⑩ Standard mounting location—leads exit rear of breaker.

K-Frame and HMCP (K) Alarm Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left ③	B01	B02	B03	B04	A1L3LPK	A1L3LTK
	Right ④	B05	B06	B07	B08	A1L3RPK	A1L3RTK
2	Left ③	B09	B10	—	B11	A2L3LPK	A2L3LTK
	Right ④	B12	B13	—	B14	A2L3RPK	A2L3RTK

L-, HMCP (L) and (M) Frames and Alarm Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left ③	B01	B02	B03	B04	A1L4LPK	A1L4LTK
	Right	B05	B06	B07	B08	A1L4RPK	A1L4RTK
2	Left ③	B09	B10	—	B11	A2L4LPK	A2L4LTK
	Right	B12	B13	—	B14	A2L4RPK	A2L4RTK

N-Frame and HMCP (N) Alarm Switch

Number of Sets of Contacts (1M and 1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ⑤ Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left	B01	B02	B03	B04	A1L5LPK	A1L5LTK
	Right ③	B05	B06	B07	B08	A1L5RPK	A1L5RTK
2	Left	B09	B10	—	B11	A2L5LPK	A2L5LTK
	Right ③	B12	B13	—	B14	A2L5RPK	A2L5RTK

R-Frame Alarm Switch (RH Only)

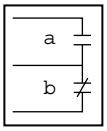
Number of Contacts (Make and Break)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Suffix Number ⑥	Field Mounted Field Installation Kits ⑤ Pigtail Leads Catalog Number ⑥
1	B05	A1L6RPK
2	B12	A2L6RPK

Notes

① Listed with Underwriters Laboratories; for field installation on interchangeable trip unit breakers under E64983.
② Standard mounting location.
③ Standard mounting location—leads exit rear of breaker.
④ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
⑤ Listed with Underwriters Laboratories for field installation under E64983.
⑥ A maximum of three ASL plug-in modules may be installed in a circuit breaker.

Auxiliary Switch

Auxiliary Switch



G-Frame Auxiliary Switch (RH Only)

Electrical Ratings Volts	Frequency	Amperes	Contact Arrangement	Factory Suffix	Catalog Number ①②
240	50/60 Hz	6	1a/1b	**A3**	**1288C74G03**
240	50/60 Hz	6	2a/2b	**A6**	**1288C73G03**

F-Frame and HMCP (F) Auxiliary Switch

		Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads				Factory Installation Kit ④	
					Terminal Block	Pigtail Leads	Terminal Block
Number of Contacts A and B	Mounting Location (Pole)	Same Side Suffix Number	Rear ③ Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Catalog Number	Catalog Number
1	Left ⑤	**A01**	**A02**	**A03**	**A04**	**A1X1PK**	**A1X1LTK**
	Left ⑤	**A15** ⑦	**A16** ⑦	**A17** ⑦	—	**E1X1PK**	—
	Right or Neutral ⑥	**A05**	**A06**	**A07**	**A08**	**A1X1PK**	**A1X1RTK** ⑧
	Right or Neutral ⑥	**A18** ⑦	**A19** ⑦	**A20** ⑦	—	—	—
2	Left ⑤	**A09**	**A10**	—	**A11**	**A2X1LPK**	**A2X1LTK**
	Left ⑤	**A21** ⑦	**A22** ⑦	—	—	**E2X1LPK**	—
	Right or Neutral ⑥	**A12**	**A13**	—	**A14**	**A2X1RPK**	**A2X1RTK** ⑧
	Right or Neutral ⑥	**A23** ⑦	**A24** ⑦	—	—	**E2X1RPK**	—

F-Frame with Electronic Trip Unit Auxiliary Switch ⑨

		Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads				Factory Installation Kit ④	
					Terminal Block	Pigtail Leads	Terminal Block
Number of Contacts A and B	Mounting Location (Pole)	Same Side Suffix Number	Rear Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Catalog Number	Catalog Number
Trip Unit Type 310+							
1	Right	**A30**	**A31**	**A32**	—	—	—
Trip Unit Type 210+							
1	Right	**A33**	**A34**	**A35**	—	—	—

J-Frame and HMCP (J) Auxiliary Switch

		Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads				Field Mounted Factory Installation Kit ⑩	
					Terminal Block	Pigtail Leads	Terminal Block
Number of Contacts A and B	Mounting Location (Pole)	Same Side Suffix Number	Rear ③ Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Catalog Number	Catalog Number
1	Left	**A01**	**A02**	**A03**	**A04**	**A1X2PK**	**A1X2LTK**
	Right ⑪	**A05**	**A06**	**A07**	**A08**	**A1X2PK**	**A1X2RTK** ④
2	Left	**A09**	**A10**	—	**A11**	**A2X2PK**	**A2X2LTK**
	Right ⑪	**A12**	**A13**	—	**A14**	**A2X2PK**	**A2X2RTK** ④

Notes

① Includes 24-inch external pigtail leads, 18 AWG (16–0.010).
② A maximum of two internal accessories may be mounted in a three-pole circuit breaker. Suitable for mounting in right pole only of two- or three-pole breaker.
③ Standard pigtail lead exit location.
④ Not listed with Underwriters Laboratories; for field installation.
⑤ Pigtail wire size: 18 AWG (0.82 mm^2).
⑥ Not for use on F-Frame with electronic trip unit.
⑦ 125 volts (max.), 50/60 Hz switch for use in electronic circuit of 100 micro amperes and 15 Vdc minimum.
⑧ Not for use on four-pole circuit breakers.
⑨ Only for use on three-pole F-Frame breakers with electronic trip unit. Installation auxiliary switch for FD electronic breakers on right pole must be performed at breaker factory.
⑩ Listed with Underwriters Laboratories for field installation or interchangeable trip unit breakers under E64983.
⑪ Standard mounting location—leads exit rear of breaker.

K-Frame and HMCP (K) Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Factory Installation Kit ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left	A01	A02	A03	A04	A1X3PK	A1X3LTK
	Right ②③	A05	A06	A07	A08	A1X3PK	A1X3RTK ④
2	Left	A09	A10	—	A11	A2X3PK	A2X3LTK
	Right ②③	A12	A13	—	A14	A2X3PK	A2X3RTK ④
	Right	A21	A22	—	—	1482D28G10 ⑥⑦	—
3	Left	A18	—	—	A15	A3X3LPK	A3X3LTK
	Right ③	A17	—	—	A16	A3X3RPK	A3X3RTK ④

L-, HMCP (L) and (M) Frames and Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Factory Installation Kit ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left	A01	A02	A03	A04	A1X4PK	A1X4LTK
	Right ②	A05	A06	A07	A08	A1X4PK	A1X4RTK ④
2	Left	A09	A10	—	A11	A2X4PK	A2X4LTK
	Right ②	A12	A13	—	A14	A2X4PK	A2X4RTK ④
3	Left	A18	—	—	A15	A3X4PK	A3X4LTK
	Right ②	A17	—	—	A16	A3X4PK	A3X4RTK ④

N-Frame and HMCP (N) Auxiliary Switch

Number of Contacts A and B	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Factory Installation Kit ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left	A01	A02	A03	A04	A1X5PK	A1X5LTK
	Right ②	A05	A06	A07	A08	A1X5PK	A1X5RTK ④
2	Left	A09	A10	—	A11	A2X5PK	A2X5LTK
	Right ②	A12	A13	—	A14	A2X5PK	A2X5RTK ④
3	Left	A18	—	—	A15	A3X5LPK	A3X5LTK
	Right ②	A17	—	—	A16	A3X5RPK	A3X5RTK ④

R-Frame Auxiliary Switch (RH Only)

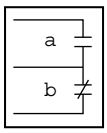
Number of Contacts A and B	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Suffix Number ⑤	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number ⑤
2	A12	A2X6RPK
4	A19	A4X6RPK

Notes

① Listed with Underwriters Laboratories for field installation under E64983.
② Standard mounting location—leads exit rear of breaker.
③ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
④ Not for use on four-pole circuit breakers.
⑤ A maximum of two auxiliary switches (any combination of 2a/2b or 4a/4b plug-in modules may be installed in a circuit breaker.
⑥ This option is not field installable.
⑦ Available on the OPTIM 550 only. Communications are not available with this option.

Auxiliary Switch and Alarm Switch Combination

Auxiliary Switch and Alarm Switch Combination



F-Frame Auxiliary Switch and Alarm Switch Combination ①

Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads Same Side Suffix Number	Rear ③ Suffix Number	Terminal Block Same Side Suffix Number	Factory Installation Kit ② Pigtail Leads Catalog Number	Terminal Block Catalog Number
Left ③	C01	C02	C03	AAL1LPK	AAL1LTK
Right	C04	C05	C06	AAL1RPK	AAL1RTK ④

F-Frame HMCP Auxiliary Switch and Alarm Switch Combination

Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads Same Side Suffix Number	Rear ③ Suffix Number	Terminal Block Same Side Suffix Number	Factory Installation Kit ② Pigtail Leads Catalog Number	Terminal Block Catalog Number
Left ④	C01	C02	C03	MAAL1LPK	MAAL1LTK
Right	C04	C05	C06	MAAL1RPK	MAAL1RPK

J-Frame and HMCP (J) Auxiliary Switch and Alarm Switch Combination

Number of Sets of Contacts (1A and 1B) (1M–1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads Same Side Suffix Number	Rear ⑥ Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ⑤ Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left	C01	C02	—	C03	AAL2LPK	AAL2LTK
	Right ④	C04	C05	—	C06	AAL2RPK	AAL2RTK ④

K-Frame and HMCP (K) Auxiliary Switch and Alarm Switch Combination

Number of Sets of Contacts (1A and 1B) (1M–1B)	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads Same Side Suffix Number	Rear ⑥ Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ⑤ Pigtail Leads Catalog Number	Terminal Block Catalog Number
1	Left	C01	C02	—	C03	AAL3LPK	AAL3LTK
	Right ⑥⑦	C04	C05	—	C06	AAL3RPK ⑧	AAL3RTK
	Right	C07	C08	—	—	1482D28G09 ⑨⑩	—

Notes

① Auxiliary switch and alarm switch combination options (Cxx) are not available on FDE 310+ with LSG or LSIG trip units due to exit wire limitations. To obtain both features, order a left mounting alarm switch (B01-B04 or B09-B11), and right mounting auxiliary switch (A30-A32).
② Not listed with Underwriters Laboratories for field installation.
③ Standard mounting location.
④ Not for use on four-pole circuit breakers
⑤ Listed with Underwriters Laboratories for field installation of interchangeable trip unit breakers under E64983.
⑥ Standard mounting location—leads exit rear of breaker.
⑦ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.
⑧ Will not install on OPTIM Trip (RH).
⑨ Available on the OPTIM 550 only. Communications are not available with this option.
⑩ This option is not field installable.

L-, HMCP (L) and (M) Frames and Auxiliary Switch and Alarm Switch Combination

Number of Sets of Contacts	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
1A, 1B and 1 Make/1 Break	Left	C01	C02	—	C03	AA114LPK	AA114LTK
	Right ②	C04	C05	—	C06	AA114RPK	AA114RTK ③
2A, 2B and 1 Make/1 Break	Left	C07	C08	—	C12	AA214LPK	AA214LTK
	Right ②	C10	C11	—	C13	AA214RPK	AA214RTK ③
3A, 3B and 1 Make/1 Break	Left	C14	—	—	—	AA314LPK	—
	Right ②	C15	—	—	—	AA314RPK	—

N-Frame and HMCP (N) Auxiliary Switch and Alarm Switch Combination

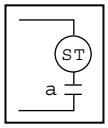
Number of Sets of Contacts	Mounting Location (Pole)	Factory Mounted Connection Type and Location 18-Inch (457 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
1A, 1B and 1 Make/1 Break	Left	C01	C02	—	C03	AA115LPK	AA115LTK
	Right ②	C04	C05	—	C06	AA115RPK	AA115RTK ③
2A, 2B and 1 Make/1 Break	Left	C07	C08	—	C12	AA215LPK	AA215LTK
	Right ②	C10	C11	—	C13	AA215RPK	AA215RTK ③

Notes

① Listed with Underwriters Laboratories for field installation under E64983.
② Standard mounting location—leads exit rear of breaker.
③ Not for use on four-pole circuit breaker.

Shunt Trip

Shunt Trip



G-Frame Shunt Trip (LH Three-Pole Only)

Electrical Ratings Volts	Frequency	Amperes	Suffix Number	Catalog Number
120	50/60 Hz	1.1	**S1**	**1373D62G01**
240	50/60 Hz	2.1	**S2**	**1373D62G02**
12	DC	2.8	**S3**	**1373D62G15**
24	DC	5.7	**S4**	**1373D62G16**
24	60 Hz	—	**S7**	**1373D62G20**

F-Frame and HMCP (F) Shunt Trip

	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads ②				Factory Installation Kit ①	
	Same Side	Rear ③	Opposite Side	Terminal Block Same Side	Pigtail Leads	Terminal Block
Voltage Rating (AC Frequency = 50/60 Hz)	**Suffix Number**	**Suffix Number**	**Suffix Number**	**Suffix Number**	**Catalog Number**	**Catalog Number**
Left-Pole Mounting AC/DC Ratings						
12–24 Vac or Vdc	**S01**	**S02**	**S03**	**S04**	**SNT1LP03K**	**SNT1LT03K**
48–127 Vac or 48–60 Vdc ④	**S05**	**S06**	**S07**	**S08**	**SNT1LP08K**	**SNT1LT08K**
208–380 Vac or 110–127 Vdc	**S09**	**S10**	**S11**	**S12**	**SNT1LP12K**	**SNT1LT12K**
415–600 Vac or 220–250 Vdc	**S13**	**S14**	**S15**	**S16**	**SNT1LP18K**	**SNT1LT18K**
Right- or Neutral-Pole Mounting AC/DC Ratings ⑤						
12–24 Vac or Vdc	**S17**	**S18**	**S19**	**S20**	**SNT1RP03K**	**SNT1RT03K** ⑥
48–127 Vac or 48–60 Vdc ④	**S21**	**S22**	**S23**	**S24**	**SNT1RP08K**	**SNT1RT08K** ⑥
208–380 Vac or 110–127 Vdc	**S25**	**S26**	**S27**	**S28**	**SNT1RP12K**	**SNT1RT12K** ⑥
415–600 Vac or 220–250 Vdc	**S29**	**S30**	**S31**	**S32**	**SNT1RP18K**	**SNT1RT18K** ⑥

Notes

① Not listed with Underwriters Laboratories, for field installation.
② Pigtail wire size: 18 AWG (0.82 mm^2).
③ Standard pigtail lead exit location.
④ 120 Vac marked suitable for ground fault protection devices.
⑤ Standard mounting location.
⑥ Not for use on four-pole circuit breakers.

G-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory.

Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed.
Accessory installation should be done before the circuit breaker is mounted and connected.

J-Frame and HMCP (J) Shunt Trip

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
Left-Pole Mounting AC/DC Ratings ②						
12–24 Vac or Vdc	**S41**	**S42**	**S43**	**S44**	**SNT2P04K**	**SNT2T04K**
48–60 Vac or Vdc	**S49**	**S50**	**S51**	**S52**	**SNT2P06K**	**SNT2T06K**
110–240 Vac or 110–125 Vdc ③	**S09**	**S10**	**S11**	**S12**	**SNT2P11K**	**SNT2T11K**
380–440 Vac or 220–250 Vdc	**S13**	**S14**	**S15**	**S16**	**SNT2P14K**	**SNT2T14K**
480–600 Vac	**S17**	**S18**	**S19**	**S20**	**SNT2P18K**	**SNT2T18K**
Right- or Neutral-Pole Mounting AC/DC Ratings						
12–24 Vac or Vdc	**S45**	**S46**	**S47**	**S48**	**SNT2P04K**	**SNT2T04K** ④
48–60 Vac or Vdc	**S53**	**S54**	**S55**	**S56**	**SNT2P06K**	**SNT2T06K** ④
110–240 Vac or 110–125 Vdc ③	**S29**	**S30**	**S31**	**S32**	**SNT2P11K**	**SNT2T11K** ④
380–440 Vac or 220–250 Vdc	**S33**	**S34**	**S35**	**S36**	**SNT2P14K**	**SNT2T14K** ④
480–600 Vac	**S37**	**S38**	**S39**	**S40**	**SNT2P18K**	**SNT2T18K** ④

K-Frame and HMCP (K) Shunt Trip

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
Left-Pole Mounting AC/DC Ratings ②						
12–24 Vac or Vdc	**S41**	**S42**	**S43**	**S44**	**SNT3P04K**	**SNT3T04K**
48–60 Vac or Vdc	**S49**	**S50**	**S51**	**S52**	**SNT3P06K**	**SNT3T06K**
110–240 Vac or 110–125 Vdc ③	**S09**	**S10**	**S11**	**S12**	**SNT3P11K**	**SNT3T11K**
380–440 Vac or 220–250 Vdc	**S13**	**S14**	**S15**	**S16**	**SNT3P14K**	**SNT3T14K**
480–600 Vac	**S17**	**S18**	**S19**	**S20**	**SNT3P18K**	**SNT3T18K**
Right- or Neutral-Pole Mounting AC/DC Ratings ⑤⑥						
12–24 Vac or Vdc	**S45**	**S46**	**S47**	**S48**	**SNT3P04K**	**SNT3T04K** ④
48–60 Vac or Vdc	**S53**	**S54**	**S55**	**S56**	**SNT3P06K**	**SNT3T06K** ④
110–240 Vac or 110–125 Vdc ③	**S29**	**S30**	**S31**	**S32**	**SNT3P11K**	**SNT3T11K** ④
380–440 Vac or 220–250 Vdc	**S33**	**S34**	**S35**	**S36**	**SNT3P14K**	**SNT3T14K** ④
480–600 Vac	**S37**	**S38**	**S39**	**S40**	**SNT3P18K**	**SNT3T18K** ④

Notes

① Listed with Underwriters Laboratories for field installation under E64983.
② Standard mounting location—leads exit rear of breaker.
③ Suitable for use with Class 1 ground fault sensing element.
④ Not for use on four-pole circuit breakers.
⑤ For use with KT (thermal-magnetic) trip units only.
⑥ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

L-, HMCP (L) and (M) Frames and Shunt Trip

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
Left-Pole Mounting AC/DC Ratings ②						
12–24 Vac or Vdc	**S01**	**S02**	**S03**	**S04**	**SNT4LP03K**	**SNT4LT03K**
48–60 Vac	**S05**	**S06**	**S07**	**S08**	**SNT4LP05K**	**SNT4LT05K**
48–60 Vdc	**S85**	**S86**	**S87**	—	**SNT4LP23K**	**SNT4LT23K**
110–240 Vac	**S09**	**S10**	**S11**	**S12**	**SNT4LP11K**	**SNT4LT11K**
110–125 Vdc	**S41**	**S42**	**S43**	**S44**	**SNT4LP26K**	**SNT4LT26K**
380–440 Vac or 220–250 Vdc	**S13**	**S14**	**S15**	**S16**	**SNT4LP14K**	**SNT4LT14K**
480–600 Vac	**S17**	**S18**	**S19**	**S20**	**SNT4LP18K**	**SNT4LT18K**
Right-Pole Mounting AC/DC Ratings ③						
12–24 Vac or Vdc	**S21**	**S22**	**S23**	**S24**	**SNT4RP03K**	**SNT4RT03K**
48–60 Vac	**S25**	**S26**	**S27**	**S28**	**SNT4RP05K**	**SNT4RT05K**
48–60 Vdc	**S88**	**S89**	**S90**	—	**SNT4RP23K**	**SNT4RT23K**
110–240 Vac	**S29**	**S30**	**S31**	**S32**	**SNT4RP11K**	**SNT4RT11K**
110–125 Vdc	**S45**	**S46**	**S47**	**S48**	**SNT4RP26K**	**SNT4RT26K**
380–440 Vac or 220–250 Vdc	**S33**	**S34**	**S35**	**S36**	**SNT4RP14K**	**SNT4RT14K**
480–600 Vac	**S37**	**S38**	**S39**	**S40**	**SNT4RP18K**	**SNT4RT18K**

Notes

① Listed with Underwriters Laboratories, for field installation under E64983.

② Standard mounting location—leads exit rear of breaker.

③ For use with LT (thermal-magnetic) three-pole trip units only.

N-Frame and HMCP (N) Shunt Trip

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
Left-Pole Mounting AC/DC Ratings ②						
9–24 Vac or Vdc	**S01**	**S02**	**S03**	**S04**	**SNT5LP03K**	**SNT5LT03K**
48–60 Vac	**S05**	**S06**	**S07**	**S08**	**SNT5LP05K**	**SNT5LT05K**
110–240 Vac ③	**S09**	**S10**	**S11**	**S12**	**SNT5LP11K**	**SNT5LT11K**
110–125 Vdc	**S41**	**S42**	**S43**	**S44**	**SNT5LP26K**	**SNT5LT26K**
380–440 Vac or 220–250 Vdc	**S13**	**S14**	**S15**	**S16**	**SNT5LP14K**	**SNT5LT14K**
480–600 Vac	**S17**	**S18**	**S19**	**S20**	**SNT5LP18K**	**SNT5LT18K**
48–60 Vdc	**S21**	**S22**	**S23**	**S24**	**SNT5LP23K**	**SNT5LT23K**

R-Frame Shunt Trip (RH Only)

Voltage Rating (AC Frequency = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Suffix Number ④	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number ④
24 Vac or Vdc	**S21**	**SNT6P03K**
48–60 Vac	**S25**	**SNT6P05K**
110–240 Vac	**S29**	**SNT6P11K**
380–440 Vac or 220–250 Vdc	**S33**	**SNT6P14K**
480–600 Vac	**S37**	**SNT6P18K**
48–60 Vdc	**S88**	**SNT6P23K**
110–125 Vdc	**S45**	**SNT6P26K**

Notes

① Listed with Underwriters Laboratories for field installation under E64983.

② Standard mounting location—leads exit rear of breaker.

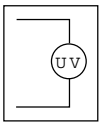
③ Supply voltages suitable for use with Class 1 GFP devices. Marking label included with accessory kits.

④ A maximum of two shunt trip plug-in modules may be installed in a circuit breaker.

Low Energy Shunt Trip
Ordering Information

Select shunt trip catalog number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific AC or DC voltages within the voltage range shown. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip



F-, J-, K-, L-, M-, N- and R-Frames and HMCPs Low Energy Shunt Trip ①

	Factory Mounted			Field Mounted		
	Connection Type and Location			Field Installation Kits ②		
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block		
Mounting Positions (Pole)	Same Side Suffix Number	Rear ③ Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Pigtail Leads Catalog Number	Terminal Block Catalog Number
F-Frame						
Left	**N01**	**N02**	**N03**	**N04**	**LST1LPK** ④	**LST1LTK** ④
Right ③	**N05**	**N06**	**N07**	**N08**	**LST1RPK** ④	**LST1RTK** ④
J-Frame						
Left	**N01**	**N02**	**N03**	—	**LST2LPK**	—
Right ③	**N05**	**N06**	**N07**	—	**LST2RPK**	—
K-Frame						
Left ③	**N01**	**N02**	**N03**	—	**LST3LPK**	—
Right ⑤⑥	**N05**	**N06**	**N07**	—	**LST3RPK**	—
L- and M-Frames						
Left	**N01**	**N02**	**N03**	—	**LST4LPK**	—
Right	**N05**	**N06**	**N07**	—	**LST4RPK**	—
N-Frame						
Left ③	**N01**	**N02**	**N03**	—	**LST5LPK**	—
R-Frame						
Right	**N01**	—	—	—	**LST6RPK**	—

Notes

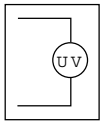
① Cutoff provisions required in control circuit.
② Listed with Underwriters Laboratories for field installation under E64983.
③ Standard mounting location—leads exit rear of breaker.
④ For F-Frame HMCP, add an "M" to beginning of catalog number. Field Installation Kit referenced for factory use only, not UL listed for field installation.
⑤ For use with thermal-magnetic trip units only.
⑥ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

Undervoltage Release Mechanism

Ordering Information

Select handle reset undervoltage release mechanism catalog number for the voltage within the indicated voltage range. Undervoltage release mechanism coils are designed to be applied at specific AC or DC voltages within the voltage range shown on applicable circuit breaker accessory nameplates.

Undervoltage Release Mechanism



G-Frame Undervoltage Release Mechanism (LH Three-Pole Only)

Electrical Ratings

Volts (AC Only)	Frequency (Hz)	Amperes	Style Numbers ①②③
120	50/60	0.05	**1373D62G03**
24	50/60	0.22	**1373D62G04**
48	50/60	0.11	**1373D62G05**
60	50/60	0.10	**1373D62G06**
110	50	0.049	**1373D62G07**
208	60	0.026	**1373D62G08**
220	50	0.025	**1373D62G09**
240	50/60	0.024	**1373D62G10**
380	50	0.015	**1373D62G11**
415	50	0.013	**1373D62G12**
440	50	0.012	**1373D62G13**
480	60	0.01	**1373D62G14**

Notes

① Includes 24-inch (609.6 mm) external pigtail leads, 18 AWG (16–0.010).

② A maximum of two internal accessories may be mounted in a three-pole circuit breaker.

③ Suitable for mounting in left pole only of three-pole breaker.

G-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory.

Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation
should be done before the circuit breaker is mounted and connected.

F-Frame Factory Mounted (For F-Frame Breaker and F-Frame HMCP) Undervoltage Release Mechanism

Voltage Rating (AC Freq. = 50/60 Hz)	Connection Type and Location 18-Inch Pigtail Leads Same Side Suffix Number	Rear ① Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number
Left-Pole Mounting AC Ratings				
12 Vac	**U01**	**U02**	**U03**	**U04**
24 Vac	**U05**	**U06**	**U07**	**U08**
48 Vac	**U37**	**U38**	**U39**	**U40**
60 Vac	**U97**	**U98**	**U99**	**U100**
110–127 Vac	**U13**	**U14**	**U15**	**U16**
208–240 Vac	**U17**	**U18**	**U19**	**U20**
380–480 Vac	**U21**	**U22**	**U23**	**U24**
525–600 Vac	**U25**	**U26**	**U27**	**U28**
Right-Pole Mounting AC Ratings ②③				
12 Vac	**U49**	**U50**	**U51**	**U52**
24 Vac	**U53**	**U54**	**U55**	**U56**
48 Vac	**U85**	**U86**	**U87**	**U88**
60 Vac	**U101**	**U102**	**U103**	**U104**
110–127 Vac	**U61**	**U62**	**U63**	**U64**
208–240 Vac	**U65**	**U66**	**U67**	**U68**
380–480 Vac	**U69**	**U70**	**U71**	**U72**
525–600 Vac	**U73**	**U74**	**U75**	**U76**
Left-Pole Mounting DC Ratings				
12 Vdc	**U29**	**U30**	**U31**	**U32**
24 Vdc	**U33**	**U34**	**U35**	**U36**
48 Vdc	**U37**	**U38**	**U39**	**U40**
60 Vdc	**U97**	**U98**	**U99**	**U100**
110–127 Vdc	**U41**	**U42**	**U43**	**U44**
220–250 Vdc	**U45**	**U46**	**U47**	**U48**
Right-Pole Mounting DC Ratings ②③				
12 Vdc	**U77**	**U78**	**U79**	**U80**
24 Vdc	**U81**	**U82**	**U83**	**U84**
48 Vdc	**U85**	**U86**	**U87**	**U88**
60 Vdc	**U101**	**U102**	**U103**	**U104**
110–127 Vdc	**U89**	**U90**	**U91**	**U92**
220–250 Vdc	**U93**	**U94**	**U95**	**U96**

Notes

① Standard pigtail lead exit location.

② Standard mounting location.

③ Not for use on right pole of four-pole circuit breaker.

F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory.

Internal accessories are UL listed for factory installation under E7819.

Where local codes and standards permit and UL listing is not required, internal accessories can be field installed. Accessory installation should be done before the circuit breaker is mounted and connected.

F-Frame Field Mounted Undervoltage Release Mechanism

Voltage Rating (AC Freq. = 50/60 Hz)	F-Frame Breaker Factory Installation Kits ① Pigtail Leads Catalog Number	F-Frame Breaker Factory Installation Kits ① Terminal Block Catalog Number	F-Frame Breaker HMCP Pigtail Leads Catalog Number	F-Frame Breaker HMCP Terminal Block Catalog Number
Left-Pole Mounting AC Ratings				
12 Vac	**UVH1LP02K**	**UVH1LT02K**	**MUVH1LP02K**	**MUVH1LT02K**
24 Vac	**UVH1LP03K**	**UVH1LT03K**	**MUVH1LP03K**	**MUVH1LT03K**
48 Vac	**UVH1LP22K**	**UVH1LT22K**	**MUVH1LP22K**	**MUVH1LT22K**
60 Vac	**UVH1LP24K**	**UVH1LT24K**	**MUVH1LP24K**	**MUVH1LT24K**
110–127 Vac	**UVH1LP08K**	**UVH1LT08K**	**MUVH1LP08K**	**MUVH1LT08K**
208–240 Vac	**UVH1LP11K**	**UVH1LT11K**	**MUVH1LP11K**	**MUVH1LT11K**
380–480 Vac	**UVH1LP15K**	**UVH1LT15K**	**MUVH1LP15K**	**MUVH1LT15K**
525–600 Vac	**UVH1LP18K**	**UVH1LT18K**	**MUVH1LP18K**	**MUVH1LT18K**
Right-Pole Mounting AC Ratings ②③				
12 Vac	**UVH1RP02K**	**UVH1RT02K**	**MUVH1RP02K**	**MUVH1RT02K**
24 Vac	**UVH1RP03K**	**UVH1RT03K**	**MUVH1RP03K**	**MUVH1RT03K**
48 Vac	**UVH1RP22K**	**UVH1RT22K**	**MUVH1RP22K**	**MUVH1RT22K**
60 Vac	**UVH1RP24K**	**UVH1RT24K**	**MUVH1RP24K**	**MUVH1RT24K**
110–127 Vac	**UVH1RP08K**	**UVH1RT08K**	**MUVH1RP08K**	**MUVH1RT08K**
208–240 Vac	**UVH1RP11K**	**UVH1RT11K**	**MUVH1RP11K**	**MUVH1RT11K**
380–480 Vac	**UVH1RP15K**	**UVH1RT15K**	**MUVH1RP15K**	**MUVH1RT15K**
525–600 Vac	**UVH1RP18K**	**UVH1RT18K**	**MUVH1RP18K**	**MUVH1RT18K**
Left-Pole Mounting DC Ratings				
12 Vdc	**UVH1LP20K**	**UVH1LT20K**	**MUVH1LP20K**	**MUVH1LT20K**
24 Vdc	**UVH1LP21K**	**UVH1LT21K**	**MUVH1LP21K**	**MUVH1LT21K**
48 Vdc	**UVH1LP22K**	**UVH1LT22K**	**MUVH1LP22K**	**MUVH1LT22K**
60 Vdc	**UVH1LP24K**	**UVH1LT24K**	**MUVH1LP24K**	**MUVH1LT24K**
110–127 Vdc	**UVH1LP26K**	**UVH1LT26K**	**MUVH1LP26K**	**MUVH1LT26K**
220–250 Vdc	**UVH1LP28K**	**UVH1LT28K**	**MUVH1LP28K**	**MUVH1LT28K**
Right-Pole Mounting DC Ratings ②③				
12 Vdc	**UVH1RP20K**	**UVH1RT20K**	**MUVH1RP20K**	**MUVH1RT20K**
24 Vdc	**UVH1RP21K**	**UVH1RT21K**	**MUVH1RP21K**	**MUVH1RT21K**
48 Vdc	**UVH1RP22K**	**UVH1RT22K**	**MUVH1RP22K**	**MUVH1RT22K**
60 Vdc	**UVH1RP22K**	**UVH1RT22K**	**MUVH1RP22K**	**MUVH1RT22K**
110–127 Vdc	**UVH1RP26K**	**UVH1RT26K**	**MUVH1RP26K**	**MUVH1RT26K**
220–250 Vdc	**UVH1RP28K**	**UVH1RT28K**	**MUVH1RP28K**	**MUVH1RT28K**

Notes

① Not listed with Underwriters Laboratories, for field installation.
② Standard mounting location.
③ Not for use on right pole of four-pole circuit breaker.

J-Frame and HMCP (J) Undervoltage Release Mechanism

	Factory Mounted Connection Type and Location				Field Mounted Field Installation Kits ②	
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block ①		
	Same Side	Rear ②	Opposite Side	Same Side	Pigtail Leads	Terminal Block ③
Voltage Rating (AC Freq. = 50/60 Hz)	Suffix Number	Suffix Number	Suffix Number	Suffix Number	Catalog Number	Catalog Number
Left-Pole Mounting AC Ratings ④						
12 Vac	U05	U06	U07	U08	UVH2LP02K	UVH2LT02K
24 Vac	U09	U10	U11	U12	UVH2LP03K	UVH2LT03K
48–60 Vac	U13	U14	U15	U16	UVH2LP05K	UVH2LT05K
110–127 Vac	U17	U18	U19	U20	UVH2LP08K	UVH2LT08K
208–240 Vac	U21	U22	U23	U24	UVH2LP11K	UVH2LT11K
380–480 Vac	U25	U26	U27	U28	UVH2LP15K	UVH2LT15K
Right-Pole Mounting AC Ratings ③						
12 Vac	U37	U38	U39	U40	UVH2RP02K	UVH2RT02K
24 Vac	U41	U42	U43	U44	UVH2RP03K	UVH2RT03K
48–60 Vac	U45	U46	U47	U48	UVH2RP05K	UVH2RT05K
110–127 Vac	U49	U50	U51	U52	UVH2RP08K	UVH2RT08K
208–240 Vac	U53	U54	U55	U56	UVH2RP11K	UVH2RT11K
380–480 Vac	U57	U58	U59	U60	UVH2RP15K	UVH2RT15K
Left-Pole Mounting DC Ratings ④						
12 Vdc	T01	T02	T03	T04	UVH2LP20K	UVH2LT20K
24 Vdc	T05	T06	T07	T08	UVH2LP21K	UVH2LT21K
48–60 Vdc	T09	T10	T11	T12	UVH2LP23K	UVH2LT23K
110–127 Vdc	T13	T14	T15	T16	UVH2LP26K	UVH2LT26K
220–250 Vdc	T17	T18	T19	T20	UVH2LP28K	UVH2LT28K
Right-Pole Mounting DC Ratings ③						
12 Vdc	T21	T22	T23	T24	UVH2RP20K	UVH2RT20K
24 Vdc	T25	T26	T27	T28	UVH2RP21K	UVH2RT21K
48–60 Vdc	T29	T30	T31	T32	UVH2RP23K	UVH2RT23K
110–127 Vdc	T33	T34	T35	T36	UVH2RP26K	UVH2RT26K
220–250 Vdc	T37	T38	T39	T40	UVH2RP28K	UVH2RT28K

Notes

① For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Eaton.
② Listed with Underwriters Laboratories for field installation under E64983.
③ Not for use on right pole of four-pole circuit breakers.
④ Standard mounting location—leads exit rear of breaker.

K-Frame and HMCP (K) Undervoltage Release Mechanism

Voltage Rating (AC Freq. = 50/60 Hz)	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads Same Side Suffix Number	Rear ② Suffix Number	Opposite Side Suffix Number	Terminal Block Same Side Suffix Number	Field Mounted Field Installation Kits ① Pigtail Leads Catalog Number	Terminal Block Catalog Number
Left-Pole Mounting AC Ratings ②						
12 Vac	**U05**	**U06**	**U07**	**U08**	**UVH3LP02K**	**UVH3LT02K**
24 Vac	**U09**	**U10**	**U11**	**U12**	**UVH3LP03K**	**UVH3LT03K**
48–60 Vac	**U13**	**U14**	**U15**	**U16**	**UVH3LP05K**	**UVH3LT05K**
110–127 Vac	**U17**	**U18**	**U19**	**U20**	**UVH3LP08K**	**UVH3LT08K**
208–240 Vac	**U21**	**U22**	**U23**	**U24**	**UVH3LP11K**	**UVH3LT11K**
380–480 Vac	**U25**	**U26**	**U27**	**U28**	**UVH3LP15K**	**UVH3LT15K**
Right-Pole Mounting AC Ratings ③④⑤						
12 Vac	**U37**	**U38**	**U39**	**U40**	**UVH3RP02K**	**UVH3RT02K**
24 Vac	**U41**	**U42**	**U43**	**U44**	**UVH3RP03K**	**UVH3RT03K**
48–60 Vac	**U45**	**U46**	**U47**	**U48**	**UVH3RP05K**	**UVH3RT05K**
110–127 Vac	**U49**	**U50**	**U51**	**U52**	**UVH3RP08K**	**UVH3RT08K**
208–240 Vac	**U53**	**U54**	**U55**	**U56**	**UVH3RP11K**	**UVH3RT11K**
380–480 Vac	**U57**	**U58**	**U59**	**U60**	**UVH3RP15K**	**UVH3RT15K**
Left-Pole Mounting DC Ratings ②						
12 Vdc	**T01**	**T02**	**T03**	**T04**	**UVH3LP20K**	**UVH3LT20K**
24 Vdc	**T05**	**T06**	**T07**	**T08**	**UVH3LP21K**	**UVH3LT21K**
48–60 Vdc	**T09**	**T10**	**T11**	**T12**	**UVH3LP23K**	**UVH3LT23K**
110–127 Vdc	**T13**	**T14**	**T15**	**T16**	**UVH3LP26K**	**UVH3LT26K**
220–250 Vdc	**T17**	**T18**	**T19**	**T20**	**UVH3LP28K**	**UVH3LT28K**
Right-Pole Mounting DC Ratings ③④⑤						
12 Vdc	**T21**	**T22**	**T23**	**T24**	**UVH3RP20K**	**UVH3RT20K**
24 Vdc	**T25**	**T26**	**T27**	**T28**	**UVH3RP21K**	**UVH3RT21K**
48–60 Vdc	**T29**	**T30**	**T31**	**T32**	**UVH3RP23K**	**UVH3RT23K**
110–127 Vdc	**T33**	**T34**	**T35**	**T36**	**UVH3RP26K**	**UVH3RT26K**
220–250 Vdc	**T37**	**T38**	**T39**	**T40**	**UVH3RP28K**	**UVH3RT28K**

Notes

① Listed with Underwriters Laboratories, for field installation under E64983.
② Standard mounting location—leads exit rear of breaker.
③ For use with KT (thermal-magnetic) trip units only.
④ Not for use on right pole of four-pole circuit breaker.
⑤ Breakers with K-Frame OPTIM 550 can only accept accessories in left pole.

L-, HMCP (L) and (M)-Frames and Undervoltage Release Mechanism

	Factory Mounted Connection Type and Location				Field Mounted Field Installation Kits ①	
	18-Inch (457.2 mm) Pigtail Leads			Terminal Block		
	Same Side	Rear ②	Opposite Side	Same Side	Pigtail Leads	Terminal Block
Voltage Rating (AC Freq. = 50/60 Hz)	Suffix Number	Suffix Number	Suffix Number	Suffix Number	Catalog Number	Catalog Number
Left-Pole Mounting AC Ratings ②						
12 Vac	U05	U06	U07	U08	UVH4LP02K	UVH4LT02K
24 Vac	U09	U10	U11	U12	UVH4LP03K	UVH4LT03K
48–60 Vac	U13	U14	U15	U16	UVH4LP05K	UVH4LT05K
110–127 Vac	U17	U18	U19	U20	UVH4LP08K	UVH4LT08K
208–240 Vac	U21	U22	U23	U24	UVH4LP11K	UVH4LT11K
380–480 Vac	U25	U26	U27	U28	UVH4LP15K	UVH4LT15K
Right-Pole Mounting AC Ratings ③④						
12 Vac	U37	U38	U39	U40	UVH4RP02K	UVH4RT02K
24 Vac	U41	U42	U43	U44	UVH4RP03K	UVH4RT03K
48–60 Vac	U45	U46	U47	U48	UVH4RP05K	UVH4RT05K
110–127 Vac	U49	U50	U51	U52	UVH4RP08K	UVH4RT08K
208–240 Vac	U53	U54	U55	U56	UVH4RP11K	UVH4RT11K
380–480 Vac	U57	U58	U59	U60	UVH4RP15K	UVH4RT15K
Left-Pole Mounting DC Ratings ②						
12 Vdc	T01	T02	T03	T04	UVH4LP20K	UVH4LT20K
24 Vdc	T05	T06	T07	T08	UVH4LP21K	UVH4LT21K
48–60 Vdc	T09	T10	T11	T12	UVH4LP23K	UVH4LT23K
110–127 Vdc	T13	T14	T15	T16	UVH4LP26K	UVH4LT26K
220–250 Vdc	T17	T18	T19	T20	UVH4LP28K	UVH4LT28K
Right-Pole Mounting DC Ratings ③④						
12 Vdc	T21	T22	T23	T24	UVH4RP20K	UVH4RT20K
24 Vdc	T25	T26	T27	T28	UVH4RP21K	UVH4RT21K
48–60 Vdc	T29	T30	T31	T32	UVH4RP23K	UVH4RT23K
110–127 Vdc	T33	T34	T35	T36	UVH4RP26K	UVH4RT26K
220–250 Vdc	T37	T38	T39	T40	UVH4RP28K	UVH4RT28K

Notes

① Listed with Underwriters Laboratories for field installation under E64983.
② Standard mounting location—leads exit rear of breaker.
③ For use with LT (thermal-magnetic) trip units only.
④ Not for use on right pole of four-pole circuit breaker.

N-Frame and HMCP (N) Undervoltage Release Mechanism

	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads			Terminal Block	Field Mounted Field Installation Kits ①	
	Same Side	Rear ②	Opposite Side	Same Side	Pigtail Leads	Terminal Block
Voltage Rating (AC Freq. = 50/60 Hz)	Suffix Number	Suffix Number	Suffix Number	Suffix Number	Catalog Number	Catalog Number
Left-Pole Mounting AC Ratings ②						
12 Vac	U05	U06	U07	U08	UVH5LP02K	UVH5LT02K
24 Vac	U09	U10	U11	U12	UVH5LP03K	UVH5LT03K
48–60 Vac	U13	U14	U15	U16	UVH5LP05K	UVH5LT05K
110–127 Vac	U17	U18	U19	U20	UVH5LP08K	UVH5LT08K
208–240 Vac	U21	U22	U23	U24	UVH5LP11K	UVH5LT11K
380–480 Vac	U25	U26	U27	U28	UVH5LP29K	UVH5LT29K
Left-Pole Mounting DC Ratings ②						
12 Vdc	T01	T02	T03	T04	UVH5LP20K	UVH5LT20K
24 Vdc	T05	T06	T07	T08	UVH5LP21K	UVH5LT21K
48–60 Vdc	T09	T10	T11	T12	UVH5LP23K	UVH5LT23K
110–127 Vdc	T13	T14	T15	T16	UVH5LP26K	UVH5LT26K
220–250 Vdc	T17	T18	T19	T20	UVH5LP28K	UVH5LT28K

R-Frame Undervoltage Release Mechanism (RH only)

	Factory Mounted Connection Type and Location 18-Inch (457.2 mm) Pigtail Leads	Field Mounted Field Installation Kits ③ Pigtail Leads
Voltage Rating (AC Frequency = 50/60 Hz)	Suffix Number ④	Catalog Number ④
12 Vac	U37	UVH6RP02K
24 Vac	U41	UVH6RP03K
48–60 Vac	U45	UVH6RP05K
110–127 Vac	U49	UVH6RP08K
208–240 Vac	U53	UVH6RP11K
380–500 Vac	U57	UVH6RP29K
12 Vdc	T21	UVH6RP20K
24 Vdc	T25	UVH6RP21K
48–60 Vdc	T29	UVH6RP23K
110–125 Vdc	T33	UVH6RP26K
220–250 Vdc	T37	UVH6RP28K

Notes

① Listed with Underwriters Laboratories for field installation under E64983.
② Standard mounting location—leads exit rear of breaker.
③ Endurance: 500 electrical operations plus 2500 mechanical operations.
④ Pigtail wire size: 18 AWG (0.82 mm^2). Leads are orange and brown.

Accessory Terminal Block (R-Frame)

Accessory Terminal Block (R-Frame)



R-Frame Accessory Terminal Block ①

Factory Installed Suffix Number	Field Mounted Catalog Number
Q01	**TBRDK**

Number of Control Wires for Each Internally Mounted Accessory

Type of Accessory	Number of Contacts per Single Accessory	Required Number of Wires
Auxiliary switch	2a/2b 4a/4b	6 12
Alarm (Signal)/ Lockout switch	1m/1b 2m/2b	6 12
Shunt trip	N/A	2
Low energy shunt	N/A	2
Undervoltage release mechanism	N/A	2

PowerNet and Zone Interlock Kits (OPTIM 550 Only) K-, L- and N-Frames

PowerNet and Zone Interlock Kits



PowerNet Interlock Kit ②

Circuit Breaker	Factory Install Suffix	Catalog Number
K-Frame	**PN**	**ICK550K**
L-Frame	**PN**	**ICK550L**
N-Frame	**PN**	**ICK550N**

Zone Interlock/Ground Kit ②①

Circuit Breaker	Factory Install Suffix	Catalog Number
K-Frame	**ZG**	**ZGK550K**
L-Frame	**ZG**	**ZGK550L**
N-Frame	**ZG**	**ZGK550N**

PowerNet and Zone Interlock/Ground Kit ②①

Circuit Breaker	Factory Install Suffix	Catalog Number
K-Frame	**ZGP**	**ZGPK550K**
L-Frame	**ZGP**	**ZGPK550L**
N-Frame	**ZGP**	**ZGPK550N**

Notes

① One 24-point accessory terminal block provided with circuit breaker when ordered factory installed or shipped from warehouse as separate item when ordered for field installation. See Digitrip RMS master connection diagram (IL 29C714).

② Installation of these kits restrict any other attachments from being installed in the RH pole.

③ Includes a ground fault alarm signal that can drive the ground fault alarm unit (catalog number GFAU).

Technical Data and Specifications

Alarm Switch

F-Frame Electrical Rating Data ①②

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
Multi-Pole Circuit Breakers			
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500
Single-Pole Circuit Breakers			
125/250	50/60 Hz	6 ③	2000
28	DC	3 ③	2000
28	DC	5 ④	2000

J-Frame Electrical Rating Data ⑤⑥

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

K-Frame Electrical Rating Data ⑥⑦

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

L- and M-Frames Electrical Rating Data ⑥⑦

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

N-Frame Electrical Rating Data ⑧

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

R-Frame Electrical Rating Data ⑨⑩

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

Auxiliary Switch

F-Frame Electrical Rating Data ①②

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
125 ③	50/60 Hz	1	2500
600	50/60 Hz	6	2500
125	DC	0.50 ④	2500
250	DC	0.25 ④	2500

J-Frame Electrical Rating Data ①②

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ④	2500
250	DC	0.25 ④	2500

K-Frame Electrical Rating Data ②⑤

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ④	2500
250	DC	0.25 ④	2500

L- and M-Frames Electrical Rating Data ②

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ④	2500
250	DC	0.25 ④	2500

N-Frame Electrical Rating Data ②⑥

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ④	2500
250	DC	0.25 ④	2500

R-Frame Electrical Rating Data ⑦⑧

Maximum Voltage	Frequency	Maximum Current Amperes
600	50/60 Hz	6
125	DC	0.50 ④
250	DC	0.25 ④

Notes

① Endurance: 6000 electrical operations plus 4000 mechanical operations.
② Endurance: 6000 electrical operations plus 2000 mechanical operations.
③ Non-inductive load.
④ Inductive (L/R = 0.026).
⑤ Endurance: 6000 electrical operations plus 2000 mechanical operations.
⑥ Pigtail wire size: 18 AWG (0.82 mm^2).
⑦ Endurance: 5000 electrical operations plus 1000 mechanical operations.
⑧ Endurance: 3000 electrical operations plus 1000 mechanical operations.
⑨ Endurance: 500 electrical operations plus 2500 mechanical operations.
⑩ Pigtail wire size: 18 AWG (0.82 mm^2). Leads are red, black and blue.

Auxiliary Switch and Alarm Switch Combination

F-Frame Electrical Rating Data ①②

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2200
250	DC	0.25 ③	2200

J-Frame Electrical Rating Data ②④

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

K-Frame Electrical Rating Data ②④

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

L- and M-Frames Electrical Rating Data ②⑤

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

N-Frame Electrical Rating Data ②⑥

Maximum Voltage	Frequency	Maximum Current Amperes	Dielectric Withstand Voltage
600	50/60 Hz	6	2500
125	DC	0.50 ③	2500
250	DC	0.25 ③	2500

Notes

① Endurance: 6000 electrical operations plus 4000 mechanical operations.
② Pigtail wire size: 18 AWG (0.82 mm^2).
③ Non-inductive load.
④ Endurance: 4000 electrical operations plus 4000 mechanical operations.
⑤ Endurance: 1000 electrical operations plus 5000 mechanical operations.
⑥ Endurance: 500 electrical operations plus 2000 mechanical operations.

3

Shunt Trip

F-Frame and HMCP Shunt Trip Electrical Rating Data ①②③

Catalog Number	Application Ratings		Electrical Operating Ratings						
	Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	I_p (A)	I_{rms} at 0.25 (A)	I_{rms} at 0.33s (A)	VA	One Minute Dielectric Withstand Voltage (V)
SNT1LP03K or SNT1LT03K	12–24	50/60	9	6.3	6.1		4.3	40	1048
			12		8.5		6	75	
			24		17		12	300	
	12–24	DC	12	9		8		100	
			24			16		400	
SNT1LP08K or SNT1LT08K	48–127	50/60	48	33.6	2.7		1.9	92	1254
			60		3.4		2.4	140	
			110		6.2		4.4	480	
			120		6.8		4.8	570	
			127		7.2		5.1	640	
	48–60	DC	48	33.6		2.1		100	
			60			2.6		160	
SNT1LP12K or SNT1LT12K	208–380	50/60	208	146	1.2		0.25	180	1760
			220		1.3		0.27	200	
			240		1.4		0.29	240	
			380		2.3		0.31	610	
	110–125	DC	110	77		0.5		55	
			120			0.55		66	
			125			0.57		71	
SNT1LP18K or SNT1LT18K	415–600	50/60	400	280	1.1		0.77	310	2200
			415		1.1		0.8	330	
			440		1.2		0.85	380	
			480		1.3		0.93	450	
			525		1.4		1.02	530	
			550		1.5		1.06	590	
			600		1.6		1.16	700	
	220–250	DC	220	154		0.48		110	
			250			0.55		140	

Notes

① Average unlatching time: 6 milliseconds.
② Average circuit breaker contact total opening time: 18 milliseconds.
③ Endurance: 6000 electrical operations plus 4000 mechanical operations.

J-Frame and HMCP (J) Shunt Trip Electrical Rating Data ①②③

	Application Ratings			Electrical Operating Ratings					
Catalog Number	Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	I_p (A)	I_{rms} at 0.25 (A)	I_{rms} at 0.33s (A)	VA	One Minute Dielectric Withstand Voltage (V)
SNT2P04K or SNT2T04K	12–24	50/60	12	9	17.7		12.6	164	1048
			24		38.3		27.4	631	
	12–24	DC	12	9		7.3		87	
			24			16.9		405	
SNT2P06K or SNT2T06K	48–60	50/60	48	36	24.4		17.3	830	1120
			60		30.1		21.3	1280	
	48–60	DC	48	36		14.8		710	
			60			18.4		1105	
SNT2P11K or SNT2T11K	110–240	50/60	110	60	0.9		0.6	66	1480
			120		1		0.7	84	
			127		1.1		0.8	102	
			208		2.4		1.7	354	
			220		2.6		1.8	396	
			240		2.6		1.8	432	
	110–125	DC	110	60		1		112	
			120			1.1		138	
			125			1.2		150	
SNT2P14K or SNT2T14K	380–440	50/60	380	285	0.34		0.25	127	1880
			400		0.38		0.27	150	
			415		0.4		0.29	163	
			440		0.44		0.31	188	
	220–250	DC	220	165		0.19		40	
			250			0.22		58	
SNT2P18K or SNT2T18K	480–600	50/60	480	360	0.13		0.07	34	2200
			525		0.13		0.08	42	
			550		0.13		0.09	50	
			600		0.14		0.1	60	

Notes

① Average unlatching time: 6 milliseconds.
② Average circuit breaker contact total opening time: 18 milliseconds.
③ Endurance: 6000 electrical operations plus 2000 mechanical operations.

K-Frame and HMCP (K) Shunt Trip Electrical Rating Data ①②③

	Application Ratings			Electrical Operating Ratings					
Catalog Number	Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	I_p (A)	I_{rms} at 0.25 (A)	I_{rms} at 0.33s (A)	VA	One Minute Dielectric Withstand Voltage (V)
SNT3P04K or SNT3T04K	12–24	50/60	12	9	17.7		12.6	164	1048
			24		38.3		27.4	631	
	12–24	DC	12	9		7.3		87	
			24			16.9		405	
SNT3P06K or SNT3T06K	48–60	50/60	48	36	24.4		17.3	830	1120
			60		30.1		21.3	1280	
	48–60	DC	48	36		14.8		710	
			60			18.4		1105	
SNT3P11K or SNT3T11K	110–240	50/60	110	60	1.3		0.9	100	1480
			120		1.4		1	120	
			127		1.5		1.1	140	
			208		2.8		2	420	
			220		3		2.1	470	
			240		3.2		2.3	550	
	110–125	DC	110	82		1		110	
			120			1.1		130	
			125			1.2		140	
SNT3P14K or SNT3T14K	380–440	50/60	380	285	0.37		0.25	95	1880
			400		0.39		0.27	108	
			415		0.42		0.29	120	
			440		0.44		0.31	136	
	220–250	DC	220	165		0.19		41	
			250			0.22		54	
SNT3P18K or SNT3T18K	480–600	50/60	480	360	0.11		0.08	40	2200
			525		0.13		0.09	50	
			550		0.13		0.09	50	
			600		0.16		0.12	70	

Notes

① Approximate unlatching time: 6 milliseconds.
② Approximate total circuit breaker contact opening time: 8 milliseconds.
③ Endurance: 5000 electrical operations plus 1000 mechanical operations.

L-Frame and HMCP (L) and M-Frame Shunt Trip Electrical Rating Data ①②③

	Application Ratings		Electrical Operating Ratings						
Catalog Number	Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	I_p (A)	I_{rms} at 0.25 (A)	I_{rms} at 0.33s (A)	VA	One Minute Dielectric Withstand Voltage (V)
SNT4P03K or SNT4T03K	12–24	50/60	9	6.3	7.2		5.1	46	1048
			12		11.6		8.2	98	
			24		28.6		20.2	485	
	12–24	DC	9	6.3		8.5		75	
			12			8.6		103	
			24			17.4		418	
SNT4P05K SNT4T05K	48–60	50/60	48	34	0.72		0.51	82	1120
			60		1.2		0.84	126	
SNT4P11K or SNT4T11K	110–240	50/60	110	77	0.89		0.63	69	1480
			120		1.03		0.73	88	
			127		1.1		0.8	102	
			208		2.3		1.6	333	
			220		2.4		1.7	374	
			240		2.6		1.8	432	
SNT4P14K or SNT4T14K	380–440	50/60	380	266	0.3		0.21	80	1880
			400		0.34		0.24	96	
			415		0.35		0.25	104	
			440		0.38		0.27	119	
	220–250	DC	220	154		0.34		75	
			250			0.34		85	
SNT4P18K or SNT4T18K	480–600	50/60	480	336	0.07		0.05	24	2200
			525		0.08		0.06	32	
			550		0.09		0.07	39	
			600		0.11		0.08	48	
SNT4P23K SNT4T23K	48–60	DC	48	34		0.76		36	1120
			60			0.95		57	
SNT4P26K or SNT4T26K	110–125	DC	110	77		0.42		46	1250
			120			0.43		52	
			125			0.44		55	

Notes

① Approximate unlatching time: 6 milliseconds.
② Approximate total circuit breaker contact opening time: 18 milliseconds.
③ Endurance: 5000 electrical operations plus 1000 mechanical operations.

N-Frame and HMCP (N) Shunt Trip Electrical Rating Data ①②③

	Application Ratings			Electrical Operating Ratings					
Catalog Number	Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	I_p (A)	I_{rms} at 0.25 (A)	I_{rms} at 0.33s (A)	VA	One Minute Dielectric Withstand Voltage (V)
SNT5LP03K or SNT5LT03K	9–24	50/60	9	6.3	7.2		5.1	46	1048
			12		11.6		8.2	98	
			24		28		19.8	475	
	9–24	DC	9	7.2		8.8		79	
			12			12.1		145	
			24			25.4		610	
SNT5LP05K SNT5LT05K	48–60	50/60	48	34	2.4		1.7	82	1120
			60		3		2.1	126	
SNT5LP11K or SNT5LT11K	110–240	50/60	110	77	0.86		0.61	67	1480
			120		0.98		0.69	83	
			127		1.1		0.75	95	
			208		2.3		1.6	333	
			220		2.4		1.7	374	
			240		2.6		1.8	432	
SNT5LP14K or SNT5LT14K	380–440	50/60	380	266	0.28		0.2	76	1880
			400		0.31		0.22	88	
			415		0.33		0.23	95	
			440		0.35		0.25	110	
	220–250	DC	220	154		0.21		46	
			250			0.22		55	
SNT5LP18K or SNT5LT18K	480–600	50/60	480	336	0.06		0.04	19	2200
			525		0.08		0.06	32	
			550		0.08		0.06	33	
			600		0.1		0.07	42	
SNT5LP23K SNT5LT23K	48–60	DC	48	34		1.4		67	1120
			60			1.7		102	
SNT5LP26K or SNT5LT26K	110–125	DC	110	77		1.1		121	1250
			120			1.2		144	
			125			1.2		150	

Notes

① Approximate unlatching time: 6 milliseconds.
② Approximate total circuit breaker contact opening time: 18 milliseconds.
③ Endurance: 3000 electrical operations plus 1000 mechanical operations.

R-Frame Shunt Trip Electrical Rating Data ①②③④⑤⑥

	Application Ratings			Electrical Operating Ratings					
Catalog Number	Voltage (V)	Frequency (Hz)	Supply Voltage (V)	Minimum Operating Voltage (V)	I_p (A)	I_{rms} at 0.25 (A)	I_{rms} at 0.33s (A)	VA	One Minute Dielectric Withstand Voltage (V)
SNT6P03K	24	50/60	24	16.8	36.1		25.5	612	1050
	24	DC	24	16.8		16.5		396	
SNT6P05K	48–60	50/60	48	34	11.9		8.4	403	1120
			60		15.7		11.1	666	
SNT6P11K	110–240	50/60	110	60	5.09		3.6	396	1480
			120		5.66		4	480	
			127		5.94		4.2	533	
			208		10.2		7.2	1498	
			220		10.5		7.4	1628	
			240		11.2		7.9	1896	
SNT6P14K	380–440	50/60	380	266	5.94		4.2	1596	2200
			400		6.23		4.4	1760	
			415		6.51		4.6	1909	
			440		6.93		4.9	2156	
	220–250	DC	220	154		1.7		374	1500
			250			1.9		475	
SNT6P18K	480–600	50/60	480	336	0.68		0.48	230	2200
			525		0.78		0.55	289	
			550		0.79		0.56	308	
			600		0.91		0.64	384	
SNT6P23K	48–60	DC	48	34		7.1		341	1120
			60			8.8		258	
SNT6P26K	110–125	DC	110	77		2.4		264	1250
			120			2.6		312	
			125			2.8		350	

Notes

① Approximate unlatching time of 6 milliseconds.
② Average circuit breaker contact total opening time approximately 62 milliseconds, at rated voltage.
③ Endurance: 500 electrical operations and 2500 mechanical operations.
④ Shunt trip can be operated up to a maximum of six times per minute.
⑤ Maximum operating voltage—110% of maximum voltage range rating.
⑥ Pigtail wire size: 18 AWG (0.82 mm^2). Leads are yellow and white.

3

Undervoltage Release Mechanism

F-Frame Electrical Rating Data ①

50/60 Hz					DC				
	Dropout Voltage		Pickup Voltage			Dropout Voltage		Pickup Voltage	
Supply Voltage	Minimum	Maximum	Maximum	VA	Supply Voltage	Minimum	Maximum	Maximum	VA
12	4.2	6.3	7.6	1.3	12	4.2	8.4	10.2	2.8
12	4.2	6.3	7.6	2.5	12	4.2	8.4	10.2	2.8
24	8.4	16.8	20.4	1.4	24	8.4	16.8	20.4	1.6
48	21.0	33.6	40.8	1.2	48	21.0	33.6	40.8	1.3
60	21.0	33.6	40.8	1.9	60	21.0	33.6	40.8	2.0
110	44.5	77.0	93.5	1.3	110	44.5	77.0	93.5	1.5
120	44.5	77.0	93.5	1.5	120	44.5	77.0	93.5	1.7
127	44.5	77.0	93.5	1.7	125	44.5	77.0	93.5	1.9
208	84.0	145.6	176.8	2.2	220	87.5	154.0	187.0	2.6
220	84.0	145.6	176.8	2.4	250	87.5	154.0	187.0	3.4
240	84.0	145.6	176.8	2.9	—	—	—	—	—
380	168.0	266.0	323.0	2.9	—	—	—	—	—
415	168.0	266.0	323.0	3.5	—	—	—	—	—
440	168.0	266.0	323.0	3.9	—	—	—	—	—
480	168.0	266.0	323.0	4.6	—	—	—	—	—
525	210.0	367.0	446.0	4.3	—	—	—	—	—
550	210.0	367.0	446.0	4.8	—	—	—	—	—
600	210.0	367.0	446.0	5.8	—	—	—	—	—

J-Frame Electrical Rating Data ②③

50/60 Hz					DC				
	Dropout Voltage		Pickup Voltage			Dropout Voltage		Pickup Voltage	
Supply Voltage	Minimum	Maximum	Maximum	VA	Supply Voltage	Minimum	Maximum	Maximum	VA
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	250	87.5	154.0	187.0	4.0
240	84.0	145.6	176.8	3.8	—	—	—	—	—
380	168.0	266.0	323.0	3.4	—	—	—	—	—
415	168.0	266.0	323.0	4.0	—	—	—	—	—
440	168.0	266.0	323.0	4.6	—	—	—	—	—
480	168.0	266.0	323.0	5.4	—	—	—	—	—

Notes

① Endurance: 6000 electrical operations plus 4000 mechanical operations.
② Endurance: 6000 electrical operations plus 2000 mechanical operations.
③ For electrical rating data for manual, automatic and electrical reset undervoltage release mechanisms, refer to Eaton.

K-Frame Electrical Rating Data ①

50/60 Hz					DC				
	Dropout Voltage		Pickup Voltage			Dropout Voltage		Pickup Voltage	
Supply Voltage	Minimum	Maximum	Maximum	VA	Supply Voltage	Minimum	Maximum	Maximum	VA
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	250	87.5	154.0	187.0	4.0
240	84.0	145.6	176.8	3.8	—	—	—	—	—
380	168.0	266.0	323.0	3.4	—	—	—	—	—
415	168.0	266.0	323.0	4.0	—	—	—	—	—
440	168.0	266.0	323.0	4.6	—	—	—	—	—
480	168.0	266.0	323.0	5.4	—	—	—	—	—

L- and M-Frames Electrical Rating Data ①

50/60 Hz					DC				
	Dropout Voltage		Pickup Voltage			Dropout Voltage		Pickup Voltage	
Supply Voltage	Minimum	Maximum	Maximum	VA	Supply Voltage	Minimum	Maximum	Maximum	VA
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	250	87.5	154.0	187.0	4.0
240	84.0	145.6	176.8	3.8	—	—	—	—	—
380	168.0	266.0	323.0	3.4	—	—	—	—	—
415	168.0	266.0	323.0	4.0	—	—	—	—	—
440	168.0	266.0	323.0	4.6	—	—	—	—	—
480	168.0	266.0	323.0	5.4	—	—	—	—	—

Note

① Endurance: 5000 electrical operations plus 1000 mechanical operations.

N-Frame Electrical Rating Data ①

50/60 Hz					DC				
	Dropout Voltage		Pickup Voltage			Dropout Voltage		Pickup Voltage	
Supply Voltage	Minimum	Maximum	Maximum	VA	Supply Voltage	Minimum	Maximum	Maximum	VA
12	4.2	8.4	10.2	1.9	12	4.2	8.4	10.2	1.6
24	8.4	16.8	20.4	3.9	24	8.4	16.8	20.4	3.1
48	21.0	33.6	40.8	2.5	48	21.0	33.6	40.8	2.0
60	21.0	33.6	40.8	3.8	60	21.0	33.6	40.8	3.1
110	44.5	77.0	93.5	1.8	110	44.5	77.0	93.5	1.6
120	44.5	77.0	93.5	2.1	120	44.5	77.0	93.5	1.9
127	44.5	77.0	93.5	2.4	125	44.5	77.0	93.5	2.2
208	84.0	145.6	176.8	2.7	220	87.5	154.0	187.0	3.1
220	84.0	145.6	176.8	3.1	220	87.5	154.0	187.0	—
240	84.0	145.6	176.8	3.8	250	—	—	—	4.0
380	175.0	266.0	323.0	3.4	—	—	—	—	—
415	175.0	266.0	323.0	4.0	—	—	—	—	—
480	175.0	266.0	323.0	4.6	—	—	—	—	—
500	175.0	266.0	323.0	5.4	—	—	—	—	—

Note

① Endurance: 3000 electrical operations plus 1000 mechanical operations.

R-Frame AC Undervoltage Release Mechanism (Handle Reset) Ratings ①②

Catalog Suffix	Application Ratings Voltage (V)	Electrical Operating Ratings Supply Voltage (V)	Dropout Voltage (V) Minimum	Dropout Voltage (V) Maximum	Pickup Voltage (V) Max.	Approximate Operating Time (ms) VA	Minimum UVR Response ③	Initiation Circuit Breaker Contact Separation ④	Maximum Circuit Breaker Contact Opening	Dielectric Withstand Voltage (V) ⑤
02/02K	12	12	4.2	8.4	10.2	2.3	5	46	77	1024
03/03K	24	24	8.4	16.8	20.4	3.1	5	46	77	1048
05/05K	48–60	48	21.0	33.5	40.8	3.4	5	46	77	1120
		60	21.0	33.5	40.8	6.0	5	46	77	1120
08/08K	110–127	110	44.5	77.0	93.5	3.3	5	46	77	1254
		120	44.5	77.0	93.5	3.6	5	46	77	1254
		127	44.5	77.0	93.5	3.8	5	46	77	1254
11/11K	208–240	208	84.0	145.6	176.8	4.2	5	46	77	1480
		220	84.0	145.6	176.8	6.6	5	46	77	1480
		240	84.0	145.6	176.8	7.2	5	46	77	1480
29/29K	380–500	380	168.0	266.0	323.0	3.8	5	46	77	2000
		415	168.0	266.0	323.0	8.3	5	46	77	2000
		440	168.0	266.0	323.0	8.8	5	46	77	2000
		480	168.0	266.0	323.0	9.6	5	46	77	2000
		500	168.0	266.0	323.0	10.0	5	46	77	2000

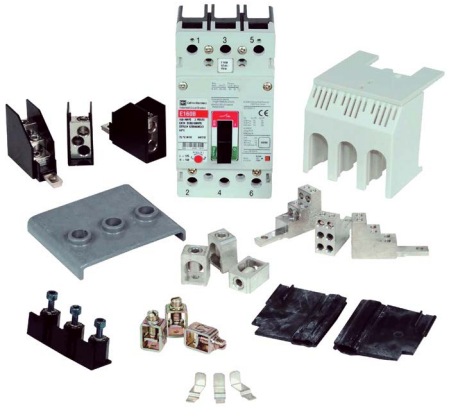
R-Frame DC Undervoltage Release Mechanism (Handle Reset) Ratings ①②

Catalog Suffix	Application Ratings Voltage (V)	Electrical Operating Ratings Supply Voltage (V)	Dropout Voltage (V) Minimum	Dropout Voltage (V) Maximum	Pickup Voltage (V) Max.	Approximate Operating Time (ms) VA	Minimum UVR Response ③	Initiation Circuit Breaker Contact Separation ④	Maximum Circuit Breaker Contact Opening	Dielectric Withstand Voltage (V) ⑤
20/20K	12	12	4.2	8.4	10.2	3.4	5	46	77	1024
21/21K	24	24	8.4	16.8	20.4	4.3	5	46	77	1048
23/23K	48–60	48	21.0	33.5	40.8	4.8	5	46	77	1120
		60	21.0	33.5	40.8	7.2	5	46	77	1120
26/26K	110–127	110	43.8	77.0	93.5	3.3	5	46	77	1250
		120	43.8	77.0	93.5	3.6	5	46	77	1250
		125	43.8	77.0	93.5	3.8	5	46	77	1250
28/28K	220–250	220	87.5	154.0	187.0	6.6	5	46	77	1500
		250	87.5	154.0	187.0	7.5	5	46	77	1500

Notes

① Endurance: 500 electrical operations plus 2500 mechanical operations.
② Pigtail wire size: 18 AWG (0.82 mm^2). Leads are orange and brown.
③ UVR will override a momentary voltage dip up to the response time shown.
④ Unlatching occurs 1 millisecond before circuit breaker contacts begin to separate.
⑤ For 1 minute.

Series C External Accessories



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External Accessories

Product Overview

End Cap Kit

The end cap kit slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The end cap kit is available with English and metric thread sizes. (Field installation only.) Listed per UL File E7819.

Keeper Nut

The keeper nut slides onto the line or load conductor of the circuit breaker and acts as a threaded adapter for the conductor to accept a ring terminal or other bolt-on connector. The keeper nut is available with English and metric thread sizes. Screws and washers are supplied by customer. (Field installation only.) Listed per UL File E7819.

L-, M-, N-Frames

Not required. Terminals are threaded.

J-Frame Plug Nut

The plug nut is used in applications where screw-connected ring-type terminals are preferred to connect cables to circuit breaker conductors. The plug nut is press-fit into the opening in the circuit breaker terminal conductor. Screws and washers are supplied by customer.

Terminal Adapter

Control Wire Terminal Kit

The control wire terminal kit provides a means to tap off control power from a main disconnect, using the provided male end of a quick disconnect.

For use with steel or stainless steel terminals only.

Note: Terminal Kits contain one terminal for each pole and one terminal cover.

Multiwire Connectors

Eaton's field-installed multiwire connectors for the load side (OFF) end terminals are used to distribute the load from the circuit breaker to multiple devices without the use of separate distribution terminal blocks.

Multiwire lug kits include mounting hardware, insulators and tin-plated aluminum connectors to replace three mechanical load lugs. UL listed as used on the load side (OFF) end.

Terminal Shields

Terminal shields provide protection against accidental contact with live line side terminations. Terminal shields are fabricated from high dielectric insulating material and fasten over the front terminal access openings. Small openings in the shields provide limited access to the terminals for tightening connectors. (Field installation only.)

Rear Fed Terminals.

Rear fed terminals allow the cable to connect to the breaker from the back instead of the top. Terminal shields or interphase barriers are included with each rear fed terminal kit (depending on frame size). When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.

Terminal End Covers

The terminal end covers are designed for use in motor control center applications where, because of confined spaces, line side conductors are normally custom fitted. The molded end covers are made of high dielectric glass-polyester and slide over the line ends of the circuit breaker. Close fitting conductor openings are molded into the end covers. The end cover and circuit breaker case fit together to form terminal compartments that isolate discharged ionizing gases during circuit breaker tripping. Terminal end covers are available with two conductor opening diameters, 0.25-inch (6.4 mm) and 0.41-inch (10.4 mm), and are listed per UL File E7819. (Field installation only.)

Interphase Barriers

The interphase barriers provide additional electrical clearance between circuit breaker poles for special termination applications. The barriers are high dielectric insulating plates that are installed in the molded slots between the terminals. (Field installation only.) Two per package.

Base Mounting Plate

Suitable for mounting six single-pole circuit breakers.

DIN Rail Adapter

For use with standard 35 mm DIN rail such as, 35 x 7.5 or 35 x 15 mm per DIN EN50022.

Adapter mounting screws included are for use with two- and three-pole circuit breakers. Adapters for single-pole circuit breakers clip into the base molding.

Key Operated Attachment

Lock Dog (Non-Padlockable)

Non-Padlockable Handle Block

The non-padlockable handle block secures the circuit breaker handle in either the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle block holds the circuit breaker handle in the ON position.) The device is positioned over the circuit breaker handle and secured by a setscrew to deter accidental operation of the circuit breaker handle. Listed per UL File E7819. (Field installation only.)

Padlockable Handle

Padlockable Handle Lock

The device is positioned in the cover opening to prevent handle movement. Will accommodate one 5/16-inch (8 mm) padlock.

Snap-on Padlockable Handle Lock Hasp

The snap-on padlockable handle lock allows the handle to be locked in the OFF or ON position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) This device was designed for use on the single-pole circuit breaker, but may be used on one-, two-, three- and four-pole styles. The handle lock snaps onto the escutcheon area of the handle with an optional retaining screw for added secureness. The handle lock will accommodate one padlock with a 1/4-inch (6.4 mm) shackle. Listed per UL File E7819. (Field installation only.)

Padlockable Handle Lock Hasp

The padlockable handle lock hasp allows the handle to be locked in the ON or OFF position. (Trip-free operation allows the circuit breaker to trip when the handle lock holds the circuit breaker handle in the ON position.) The hasp mounts on the circuit breaker cover within the trimline. The cover is predrilled on both sides of the operating handle so that the hasp can be mounted on either side of the handle. The hasp will accommodate up to three padlocks with 1/4-inch (6.4 mm) shackles, one per circuit breaker. Listed per UL File E7819. (Field installation only.)

Cylinder Lock

The cylinder lock internally blocks the trip bar in the tripped position to prevent the circuit breaker from being switched to ON. The cylinder lock is factory installed in the left pole only of the circuit breaker cover. Other internally mounted accessories cannot be installed in the same pole as the cylinder lock. (Factory installation only.)

Key Interlock Kit (Lock Not Included)

The key interlock is used to externally lock the circuit breaker handle in the OFF position. When the key interlock is locked, an extended deadbolt blocks movement of the circuit breaker handle. Uniquely coded keys are removable only with the deadbolt extended. Each coded key controls a group of circuit breakers for a given specific customer installation.

The key interlock assembly is Underwriters Laboratories listed for field installation under UL File E7819 and consists of a mounting kit and a purchaser supplied deadbolt lock. The mounting kit comprises a mounting plate, which is secured to the circuit breaker cover in either the left- or right-pole position, key interlock mounting screws, and a wire seal. Specific mounting kits are required for individual key interlock types.

Sliding Bar Interlock

The sliding bar interlock provides mechanical interlocking between two adjacent three-pole circuit breakers. It is installed on the enclosure cover between the circuit breakers. When the sliding bar interlock handle is moved from one side to the other, a bar extends to alternately block movement of the circuit breaker handles and prevents both circuit breakers from being switched to ON at the same time. Sliding bar interlocks are not UL listed. (Field installation only.)

Walking Beam Interlock

The walking beam Interlock provides mechanical interlocking between two adjacent circuit breakers of the same pole configuration. The walking beam interlock mounts on a bracket behind and between the circuit breakers. A plunger on each end of the beam is inserted through an access hole in the back plate and base of each circuit breaker. The walking beam interlock prevents both circuit breakers from being switched ON at the same time. If a walking beam interlock is installed, the wiring troughs in the back of the circuit breaker case are blocked by the plungers and cannot be used for cross wiring. Factory modified circuit breakers are required for this application. UL File E38116.

Electrical Operator

The electrical (solenoid) operator is a single solenoid mechanism that enables local and remote circuit breaker ON, OFF, and reset switching. The electrical operator is mounted on the circuit breaker cover within the trimline of the circuit breaker. The electrical operator uses a unique bi-stable latch that allows the device to operate using one solenoid. The accessory provides high-speed switching with a maximum operating time of 5 cycles (80 mS), making it suitable for generator synchronizing applications.

Means are provided for remote electrical operation and for local manual operation. A special slide includes provisions for padlocking the circuit breaker handle in the OFF position. The slide will accept three padlock shackles with a maximum diameter of 1/4-inch (6.4 mm) each. An interlock electrically disconnects the solenoid when the electrical operator cover is removed. The rating data tables provide electrical rating data for the electrical (solenoid) operator.

The electrical (motor) operator allows the circuit's breaker to be opened, closed or reset remotely. It also has a lock-off capability and provisions for manual operation.

The electrical (motor) operator contains a reversible motor connected to a ball screw. The ball screw drives the circuit breaker handle. Limit switches and relays are used to control the motor.

Plug-In Adapters

Plug-in adapters simplify installation and front removal of circuit breakers. Individual line and load plug-in adapters are available for rear connection applications on two-, three-, and four-pole circuit breakers. Common mounting plates for line- and load-end adapters are available.

One plug-in adapter kit is required for line-end and one for load-end.

Plug-in adapters are UL approved unless otherwise noted.

Rear Connecting Studs

Rear connecting studs are available in several sizes to accommodate specific fixed-mounted circuit breaker applications.

Each rear connecting stud assembly consists of one stud and one tube. To maintain proper clearances between poles, select alternate long and short stud assemblies for circuit breakers with more than one pole. One assembly is required for line-end and one for load-end of each pole. Tubes must be ordered separately. Connecting studs are available only with English thread sizes.

Note: Not UL listed.

Panelboard Connecting Straps

Panelboard connecting straps are used to connect the circuit breaker terminals to the panelboard bus. The panelboard connecting straps are available with various ratings for outside and center poles. (Field installation only.)

Panelboard connecting straps are available to meet the needs of most standard panelboard applications. Style numbers for mounting brackets for CDP panelboard installations are also included.

Note: Not UL listed. Refer to panelboard manufacturer for compatibility.

Type LFD Current Limiter

The LFD current limiter is an accessory that bolts to the load end of a standard FDB or FD thermal-magnetic circuit breaker, providing 200,000 A interrupting capacity at up to 600 Vac. LFD current limiters for thermal-magnetic and electronic circuit breakers are listed with Underwriters Laboratories under File E47239.

Ground Fault Alarm Unit

The ground fault alarm unit is a remotely mounted device with a combination indicating light/test button that will light when the breaker trips or alarms on ground fault. The ground fault alarm unit requires a separate 120 Vac power source to power the light and the internal relay, which has 1NO and 1NC contacts for remote indication. The ground fault alarm unit can be panel mounted for ordering with an optional face mounting bracket. For use on Digitrip 310 only, K- through N-Frame.

IQ Energy Sentinel

The IQ Energy Sentinel is a highly accurate, microprocessor-based, breaker-mounted device designed to monitor power and energy readings. It represents an alternative to watt meters, watt-hour meters, and watt demand meters. Key advantages include savings in space, lower installation costs, and remote monitoring capability.

The IQ Energy Sentinel mounts on the load side of a Series C F-Frame (150 ampere) circuit breaker. It can be applied on three-phase, four-wire systems, or single-phase, three-wire systems with voltage connected through Phases A and C.

For more information, see Descriptive Bulletin 8178.

Potential Transformer Module

The potential transformer module is required for the Digitrip OPTIM 1050 to provide a voltage input to allow the trip unit to monitor power and energy as well as power factor. The potential transformer module is a 6 VA transformer with a primary voltage input of up to 600 volt line to line. Three 0.1 ampere fuses are provided on the primary of the transformer and can be used for isolation purposes during dielectric testing. The device is normally panel mounted and can feed up to 16 OPTIM trip units.

Solid-State (Electronic) Portable Test Kit

The solid-state (electronic) portable test kit provides verification of performance of all ratings of Digitrip 310 electronic trip units installed in circuit breakers while in service under varying load and/or phase imbalance. The test kit operates on 120-volt, 50/60 Hz power; it includes complete instructions and test times for testing long time, short time/instantaneous operation and optional ground fault operation of the circuit breaker.

Breaker Interface Module (BIM)

The Breaker Interface Module (BIM) is a panel mounted user interface device that is mounted on the front of an electrical assembly or at a remote location. The BIM is used to access, configure, test and display information for OPTIM trip units and other devices. The BIM consists of four display windows, eight function buttons, 18 LEDs, and a graphical time/current curve to provide breaker status, operational information, protection status and energy monitoring. A 24 Vdc power supply is required to provide power to the BIM. This is supplied by the switchboard builder to Eaton's specifications. The BIM is a member of Eaton's PowerNet family of communicating devices that connects OPTIM trip units, Digitrip RMS 810/910 trip units and energy sentinels as a subnetwork system. The BIM can also be connected to a main network via a PONI module to PowerNet software.

Digitrip OPTIMizer

The Digitrip OPTIMizer is a hand-held programmer that is used to access, configure, test and display information from OPTIM trip units. The OPTIMizer plugs into the front of an OPTIM trip unit via an eight-pin telephone jack and is powered by a nine-volt battery or the auxiliary power module. One highlighted feature is the "Copy" and "Download" commands.

Setting up multiple OPTIM trips can be finished in minutes and with no errors. An Auxiliary Power Module connection provides a trip test when control power is not present at the breaker. The OPTIMizer is supplied as a standard package to include the programmer, the eight-pin connection cord, battery and carrying case. The auxiliary power module is optional.

Auxiliary Power Module

The auxiliary power module is a power supply requiring 120 Vac input at 50 or 60 Hz that provides a 32 Vdc output. The auxiliary power module provides control power for testing an OPTIM trip unit when other means of control power is not available or for continuous OPTIMizer operation versus temporary with a battery. The auxiliary power module connects into the top of the Digitrip OPTIMizer via a keyed receptacle. The main application for the auxiliary power module would be for the testing of a standalone non-communicating OPTIM breaker that ordinarily would not have control power.

Cause of Trip Display/Remote Mount Cause of Trip Display

The Cause of Trip Display can be field-installed on any Digitrip RMS 310+ trip unit. The device provides breaker information through an LCD screen, such as cause of trip, phrase current, ground current and low loads. The display is ideal for troubleshooting common trips such as ground fault, long delay, and instantaneous/short delay. The DIGIVIEW version will provide a local display at the breaker without additional wiring by connecting directly onto the trip unit. The DIGIVIEWR06 version has a 6 foot cable that allows users to mount the display on the outside of an enclosure door and connect to the trip unit that is contained inside the enclosure.

Cause of Trip LED Module

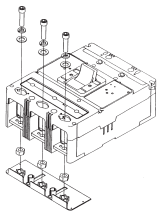
The Cause of Trip LED Module can be field-installed on any Digitrip RMS 310+ trip unit. The device provides a cause of trip indication via LED. The Cause of Trip LED Module connects directly onto the trip unit. When the breaker trips, the module indicates the cause of trip (long delay, short delay, instantaneous and ground) via LED indication. The module is reset after the breaker is reset.

Note: The OPTIMizer can work off of 32 Vdc control power, although 24 Vdc is the standard on OPTIM breakers.

Product Selection

Termination Hardware—End Cap Kit

End Cap Kit

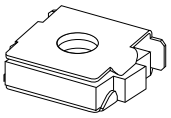


End Cap Kit

Thread Type	Thread Size	Catalog Number
Two-Pole F-Frame (225 A)		
Imperial	10–32	**KPEK12**
Metric	M–5	**KPEKM12**
Three-Pole F-Frame (225 A)		
Imperial	10–32	**KPEK1**
Metric	M–5	**KPEKM1**
Four-Pole F-Frame (225 A)		
Imperial	10–32	**KPEK14**
Metric	M–5	**KPEKM14**
Three-Pole J-Frame		
Imperial	0.312–18	**KPEK2**
Metric	M–8	**KPEKM2**
Four-Pole J-Frame		
Imperial	0.312–18	**KPEK24**
Metric	M–8	**KPEKM24**
Three-Pole K-Frame		
Imperial	0.312–18	**KPEK3**
Metric	M–8	**KPEKM3**
Four-Pole K-Frame		
Imperial	0.312–18	**KPEK34**
Metric	M–8	**KPEKM34**
Three-Pole L-Frame		
Imperial	0.312-18	**KPEK4**
Metric	M-8	**KPEKM4**
Four-Pole L-Frame		
Imperial	0.312–18	**KPEK44**
Metric	M–8	**KPEKM44**

Termination Hardware—Keeper Nut

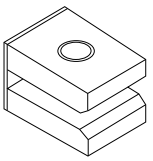
F-Frame Keeper Nut



F-Frame Keeper Nut

Thread Type	Thread Size	Catalog Number Package of 12 (Priced Individually)
Imperial	10–32	**KPR1A**
Metric	M–5	**KPR1AM**

K-Frame Keeper Nut



K-Frame Keeper Nut

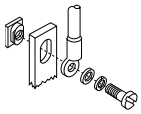
Thread Type	Thread Size	Line/Load End	Catalog Number Package of 3
Imperial	0.375–16	Line	**KPR3A**
		Load	**KPR3B**
Metric	M–8	Line	**KPR3AM**
		Load	**KPR3BM**

Note

L-, M-, N-Frames not required. Terminals are threaded.

Termination Hardware

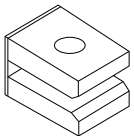
J-Frame Plug Nut



J-Frame Plug Nut

Thread Type	Thread Size	Catalog Number Package of 6
Imperial	0.250–20	**PLN2**
Metric	M–6	**PLN2M**

K-Frame Terminal Adapter



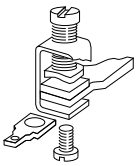
K-Frame Terminal Adapter ①

Line/Load End	Catalog Number
Line and load	**TAD3**

F-Frame Ordering Information

Terminals must be ordered separately. Priced individually.

F-Frame Kit



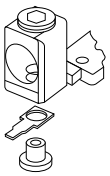
F-Frame Control Wire Terminal Kit ②

Description	Maximum Amperes	Compatible Terminals	Catalog Number
Package of 12 control wire terminal tangs.	150	3T100FB, 3T150FB	**FCWTK**
	225	3TA225FD, 3TA225FDM	**FCWTK225**

J- and K-Frame Ordering Information

Terminals must be ordered separately. Priced individually.

J- and K-Frame Kit



J- and K-Frame Control Wire Terminal Kit

Description	Catalog Number
Package of 12 control wire terminal tangs.	**KCWTK**

L-Frame Control Wire Terminal Kit

AWG Wire Range/Number Conductors	Metric Wire Range mm²	Catalog Number
Al/Cu 3/0–350 kcmil (2)	95–150	**TA602LDCW** ③
Cu 250–350 kcmil (2)	120–250	**T602LDCW** ③
Al/Cu 400–500 kcmil (2)	185–240	**2TA603LDKCW** ④⑤
Al/Cu 400–500 kcmil (2)	185–240	**3TA603LDKCW** ④⑥
Al/Cu 400–500 kcmil (2)	185–240	**4TA603LDKCW** ④⑦

Notes

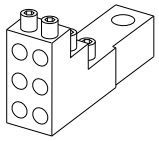
① K-Frame terminal adapter for use in replacing LB/DA breakers.
② Not for use with T250KB terminals.
③ Individually packed.
④ Terminal kits contain one terminal for each pole and one terminal cover.
⑤ Two-pole kit.
⑥ Three-pole kit.
⑦ Four-pole kit.

Termination Hardware

G-Frame Control Wire Terminal

Description	Catalog Number	Catalog Number
Control wire terminal (kit of 12)	**5652B38G01**	**GCWTK**

Multiwire Connectors



Multiwire Connectors Ordering Information (Package of 3)

Maximum Amperes	Wires per Terminal	Wire Size Range AWG Cu	Kit Catalog Number ①
G-Frame ②			
100	3	14–2	**3TA100G3K**
	6	14–6	**3TA100G6K**
F-Frame			
225	3	14–2	**3TA150F3K**
	6	14–6	**3TA150F6K**
J-Frame			
250	3	14–2	**3TA250J3K**
	6	14–6	**3TA250J6K**
K-Frame			
400	3	14–2/0	**3TA400K3K**
	6	14–3	**3TA400K6K**

Rear Fed Terminals

Frame	Maximum Amperes	Wire Size Range AWG Cu	Catalog Number ①
FD	150	14–4/0	**TA150FDRF**
	150	14–4/0	**3TA150FDRF**
	225	6–300 kcmil	**TA225FDRF**
	225	6–300 kcmil	**3TA225FDRF**
KD	400	250–500 kcmil	**TA350KRF**
	400	250–500 kcmil	**3TA350KRF**
MDL	800	3/0 MAX (3)	**TA800MDLRF**
	800	3/0 MAX (3)	**3TA800MDLRF**

Base Mounting Hardware

Ordering Information

Hardware for surface mounting of circuit breakers is supplied only on request. Hardware consists of mounting screws and lockwashers. Order hardware for circuit breaker pole configurations as required.

Mounting Hardware

Screw Length in Inches (mm)	Catalog Number
G-Frame	
0.138–32 x 2.63 (3.5 x 66.7 mm) Std.	**624B375G23**
0.138–32 x 3.00 (3.5 x 76.2 mm)	**8703C80G05**

Notes

① When catalog number starts with a 3, it indicates a kit with three terminals in each kit. Catalog number beginning with a TA indicates one terminal.

② GD breakers require special tapping for multiwire lugs, as described in the IL or use with standard aluminum collars.

Imperial Thread Mounting Hardware

Number of Poles	Description	Type of Mounting	Catalog Number
F-Frame			
1	0.164-32 x 3.188-inch pan-head steel screws, lockwashers and clamps	Individual	**624B375G01**
		Group ①	**624B375G02**
2	0.164-32 x 1.5-inch pan-head steel screws and lockwashers	Individual	**4218B80G01**
3, 4	0.164-32 x 1.5-inch pan-head steel screws and lockwashers	Individual	**BMH1**
J-Frame			
2, 3, 4	0.250-20 x 2.75 inch pan-head steel screws and lockwashers	Individual	**BMH2**
K-Frame			
2, 3, 4	0.250-20 x 1.5 inch pan-head steel screws and lockwashers	Individual	**BMH3**
L-Frame			
2, 3, 4	0.250-20 x 1.5 inch filister-head steel screws and lockwashers and flat washers	Individual	**BMH4**
M-Frame			
2, 3	0.3125-18 x 1.25 inch filister-head steel screws and lockwashers and flat washers	Individual	**BMH5**
N-Frame			
2, 3, 4	0.3125-18 x 1.25 inch pan-head steel screws and lockwashers	Individual	**BMH5**
R-Frame			
Supplied by customer			

Metric Thread Mounting Hardware

Number of Poles	Description	Type of Mounting	Catalog Number
F-Frame			
1	M4–0.7 x 80 mm pan-head steel screws, lockwashers, and clamps	Individual	**4218B80G09**
		Group ①	**4218B80G10**
2	M4–0.7 x 38 mm pan-head steel screws and lockwashers	Individual	**4218B80G11**
3, 4	M4–0.7 x 38 mm pan-head steel screws and lockwashers	Individual	**BMH1M**
J-Frame			
2, 3, 4	M6–0.7 x 70 mm pan-head steel screws and lockwashers	Individual	**BMH2M**
K-Frame			
2, 3, 4	M6–0.7 x 38 mm pan-head steel screws and lockwashers	Individual	**BMH3M**
L-Frame			
2, 3	—	Individual	**BMH4M**
M-Frame			
2, 3	—	Individual	**BMH4M**
N-Frame			
2, 3	—	Individual	**BMH5M**
R-Frame			
Supplied by customer			

Note

① One set of hardware for two circuit breakers.

Terminal Shields

G-Frame Terminal Shield

Number Units in Package	Catalog Number
10	**GTSK3**

F-Frame



F-Frame Terminal Shield

Number of Poles	Location	Standard (Package of 10) (Priced Individually) Catalog Number	Special—For Use When Electrical Operator is Mounted on Circuit Breaker Catalog Number
1	Line	**625B229G06**	—
2	Line	**625B229G07**	—
3	Line	**625B229G08**	**4210B95G01**
4	Line	**625B229G09**	**4210B95G02**

J-Frame



J-Frame Terminal Shield

Number of Poles	Location	Catalog Number (Package of 10)
2, 3	Line End	**1266C07G01**
4	Line End	**6631C01G01**
2, 3	Load End	**6641C16G01**
4	Load End	**6641C16G02**

K-Frame



K-Frame Terminal Shield

Number of Poles	Location	Catalog Number (Package of 10)
2, 3	Line	**TS33LN**
4	Line	**TS34LN**
3	Load	**TS33LD**

L-Frame Terminal Shield

Catalog Number (Package of 1)
314C420G05

M-Frame Terminal Shield

Catalog Number (Package of 1)
208B966G01

N-Frame Terminal Shield

Catalog Number (Package of 1)
NTS3K

Terminal End Covers

Ordering Information

The terminal end cover is available for three-pole circuit breakers only. Two conductor opening sizes are available. Specify quantity (one per circuit breaker) when ordering.

F-Frame



F-Frame Terminal End Covers

Conductor Opening Diameter in Inches (mm)	Catalog Number
0.25 (6.35 mm)	**TEC1**
0.41 (10.41 mm)	**TEC2**

Interphase Barriers

Ordering Information

Two per package.

Interphase Barrier

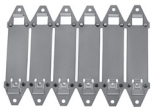


Interphase Barriers

Frame	Catalog Number
F	**IPB1**
J, K	**IPB3**
L	**IPB4**
M	**IPB4**
N	**IPB5**

Base Mounting Plate

Base Mounting Plate



Base Mounting Plate G-Frame GD/GHC

Number of Units in Package	Catalog Number
1	**207B513G01**

DIN Rail Adapter

DIN Rail Adapter



DIN Rail Adapter G-Frame GD/GHC

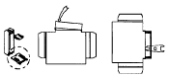
Number of Poles	Number of Units in Package	Catalog Number
1, 2	10	**1225C79G01**
3	10	**1225C79G02** ①

All Metal DIN Rail Adapter G-Frame GD/GHC

Number of Poles	Number of Units in Package	Catalog Number
3	1	**EGGDDIN**

Key Operated Attachment

Key Operated Attachment



Key Operated Attachment G-Frame GD/GHC

Number of Units in Package	Catalog Number
10	**GKOA**

Note

① For use on three-pole breakers only.

Lock Dog (Non-Padlockable)

Lock Dog (Non-Padlockable)



Lock Dog (Non-Padlockable) G-Frame GD/GHC/GHB/GMCP

Number of Units in Package	Catalog Number
1	**1294C01H01**

Handle Ties

Handle Tie—Series C, F-Frame

Number of Poles	Number of Units in Package	Catalog Number
2	10	**HTBFD2P**
3	10	**HTBFD3P**

Handle Tie—Series C, G-Frame

Number of Poles	Number of Units in Package	Catalog Number
2	10	**HTBGD2P**
3	10	**HTBGD3P**

Non-Padlockable Handle Block

Non-Padlockable Handle Block



Non-Padlockable Handle Block

Frame	Catalog Number
F	**LKD1**
J, K	**LKD3**
L, M, N	**LKD4**

Padlockable Handle

Padlockable Handle



Padlockable G-Frame GD/GHC/GHB

Number of Units in Package	Catalog Number ①
10	**1223C77G03**
10	**1223C77G05** ②
10	**1223C77G06** ②

Padlockable Handle Lock

Padlockable Handle Lock



Padlockable Handle Lock

Frame	Catalog Number
G	**GPHBOFF**
J, K	**PHB3**

Snap-On Padlockable Handle Lock Hasp

Snap-On Padlockable Handle Lock Hasp



Snap-On Padlockable Handle Lock Hasp

Frame	Catalog Number
F	**PHL1**

Notes

① Accepts 0.285 Lock Shank.
② Padlockable in the OFF position only.

Padlockable Handle Lock Hasp

Padlockable Handle Lock Hasp



Padlockable Handle Lock Hasp

Description	Catalog Number
F-Frame	
Single-pole breakers	**PHL1**
Two-, three- and four-pole breakers	**PLK1**
For left side mounting	**PLK1LOFF**
For right side mounting	**PLK1ROFF**
J, K-Frames	
Two-, three- and four-pole breakers	**PLK3**
For left side mounting	**PLK3LOFF** ①
For right side mounting	**PLK3ROFF** ①
L-Frame (Side Mounted)	
Lock ON or OFF	**HLK4**
Lock OFF only (left-hand mount)	**HLK4LOFF** ①
L-Frame (Top Mounted)	
Lock ON or OFF	**HLK4S**
Lock OFF only	**HLK4SOFF** ①
M-Frame	
Lock ON or OFF	**HLK4**
Lock OFF only (left-hand mount)	**HLK4LOFF** ①
M-Frame (Vertical Mounting)	
Lock ON/OFF	**HLK4S**
Lock OFF only	**HLK4SOFF**
N-Frame	
Side mounted	**PLK5**
Top mounted (ON/OFF)	**PLK5S**
Top mounted (OFF only)	**PLK5SOFF** ①
R-Frame	
Lock ON/OFF	**HLK6**
Lock OFF only	**HLK6OFF** ①

Cylinder Lock

Cylinder Lock



Cylinder Lock

Frame	Catalog Number
F, J, K	Order by description

Note

① For padlockable handle lock hasp to padlock handle in OFF position only, order either catalog number.

Key Interlock Kit

Ordering Information

Key interlock kits contain the necessary interface and hardware to install a trapped key interlock from one of the listed manufacturers. Key interlocks are not installed or supplied as part of the breaker, and must be obtained separately from the lock manufacturer or through the manufacturer of the equipment on which the breaker will be installed. Select the mounting kit catalog number to match the type of lock used.

Key Interlock Kit



Key Interlock Kit (Trapped Key Interlock)

Lock Manufacturer	Lock Type	Bolt Projection in Withdrawn Position in Inches (mm)	Kit Catalog Number
F-Frame			
Superior	B-4003-1	0.38 (9.5)	**KYK1**
Kirk®	F	0.38 (9.5)	**KYK1**
Castell ①	K or QK	0.38 (9.5)	**CTK1**
J, K-Frames			
Superior	B-4003-1	0.38 (9.5)	**KYK3**
Kirk	F	0.38 (9.5)	**KYK3**
Castell ①	K or QK	0.38 (9.5)	**CTK3**
L-, M-, N-Frames			
Superior	B-4003-1	0.38 (9.5)	**KYK4**
Kirk	F	0.38 (9.5)	**KYK4**
Castell ①	K or QK	0.38 (9.5)	**CTK4**
R-Frame			
Superior	B-4003-1	1.0 (25.4)	**KYK6**
Kirk	F	1.0 (25.4)	**KYK6**
Castell ①	K or QK	1.0 (25.4)	**CTK6**
JG-Frame			
Superior	B-4003-1	0.38 (9.5)	**KYKJG**
Kirk	F	0.38 (9.5)	**KYKJG**
Castell ①	K or QK	0.38 (9.5)	**CTKJG**
LG-Frame			
Superior	B-4003-1	0.38 (9.5)	**KYKLG**
Kirk	F	0.38 (9.5)	**KYKLG**
Castell ①	K or QK	0.38 (9.5)	**CTKLG**

Note

① When ordering Castell Interlock, it is necessary for customer to specify that the mounting bolt holes must be 10 mm in diameter

Sliding Bar Interlock

Ordering Information

The sliding bar interlock is available for mounting between two adjacent three-pole circuit breakers with circuit breakers centerline spacing as indicated in table and enclosure front panel thickness of 1/8 or 3/16 inch (3.2 or 4.8 mm). (For field installation only.)

Sliding Bar Interlock



Sliding Bar Interlock

Frame	Centerline Spacing in Inches (mm)	Catalog Number
F	4.19 (106.4)	**SBK1**
J	4.38 (111.3)	**SBK2**
K	5.75 (146.0)	**SBK3**
L, M	8.50 (215.9)	**SBK4**
N	8.50 (215.9)	**SBK5**

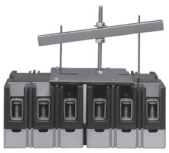
Walking Beam Interlock

Ordering Information

The walking beam interlock is available for mounting between two adjacent circuit breakers spaced 1/4-inch (6.4 mm) apart and having the same pole configuration. The two circuit breakers must be factory modified to accept the walking beam interlock assembly (suitable for use with either two-, three- or four-pole circuit breakers).

With properly modified circuit breakers, the walking beam interlock is suitable for field installation. Order circuit breakers specifying modification for walking beam (20% price adder) and select walking beam interlock from table below. Circuit breakers and walking beam interlock are boxed and shipped separately.

Walking Beam Interlock



Walking Beam Interlock

Frame	Catalog Number
F	**WBL1**
K	**WBL3**
L, M	**WBL4A**
N	**WBL5**
R ①	**WBL6**

Note

① Three-pole only.

Electrical Operator

F-Frame Electrical (Solenoid) Operator

Voltage	Frequency	Terminal Block Catalog Number	18-Inch (457.2 mm) Pigtail Lead Catalog Number
120	AC	**EOP1T07**	**EOP1P07**
240	AC	**EOP1T11**	**EOP1P11**

F-Frame Electrical (Motor) Operator ①

Voltage	Frequency	18-Inch (457.2 mm) Pigtail Lead Catalog Number
120	50/60 Hz AC	**MOPFD120C**
24	DC	**MOPFD24D**
125	DC	**MOPFD120C**
208–240	50/60 Hz	**MOPFD240C**
220–250	DC	**MOPFD240C**

J-Frame Electrical (Solenoid) Operator

Operating Voltage	Frequency	Terminal Block Catalog Number
120	50/60 Hz AC	**EOP2T07**
240	50/60 Hz AC	**EOP2T11**

K-Frame Electrical (Solenoid) Operator

Operating Voltage	Frequency	Terminal Block Catalog Number
120	50/60 Hz AC	**EOP3MT07**
240	50/60 Hz AC	**EOP3MT11**

K-Frame Electrical (Solenoid) Operator Base Mounting Kit

Frame	Catalog Number
K	**BBMK3**

L- and M-Frame Electrical (Motor) Operator (310 and OPTIM)

Operating Voltage	Frequency	Terminal Block Catalog Number
120	50/60 Hz	**EOP4MT07**
208	50/60 Hz	**EOP4MT11**
240	50/60 Hz	**EOP4MT11A**
480	50/60 Hz	**EOP4MT15**
125	DC	**EOP4MT26**
24	DC	**EOP4MT21**

Note

① Motor operators MOP1P07, MOP1P03DC, MOP1P05DC and MOP1P07DC are replaced by MOPFD motor operators listed in table.

N-Frame Electrical (Motor) Operator

Operating Voltage	Frequency	Pigtail Leads Catalog Number
120	50/60 Hz	**EOP5T07**
208	50/60 Hz	**EOP5T09**
240	50/60 Hz	**EOP5T11**
480	50/60 Hz	**EOP5T15**
24	DC	**EOP5T21**
48	DC	**EOP5T22**
125	DC	**EOP5T26**

R-Frame Electrical (Motor) Operator

Operating Voltage	Frequency	Factory-Installed Terminal Block Catalog Number
120	50/60 Hz	**EOP6T08K**
240	50/60 Hz	**EOP6T11K**
48	DC	**EOP6T21K**

Plug-In Adapters

F-Frame Ordering Information (Flat Bar Type)

Continuous Current Rating (Amperes)	Two-Pole Catalog Number	Three-Pole Catalog Number	Four-Pole Catalog Number
100–225	**1480D13G01**	**1480D13G02**	**1480D13G07** ①
Mounting plate	**176C511H01**	**507C047H01**	—

J-Frame Ordering Information (Flat Bar Type)

Continuous Current Rating (Amperes)	Terminal End	Two-Pole Catalog Number	Three-Pole Catalog Number	Four-Pole Catalog Number
250	Line	**1260C86G05**	**1260C86G06**	**1231C67G01**
	Load	**1260C86G07**	**1260C86G08**	**1231C67G02**
	One line and one load	**506C144G27**	**506C144G28**	—
Mounting plate	—	②	**PMP23**	—

K-Frame Ordering Information (Flat Bar Type)—600 Vac Maximum

Continuous Current Rating (Amperes)	Two-Pole Catalog Number	Three-Pole Catalog Number	Four-Pole Catalog Number
400	**PAD32**	**PAD33**	—
Mounting plate	②	**PMP33**	—

Notes

① 100 ampere maximum.

② Use three-pole mounting plate for two-pole circuit breaker.

L-Frame (Threaded Stud Type)

Continuous Current Rating (Amperes)	Two-Pole Catalog Number	Three-Pole Catalog Number	Four-Pole Catalog Number
600 (threaded stud type)	**506C059G03**	**506C059G04**	**PAD44**
600 (flat bar type)	**1288C19G01**	**1288C19G02**	**6636C55H01**
Mounting plate	**504C824H01**	**504C824H01**	—

M-Frame (Flat Bar Type)—600 Vac Maximum

Continuous Current Rating (Amperes)	Two-Pole Catalog Number	Three-Pole Catalog Number
800	**2614D53G05**	**2614D53G06**
Mounting plate	**1290C73H01**	**1290C73H01**

N-Frame (Flat Bar Type)

Continuous Current Rating (Amperes)	Two-Pole Catalog Number	Three-Pole Catalog Number
1200	**2614D53G03**	**2614D53G04**
Mounting plate	**1290C73H01**	**1290C73H01**

Plug-In Adapters

Frame	Number of Poles	Standard Certification	Catalog Number
FD	3	IEC	**PAD3F**
FD	4	IEC	**PAD4F**
JD	3	IEC	**PAD3JD**
KD	3	IEC	**PAD3K**
LD	3	IEC	**PAD3LD**
LD	4	IEC	**PAD4LD**

Rear Connecting Studs

F-Frame ①

Stud Ampere Rating	Stud Catalog Number	Tube Catalog Number
For 15 to 100 A Circuit Breakers		
100 short	**451D874G01**	**32B9446H20**
100 short	**451D874G01**	**32B9446H21**
100 short	**451D874G01**	**32B9446H22**
100 short	**451D874G01**	**32B9446H23**
100 long	**451D874G02**	**32B9446H24**
100 long	**451D874G02**	**32B9446H25**
100 long	**451D874G02**	**32B9446H26**
100 long	**451D874G02**	**32B9446H27**
For 110 to 225 A Circuit Breakers		
225 short	**374D883G01**	**374D883H06**
225 short	**374D883G01**	**374D883H07**
225 short	**374D883G01**	**374D883H08**
225 short	**374D883G01**	**374D883H09**
225 long	**374D883G02**	**374D883H10**
225 long	**374D883G02**	**374D883H11**
225 long	**374D883G02**	**374D883H12**
225 long	**374D883G02**	**374D883H13**

J-Frame ①

Stud Ampere Rating	Stud Catalog Number	Tube Catalog Number
250 short	**5010D23G01**	**456D983H05**
250 short	**5010D23G01**	**456D983H06**
250 short	**5010D23G01**	**456D983H07**
250 long	**5010D23G02**	**5010D23H05**
250 long	**5010D23G02**	**5010D23H06**
250 long	**5010D23G02**	**5010D23H07**

K-Frame ①

Stud Ampere Rating	Stud Catalog Number	Standard Tube Catalog Number
400 short	**6642C14G02**	**313C909H17**
400 short	**6642C14G04**	**313C909H18**
400 short	**6642C14G06**	**313C909H19**
400 long	**6642C14G03**	**313C909H20**
400 long	**6642C14G05**	**313C909H21**
400 long	**6642C14G07**	**313C909H22**

L-Frame Ordering Information

Stud Catalog Number
314C960G07
314C960G08
314C960G09

M-Frame Ordering Information ①

Stud Ampere Rating	Stud Catalog Number
225	**314C960G01**
400	**314C960G04**
400	**314C960G05**
400	**314C960G06**
600	**314C960G07**
600	**314C960G08**
600	**314C960G09**
800	**314C960G10**
800	**314C960G11**
800	**314C960G12**

N-Frame Ordering Information ①

Stud Ampere Rating	Stud Catalog Number
800	**623B222G01**
800	**623B222G02**
800	**623B222G03**
1200	**373B375G04**
1200	**373B375G03**

Note

① Not UL listed.

Panelboard Connecting Straps

F-Frame Panelboard Connecting Straps

Bus Spacing in Inches (mm)	Continuous Current Rating (Amperes)	Pole Connector Type Center Catalog Number	Outside Catalog Number
2.75 (69.9)	50	**673B142G02**	**673B142G09**
2.75 (69.9)	100	**673B142G02**	**673B142G10**
2.75 (69.9)	150	**673B142G04**	**673B142G03**
3.50 (88.9)	50	**1253C72G01**	**1253C72G03**
3.50 (88.9)	100	**1253C73G03**	**1253C73G06**
3.50 (88.9)	150	**1253C73G01**	**1253C73G05**

F-Frame Mounting Bracket

Number of Poles	Catalog Number
2	**624B600H02**
3	**624B600H01**

J-Frame Panelboard Connecting Straps

Bus Spacing in Inches (mm)	Continuous Current Rating (Amperes)	Pole Connector Type Center Catalog Number	Outside Catalog Number
3.50 (88.9)	250	**2600D26G01**	**2600D26G02**

K-Frame Panelboard Connecting Straps

Bus Spacing in Inches (mm)	Continuous Current Rating (Amperes)	Pole Connector Type Center Catalog Number	Outside Catalog Number
3.50 (88.9)	400	**4212B78G02**	**4212B77G01**

K-Frame Mounting Bracket

Number of Poles	Catalog Number
2, 3	**208B264H01**

L-Frame Panelboard Connecting Straps

Continuous Current Rating (Amperes)	Pole Connector Type	
	Center Catalog Number	Outside Catalog Number
600	**624B609G01**	**506C052G01**

L-Frame Mounting Bracket

Number of Poles	Catalog Number
2, 3	**208B297H01**

M-Frame Panelboard Connecting Straps

Bus Spacing in Inches (mm)	Continuous Current Rating (Amperes)		Pole Connector Type
		Connector Type	Catalog Number
3.50 (88.9)	800	Short	**314C996G01**
		Medium	**314C996G02**
		Long	**314C996G03**

M-Frame Mounting Bracket

Catalog Number
315C270H01

N-Frame Panelboard Connecting Straps

Bus Spacing in Inches (mm)	Continuous Current Rating (Amperes)		Pole Connector Type
		Connector Type	Catalog Number
3.50 (88.9)	1200	Short	**505C606G04**
		Medium	**505C606G05**
		Long	**505C606G06**

N-Frame Mounting Bracket (Four Required)

Catalog Number
315C270H01

Type LFD Current Limiter

The LFD current limiter is an accessory that bolts to the load end of a standard FDB or FD thermal-magnetic and electronic circuit breaker, providing 200,000 A interrupting capacity at up to 600 Vac. LFD current limiters for thermal-magnetic circuit breakers are listed with Underwriters Laboratories under File E47239.

Type LFD Current Limiter



Type LFD Current Limiter

Circuit Breaker Rating Amperes	Catalog Number
15–70	**LFD3070R**
80–160	**LFD3150R**

Ground Fault Alarm Unit

The ground fault alarm unit is a remotely mounted device with a combination indicating light/test button that will light when the breaker trips or alarms on ground fault. The ground fault alarm unit requires a separate 120 Vac power source to power the light and the internal relay, which has 1NO and 1NC contacts for remote indication. The ground fault alarm unit can be panel mounted for ordering with an optional face mounting bracket. For use on Digitrip 310 only, K- through N-Frame.

Ground Fault Alarm Unit



GF Alarm Unit

Description	Catalog Number
Ground fault alarm unit	**GFAU**
Face mounting bracket	**1264C67G01**

IQ Energy Sentinel

The IQ Energy Sentinel is a highly accurate, microprocessor-based, breaker-mounted device designed to monitor power and energy readings. It represents an alternative to watt meters, watt-hour meters, and watt demand meters. Key advantages include savings in space, lower installation costs, and remote monitoring capability.

The IQ Energy Sentinel mounts on the load side of a Series C F-Frame (150 ampere) circuit breaker. It can be applied on three-phase, four-wire systems, or single-phase, three-wire systems with voltage connected through Phases A and C.

For more information, see Descriptive Bulletin 8178.

Solid-State (Electronic) Portable Test Kit

The solid-state (electronic) portable test kit provides verification of performance of all ratings of Digitrip 310 electronic trip units installed in circuit breakers while in service under varying load and/or phase imbalance. The test kit operates on 120-volt, 50/60 Hz power; it includes complete instructions and test times for testing long time, short time/instantaneous operation and optional ground fault operation of the circuit breaker.

Portable Test Kit

Description	Catalog Number
Solid-state (electronic) portable test kit	**STK2**

Breaker Interface Module (BIM)

The Breaker Interface Module (BIM) is a panel mounted user interface device that is mounted on the front of an electrical assembly or at a remote location. The BIM is used to access, configure, test and display information for OPTIM trip units and other devices. The BIM consists of four display windows, eight function buttons, 18 LEDs, and a graphical time/current curve to provide breaker status, operational information, protection status and energy monitoring. A 24 Vdc power supply is required to provide power to the BIM. This is supplied by the switchboard builder to Eaton's specifications. The BIM is a member of Eaton's PowerNet family of communicating devices that connects OPTIM trip units, Digitrip RMS 810/910 trip units and energy sentinels as a subnetwork system. The BIM can also be connected to a main network via a PONI module to PowerNet software.

Breaker Interface Module (BIM)



Breaker Interface Module (BIM)

Catalog Number
BIMII

Shaded area denotes obsolete or discontinued products and services.

Digitrip OPTIMizer

The Digitrip OPTIMizer is a hand-held programmer that is used to access, configure, test and display information from OPTIM trip units. The OPTIMizer plugs into the front of an OPTIM trip unit via an eight-pin telephone jack and is powered by a nine-volt battery or the auxiliary power module. One highlighted feature is the "Copy" and "Download" commands.

Setting up multiple OPTIM trips can be finished in minutes and with no errors. An Auxiliary Power Module connection provides a trip test when control power is not present at the breaker. The OPTIMizer is supplied as a standard package to include the programmer, the eight-pin connection cord, battery and carrying case. The auxiliary power module is optional.

Note: 24 Vdc Power Supply
A 24 Vdc power supply is required for all Digitrip OPTIM trip units that are required to communicate either on the main Eaton PowerNet network or as a subnetwork to a BIM. The breaker's load is 45 mA of current. Typically one power supply is required per switchboard and can provide control power to a BIM and the OPTIM trip units. The 24 Vdc power supply should be an "isolated high quality" power supply with a "CE" label, and is normally provided by the switchboard manufacturer to Eaton's recommendations.

Digitrip OPTIMizer



Digitrip OPTIMizer

Catalog Number
OPTIMizer—standard package

Auxiliary Power Module

The auxiliary power module is a power supply requiring 120 Vac input at 50 or 60 Hz that provides a 32 Vdc output. The auxiliary power module provides control power for testing an OPTIM trip unit when other means of control power is not available or for continuous OPTIMizer operation versus temporary with a battery.

The auxiliary power module connects into the top of the Digitrip OPTIMizer via a keyed receptacle. The main application for the auxiliary power module would be for the testing of a standalone non-communicating OPTIM breaker that ordinarily would not have control power.

Auxiliary Power Module



Auxiliary Power Module

Catalog Number
PRTBAPMDV

Cause of Trip Display/Remote Mount Cause of Trip Display

The Cause of Trip Display can be field-installed on any Digitrip RMS 310+ trip unit. The device provides breaker information through an LCD screen, such as cause of trip, phrase current, ground current and low loads. The display is ideal for troubleshooting common trips such as ground fault,long delay, and instantaneous/short delay. The DIGIVIEW version will provide a local display at the breaker without additional wiring by connecting directly onto the trip unit. The DIGIVIEWR06 version has a 6 foot cable that allows users to mount the display on the outside of an enclosure door and connect to the trip unit that is contained inside the enclosure.

Cause of Trip Display/Remote Mount Cause of Trip Display

Catalog Number
DIGIVIEW
DIGIVIEWR06

Cause of Trip LED Module

The Cause of Trip LED Module can be field-installed on any Digitrip RMS 310+ trip unit. The device provides a cause of trip indication via LED. The Cause of Trip LED Module connects directly onto the trip unit.

When the breaker trips, the module indicates the cause of trip (long delay, short delay, instantaneous and ground) via LED indication. The module is reset after the breaker is reset.

Cause of Trip LED Module

Catalog Number
TRIP-LED

Accessories

Flex Shaft Accessories (F- through R-Frame)

NEMA 12 Safety Door Hardware for Flex Shaft and C371 ①

Handle Length in Inches (mm)	Catalog Number ②
4 (101.6)	**C361KJ4**
6 (152.4)	**C361KJ6**
Roller Latch ③	**C361KR**

Series C Rotary Accessories

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker.

This accessory would be mounted on the mechanism and comes with 24-inch (609.6 mm) pigtail leads.

Series C Auxiliary Switch

Catalog Number
5108A61G01

Wire Seal

The wire seal can be used to secure the cover on the trip unit to prevent adjustments after settings are confirmed.

Wire Seal

Description	Catalog Number
Wire seal	**5108A03H01**

Notes

① Customer: Consult with box manufacturer for correct door hardware and any adapters required for assembly.

② The 1/4-inch x 1/2-inch (6.35 x 12.7 mm) standard mill rectangular locking bar is not supplied with these kits.

③ Third roller latch for use with 4- or 6-inch (101.6 or 152.4 mm) handle when 3 point latching is required.

Technical Data and Specifications

Electrical Operator

F-Frame Electrical (Solenoid) Operator Rating Data ①②

Voltage ③	Frequency	Inrush Current Amperes	Maximum Operating Time	Fuse Amperes ④
120	50/60 Hz AC	10	5 cycles (80 ms)	3
240	50/60 Hz AC	5	5 cycles (80 ms)	2

F-Frame Electrical (Motor) Operator Rating Data ②⑤⑥⑦

Voltage ③	Frequency	Inrush Current Amperes
120	AC	2
24	DC	5
48	DC	3
125	DC	2

J-Frame Electrical (Solenoid) Operator Rating Data ①⑥⑧⑨

Voltage ③	Inrush Current Amperes	Fuse Amperes
120	30	6
240	16	4

K-Frame Electrical (Solenoid) Operator Rating Data ①⑥⑧⑨

Operating Voltage ③	Inrush Current Amperes	Fuse Amperes
120	30	6
240	16	4

L- and M-Frame Electrical (Motor) Operator Rating Data ①⑥⑧⑩

Operating Voltage ③	Inrush Current Amperes
120 AC	31
208 AC	13
240 AC	12
125 DC	21
24 DC	50

N-Frame Electrical (Motor) Operator Rating Data ①⑥⑪⑫

Operating Voltage ③	Frequency	Inrush Current Amperes	Fuse Amperes
120	50/60 Hz	31	6
208	50/60 Hz	21	—
240	50/60 Hz	19	4
480	50/60 Hz	—	—
24	DC	50	—
48	DC	80	—
125	DC	21	—

R-Frame Electrical (Motor) Operator Rating Data ⑬⑭⑮⑯

Operating Voltage ⑰	Frequency	Motor Inrush Current Amperes
120	50/60 Hz	40
240	50/60 Hz	27
48	DC	53
24	DC	58

Notes

① UL listed under UL File E64983.
② The electrical operator design is endurance tested for 8000 electrical operations.
③ Tolerance: +10%, –15% of nominal voltage.
④ Use current-limiting type fuse where required.
⑤ UL listed under UL File E64124.
⑥ Frequency: 50/60 Hz.
⑦ Maximum operating time: 3 seconds max. Operator is an intermittent duty device. The safe duty cycle (OFF to ON to OFF) should not exceed one per minute.
⑧ The electrical operator design has been endurance tested for 6000 electrical operations.
⑨ Maximum operating time: 5 cycles (80 mS).
⑩ Maximum operating time: 12 cycles.
⑪ The electrical operator design has been endurance tested for 2,500 electrical operations.
⑫ Maximum operating time: 12 cycles max. Operator is an intermittent duty device. The safe duty cycle (OFF to ON to OFF) should not exceed one per minute.
⑬ Operator is an intermittent duty service. The safe duty cycle (OFF to ON to OFF) should not exceed one per minute.
⑭ Electric Operating time at rated voltage; (a) To turn breaker ON–1/2 second max. (b) To turn breaker OFF–1/2 second max.
⑮ Motor operating temperature; Class "A" temperature limits apply.
⑯ A minimum 1 kVA power source is recommended for motor operation.
⑰ Applied voltage should be no less than 85% or no more than 110% of rated voltage.

For OPTIM trip, OPEOPCK kit required.

Dimensions

Approximate Dimensions in Inches (mm)

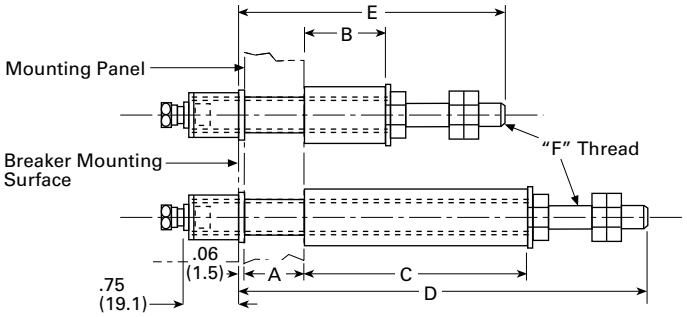
Rear Connecting Studs

3

F-Frame ①

Stud Ampere Rating	Stud Catalog Number	Panel Thickness A	Tube Length B	C	Tube Catalog Number	Dimensions D	E	F
For 15 to 100 A Circuit Breakers								
100 short	**451D874G01**	1.00 (25.4)	1.06 (26.9)	—	**32B9446H20**	—	3.63 (92.1)	0.31 (7.9)–18
100 short	**451D874G01**	0.69–0.94 (17.5 to 23.8)	1.38 (34.9)	—	**32B9446H21**	—	3.63 (92.1)	0.31 (7.9)–18
100 short	**451D874G01**	0.38–0.63 (9.5 to 15.9)	1.69 (42.9)	—	**32B9446H22**	—	3.63 (92.1)	0.31 (7.9)–18
100 short	**451D874G01**	0.25–0.31 (6.4 to 7.9)	2.00 (50.8)	—	**32B9446H23**	—	3.63 (92.1)	0.31 (7.9)–18
100 long	**451D874G02**	1.00 (25.4)	—	3.44 (87.3)	**32B9446H24**	6.13 (155.6)	—	0.31 (7.9)–18
100 long	**451D874G02**	0.69–0.94 (17.5 to 23.8)	—	3.75 (95.2)	**32B9446H25**	6.13 (155.6)	—	0.31 (7.9)–18
100 long	**451D874G02**	0.38–0.63 (9.5 to 15.9)	—	4.06 (103.1)	**32B9446H26**	6.13 (155.6)	—	0.31 (7.9)–18
100 long	**451D874G02**	0.25–0.31 (6.4 to 7.9)	—	4.38 (111.3)	**32B9446H27**	6.13 (155.6)	—	0.31 (7.9)–18
For 110 to 225 A Circuit Breakers								
225 short	**374D883G01**	1.00 (25.4)	1.06 (26.9)	—	**374D883H06**	—	4.25 (108.0)	0.44 (11.1)–14
225 short	**374D883G01**	0.69–0.94 (17.5 to 23.8)	1.38 (34.9)	—	**374D883H07**	—	4.25 (108.0)	0.44 (11.1)–14
225 short	**374D883G01**	0.38–0.63 (9.5 to 15.9)	1.69 (42.9)	—	**374D883H08**	—	4.25 (108.0)	0.44 (11.1)–14
225 short	**374D883G01**	0.25–0.31 (6.4 to 7.9)	2.00 (50.8)	—	**374D883H09**	—	4.25 (108.0)	0.44 (11.1)–14
225 long	**374D883G02**	1.00 (25.4)	—	3.44 (87.3)	**374D883H10**	7.50 (190.5)	—	0.44 (11.1)–14
225 long	**374D883G02**	0.69–0.94 (17.5 to 23.8)	—	3.75 (95.2)	**374D883H11**	7.50 (190.5)	—	0.44 (11.1)–14
225 long	**374D883G02**	0.38–0.63 (9.5 to 15.9)	—	4.06 (103.1)	**374D883H12**	7.50 (190.5)	—	0.44 (11.1)–14
225 long	**374D883G02**	0.25–0.31 (6.4 to 7.9)	—	4.38 (111.3)	**374D883H13**	7.50 (190.5)	—	0.44 (11.1)–14

F-Frame



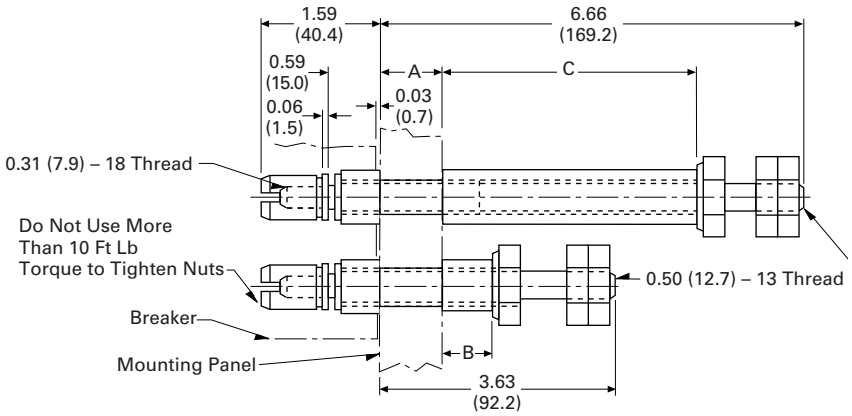
Note

① Not UL listed.

Approximate Dimensions in Inches (mm)

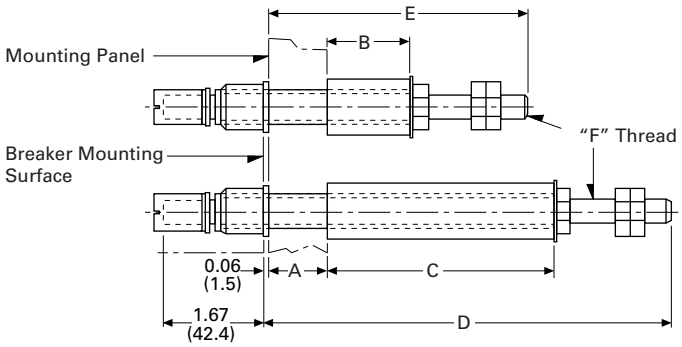
J-Frame

Stud Ampere Rating	Stud Catalog Number	Panel Thickness A	Tube Length B	C	Tube Catalog Number
250 short	**5010D23G01**	0.75–1.00 (19.1–25.4)	0.84 (21.4)	—	**456D983H05**
250 short	**5010D23G01**	0.50–0.75 (12.7–19.1)	1.09 (27.7)	—	**456D983H06**
250 short	**5010D23G01**	0.25–0.50 (6.4–12.7)	1.03 (26.2)	—	**456D983H07**
250 long	**5010D23G02**	0.75–1.00 (19.1–25.4)	—	3.88 (98.6)	**5010D23H05**
250 long	**5010D23G02**	0.50–0.75 (12.7–19.1)	—	4.13 (104.9)	**5010D23H06**
250 long	**5010D23G02**	0.25–0.50 (6.4–12.7)	—	4.38 (111.3)	**5010D23H07**



K-Frame ①

Stud Ampere Rating	Stud Catalog Number	Panel Thickness A	Tube Length B	C	Standard Tube Catalog Number	Dimensions D	E	F
400 short	**6642C14G02**	0.75–1 (19.1–25.4)	0.84 (21.3)	—	**313C909H17**	—	3.66 (93.0)	0.75–16 (19.1–406.4)
400 short	**6642C14G04**	0.50–0.75 (12.7–18.4)	1.09 (27.69)	—	**313C909H18**	—	—	—
400 short	**6642C14G06**	0.25–0.5 (6.35–12.7)	1.03 (26.16)	—	**313C909H19**	—	—	—
400 long	**6642C14G03**	0.75–1 (19.1–25.4)	—	3.78 (96.0)	**313C909H20**	—	—	—
400 long	**6642C14G05**	0.50–0.75 (12.7–18.4)	—	4.03 (102.4)	**313C909H21**	6.58 (167.1)	—	—
400 long	**6642C14G07**	0.25 –0.5 (6.35–12.7)	—	4.28 (108.7)	**313C909H22**	—	—	—



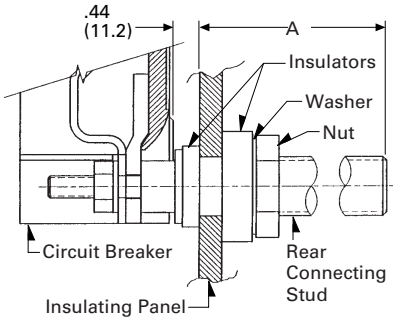
Note

① Not UL listed.

Approximate Dimensions in Inches (mm)

L-Frame

Stud Length (A)	Stud Catalog Number
5.47 (138.9)	**314C960G07**
7.97 (202.4)	**314C960G08**
10.47 (265.9)	**314C960G09**



M-Frame

Stud Ampere Rating	Diameter and Thread	Extension Back of Breaker	Stud Catalog Number
225	0.50 (12.7)–13	3.66 (93.0)	**314C960G01**
400	0.75 (19.1)–16	5.91 (150.1)	**314C960G04**
400	0.75 (19.1)–16	8.41 (213.6)	**314C960G05**
400	0.75 (19.1)–16	10.91 (277.0)	**314C960G06**
600	1.00 (25.4)–12	5.91 (150.1)	**314C960G07**
600	1.00 (25.4)–12	8.41 (213.6)	**314C960G08**
600	1.00 (25.4)–12	10.91 (277.0)	**314C960G09**
800	1.13 (28.7)–12	5.91 (150.1)	**314C960G10**
800	1.13 (28.7)–12	8.41 (213.6)	**314C960G11**
800	1.13 (28.7)–12	10.91 (277.0)	**314C960G12**

N-Frame

Stud Ampere Rating	Diameter and Thread	Extension Back of Breaker	Stud Catalog Number
800	1.13 (28.7)–12	5.5 (139.7)	**623B222G01**
800	1.13 (28.7)–12	8.0 (203.2)	**623B222G02**
800	1.13 (28.7)–12	10.5 (266.7)	**623B222G03**
1200	1.25 (31.8)–12	5.5 (139.7)	**373B375G04**
1200	1.25 (31.8)–12	10.5 (266.7)	**373B375G03**

Shaded area denotes obsolete or discontinued products and services.

EB: 120, 240 Vac; 125/250 Vdc



Type EB Single-, Two-, Three-Pole; 240 Vac Maximum; Thermal-Magnetic and Saf-T-Vue®①

Continuous Ampere Rating at 40 °C	Single-Pole, 120 Vac, 125 Vdc② Standard Catalog Number	Two-Pole, 240 Vac, 125/250 Vdc② Standard Catalog Number	Three-Pole, 240 Vac, 125/250 Vdc② Standard Catalog Number	Saf-T-Vue③ Catalog Number
15	EB1015④	EB2015	EB3015	EB3015S
20	EB1020④	EB2020	EB3020	EB3020S
25	EB1025	EB2025	EB3025	EB3025S
30	EB1030	EB2030	EB3030	EB3030S
35	EB1035	EB2035	EB3035	EB3035S
40	EB1040	EB2040	EB3040	EB3040S
45	EB1045	EB2045	EB3045	EB3045S
50	EB1050	EB2050	EB3050	EB3050S
60	EB1060	EB2060	EB3060	EB3060S
70	EB1070	EB2070	EB3070	EB3070S
80	EB1080	EB2080	EB3080	EB3080S
90	EB1090	EB2090	EB3090	EB3090S
100	EB1100	EB2100	EB3100	EB3100S
	Approximate shipping weight is 2 lb	Approximate shipping weight is 3 lb	Approximate shipping weight is 4.5 lb	

EHB: 277, 480 Vac; 250 Vdc



Type EHB Single-, Two-, Three-Pole; 480 Vac Maximum; Thermal-Magnetic and Saf-T-Vue①

Continuous Ampere Rating at 40 °C	Single-Pole, 277 Vac, 125 Vdc② Standard Catalog Number	Two-Pole, 480 Vac, 250 Vdc② Standard Catalog Number	Three-Pole, 480 Vac Standard Catalog Number	Saf-T-Vue③ Catalog Number
15	EHB1015⑤	EHB2015	EHB3015	EHB3015S
20	EHB1020⑤	EHB2020	EHB3020	EHB3020S
25	EHB1025	EHB2025	EHB3025	EHB3025S
30	EHB1030	EHB2030	EHB3030	EHB3030S
35	EHB1035	EHB2035	EHB3035	EHB3035S
40	EHB1040	EHB2040	EHB3040	EHB3040S
45	EHB1045	EHB2045	EHB3045	EHB3045S
50	EHB1050	EHB2050	EHB3050	EHB3050S
60	EHB1060	EHB2060	EHB3060	EHB3060S
70	EHB1070	EHB2070	EHB3070	EHB3070S
80	EHB1080	EHB2080	EHB3080	EHB3080S
90	EHB1090	EHB2090	EHB3090	EHB3090S
100	EHB1100	EHB2100	EHB3100	EHB3100S
	Approximate shipping weight is 2 lb	Approximate shipping weight is 3 lb	Approximate shipping weight is 4.5 lb	

UL Listed Interrupting Ratings⑥

Maximum Volts	Amperes
EB Breakers	
120 and 240 AC	10,000 asymmetrical, symmetrical
125/250 DC	5000②
EHB, FB Breakers	
240 AC	20,000 asymmetrical, 18,000 symmetrical
277 AC (EHB)	15,000 asymmetrical, 14,000 symmetrical
480 AC	15,000 asymmetrical, 14,000 symmetrical
600 AC (FB)	15,000 asymmetrical, 14,000 symmetrical
250 DC	10,000②

Notes

① Includes load terminals only.
② DC ratings apply to substantially non-inductive circuits.
③ Not UL Listed.
④ Switching duty rated for 120 Vac fluorescent light applications only.
⑤ Switching duty rated for 277 Vac fluorescent light applications only.
⑥ Interrupting capacities shown do not apply to molded-case switches.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

FB, HFB: 600 Vac; 250 Vdc



Type FB, HFB Single-, Two-, Three-, Four-Pole; 480 V Max.; Thermal-Magnetic MARK 75® Saf-T-Vue

Continuous Ampere Rating at 40 °C	Single-Pole 277 Vac; 125 Vdc [1] MARK 75 [4] Catalog Number	Two-Pole 600 Vac; 250 Vdc [1] Standard Catalog Number	Two-Pole MARK 75 [5] Catalog Number	Three-Pole 600 Vac Standard Catalog Number	Three-Pole Saf-T-Vue [5] Catalog Number	Three-Pole MARK 75 [6] Catalog Number	Four-Pole [2][3] 600 Vac Standard Catalog Number
15	HFB1015 [7]	FB2015	HFB2015	FB3015	FB3015S	HFB3015L	FB4015
20	HFB1020 [7]	FB2020	HFB2020	FB3020	FB3020S	HFB3020L	FB4020
25	HFB1025	FB2025	HFB2025	FB3025	FB3025S	HFB3025L	FB4025
30	HFB1030	FB2030	HFB2030	FB3030	FB3030S	HFB3030L	FB4030
35	HFB1035	FB2035	HFB2035	FB3035	FB3035S	HFB3035L	FB4035
40	HFB1040	FB2040	HFB2040	FB3040	FB3040S	HFB3040L	FB4040
45	HFB1045	FB2045	HFB2045	FB3045	FB3045S	HFB3045L	FB4045
50	HFB1050	FB2050	HFB2050	FB3050	FB3050S	HFB3050L	FB4050
60	HFB1060	FB2060	HFB2060	FB3060	FB3060S	HFB3060L	FB4060
70	HFB1070	FB2070	HFB2070	FB3070	FB3070S	HFB3070L	FB4070
80	HFB1080	FB2080	HFB2080	FB3080	FB3080S	HFB3080L	FB4080
90	HFB1090	FB2090	HFB2090	FB3090	FB3090S	HFB3090L	FB4090
100	HFB1100	FB2100	HFB2100	FB3100	FB3100S	HFB3100L	FB4100
110	—	—	—	FB3110	FB3110S	HFB3110	—
125	—	—	—	FB3125	FB3125S	HFB3125	—
150	—	—	—	FB3150	FB3150S	HFB3150	—

UL Listed Interrupting Ratings [8]

Maximum Volts	Amperes
MARK 75 Type HFB	
240 AC	75,000 asymmetrical, 65,000 symmetrical
277 AC [5]	75,000 asymmetrical, 65,000 symmetrical
480 AC	30,000 asymmetrical, 25,000 symmetrical
250 DC (two-pole)	20,000 [1][9]

Special Breakers Type FB, Magnetic Only, Front Adjustable

Continuous Ampere Rating	Magnetic Trip Range Amperes	Two-Pole, 600 Vac Standard Catalog/Style Number	Two-Pole, 600 Vac MARK 75 Catalog/Style Number	Three-Pole, 600 Vac Standard Catalog/Style Number	Three-Pole, 600 Vac Saf-T-Vue Catalog/Style Number	Three-Pole, 600 Vac MARK 75 [6] Catalog/Style Number
3	7–22	FB2022MRL	HFB2022ML	FB3022MRL	FB3022SMRL	HFB3022ML
5	15–45	FB2045MRL	HFB2045ML	FB3045MRL	FB3045SMRL	HFB3045ML
10	35–110	FB2110MRL	HFB2110ML	FB3110MRL	FB3110SMRL	HFB3110ML
25	32–80	2610D53G12	4994D96G12	2610D53G30	4998D89G30	2610D57G30
25	66–190	FB2190MRL	HFB2190ML	FB3190MRL	FB3190SMRL	HFB3190ML
30	50–150	1268C14G05	—	1268C14G06	—	—
30	90–270	FB2270MRL	HFB2270ML	FB3270MRL	FB3270SMRL	HFB3270ML
50	66–190	1268C14G01	—	1268C14G02	—	—
50	160–480	FB2480MRL	HFB2480ML	FB3480MRL	FB3480SMRL	HFB3480ML
70	100–270	2610D53G13	4994D96G13	2610D53G31	2610D58G31	4994D96G31
100	150–480	1268C14G03	—	1268C14G04	81E4647	65E4667
100	450–1550	FB21550MRL	HFB21550ML	FB31550MRL	FB31550SMRL	HFB31550ML

Notes

[1] DC ratings apply to substantially non-inductive circuits.
[2] Not UL Listed.
[3] All four poles have thermal-magnetic trip elements. Can be supplied with three protected poles and one unprotected, non-automatic pole if required. Order by description with no price or dimensional differences.
[4] 15–30 A rated 75,000 AIC. 40–100 A rated 30,000 A asymmetrical, 25,000 A symmetrical.
[5] Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
[6] Includes line and load terminals. MARK 75 frame color changed from gray to black in mid-2002.
[7] Switching duty rated for 277 Vac fluorescent light applications only.
[8] Interrupting capacities shown do not apply to molded-case switches.
[9] Ratings above 10,000 A not UL Listed.

Accessories and Modifications

Terminals

Breakers include load terminals only. Terminals are UL Listed as suitable for wire type and size. When used with aluminum conductors, use joint compound. When line terminals are required, order by style number from the table at no charge with the breaker.

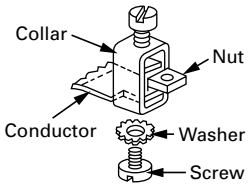
Note: Magnetic only breakers include both line and load terminals.

Note: Suffix "L" on catalog number indicates line and load terminals included. If factory installation is required, specify on order.

Terminals

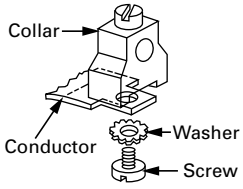
Maximum Amperes	Wire Type	Wire Range	Package of Three Line Terminals ① Style Number
Standard Pressure Type Terminals			
20 (EB, EHB)	Al/Cu	#14–#10	**624B100G14**
100	Al/Cu	#14–1/0	**624B100G02**
150	Al/Cu	# 4–4/0	**624B100G17**
Optional Al/Cu Pressure Terminals			
50	Al/Cu	#14–#4	**624B100G10**
100	Al/Cu	# 4–4/0	**624B100G17**

Terminal Style 624B100G02



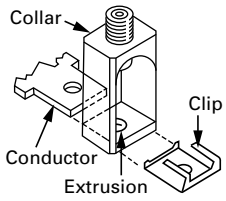
Insert collar enclosing conductor as shown. Locate nut on top of conductor and tighten securely with screw and washer. **Caution:** Collar must surround conductor.

Terminal Style 624B100G10



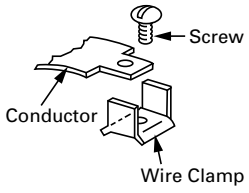
Assemble collar on top of conductor as shown. Tighten securely with screw and washer.

Terminal Style 624B100G17



Insert collar enclosing conductor and center on extrusion on collar. Install clip with legs on top of conductor and snap end around bottom of collar.

Terminal Style 624B100G14



Assemble wire clamp to bottom of conductor as shown.

Shaded area denotes obsolete or discontinued products and services.

LFB Current Limiter Attachment

The LFB current limiter is an attachment that bolts to the load end of a standard FB thermal-magnetic or magnetic only breaker, providing 200,000 A interrupting capacity (AIC) at up to 600 Vac. Limiters for thermal-magnetic breakers are UL Listed. Current limiters must be applied as indicated in the table on **Page V12-T3-342**.

Standard LFB terminals are suitable for Cu/Al cable. Ratings through 70 A accept (1) #14–#2, and 100 and 150 A accept (1) #1–4/0.

Note: Cannot be used with plug-in adapters. Ratings through 70 A can be supplied with terminals for Cu cable only (#14–#2). Order by description.

LFB Current Limiter Attachment ②

Breaker Rating, Amperes	Limiter Catalog Number
For Thermal-Magnetic Breakers ③	
15–70	**LFB3070R** ④
80–150	**LFB3150R** ⑤
For Magnetic Only Breakers ③⑥	
3	**LFB3003MR**
5	**LFB3005MR**
10	**LFB3010MR**
25	**LFB3025MR**
30	**LFB3030MR**
50	**LFB3050MR**
70	**LFB3070MR**
100	**LFB3100MR**
150	**LFB3150MR**

Notes

① Style listed is for package of three terminals.
② These frames are obsolete. For replacement solutions, see the cross-reference on **Pages V12-T3-16**.
③ Ratings through 70 A can be supplied with terminals for Cu cable only (#14–#2). Order by description.
④ Superseded by LFD3070R.
⑤ Superseded by LFD3150R.
⑥ Replace with Series C HMCP and ELC current limiters or replace with MCP and EL current limiters

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum calibration for 400 Hz is 135 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker, listed above, when ordering breakers to be used in 50 °C ambients.

Note: Not UL Listed.

Ambient Compensating Breakers

To order, add suffix letter "A" to standard thermal-magnetic breaker catalog number.

Available in all standard ratings of EB, EHB, FB and HFB breakers up to ratings of 100 A. Factory adder 20%.

Note: Not UL Listed.

Federal Specification Classifications

EB, EHB, FB and HFB breakers meet requirements of Federal Specification W-C-375b as follows:

- EB: single-pole, Class 11a; two-, three-pole, Classes 10b, 11b, 12b
- EHB: single-pole, Class 13a; two-, three-pole, Class 13b
- FB: two-, three-pole, Class 18a
- HFB: single-pole, Class 13a; two-, three-pole, Class 22a

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243.**

Type CCV 120/240 V Tenant Main Circuit Breaker 10,000 A and 25,000 A Interrupting Capacity, 100–225 A



Type CCV Two-Pole 120/240 V Tenant Main Circuit Breaker

Product Description

Ratings

- 120/240 Vac, two-pole, through 225 continuous amperes, calibrated at 40 °C

Tripping Characteristics

- Thermal-magnetic trip, calibrated and sealed after assembly. Indirectly heated thermal tripping bimetal elements

Interrupting Capacity at 120/240 Vac

- Type CCV—10,000 A rms symmetrical
- Type CCVH—25,000 A rms symmetrical

Handles

- Trip-free with "ON-TRIPPED-OFF" positions. Reset past "OFF" is required to latch breaker contacts after tripping

Terminals

- Standard lugs (wire connectors) suitable for either CU or AL wire

Standards

- Complies with UL Standard 489, breakers are listed under UL File #E781

Backward Compatibility

- CCV and CCVH retains same profile and footprint of the CC and CCH breaker allowing use in the same applications

Product Selection

Ampere Rating	Two-Pole Breaker Wire Size Range, Al/Cu	10,000 AIC	25,000 AIC
100	#2/0–300 kcmil	**CCV2100**	**CCVH2100**
125	#2/0–300 kcmil	**CCV2125**	**CCVH2125**
150	#2/0–300 kcmil	**CCV2150**	**CCVH2150**
175	#2/0–300 kcmil	**CCV2175**	**CCVH2175**
200	#2/0–300 kcmil	**CCV2200**	**CCVH2200**
225	#2/0–300 kcmil	**CCV2225**	**CCVH2225**

Terminal Options

Terminal configurations available by adding the following designator on the suffix:

W = No terminals

X = Load side terminals only

Y = Line side terminals only

CCV as tenant main breaker with CC as aftermarket option.

Cross-Reference

CCV Catalog Number	CC Catalog Number	CCV Catalog Number	CC Catalog Number
CCV2100	**CC2100**	**CCVH2100**	**CCH2100**
CCV2100W	**CC2100W**	**CCVH2100W**	**CCH2100W**
CCV2100X	**CC2100X**	**CCVH2100X**	**CCH2100X**
CCV2100Y	**CC2100Y**	**CCVH2100Y**	**CCH2100Y**
CCV2125	**CC2125**	**CCVH2125**	**CCH2125**
CCV2125W	**CC2125W**	**CCVH2125W**	**CCH2125W**
CCV2125X	**CC2125X**	**CCVH2125X**	**CCH2125X**
CCV2125Y	**CC2125Y**	**CCVH2125Y**	**CCH2125Y**
CCV2150	**CC2150**	**CCVH2150**	**CCH2150**
CCV2150W	**CC2150W**	**CCVH2150W**	**CCH2150W**
CCV2150X	**CC2150X**	**CCVH2150X**	**CCH2150X**
CCV2150Y	**CC2150Y**	**CCVH2150Y**	**CCH2150Y**
CCV2175	**CC2175**	**CCVH2175**	**CCH2175**
CCV2175W	**CC2175W**	**CCVH2175W**	**CCH2175W**
CCV2175X	**CC2175X**	**CCVH2175X**	**CCH2175X**
CCV2175Y	**CC2175Y**	**CCVH2175Y**	**CCH2175Y**
CCV2200	**CC2200**	**CCVH2200**	**CCH2200**
CCV2200W	**CC2200W**	**CCVH2200W**	**CCH2200W**
CCV2200X	**CC2200X**	**CCVH2200X**	**CCH2200X**
CCV2200Y	**CC2200Y**	**CCVH2200Y**	**CCH2200Y**
CCV2225	**CC2225**	**CCVH2225**	**CCH2225**
CCV2225W	**CC2225W**	**CCVH2225W**	**CCH2225W**
CCV2225X	**CC2225X**	**CCVH2225X**	**CCH2225X**
CCV2225Y	**CC2225Y**	**CCVH2225Y**	**CCH2225Y**

Type JB

Shaded area denotes obsolete or discontinued products and services.

JB: 600 Vac; 250 Vdc



Type JB 90–250 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Fixed Trip, Thermal-Magnetic, Saf-T-Vue (Suitable for Reverse-Feed)

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes (Set on High Side, Adjustable to Lower Limits) Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ① Standard Catalog Number	Saf-T-Vue ② Catalog Number	Breaker Without Terminals Standard Catalog Number	Saf-T-Vue ② Catalog Number
Two-Pole, 600 Vac, 250 Vdc ③						
70	350	700	**JB2070**	**JB2070S**	**JB2070W**	**JB2070SW**
90	450	900	**JB2090**	**JB2090S**	**JB2090W**	**JB2090SW**
100	500	1000	**JB2100**	**JB2100S**	**JB2100W**	**JB2100SW**
125	625	1250	**JB2125**	**JB2125S**	**JB2125W**	**JB2125SW**
150	750	1500	**JB2150**	**JB2150S**	**JB2150W**	**JB2150SW**
175	875	1750	**JB2175**	**JB2175S**	**JB2175W**	**JB2175SW**
200	1000	2000	**JB2200**	**JB2200S**	**JB2200W**	**JB2200SW**
225	1125	2250	**JB2225**	**JB2225S**	**JB2225W**	**JB2225SW**
250	1250	2500	**JB2250**	**JB2250S**	**JB2250W**	**JB2250SW**
			Approx. shipping weight. 12 lb		Approx. shipping weight 12 lb	
Three-Pole, 600 Vac Only						
70	350	700	**JB3070**	**JB3070S**	**JB3070W**	**JB3070SW**
90	450	900	**JB3090**	**JB3090S**	**JB3090W**	**JB3090SW**
100	500	1000	**JB3100**	**JB3100S**	**JB3100W**	**JB3100SW**
125	625	1250	**JB3125**	**JB3125S**	**JB3125W**	**JB3125SW**
150	750	1500	**JB3150**	**JB3150S**	**JB3150W**	**JB3150SW**
175	875	1750	**JB3175**	**JB3175S**	**JB3175W**	**JB3175SW**
200	1000	2000	**JB3200**	**JB3200S**	**JB3200W**	**JB3200SW**
225	1125	2250	**JB3225**	**JB3225S**	**JB3225W**	**JB3225SW**
250	1250	2500	**JB3250**	**JB3250S**	**JB3250W**	**JB3250SW**
			Approx. shipping weight 14 lb		Approx. shipping weight 12 lb	

Magnetic Only Breakers, Front Adjustable ②

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes (Set on High Side, Adjustable to Lower Limits) Low	High	Breaker Only, No Terminals ④ Two-Pole ③ Standard Catalog Number	Saf-T-Vue Catalog Number	Three-Pole Standard Catalog Number	Saf-T-Vue Catalog Number
250	350	700	**JB2700MW**	**JB2700SMW**	**JB3700MW**	**JB3700SMW**
250	625	1250	**JB21250MW**	**JB21250SMW**	**JB31250MW**	**JB31250SMW**
250	750	1500	**JB21500MW**	**JB21500SMW**	**JB31500MW**	**JB31500SMW**
250	875	1750	**JB21750MW**	**JB21750SMW**	**JB31750MW**	**JB31750SMW**
250	1125	2250	**JB22250MW**	**JB22250SMW**	**JB32250MW**	**JB32250SMW**
250	1250	2500	**JB22500MW**	**JB22500SMW**	**JB32500MW**	**JB32500SMW**

Notes

① Terminals are shipped separately from breaker frame.
② Not UL Listed.
③ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Select desired terminal from table and order as separate item.

UL Listed Interrupting Ratings ①

Maximum Volts	Amperes
240 AC	30,000 asymmetrical, 25,000 symmetrical
480 AC	25,000 asymmetrical, 22,000 symmetrical
600 AC	15,000 asymmetrical, 14,000 symmetrical
250 DC	10,000

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Al/Cu Pressure Terminals		
250	(1) #4–350 kcmil Al/Cu	**TA250KB**
Optional Pressure Terminals		
250	(1) #4–350 kcmil Cu	**T250KB**

Note

① Ratings above 10,000 A not UL Listed.

Accessories and Modifications

Shaded area denotes obsolete or discontinued products and services.

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker when ordering breakers to be used in 50 °C ambients. Same price as standard 40 °C breakers. **For CSA®, see Page V12-T3-374.**

Type JB breakers meet requirements of Class 19a circuit breakers as defined by Federal Specification W-C-375b.

Note: Not UL Listed.

UL Listed Interrupting Rating (see table)

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243.**

Terminals (see table)

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed left. When used with aluminum conductors, use joint compound. To order optional copper only terminals, add suffix "C" to complete breaker catalog number.

Note: Terminals are shipped separately from breaker frame.

Magnetic Only Breakers

For description, refer to Application Data 29-160.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Types KB and HKB

Shaded area denotes obsolete or discontinued products and services.

KB/MARK 75/HKB: 600 Vac; 250 Vdc



Type KB and MARK 75 Type HKB 90–250 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Interchangeable Trip Thermal-Magnetic, Saf-T-Vue

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting Amperes ② Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ② Standard Catalog Number	Saf-T-Vue ② Catalog Number	MARK 75 Catalog Number	Shipped as Frame, Trip Unit and Terminals ① Frame Only Standard Catalog Number	Saf-T-Vue ③ Catalog Number	MARK 75 Catalog Number	Trip Unit Only Standard Saf-T-Vue MARK 75 Catalog Number
Two-Pole, 600 Vac, 250 Vdc ②									
70	350	700	KB2070	KB2070S	HKB2070	KB2250F	KB2250FS	HKB2250F	HKB2070T
90	450	900	KB2090	KB2090S	HKB2090	KB2250F	KB2250FS	HKB2250F	HKB2090T
100	500	1000	KB2100	KB2100S	HKB2100	KB2250F	KB2250FS	HKB2250F	HKB2100T
125	625	1250	KB2125	KB2125S	HKB2125	KB2250F	KB2250FS	HKB2250F	HKB2125T
150	750	1500	KB2150	KB2150S	HKB2150	KB2250F	KB2250FS	HKB2250F	HKB2150T
175	875	1750	KB2175	KB2175S	HKB2175	KB2250F	KB2250FS	HKB2250F	HKB2175T
200	1000	2000	KB2200	KB2200S	HKB2200	KB2250F	KB2250FS	HKB2250F	HKB2200T
225	1125	2250	KB2225	KB2225S	HKB2225	KB2250F	KB2250FS	HKB2250	HKB2225T
250	1250	2500	KB2250	KB2250S	HKB2250	KB2250F	KB2250FS	HKB2250F	HKB2250T
			Approx. shipping weight 12 lb			Approx. shipping weight 9 lb			Approx. shipping weight 2 lb
Three-Pole, 600 Vac Only									
70	350	700	KB3070	KB3070S	HKB3070	KB3250F	KB3250FS	HKB3250F	HKB3070T
90	450	900	KB3090	KB3090S	HKB3090	KB3250F	KB3250FS	HKB3250F	HKB3090T
100	500	1000	KB3100	KB3100S	HKB3100	KB3250F	KB3250FS	HKB3250F	HKB3100T
125	625	1250	KB3125	KB3125S	HKB3125	KB3250F	KB3250FS	HKB3250F	HKB3125T
150	750	1500	KB3150	KB3150S	HKB3150	KB3250F	KB3250FS	HKB3250F	HKB3150T
175	875	1750	KB3175	KB3175S	HKB3175	KB3250F	KB3250FS	HKB3250F	HKB3175T
200	1000	2000	KB3200	KB3200S	HKB3200	KB3250F	KB3250FS	HKB3250F	HKB3200T
225	1125	2250	KB3225	KB3225S	HKB3225	KB3250F	KB3250FS	HKB3250F	HKB3225T
250	1250	2500	KB3250	KB3250S	HKB3250	KB3250F	KB3250FS	HKB3250F	HKB3250T
			Approx. shipping weight 14 lb			Approx. shipping weight 11 lb			Approx. shipping weight 2 lb

Magnetic Only, Front Adjustable Breakers ③

Continuous Ampere Rating	Magnetic Trip Setting Amperes ④ Low	High	Trip Units Only Two-Pole ③ Catalog Number	Three-Pole Catalog Number
250	350	700	HKB2700TM	HKB3700TM
250	500	1000	HKB21000TM	HKB31000TM
250	625	1250	HKB21250TM	HKB31250TM
250	750	1500	HKB21500TM	HKB31500TM
250	875	1750	HKB21750TM	HKB31750TM
250	1125	2250	HKB22250TM	HKB32250TM
250	1250	2500	HKB22500TM	HKB32500TM

Notes

① Terminals shipped separately from breaker frame.
② Not UL Listed.
③ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Set on high side, adjustable to lower limit.

UL Listed Interrupting Ratings

Maximum Volts	Amperes
Standard Breakers	
240 AC	30,000 asymmetrical, 25,000 symmetrical
480 AC	25,000 asymmetrical, 22,000 symmetrical
600 AC	15,000 asymmetrical, 14,000 symmetrical
250 DC	10,000
MARK 75 Breakers	
240 AC	75,000 asymmetrical., 65,000 symmetrical.
480 AC	30,000 asymmetrical, 25,000 symmetrical
600 AC	20,000 asymmetrical, 18,000 symmetrical
250 DC	20,000 ①

Terminals ②

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Al/Cu Pressure Terminals		
250	(1) #4–350 kcmil Al/Cu	**TA250KB**
Optional Pressure Terminals		
250	(1) #4–350 kcmil Cu	**T250KB**

Notes

① Ratings above 10,000 A not UL Listed.

② Terminals shipped separately from breaker frame.

Shaded area denotes obsolete or discontinued products and services.

Accessories and Modifications

Magnetic Only, Front Adjustable Breakers (see table on Page V12-T3-347)

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton.

Note: Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker, listed on **Page V12-T3-347**, when ordering breakers to be used in 50 °C ambients.

For CSA, see Page V12-T3-374.

Note: Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.

Type KB breakers meet requirements for Class 19a, as defined by Federal Specification W-C-375b. Type HKB breakers not defined in W-C-375b.

UL Listed Interrupting Ratings (see table)

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243.**

Terminals (see table)

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum conductors, use joint compound. To order optional copper only terminals, add suffix "C" to complete breaker catalog number.

Magnetic Only Breakers

For description, refer to Application Data 29-160. To order these breakers, select frame, trip unit and terminals.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Shaded area denotes obsolete or discontinued products and services.

Type JA

JA: 600 Vac; 250 Vdc



Type JA 70–225 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Fixed Trip, Thermal-Magnetic, Saf-T-Vue (Suitable for Reverse-Feed)

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes (Set on High Side, Adjustable to Lower Limits) Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ① Standard Catalog Number	Saf-T-Vue Catalog Number	Breaker Without Terminals Standard Catalog Number	Saf-T-Vue Catalog Number
Two-Pole, 600 Vac, 250 Vdc ②						
70	350	700	**JA2070**	**JA2070S**	**JA2070W**	**JA2070SW**
90	450	900	**JA2090**	**JA2090S**	**JA2090W**	**JA2090SW**
100	500	1000	**JA2100**	**JA2100S**	**JA2100W**	**JA2100SW**
125	625	1250	**JA2125**	**JA2125S**	**JA2125W**	**JA2125SW**
150	750	1500	**JA2150**	**JA2150S**	**JA2150W**	**JA2150SW**
175	875	1750	**JA2175**	**JA2175S**	**JA2175W**	**JA2175SW**
200	1000	2000	**JA2200**	**JA2200S**	**JA2200W**	**JA2200SW**
225	1125	2250	**JA2225**	**JA2225S**	**JA2225W**	**JA2225SW**
			Approx. shipping weight 12 lb		Approx. shipping weight 12 lb	
Three-Pole, 600 Vac Only						
70	350	700	**JA3070**	**JA3070S**	**JA3070W**	**JA3070SW**
90	450	900	**JA3090**	**JA3090S**	**JA3090W**	**JA3090SW**
100	500	1000	**JA3100**	**JA3100S**	**JA3100W**	**JA3100SW**
125	625	1250	**JA3125**	**JA3125S**	**JA3125W**	**JA3125SW**
150	750	1500	**JA3150**	**JA3150S**	**JA3150W**	**JA3150SW**
175	875	1750	**JA3175**	**JA3175S**	**JA3175W**	**JA3175SW**
200	1000	2000	**JA3200**	**JA3200S**	**JA3200W**	**JA3200SW**
225	1125	2250	**JA3225**	**JA3225S**	**JA3225W**	**JA3225SW**
			Approx. shipping weight 14 lb		Approx. shipping weight 12 lb	

Special Breakers ③

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes (Set on High Side, Adjustable to Lower Limits) Low	High	Two-Pole ③ Standard Catalog Number	Saf-T-Vue Catalog Number	Three-Pole Standard Catalog Number	Saf-T-Vue Catalog Number
Magnetic Only Breakers, Front Adjustable—Without Terminals ④						
225	350	700	**JA2700MW**	**JA2700SMW**	**JA3700MW**	**JA3700SMW**
225	625	1250	**JA21250MW**	**JA21250SMW**	**JA31250MW**	**JA31250SMW**
225	750	1500	**JA21500MW**	**JA21500SMW**	**JA31500MW**	**JA31500SMW**
225	875	1750	**JA21750MW**	**JA21750SMW**	**JA31750MW**	**JA31750SMW**
225	1125	2250	**JA22250MW**	**JA22250SMW**	**JA32250MW**	**JA32250SMW**
Ambient Compensating Breakers						
70	350	700	**JA2070A**	—	**JA3070A**	—
100	500	1000	**JA2100A**	—	**JA3100A**	—
125	625	1250	**JA2125A**	—	**JA3125A**	—
150	750	1500	**JA2150A**	—	**JA3150A**	—
175	875	1750	**JA2175A**	—	**JA3175A**	—
200	1000	2000	**JA2200A**	—	**JA3200A**	—
225	1125	2250	**JA2225A**	—	**JA3225A**	—

Notes

① Terminals are shipped separately from breaker frame.
② Not UL Listed.
③ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Select desired terminal from table and order as separate item.

UL Listed Interrupting Ratings

Maximum Volts	Amperes
240 AC	30,000 asymmetrical, 25,000 symmetrical
480 AC	25,000 asymmetrical, 22,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	10,000

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Al/Cu Pressure Terminals		
70–225	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al	**TA225LA1**
Optional Copper Pressure Terminals		
70–225	(1) #6–350 kcmil Cu	**T225LA**
70–225 ①	(1) #6–250 kcmil Cu	**T225LBF**

Note

① Optional terminal.

Shaded area denotes obsolete or discontinued products and services.

Accessories and Modifications

Special Calibrations (see table on Page **V12-T3-349**)

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton.

See Application Data 29-160 for information regarding special conditions.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker when ordering breakers to be used in 50 °C ambients.

For CSA, see Page V12-T3-374.

Type JA breakers meet requirements of Class 19a and 20a circuit breakers as defined by Federal Specification W-C-375b.

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243.**

Terminals (see table)

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed left. When used with aluminum conductors, use joint compound. To order optional copper only terminals, add suffix "C" to complete breaker catalog number.

Note: Terminals are shipped separately from breaker frame.

Note: If upgrading a JA breaker to a Series C K-Frame in a panelboard application, order TAD3 spacer kit.

UL Listed Interrupting Ratings (see table)

-

Magnetic Only and Ambient Compensating Breakers

For description, refer to Application Data 29-160. To order, select catalog number from table on **Page V12-T3-349**.

Shaded area denotes obsolete or discontinued products and services.

Types KA and HKA

KA: 600 Vac; 250 Vdc



Type KA 70–225 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Interchangeable Trip, Thermal-Magnetic, Saf-T-Vue and MARK 75 Type HKA

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting Amperes ① Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ② Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Shipped as Frame, Trip Unit and Terminals Frame Only Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Trip Unit Only Standard MARK 75 or Saf-T-Vue Catalog Number
Two-Pole, 600 Vac, 250 Vdc ③									
70	350	700	**KA2070**	**KA2070S**	**HKA2070**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2070T**
90	450	900	**KA2090**	**KA2090S**	**HKA2090**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2090T**
100	500	1000	**KA2100**	**KA2100S**	**HKA2100**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2100T**
125	625	1250	**KA2125**	**KA2125S**	**HKA2125**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2125T**
150	750	1500	**KA2150**	**KA2150S**	**HKA2150**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2150T**
175	875	1750	**KA2175**	**KA2175S**	**HKA2175**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2175T**
200	1000	2000	**KA2200**	**KA2200S**	**HKA2200**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2200T**
225	1125	2250	**KA2225**	**KA2225S**	**HKA2225**	**KA2225F**	**KA2225FS**	**HKA2225F**	**HKA2225T**
			Approx. shipping weight 12 lb			Approx. shipping weight 9.5 lb			Approx. shipping weight 2 lb
Three-Pole, 600 Vac Only									
70	350	700	**KA3070**	**KA3070S**	**HKA3070**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3070T**
90	450	900	**KA3090**	**KA3090S**	**HKA3090**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3090T**
100	500	1000	**KA3100**	**KA3100S**	**HKA3100**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3100T**
125	625	1250	**KA3125**	**KA3125S**	**HKA3125**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3125T**
150	750	1500	**KA3150**	**KA3150S**	**HKA3150**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3150T**
175	875	1750	**KA3175**	**KA3175S**	**HKA3175**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3175T**
200	1000	2000	**KA3200**	**KA3200S**	**HKA3200**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3200T**
225	1125	2250	**KA3225**	**KA3225S**	**HKA3225**	**KA3225F**	**KA3225FS**	**HKA3225F**	**HKA3225T**
			Approx. shipping weight 14 lb			Approx. shipping weight 11 lb			Approx. shipping weight 2.5 lb.

Trip Units Only for Magnetic Only and Ambient Compensating Breakers ④

Continuous Ampere Rating	Magnetic Trip Setting, Amperes ① Low	High	Two-Pole ③ Catalog Number	Three-Pole Catalog Number
Magnetic Only, Front Adjustable Breakers				
225	350	700	**HKA2700TM**	**HKA3700TM**
225	625	1250	**HKA21250TM**	**HKA31250TM**
225	750	1500	**HKA21500TM**	**HKA31500TM**
225	875	1750	**HKA21750TM**	**HKA31750TM**
225	1125	2250	**HKA22250TM**	**HKA32250TM**
Ambient Compensating Breakers				
70	350	700	**HKA2070TA**	**HKA3070TA**
100	500	1000	**HKA2100TA**	**HKA3100TA**
125	625	1250	**HKA2125TA**	**HKA3125TA**
150	750	1500	**HKA2150TA**	**HKA3150TA**
175	875	1750	**HKA2175TA**	**HKA3175TA**
200	1000	2000	**HKA2200TA**	**HKA3200TA**
225	1125	2250	**HKA2225TA**	**HKA3225TA**

Notes

① Set on high side, adjustable to lower limit.
② Terminals are shipped separately from breaker frame.
③ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Not UL Listed.

UL Listed Interrupting Ratings

Maximum Volts	Amperes
Standard Breakers	
240 AC	30,000 asymmetrical, 25,000 symmetrical
480 AC	25,000 asymmetrical, 22,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	10,000
MARK 75 Breakers	
240 AC	75,000 asymmetrical, 65,000 symmetrical
480 AC	40,000 asymmetrical, 35,000 symmetrical
600 AC	30,000 asymmetrical, 25,000 symmetrical
250 DC	20,000 ①

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Numbers
Standard Al/Cu Pressure Terminals		
225	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al	**TA225LA1**
Optional Copper Pressure Terminals		
225	(1) #6–350 kcmil Cu	**T225LA**
225 ②	(1) #6–250 kcmil Cu	**T225LBF**

Notes

① Ratings above 10,000 A not UL Listed.

② Optional terminal.

Shaded area denotes obsolete or discontinued products and services.

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton. See Application Data 29-160 for information regarding special conditions.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker when ordering breakers to be used in 50 °C ambients.

Note: Not UL Listed.

Terminals (see table)

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum conductors, use joint compound. To order optional copper only terminals, add suffix "C" to complete breaker catalog number.

Type KA breakers meet requirements for Class 19a and 20a circuit breakers, and Type HKA meet requirements for Class 23a as defined by Federal Specification W-C-375b.

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243.**

Note: Terminals are shipped separately from breaker frame.

Note: If upgrading a KA, HKA breaker to a Series C K-Frame in a panelboard application, also order TAD3 spacer kit.

UL Listed Interrupting Ratings (see table)

Magnetic Only Breakers

For description, refer to Application Data 29-160. To order these breakers, select frame, trip unit and terminals.

Shaded area denotes obsolete or discontinued products and services.

Type LBB

LBB: 600 Vac; 250 Vdc



Type LBB 125–400 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Fixed Trip, Thermal-Magnetic, Saf-T-Vue (Suitable for Reverse-Feed)

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes ①		Complete Breaker Includes Pressure Type Aluminum Terminals ②		Breaker Without Terminals	
			Standard	Saf-T-Vue	Standard	Saf-T-Vue
	Low	High	Catalog Number	Catalog Number	Catalog Number	Catalog Number
Two-Pole, 600 Vdc, 250 Vdc ③						
125	625	1250	**LBB2125**	**LBB2125S**	**LBB2125W**	**LBB2125SW**
150	750	1500	**LBB2150**	**LBB2150S**	**LBB2150W**	**LBB2150SW**
175	875	1750	**LBB2175**	**LBB2175S**	**LBB2175W**	**LBB2175SW**
200	1000	2000	**LBB2200**	**LBB2200S**	**LBB2200W**	**LBB2200SW**
225	1125	2250	**LBB2225**	**LBB2225S**	**LBB2225W**	**LBB2225SW**
250	1250	2500	**LBB2250**	**LBB2250S**	**LBB2250W**	**LBB2250SW**
300	1500	3000	**LBB2300**	**LBB2300S**	**LBB2300W**	**LBB2300SW**
350	1750	3500	**LBB2350**	**LBB2350S**	**LBB2350W**	**LBB2350SW**
400	2000	4000	**LBB2400**	**LBB2400S**	**LBB2400W**	**LBB2400SW**
			Approx. shipping weight 13 lb		Approx. shipping weight 13 lb	
Three-Pole, 600 Vac Only						
125	625	1250	**LBB3125**	**LBB3125S**	**LBB3125W**	**LBB3125SW**
150	750	1500	**LBB3150**	**LBB3150S**	**LBB3150W**	**LBB3150SW**
175	875	1750	**LBB3175**	**LBB3175S**	**LBB3175W**	**LBB3175SW**
200	1000	2000	**LBB3200**	**LBB3200S**	**LBB3200W**	**LBB3200SW**
225	1125	2250	**LBB3225**	**LBB3225S**	**LBB3225W**	**LBB3225SW**
250	1250	2500	**LBB3250**	**LBB3250S**	**LBB3250W**	**LBB3250SW**
300	1500	3000	**LBB3300**	**LBB3300S**	**LBB3300W**	**LBB3300SW**
350	1750	3500	**LBB3350**	**LBB3350S**	**LBB3350W**	**LBB3350SW**
400	2000	4000	**LBB3400**	**LBB3400S**	**LBB3400W**	**LBB3400SW**
			Approx. shipping weight 15 lb		Approx. shipping weight 15 lb	

Notes

① Set on high side, adjustable to lower limits.
② Terminals are shipped separately from breaker.
③ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

Magnetic Only, Ambient Compensating Breakers ①

Continuous Ampere Rating	Magnetic Trip Setting, Amperes ② Low	High	Two-Pole Breakers ③ Standard Catalog Number	Saf-T-Vue Catalog Number	Three-Pole Breakers Standard Catalog Number	Saf-T-Vue Catalog Number
Magnetic Only Breakers, Front Adjustable—Without Terminals ④						
400	350	700	**LBB2700MW**	**LBB2700SMW**	**LBB3700MW**	**LBB3700SMW**
400	625	1250	**LBB21250MW**	**LBB21250SMW**	**LBB31250MW**	**LBB31250SMW**
400	750	1500	**LBB21500MW**	**LBB21500SMW**	**LBB31500MW**	**LBB31500SMW**
400	875	1750	**LBB21750MW**	**LBB21750SMW**	**LBB31750MW**	**LBB31750SMW**
400	1125	2250	**LBB22250MW**	**LBB22250SMW**	**LBB32250MW**	**LBB32250SMW**
400	1500	3000	**LBB23000MW**	**LBB23000SMW**	**LBB33000MW**	**LBB33000SMW**
400	2000	4000	**LBB24000MW**	**LBB24000SMW**	**LBB34000MW**	**LBB34000SMW**
Ambient Compensating Breakers—Includes Terminals						
125	625	1250	**LBB2125A**	**LBB2125SA**	**LBB3125A**	**LBB3125SA**
150	750	1500	**LBB2150A**	**LBB2150SA**	**LBB3150A**	**LBB3150SA**
175	875	1750	**LBB2175A**	**LBB2175SA**	**LBB3175A**	**LBB3175SA**
200	1000	2000	**LBB2200A**	**LBB2200SA**	**LBB3200A**	**LBB3200SA**
225	1125	2250	**LBB2225A**	**LBB2225SA**	**LBB3225A**	**LBB3225SA**
250	1250	2500	**LBB2250A**	**LBB2250SA**	**LBB3250A**	**LBB3250SA**
300	1500	3000	**LBB2300A**	**LBB2300SA**	**LBB3300A**	**LBB3300SA**
350	1750	3500	**LBB2350A**	**LBB2350SA**	**LBB3350A**	**LBB3350SA**
400	2000	4000	**LBB2400A**	**LBB2400SA**	**LBB3400A**	**LBB3400SA**

UL Listed Interrupting Ratings

Maximum Volts	Amperes
240 AC	50,000 asymmetrical, 42,000 symmetrical
480 AC	35,000 asymmetrical, 30,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	20,000 ⑤

Accessories and Modifications.

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum calibration for 400 Hz is 300 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker when ordering breakers to be used in 50 °C ambients.

Note: Not UL Listed.

Terminals

Two terminals required per pole.

Select from **Page V12-T3-361.**

Note: Terminals are shipped separately from breaker.

Note: If upgrading an LBB breaker to a Series C K-Frame in a panelboard application, also order TAD3 spacer kit.

For CSA, see Page V12-T3-374.

Type LBB breakers meet requirements for Class 21a circuit breakers, as defined by Federal Specification W-C-375b.

UL Listed Interrupting Ratings (see table)

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Magnetic Only Breakers

For description, refer to Application Data 29-160. To order, select catalog number from table above.

Notes

① Not UL Listed.
② Set on high side, adjustable to lower limits.
③ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Select desired terminals from **V12-T3-356**, and order as separate item.
⑤ Ratings above 10,000 A not UL Listed.

Shaded area denotes obsolete or discontinued products and services.

Types LB and HLB

LB: 600 Vac; 250 Vdc



Type LB and MARK 75 Type HLB 70–400 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Interchangeable Trip, Thermal-Magnetic, Saf-T-Vue and MARK 75

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting Amperes ① Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ② Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Shipped as Frame, Trip Unit and Terminals ② Frame Only Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Trip Unit Only Standard Saf-T-Vue, MARK 75 Catalog Number
Two-Pole, 600 Vac, 250 Vdc ③									
70	350	700	**LB2070**	**LB2070S**	—	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2070T**
90	450	900	**LB2090**	**LB2090S**	—	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2090T**
100	500	1000	**LB2100**	**LB2100S**	—	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2100T**
125	625	1250	**LB2125**	**LB2125S**	**HLB2125**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2125T**
150	750	1500	**LB2150**	**LB2150S**	**HLB2150**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2150T**
175	875	1750	**LB2175**	**LB2175S**	**HLB2175**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2175T**
200	1000	2000	**LB2200**	**LB2200S**	**HLB2200**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2200T**
225	1125	2250	**LB2225**	**LB2225S**	**HLB2225**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2225T**
250	1250	2500	**LB2250**	**LB2250S**	**HLB2250**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2250T**
300	1500	3000	**LB2300**	**LB2300S**	**HLB2300**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2300T**
350	1750	3500	**LB2350**	**LB2350S**	**HLB2350**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2350T**
400	2000	4000	**LB2400**	**LB2400S**	**HLB2400**	**LB2400F**	**LB2400FS**	**HLB2400F**	**HLB2400T**
			Approx. shipping weight 13 lb			Approx. shipping weight 10 lb			Approx. shipping weight 2 lb
Three-Pole, 600 Vac Only									
70	350	700	**LB3070**	**LB3070S**	—	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3070T**
90	450	900	**LB3090**	**LB3090S**	—	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3090T**
100	500	1000	**LB3100**	**LB3100S**	—	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3100T**
125	625	1250	**LB3125**	**LB3125S**	**HLB3125**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3125T**
150	750	1500	**LB3150**	**LB3150S**	**HLB3150**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3150T**
175	875	1750	**LB3175**	**LB3175S**	**HLB3175**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3175T**
200	1000	2000	**LB3200**	**LB3200S**	**HLB3200**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3200T**
225	1125	2250	**LB3225**	**LB3225S**	**HLB3225**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3225T**
250	1250	2500	**LB3250**	**LB3250S**	**HLB3250**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3250T**
300	1500	3000	**LB3300**	**LB3300S**	**HLB3300**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3300T**
350	1750	3500	**LB3350**	**LB3350S**	**HLB3350**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3350T**
400	2000	4000	**LB3400**	**LB3400S**	**HLB3400**	**LB3400F**	**LB3400FS**	**HLB3400F**	**HLB3400T**
			Approx. shipping weight 15 lb			Approx. shipping weight 12 lb			Approx. shipping weight 2.5 lb

Notes

① Set on high side, adjustable to lower limits.
② Terminals are shipped separately from breaker.
③ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.

Shaded area denotes obsolete or discontinued products and services.

Special Breakers—Trip Units Only ①

Continuous Ampere Rating	Magnetic Trip Setting, Amperes ② Low	High	Trip Unit Only Two-Pole ③ Catalog Number	Three-Pole Catalog Number
Magnetic Only Breakers, Front Adjustable				
400	350	700	**HLB2700TM**	**HLB3700TM**
400	625	1250	**HLB21250TM**	**HLB31250TM**
400	750	1500	**HLB21500TM**	**HLB31500TM**
400	875	1750	**HLB21750TM**	**HLB31750TM**
400	1125	2250	**HLB22250TM**	**HLB32250TM**
400	1125	2250	**HLB22250TM**	**HLB32250TM**
400	1500	3000	**HLB23000TM**	**HLB33000TM**
400	2000	4000	**HLB24000TM**	**HLB34000TM**
Ambient Compensating Breakers				
70	350	700	**HLB2070TA**	**HLB3070TA**
90	450	900	**HLB2090TA**	**HLB3090TA**
100	500	1000	**HLB2100TA**	**HLB3100TA**
125	625	1250	**HLB2125TA**	**HLB3125TA**
150	750	1500	**HLB2150TA**	**HLB3150TA**
175	875	1750	**HLB2175TA**	**HLB3175TA**
200	1000	2000	**HLB2200TA**	**HLB3200TA**
225	1125	2250	**HLB2225TA**	**HLB3225TA**
250	1250	2500	**HLB2250TA**	**HLB3250TA**
300	1500	3000	**HLB2300TA**	**HLB3300TA**
350	1750	3500	**HLB2350TA**	**HLB3350TA**
400	2000	4000	**HLB2400TA**	**HLB3400TA**

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC circuits, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum calibration for 400 Hz is 300 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering breakers to be used in 50 °C ambients.

Note: Not UL Listed.

Magnetic Only Breakers

For description, refer to Application Data 29-160. To order, select trip unit from table above, frame and terminals.

Note: Not UL Listed.

For CSA, see Page V12-T3-374.

Type LB breakers meet requirements for Class 21a circuit breakers, and Type HLB meet requirements for Class 23a, as defined by Federal Specification W-C-375b.

UL Listed Interrupting Ratings

Maximum Volts	Amperes
Standard Breakers	
240 AC	50,000 asymmetrical, 42,000 symmetrical
480 AC	35,000 asymmetrical, 30,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	20,000 ④
MARK 75 Breakers	
240 AC	75,000 asymmetrical, 65,000 symmetrical
480 AC	40,000 asymmetrical, 35,000 symmetrical
600 AC	30,000 asymmetrical, 25,000 symmetrical
250 DC	20,000 ④

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Terminals

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum cable, use joint compound. To order optional copper only terminals, add suffix "C" to complete breaker catalog number.

Note: Terminals are shipped separately from breaker. If upgrading an LB, HLB breaker to a Series C K-Frame in a panelboard application, also order TAD3 spacer kit.

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Pressure Terminals		
225	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al	**TA225LA1**
350	(1) 250–500 kcmil Al/Cu	**TA350DA**
400	(2) 3/0–250 kcmil Cu only	**T400DA2**
Optional Copper Pressure Terminals		
225	(1) #6–350 kcmil Cu	**T225LA**
225 ⑤	(1) #6–250 kcmil Cu	**T225LBF**
350	(1) 250–500 kcmil Cu	**T350DA**

Notes

① Not UL Listed.
② Set on high side, adjustable to lower limits.
③ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Ratings above 10,000 A not UL Listed.
⑤ Optional terminal.

Shaded area denotes obsolete or discontinued products and services.

Type DA

DA: 240 Vac; 250 Vdc



Type DA Breakers 250–400 A, 240 Vac, 250 Vdc, Two- and Three-Pole, Fixed Trip, Thermal-Magnetic (Suitable for Reverse-Feed)

Continuous Ampere Rating at 40 °C	Breakers With Line Terminals Only		Breakers With Line and Load Terminals	
	Two-Pole ① Catalog Number	Three-Pole Catalog Number	Two-Pole ① Catalog Number	Three-Pole Catalog Number
250	**DA2250Y**	**DA3250Y**	**DA2250**	**DA3250**
300	**DA2300Y**	**DA3300Y**	**DA2300**	**DA3300**
350	**DA2350Y**	**DA3350Y**	**DA2350**	**DA3350**
400	**DA2400Y**	**DA3400Y**	**DA2400**	**DA3400**
	Approx. shipping weight 13 lb	Approx. shipping weight 15 lb	Approx. shipping weight 13 lb	Approx. shipping weight 13 lb

Accessories and Modifications

Type DA breakers meet requirements of Federal Specification W-C-375b., Class 14b.

UL Listed Interrupting Ratings

Maximum Volts	Amperes
240 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	10,000

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Terminals

Terminals are UL Listed for the wire type and size listed below. When used with aluminum conductors, use joint compound.

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Pressure Terminals		
350	(1) 250–500 kcmil Al/Cu	**TA350DA**
400	(2) 3/0–250 kcmil Cu only	**T400DA2**
Optional Terminals (for Copper Cable)		
350	(1) 250–500 kcmil Cu	**T350DA**

Note: If upgrading a DA breaker to a Series C K-Frame in a panelboard application, also order TAD3 spacer kit.

For CSA, see Page V12-T3-374.

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC circuits, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum 400 Hz calibrations: Type DA, 300 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker when ordering breakers to be used in 50 °C ambients. Same price as standard 40 °C breakers.

Note: Not UL Listed.

Notes

① Two-pole breakers are supplied in three-pole frames.

Shaded area denotes obsolete or discontinued products and services.

Type LAB

LAB: 600 Vac; 250 Vdc



Type LAB 125–400 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Fixed Trip, Thermal-Magnetic, Saf-T-Vue (Suitable for Reverse-Feed)

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes ①		Complete Breaker Includes Pressure Type Aluminum Terminals ②		Breaker Without Terminals	
			Standard	Saf-T-Vue	Standard	Saf-T-Vue
	Low	High	Catalog Number	Catalog Number	Catalog Number	Catalog Number
Two-Pole, 600 Vac, 250 Vdc ③						
125	625	1250	**LAB2125**	**LAB2125S**	**LAB2125W**	**LAB2125SW**
150	750	1500	**LAB2150**	**LAB2150S**	**LAB2150W**	**LAB2150SW**
175	875	1750	**LAB2175**	**LAB2175S**	**LAB2175W**	**LAB2175SW**
200	1000	2000	**LAB2200**	**LAB2200S**	**LAB2200W**	**LAB2200SW**
225	1125	2250	**LAB2225**	**LAB2225S**	**LAB2225W**	**LAB2225SW**
250	1250	2500	**LAB2250**	**LAB2250S**	**LAB2250W**	**LAB2250SW**
300	1500	3000	**LAB2300**	**LAB2300S**	**LAB2300W**	**LAB2300SW**
350	1750	3500	**LAB2350**	**LAB2350S**	**LAB2350W**	**LAB2350SW**
400	2000	4000	**LAB2400**	**LAB2400S**	**LAB2400W**	**LAB2400SW**
			Approx. shipping weight 22 lb		Approx. shipping weight 22 lb	
Three-Pole, 600 Vac Only						
125	625	1250	**LAB3125**	**LAB3125S**	**LAB3125W**	**LAB3125SW**
150	750	1500	**LAB3150**	**LAB3150S**	**LAB3150W**	**LAB3150SW**
175	875	1750	**LAB3175**	**LAB3175S**	**LAB3175W**	**LAB3175SW**
200	1000	2000	**LAB3200**	**LAB3200S**	**LAB3200W**	**LAB3200SW**
225	1125	2250	**LAB3225**	**LAB3225S**	**LAB3225W**	**LAB3225SW**
250	1250	2500	**LAB3250**	**LAB3250S**	**LAB3250W**	**LAB3250SW**
300	1500	3000	**LAB3300**	**LAB3300S**	**LAB3300W**	**LAB3300SW**
350	1750	3500	**LAB3350**	**LAB3350S**	**LAB3350W**	**LAB3350SW**
400	2000	4000	**LAB3400**	**LAB3400S**	**LAB3400W**	**LAB3400SW**
			Approx. shipping weight 24.5 lb		Approx. shipping weight 24.5 lb	

Notes

① Set on high side, adjustable to lower limits.
② Terminals shipped separately from breaker.
③ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.

Shaded area denotes obsolete or discontinued products and services.

Special Breakers ①

Continuous Ampere Rating	Magnetic Trip Setting, Amperes ② Low	High	Breaker Catalog Number Two-Pole ③ Standard Catalog Number	Saf-T-Vue Catalog Number	Three-Pole Standard Catalog Number	Saf-T-Vue Catalog Number
Magnetic Only Breakers, Front Adjustable—Without Terminals ④						
400	350	700	LAB2700MW	LAB2700SMW	LAB3700MW	LAB3700SMW
400	625	1250	LAB21250MW	LAB21250SMW	LAB31250MW	LAB31250SMW
400	750	1500	LAB21500MW	LAB21500SMW	LAB31500MW	LAB31500SMW
400	875	1750	LAB21750MW	LAB21750SMW	LAB31750MW	LAB31750SMW
400	1125	2250	LAB22250MW	LAB22250SMW	LAB32250MW	LAB32250SMW
400	1500	3000	LAB23000MW	LAB23000SMW	LAB33000MW	LAB33000SMW
400	2000	4000	LAB24000MW	LAB24000SMW	LAB34000MW	LAB34000SMW
Ambient Compensating Breakers—Includes Terminals						
125	625	1250	LAB2125A	—	LAB3125A	—
150	750	1500	LAB2150A	—	LAB3150A	—
175	875	1750	LAB2175A	—	LAB3175A	—
200	1000	2000	LAB2200A	—	LAB3200A	—
225	1125	2250	LAB2225A	—	LAB3225A	—
250	1250	2500	LAB2250A	—	LAB3250A	—
300	1500	3000	LAB2300A	—	LAB3300A	—
350	1750	3500	LAB2350A	—	LAB3350A	—
400	2000	4000	LAB2400A	—	LAB3400A	—

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC circuits, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum calibration for 400 Hz is 300 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker when ordering breakers to be used in 50 °C ambients. **For CSA, see Page V12-T3-374.**

Note: Not UL Listed.

Type LAB breakers meet requirements for Class 21a circuit breakers, as defined by Federal Specification W-C-375b.

UL Listed Interrupting Ratings ⑤

Maximum Volts	Amperes
240 AC	50,000 asymmetrical, 42,000 symmetrical
480 AC	35,000 asymmetrical, 30,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	20,000 ⑥

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Terminals

Two terminals required per pole.

Select from the table on **Page V12-T3-362**.

Note: Terminals shipped separately from breaker.

Magnetic Only and Ambient Compensating Breakers

To order, select catalog number from "Special Breakers" table above.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Notes

① Not UL Listed.
② Set on high side, adjustable to lower limits.
③ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Select desired terminals from **Page V12-T3-365** and order as separate item.
⑤ Interrupting capacities shown do not apply to molded-case switches.
⑥ Ratings above 10,000 A not UL Listed.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

Types LA and HLA

LA: 600 Vac; 250 Vdc



Type LA and MARK 75 Type HLA 70–400 A, 600 Vac, 250 Vdc, Two- and Three-Pole, Interchangeable Trip

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting Amperes ① Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ② Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Shipped as Frame, Trip Unit and Terminals Frame Only Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Trip Unit Only Standard, MARK 75, Saf-T-Vue Catalog Number
400 A Frame Breakers ③ — Two-Pole, 600 Vac, 250 Vdc ④									
70 ⑤	350	700	**LA2070**	**LA2070S**	**HLA2070**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2070T**
90 ⑤	450	900	**LA2090**	**LA2090S**	**HLA2090**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2090T**
100 ⑤	500	1000	**LA2100**	**LA2100S**	**HLA2100**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2100T**
125	625	1250	**LA2125**	**LA2125S**	**HLA2125**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2125T**
150	750	1500	**LA2150**	**LA2150S**	**HLA2150**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2150T**
175	875	1750	**LA2175**	**LA2175S**	**HLA2175**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2175T**
200	1000	2000	**LA2200**	**LA2200S**	**HLA2200**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2200T**
225	1125	2250	**LA2225**	**LA2225S**	**HLA2225**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2225T**
250	1250	2500	**LA2250**	**LA2250S**	**HLA2250**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2250T**
300	1500	3000	**LA2300**	**LA2300S**	**HLA2300**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2300T**
350	1750	3500	**LA2350**	**LA2350S**	**HLA2350**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2350T**
400	2000	4000	**LA2400**	**LA2400S**	**HLA2400**	**LA2400F**	**LA2400FS**	**HLA2400F**	**HLA2400T**
			Approx. shipping weight 21.75 lb			Approx. shipping weight 17.5 lb			Approx.shipping weight 2.25 lb
Three-Pole, 600 Vac Only									
70 ⑤	350	700	**LA3070**	**LA3070S**	**HLA3070**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3070T**
90 ⑤	450	900	**LA3090**	**LA3090S**	**HLA3090**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3090T**
100 ⑤	500	1000	**LA3100**	**LA3100S**	**HLA3100**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3100T**
125	625	1250	**LA3125**	**LA3125S**	**HLA3125**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3125T**
150	750	1500	**LA3150**	**LA3150S**	**HLA3150**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3150T**
175	875	1750	**LA3175**	**LA3175S**	**HLA3175**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3175T**
200	1000	2000	**LA3200**	**LA3200S**	**HLA3200**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3200T**
225	1125	2250	**LA3225**	**LA3225S**	**HLA3225**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3225T**
250	1250	2500	**LA3250**	**LA3250S**	**HLA3250**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3250T**
300	1500	3000	**LA3300**	**LA3300S**	**HLA3300**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3300T**
350	1750	3500	**LA3350**	**LA3350S**	**HLA3350**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3350T**
400	2000	4000	**LA3400**	**LA3400S**	**HLA3400**	**LA3400F**	**LA3400FS**	**HLA3400F**	**HLA3400T**
			Approx. shipping weight 24.5 lb			Approx. shipping weight 19 lb			Approx. shipping weight 3 lb

Notes

① Set on high side, adjustable to lower limits.
② Terminals shipped separately from breaker.
③ Terminals, trip units and accessories are not interchangeable between 400 and 600 A frames.
④ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.
⑤ These ratings have interrupting capacities reduced to 25,000 A symmetrical at 240 V, 20,000 A symmetrical at 480 V, and 15,000 A symmetrical at 600 V.

Shaded area denotes obsolete or discontinued products and services.

Special Breakers ① — Trip Units Only

Continuous Ampere Rating	Magnetic Trip Setting, Amperes ② Low	High	Two-Pole ③ Catalog Number	Three-Pole Catalog Number
Magnetic Only Breakers, Front Adjustable—400 A Frame Breakers ④				
400	350	700	**HLA2700TM**	**HLA3700TM**
400	625	1250	**HLA21250TM**	**HLA31250TM**
400	750	1500	**HLA21500TM**	**HLA31500TM**
400	875	1750	**HLA21750TM**	**HLA31750TM**
400	1125	2250	**HLA22250TM**	**HLA32250TM**
400	1500	3000	**HLA23000TM**	**HLA33000TM**
400	2000	4000	**HLA24000TM**	**HLA34000TM**
Ambient Compensating Breakers—400 A Frame Breakers Only ④				
70 ⑤	350	700	**HLA2070TA**	**HLA3070TA**
90 ⑤	450	900	**HLA2090TA**	**HLA3090TA**
100 ⑤	500	1000	**HLA2100TA**	**HLA3100TA**
125	625	1250	**HLA2125TA**	**HLA3125TA**
150	750	1500	**HLA2150TA**	**HLA3150TA**
175	875	1750	**HLA2175TA**	**HLA3175TA**
200	1000	2000	**HLA2200TA**	**HLA3200TA**
225	1125	2250	**HLA2225TA**	**HLA3225TA**
250	1250	2500	**HLA2250TA**	**HLA3250TA**
300	1500	3000	**HLA2300TA**	**HLA3300TA**
350	1750	3500	**HLA2350TA**	**HLA3350TA**
400	2000	4000	**HLA2400TA**	**HLA3400TA**

Notes

① Not UL Listed.
② Set on high side, adjustable to lower limits.
③ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Terminals, trip units and accessories are not interchangeable between 400 and 600 A frames.
⑤ These ratings have interrupting capacities reduced to 25,000 A symmetrical at 240 V, 20,000 A symmetrical at 480 V, and 15,000 A symmetrical at 600 V.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum 400 Hz calibration: 400 A frame, 300 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering breakers to be used in 50 °C ambients.

Note: Not UL Listed.

Terminals

Two terminals required per pole.

Select from table at right.

Note: Terminals shipped separately from breaker.

Magnetic Only Breakers

To order, select trip unit from the table on **Page V12-T3-361**, frame and terminals from table at right.

Note: Not UL Listed. MARK 75 frame color changed from gray to black in mid-2002.

UL Listed Except as Noted

Type LA breakers meet requirements for Class 21a circuit breakers, and Type HLA meet requirements for Class 23a as defined by Federal Specification W-C-375b.

UL Listed Interrupting Ratings ①

Maximum Volts	Amperes
Standard Breakers	
240 AC	50,000 asymmetrical, 42,000 symmetrical
480 AC	35,000 asymmetrical, 30,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	20,000 ②
MARK 75 Breakers	
240 AC	75,000 asymmetrical, 65,000 symmetrical
480 AC	40,000 asymmetrical, 35,000 symmetrical
600 AC	30,000 asymmetrical, 25,000 symmetrical
250 DC	20,000 ②

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Terminals

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum cable, use joint compound. To order optional copper only terminals, add suffix "C" to complete breaker catalog number.

Note: Terminals shipped separately from breaker. Terminals, trip units and accessories are not interchangeable between 400 and 600 A frames.

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Al/Cu Pressure Terminals		
225 ③	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al	**TA225LA1**
400 ③	(1) #4–250 kcmil Al/Cu, plus (1) 3/0–600 kcmil Al/Cu	**TA400LA1**
Optional Copper Pressure Terminals		
225 ③	(1) #6–350 kcmil Cu	**T225LA**
225 ③④	(1) #6–250 kcmil Cu	**T225LBF**
400 ③	(1) #4–250 kcmil Cu, plus (1) 3/0–600 kcmil Cu	**T401LA**

Notes

① Interrupting capacities do not apply to molded-case switches.
② Ratings above 10,000 A not UL Listed.
③ 400 A frame only.
④ Optional terminal.

Shaded area denotes obsolete or discontinued products and services.

Types LA and HLA

LA: 600 Vac; 250 Vdc



Type LA and MARK 75 Type HLA 250–600 A, 600 Vac, 250 Vdc, Two-, Three-Pole, Interchangeable Trip Thermal-Magnetic, Saf-T-Vue and MARK 75 Breakers

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes ① Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ② Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Shipped as Frame, Trip Unit and Terminals ② Frame Only Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Trip Unit Only Standard Saf-T-Vue, MARK 75 Catalog Number
600 A Frame Breakers ③—Two-Pole, 600 Vac, 250 Vdc ④									
250	1250	2500	2603D50G01	2603D50G13	1256C10G02	LA2600F	LA2600FS	HLA2600F	2603D46G07
300	1500	3000	2603D50G02	2603D50G14	1256C10G03	LA2600F	LA2600FS	HLA2600F	2603D46G08
350	1750	3500	2603D50G03	2603D50G15	1256C10G04	LA2600F	LA2600FS	HLA2600F	2603D46G09
350	1750	3500	2603D50G03	2603D50G15	1256C10G04	LA2600F	LA2600FS	HLA2600F	2603D46G09
400	2000	4000	2603D50G04	2603D50G16	1256C10G05	LA2600F	LA2600FS	HLA2600F	2603D46G10
500	2500	5000	LA2500	LA2500S	HLA2500	LA2600F	LA2600FS	HLA2600F	HLA2500T
600	3000	6000	LA2600	LA2600S	HLA2600	LA2600F	LA2600FS	HLA2600F	HLA2600T
Three-Pole, 600 Vac Only									
250	1250	2500	2603D50G07	2603D50G019	1256C10G12	LA3600F	LA3600FS	HLA3600F	2603D46G26
300	1500	3000	2603D50G08	2603D50G020	1256C10G13	LA3600F	LA3600FS	HLA3600F	2603D46G27
350	1750	3500	2603D50G09	2603D50G021	1256C10G14	LA3600F	LA3600FS	HLA3600F	2603D46G28
400	2000	4000	2603D50G10	2603D50G022	1256C10G15	LA3600F	LA3600FS	HLA3600F	2603D46G29
500	2500	5000	LA3500	LA3500S	HLA3500	LA3600F	LA3600FS	HLA3600F	HLA3500T
600	3000	6000	LA3600	LA3600S	HLA3600	LA3600F	LA3600FS	HLA3600F	HLA3600T

Type Special Breakers ⑤—Trip Units Only

Continuous Ampere Rating	Magnetic Trip Setting, Amperes Low	High	Two-Pole ④ Catalog Number	Three-Pole Catalog Number
600 A Frame Breakers ③—Magnetic Only Breakers, Front Adjustable				
600	1125	2250	2603D47G07	2603D47G26
600	1500	3000	2603D47G08	2603D47G27
600	2000	4000	2603D47G10	2603D47G29
600	2500	5000	HLA25000TM	HLA35000TM
600	3000	6000	HLA26000TM	HLA36000TM
600 A Frame Breakers—Ambient Compensating Breakers				
250	1250	2500	5683D88G07	5683D88G26
300	1500	3000	5683D88G08	5683D88G27
350	1750	3500	5683D88G09	5683D88G28
400	2000	4000	5683D88G10	5683D88G29
500	2500	5000	HLA2500TA	HLA3500TA
600	3000	6000	HLA2600TA	HLA3600TA

Notes

① Set on high side, adjustable to lower limits.
② Terminals shipped separately from breakers.
③ Terminals, trip units and accessories are not interchangeable between 400 and 600 A frames.
④ Two-pole breakers or trips are supplied in three-pole frames with current carrying parts omitted from center pole.
⑤ Not UL Listed.

Shaded area denotes obsolete or discontinued products and services.

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum 400 Hz calibration: 600 A frame, 450 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering breakers to be used in 50 °C ambients. Same price as standard 40 °C breakers.

For CSA, see Page V12-T3-374.

Type LA breakers meet requirements for Class 21a circuit breakers, and type HLA meet requirements for Class 23a as defined by Federal Specification W-C-375b.

Note: Not UL Listed. MARK 75 frame color changed from gray to black in mid-2002.

UL Listed Interrupting Ratings ①

Maximum Volts	Amperes
Standard Breakers	
240 AC	50,000 asymmetrical, 42,000 symmetrical
480 AC	35,000 asymmetrical, 30,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC	20,000 ②
MARK 75 Breakers	
240 AC	75,000 asymmetrical, 65,000 symmetrical
480 AC	40,000 asymmetrical, 35,000 symmetrical
600 AC	30,000 asymmetrical, 25,000 symmetrical
250 DC	20,000 ②

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Terminals

Two terminals are required per pole. Terminals are UL Listed for wire type and range listed below. When used with aluminum cable, use joint compound. To order optional copper only terminals, add suffix "C" to complete breaker catalog number.

Note: Terminals shipped separately from breakers. Terminals, trip units and accessories are not interchangeable between 400 A and 600 A frames.

Magnetic Only Breakers

To order, select frame, trip unit and terminals from tables on this page.

Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Al/Cu Pressure Terminals		
600 ③	(2) 250–500 kcmil Al/Cu	**TA600LA**
Optional Copper Pressure Terminals		
600 ③	(2) 250–500 kcmil Cu	**T600LA**

Notes

① Interrupting capacities shown do not apply to molded case switches.
② Ratings above 10,000 A not UL Listed.
③ For 600 A frame breakers only.

Shaded area denotes obsolete or discontinued products and services.

Type LAY

LAY: 240 Vac



Type LAY 250–600 A, 240 Vac, Three-Pole, Interchangeable Trip Thermal-Magnetic, 600 A Frame ①

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting Amperes ② Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ③ Catalog Number	Shipped as Frame, Trip Unit and Terminals ④ Frame Only Catalog Number	Trip Unit Only Catalog Number
250	1250	2500	LAY3250	LAY3600F	2603D46G26
300	1500	3000	LAY3300	LAY3600F	2603D46G27
350	1750	3500	LAY3350	LAY3600F	2603D46G28
400	2000	4000	LAY3400	LAY3600F	2603D46G29
500	2500	5000	LAY3500	LAY3600F	HLA3500T
600	3000	6000	LAY3600	LAY3600F	HLA3600T

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton. See Application Data 29-160 for information regarding special conditions. Maximum 400 Hz calibration: 600 A frame, 450 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering breakers to be used in 50 °C ambients. Same price as standard 40 °C breakers.

For CSA, see Page V12-T3-374.

Type LAY breakers are not defined by Federal Specification W-C-375b.

Note: Not UL Listed.

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

UL Listed Interrupting Ratings

Maximum Volts	Amperes
240 AC	115,000 asymmetrical, 100,000 symmetrical

Terminals

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum cable, use joint compound.

Note: Terminals shipped separately from breaker.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Terminals

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Al/Cu Pressure Terminals		
500 ④	(2) 3/0–250 kcmil Al/Cu	TA602LD
600 ④	(2) 400–500 kcmil Al/Cu	TA603LA
600 ④	(2) 250–500 kcmil Al/Cu	TA600LA
Optional Copper Pressure Terminals		
600 ⑤	(2) 250–500 kcmil Cu	T600LA

Notes

① Optional terminal.
② Set on high side, adjustable to lower limits.
③ Terminals shipped separately from breaker.
④ For 600 A frame breakers only.
⑤ Not UL Listed.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

Types MA and HMA

MA: 600 Vac; 250 Vdc



Type MA 125–800 A, 600 Vac, 250 Vdc ①, Two- and Three-Pole, Interchangeable Trip

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting Amperes ② Low	High	Complete Breaker Includes Pressure Type Copper Terminals ③ Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Shipped as Frame, Trip Unit and Terminals ③ Frame Only Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Trip Unit Only Standard Saf-T-Vue, MARK 75 Catalog Number
Two-Pole, 600 Vac, 250 Vdc ①④									
125	625	1250	**MA2125**	**MA2125S**	**HMA2125**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2125T**
150	750	1500	**MA2150**	**MA2150S**	**HMA2150**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2150T**
175	875	1750	**MA2175**	**MA2175S**	**HMA2175**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2175T**
200	1000	2000	**MA2200**	**MA2200S**	**HMA2200**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2200T**
225	1125	2250	**MA2225**	**MA2225S**	**HMA2225**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2225T**
250	1250	2500	**MA2250**	**MA2250S**	**HMA2250**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2250T**
300	1500	3000	**MA2300**	**MA2300S**	**HMA2300**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2300T**
350	1750	3500	**MA2350**	**MA2350S**	**HMA2350**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2350T**
400	2000	4000	**MA2400**	**MA2400S**	**HMA2400**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2400T**
500	2500	5000	**MA2500**	**MA2500S**	**HMA2500**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2500T**
600	3000	6000	**MA2600**	**MA2600S**	**HMA2600**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2600T**
700	3000	6000	**MA2700** ⑤	**MA2700S**	**HMA2700**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2700T** ⑤
800	3000	6000	**MA2800** ⑤	**MA2800S**	**HMA2800**	**MA2800F**	**MA2800FS**	**HMA2800F**	**HMA2800T** ⑤
800	MCS ⑥	—	**MA2800WK**	**MA2800WSK**	—	—	—	—	**Incl. in Frame**
			Approx. shipping weight 37 lb			Approx. shipping weight 24 lb			Approx. shipping weight 3.5 lb
Three-Pole, 600 Vac Only									
125	625	1250	**MA3125**	**MA3125S**	**HMA3125**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3125T**
150	750	1500	**MA3150**	**MA3150S**	**HMA3150**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3150T**
175	875	1750	**MA3175**	**MA3175S**	**HMA3175**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3175T**
200	1000	2000	**MA3200**	**MA3200S**	**HMA3200**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3200T**
225	1125 ⑥	2250	**MA3225**	**MA3225S**	**HMA3225**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3225T**
250	1250	2500	**MA3250**	**MA3250S**	**HMA3250**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3250T**
300	1500	3000	**MA3300**	**MA3300S**	**HMA3300**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3300T**
350	1750	3500	**MA3350**	**MA3350S**	**HMA3350**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3350T**
400	2000	4000	**MA3400**	**MA3400S**	**HMA3400**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3400T**
500	2500	5000	**MA3500**	**MA3500S**	**HMA3500**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3500T**
600	3000	6000	**MA3600**	**MA3600S**	**HMA3600**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3600T**
700	3000	6000	**MA3700** ⑤	**MA3700S**	**HMA3700**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3700T** ⑤
800	3000	6000	**MA3800** ⑤	**MA3800S**	**HMA3800**	**MA3800F**	**MA3800FS**	**HMA3800F**	**HMA3800T** ⑤
800	MCS ⑥	—	**MA3800WK**	**MA3800WSK**	—	—	—	—	**Incl. in Frame**
			Approx. shipping weight 44 lb			Approx. shipping weight 28 lb			Approx. shipping weight 4 lb

Notes

① Above 600 A, DC rating applies to magnetic only breakers.
② Set on high side, adjustable to lower limits.
③ Terminals are shipped separately from breaker.
④ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
⑤ 60 Hz AC only.
⑥ Interrupting capacities shown do not apply to high magnetic molded-case switches.

MARK 75 frame color changed from gray to black in mid-2002. Also magnetic only trip units available: HMA8000TM 4000–8000 A.

Shaded area denotes obsolete or discontinued products and services.

Magnetic Only Breakers, Front Adjustable ①

Continuous Ampere Rating	Magnetic Trip Range ③ Low	High	Trip Unit Only Two-Pole ③ Catalog Number	Three-Pole Catalog Number
800	625	1250	**HMA21250TM**	**HMA31250TM**
800	1000	2000	**HMA22000TM**	**HMA32000TM**
800	1500	3000	**HMA23000TM**	**HMA33000TM**
800	2000	4000	**HMA24000TM**	**HMA34000TM**
800	3000	6000	**HMA26000TM**	**HMA36000TM**
800	4000	8000	**HMA28000TM**	**HMA38000TM**

Ambient Compensating Breakers ①

Continuous Ampere Rating	Magnetic Trip Range ② Low	High	Trip Unit Only Two-Pole Catalog Number	Three-Pole Catalog Number
125	625	1250	**HMA2125TA**	**HMA3125TA**
150	750	1500	**HMA2150TA**	**HMA3150TA**
175	875	1750	**HMA2175TA**	**HMA3175TA**
200	1000	2000	**HMA2200TA**	**HMA3200TA**
220	1125	2250	**HMA2225TA**	**HMA3225TA**
250	1250	2500	**HMA2250TA**	**HMA3250TA**
300	1500	3000	**HMA2300TA**	**HMA3300TA**
350	1750	3500	**HMA2350TA**	**HMA3350TA**
400	2000	4000	**HMA2400TA**	**HMA3400TA**
500	2500	5000	**HMA2500TA**	**HMA3500TA**
600	3000	6000	**HMA2600TA**	**HMA3600TA**
700	3000	6000	**HMA2700TA**	**HMA3700TA**
800	3000	6000	**HMA2800TA**	**HMA3800TA**

Type MA Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC (50 Hz AC minimum, 60 Hz AC maximum, refer to Eaton. See Application Data 29-160 for additional information regarding special conditions.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering breakers to be used in 50 °C ambients.

Note: Not UL Listed.

Type MA UL Listed Interrupting Ratings ④

Maximum Volts	Amperes
Standard Breakers	
240 AC	50,000 asymmetrical, 42,000 symmetrical
480 AC	35,000 asymmetrical, 30,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC ⑤	20,000 ⑥
MARK 75 Breakers	
240 AC	75,000 asymmetrical, 65,000 symmetrical
480 AC	40,000 asymmetrical, 35,000 symmetrical
600 AC	30,000 asymmetrical, 25,000 symmetrical
250 DC ⑤	20,000 ⑥

Notes

① Not UL Listed.
② Set on high side, adjustable to lower limits.
③ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
④ Interrupting capacities shown do not apply to high magnetic molded-case switches.
⑤ Above 600 A, DC rating applies to magnetic only breakers.
⑥ Ratings above 10,000 A not UL Listed.

For CSA, see Page V12-T3-374.

Type MA breakers meet requirements for Class 21a circuit breakers, and Type HMA meet requirements for Class 23a, as defined by Federal Specification W-C-375b.

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Shaded area denotes obsolete or discontinued products and services.

Terminals

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum conductors, use joint compound.

Note: Terminals are shipped separately from breaker.

Magnetic Only and Ambient Compensating Breakers

To order a complete breaker, select trip unit plus frame and terminals.

Terminals ①

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Standard Al/Cu Pressure Terminals		
600	(2) #1–500 kcmil Al/Cu	**TA700MA1**
800 (Std.)	(3) 3/0–400 kcmil Al/Cu	**TA800MA2**
800 ①	(2) 500–750 kcmil Al/Cu	**TA801MA**
Optional Copper Pressure Terminals		
350	(1) #1–600 kcmil Cu	**T350MA**
600	(2) 2/0–500 kcmil Cu	**T600MA1**
800	(3) 3/0–300 kcmil Cu	**T800MA1**

Type MAY Accessories and Modifications

Type MAY 600–800 A, 240 Vac, Three-Pole, Interchangeable Trip

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes ② Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ③ Catalog Number	Shipped as Frame, Trip Unit and Terminals ③ Frame Only Catalog Number	Trip Unit Only Catalog Number
Three-Pole, 240 Vac Only					
600	3000	6000	**MAY3600**	**MAY3800F**	**HMA3600T**
700 ④	3000	6000	**MAY3700**	**MAY3800F**	**HMA3700T**
800 ④	3000	6000	**MAY3800**	**MAY3800F**	**HMA3800T**

Type MAY breakers are not defined by Federal Specification W-C-375b.

Note: Not UL listed.

Type MAY UL Listed Interrupting Ratings

Maximum Volts	Amperes
240 Vac	115,000 asymmetrical, 100,000 symmetrical

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Notes

① Not UL Listed.
② Set on high side, adjustable to lower limits.
③ Terminals are shipped separately from breaker.
④ 60 Hz AC only.

Shaded area denotes obsolete or discontinued products and services.

Types NB and NHB

NB: 600 Vac; 250 Vdc



Type NB 700–1200 A, 600 V, 60 Hz AC ①, 250 Vdc ②, Two- and Three-Pole Interchangeable Trip

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes ③ Low	High	Complete Breaker Includes Pressure Type Copper Terminals ④ Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Shipped as Frame, Trip Unit and Terminals ④ Frame Only Standard Catalog Number	Saf-T-Vue Catalog Number	MARK 75 Catalog Number	Trip Unit Only Standard Saf-T-Vue, MARK 75 Catalog Number
Two-Pole, 600 Vac, 250 Vdc ②⑤									
700	3000	6000	**NB2700**	**NB2700S**	**HNB2700**	**NB21200F**	**NB21200FS**	**HNB21200F**	**HNB2700T**
800	3000	6000	**NB2800**	**NB2800S**	**HNB2800**	**NB21200F**	**NB21200FS**	**HNB21200F**	**HNB2800T**
900	4000	8000	**NB2900**	**NB2900S**	**HNB2900**	**NB21200F**	**NB21200FS**	**HNB21200F**	**HNB2900T**
1000	4000	8000	**NB21000**	**NB21000S**	**HNB21000**	**NB21200F**	**NB21200FS**	**HNB21200F**	**HNB21000T**
1200	4000	8000	**NB21200**	**NB21200S**	**HNB21200**	**NB21200F**	**NB21200FS**	**HNB21200F**	**HNB21200T**
600	3000	6000	—	—	—	—	—	**HNB31200F**	**HNB3600T**
			Approx. shipping weight 43 lb			Approx. shipping weight 29 lb		Approx. shipping weight 29 lb	Approx. shipping weight 3.5 lb
Three-Pole, 600 Vac Only									
700	3000	6000	**NB3700**	**NB3700S**	**HNB3700**	**NB31200F**	**NB31200FS**	**HNB31200F**	**HNB3700T**
800	3000	6000	**NB3800**	**NB3800S**	**HNB3800**	**NB31200F**	**NB31200FS**	**HNB31200F**	**HNB3800T**
900	4000	8000	**NB3900**	**NB3900S**	**HNB3900**	**NB31200F**	**NB31200FS**	**HNB31200F**	**HNB3900T**
1000	4000	8000	**NB31000**	**NB31000S**	**HNB31000**	**NB31200F**	**NB31200FS**	**HNB31200F**	**HNB31000T**
1200	4000	8000	**NB31200**	**NB31200S**	**HNB31200**	**NB31200F**	**NB31200FS**	**HNB31200F**	**HNB31200T**
			Approx. shipping weight 51 lb			Approx. shipping weight 32 lb			Approx. shipping weight 4 lb

Magnetic Only Breakers, Front Adjustable ⑥⑦

Continuous Ampere Rating	Magnetic Trip Range ③ Low	High	Trip Unit Only Two-Pole ⑤ Catalog Number	Three-Pole Catalog Number
1200	3000	6000	**HNB26000TM**	**HNB36000TM**
1200	4000	8000	**HNB28000TM**	**HNB38000TM**
1200	5000	10000	**HNB210000TM**	**HNB310000TM**
1200	6000	12000	**HNB212000TM**	**HNB312000TM**

Notes

① Higher frequency calibration not available. Minimum of 50 Hz calibration available on special order.
② 250 Vdc rating applied only to magnetic only type breakers.
③ Set on high side, adjustable to lower limits.
④ Terminals shipped separately from breaker.
⑤ Two-pole breakers supplied in three-pole frames with current carrying parts omitted from center pole.
⑥ Frames, terminals, studs, mounting hardware, dimensions and shipping weights are same as standard thermal-magnetic breakers.
⑦ Not UL Listed.

UL Listed Interrupting Ratings

Maximum Volts	Amperes
Standard Breakers	
240 AC	50,000 asymmetrical, 42,000 symmetrical
480 AC	35,000 asymmetrical, 30,000 symmetrical
600 AC	25,000 asymmetrical, 22,000 symmetrical
250 DC ①②	20,000 ③
MARK 75 Breakers	
240 AC	75,000 asymmetrical, 65,000 symmetrical
480 AC	40,000 asymmetrical, 35,000 symmetrical
600 AC	30,000 asymmetrical, 25,000 symmetrical
250 DC ①②	20,000 ③

Terminals ④

Maximum Amperes	Number of Cables, Wire Range, Type,	Catalog Number
Standard Al/Cu Pressure Terminals		
1000	(3) 3/0–400 kcmil Al/Cu	**TA1000NB1**
1200	(4) 4/0–500 kcmil Al/Cu	**TA1200NB1**
Optional Copper or Al/Cu Pressure Terminals		
1000	(3) 3/0–500 kcmil Cu	**T1000NB1**
1200	(4) 3/0–400 kcmil Cu	**T1200NB1**
1200	(3) 500–750 kcmil Al/Cu	**TA1201NB1**

Shaded area denotes obsolete or discontinued products and services.

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC (50 Hz AC minimum, 60 Hz AC maximum for ratings of 700 A and above), refer to Eaton. See Application Data 29-160 for additional information regarding special conditions. Maximum 400 Hz calibration for type MA is 475 A.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering breakers to be used in 50 °C ambients. **For CSA, see Page V12-T3-374.**

Note: Not UL Listed.

Type NB breakers meet requirements for Class 21a circuit breakers, and Type HNB meet requirements for Class 23a, as defined by Federal Specification W-C-375b.

For all three-phase delta, grounded B phase applications, contact EatonCareTechnical Resource Center at **1-800-356-1243**.

Terminals

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum conductors, use joint compound. To order optional copper terminals, add suffix "C" to complete breaker catalog number.

Note: Frames, terminals, studs, mounting hardware, dimensions and shipping weights are same as standard thermal magnetic breakers.

Magnetic Only Breakers

To order a complete breaker, select trip unit, plus frame and terminals.

Note: Not UL Listed.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Notes

① 250 Vdc rating applied only to magnetic only type breakers.
② Terminals shipped separately from breaker.
③ Ratings above 10,000 A not UL Listed.
④ MARK 75 frame color changed from gray to black in mid-2002.

Shaded area denotes obsolete or discontinued products and services.

Type NBY

NBY: 240 Vac



Type NBY 700–1200 A, 240 V, 60 Hz AC ①, Three-Pole, Interchangeable Trip

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting Amperes ② Low	High	Complete Breaker Includes Pressure Type Aluminum Terminals ③ Catalog Number	Shipped as Frame, Trip Unit and Terminals ③ Frame Only Catalog Number	Trip Unit Only Catalog Number
Three-Pole, 600 Vac Only					
700	3000	6000	**NBY3700**	**NBY31200F**	**HNB3700T**
800	3000	6000	**NBY3800**	**NBY31200F**	**HNB3800T**
900	4000	8000	**NBY3900**	**NBY31200F**	**HNB3900T**
1200	4000	8000	**NBY31200**	**NBY31200F**	**HNB31200T**

UL Listed Interrupting Ratings

Maximum Volts	Amperes
240 AC	115,000 asymmetrical, 100,000 symmetrical

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Terminals

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum conductors, use joint compound.

Note: Terminals shipped separately from breaker.

Terminals

Max. Amperes	Number of Cables, Wire Range, Type,	Catalog Number
Standard Al/Cu Pressure Terminals		
1000	(3) 3/0–400 kcmil Al/Cu	**TA1000NB1**
1200	(4) 4/0–500 kcmil Al/Cu	**TA1200NB1**
1200	(3) 500–750 kcmil Al/Cu	**TA1201NB1**
Alternate Copper Pressure Terminals		
1000	(3) 3/0–500 kcmil Cu	**T1000NB1**
1200	(4) 3/0–400 kcmil Cu	**T1200NB1**

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard or for ambients other than 40 °C or 50° C. For frequencies other than 0–60 Hz AC (50 Hz AC minimum, 60 Hz AC maximum), refer to Eaton. See Application Data 29-160 for additional information regarding special conditions.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering for breakers to be used in 50 °C ambients.

Note: Not UL Listed.

For CSA, see Page V12-T3-374.

Type NBY breakers are not defined by Federal Specification W-C-375b.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Notes

① Higher frequency calibration not available. Minimum of 50 Hz calibration available on special order.

② Set on high side, adjustable to lower limits.

③ Terminals shipped separately from breaker.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

Type PB

Rear Connected PB Breaker: 600 Vac



Type PB 600–25s00 A, 600 V, 60 Cycle AC ①, 250 Vdc ②, Two- and Three-Pole, Interchangeable Trip

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes ③④ Low	High	Complete Breaker Includes Bus Bar Connectors ⑤ Catalog Number	Shipped as Frame, Trip Unit and Rear Connectors Frame Only Catalog Number	Trip Unit Only Catalog Number
Two-Pole, 600 Vac Only ⑥					
600	1500	5000	**PB2600**	**PB22500F**	**PB2600T**
700	1500	5000	**PB2700**	**PB22500F**	**PB2700T**
800	1500	5000	**PB2800**	**PB22500F**	**PB2800T**
900	1500	5000	**PB2900**	**PB22500F**	**PB2900T**
1000	1500	5000	**PB21000**	**PB22500F**	**PB21000T**
1200	2000	6000	**PB21200**	**PB22500F**	**PB21200T**
1400	2500	7000	**PB21400**	**PB22500F**	**PB21400T**
1600	3000	8000	**PB21600**	**PB22500F**	**PB21600T**
1800	3000	8000	**PB21800**	**PB22500F**	**PB21800T**
2000	3000	8000	**PB22000**	**PB22500F**	**PB22000T**
	Approx. shipping weight		132 lb	98 lb	18 lb
2500	3000	8000	**PB22500**	**PB22500F**	**PB22500T**
	Approx. shipping weight		144 lb	98 lb	18 lb
Three-Pole, 600 Vac Only—Not UL Listed					
600	1500	5000	**PB3600**	**PB32500F**	**PB3600T**
700	1500	5000	**PB3700**	**PB32500F**	**PB3700T**
800	1500	5000	**PB3800**	**PB32500F**	**PB3800T**
900	1500	5000	**PB3900**	**PB32500F**	**PB3900T**
1000	1500	5000	**PB31000**	**PB32500F**	**PB31000T**
1200	2000	6000	**PB31200**	**PB32500F**	**PB31200T**
1400	2500	7000	**PB31400**	**PB32500F**	**PB31400T**
1600	3000	8000	**PB31600**	**PB32500F**	**PB31600T**
1800	3000	8000	**PB31800**	**PB32500F**	**PB31800T**
2000	3000	8000	**PB32000**	**PB32500F**	**PB32000T**
	Approx. shipping weight		155 lb	108 lb	23 lb
2500	3000	8000	**PB32500**	**PB32500F**	**PB32500T**
	Approx. shipping weight		173 lb	108 lb	23 lb

Notes

① Higher frequency calibration not available. Minimum of 50 Hz calibration available on special order.
② Available only on magnetic only breakers.
③ Higher magnetic trip settings are available as special calibration. Refer to magnetic only breakers for specific trip ranges.
④ Set on high side, adjustable to lower limits.
⑤ Shipped separately from breaker.
⑥ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.

Shaded area denotes obsolete or discontinued products and services.

Type PB

PBF Front Connected: 600 Vac



Type PBF Front-Connected 600–2000 A, 600 V, 60 Cycle AC ①, 250 Vdc ②, Two- and Three-Pole, Interchangeable Trip

Continuous Ampere Rating at 40 °C	Magnetic Trip Setting, Amperes (Set on High Side, Adjustable to Lower Limits) Low	High	Complete Breaker Includes Bus Bar Connectors ③ Catalog Number	Shipped As: Frame Only Includes Bus Bar Connectors ③ Catalog Number	Trip Unit Only Catalog Number
Two-Pole, 600 Vac ④					
600	1500	5000	**PBF2600**	**PBF22000F**	**PBF2600T**
700	1500	5000	**PBF2700**	**PBF22000F**	**PBF2700T**
800	1500	5000	**PBF2800**	**PBF22000F**	**PBF2800T**
900	1500	5000	**PBF2900**	**PBF22000F**	**PBF2900T**
1000	1500	5000	**PBF21000**	**PBF22000F**	**PBF21000T**
1200	2000	6000	**PBF21200**	**PBF22000F**	**PBF21200T**
1400	2500	7000	**PBF21400**	**PBF22000F**	**PBF21400T**
1600	3000	8000	**PBF21600**	**PBF22000F**	**PBF21600T**
1800	3000	8000	**PBF21800**	**PBF22000F**	**PBF21800T**
2000	3000	8000	**PBF22000**	**PBF22000F**	**PBF22000T**
Three-Pole, 600 Vac—Not UL Listed					
600	1500	5000	**PBF3600**	**PBF32000F**	**PBF3600T**
700	1500	5000	**PBF3700**	**PBF32000F**	**PBF3700T**
800	1500	5000	**PBF3800**	**PBF32000F**	**PBF3800T**
900	1500	5000	**PBF3900**	**PBF32000F**	**PBF3900T**
1000	1500	5000	**PBF31000**	**PBF32000F**	**PBF31000T**
1200	2000	6000	**PBF31200**	**PBF32000F**	**PBF31200T**
1400	2500	7000	**PBF31400**	**PBF32000F**	**PBF31400T**
1600	3000	8000	**PBF31600**	**PBF32000F**	**PBF31600T**
1800	3000	8000	**PBF31800**	**PBF32000F**	**PBF31800T**
2000	3000	8000	**PBF32000**	**PBF32000F**	**PBF32000T**

Notes

① Higher frequency calibration not available. Minimum of 50 Hz calibration available on special order.
② Available only on magnetic only breakers.
③ Included with frame.
④ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.

Shaded area denotes obsolete or discontinued products and services.

Types PB and PBF Accessories and Modifications

PB breakers are not UL Listed.

Special Breakers ⑤ Magnetic Only, Front Adjustable ① Trip Unit Only

Continuous Ampere Rating	Magnetic Trip Range, Amperes ② Low	High	Two-Pole ③ Catalog Number	Three-Pole Catalog Number
For Rear-Connected Type PB Breakers				
2000	1500	5000	PB25000TM	PB35000TM
2000	2000	6000	PB26000TM	PB36000TM
2000	2500	7000	PB27000TM	PB37000TM
2000	3000	8000	PB28000TM	PB38000TM
2000	3500	10,000	PB210000TM	PB310000TM
2000	4000	12,000	PB212000TM	PB312000TM
2500	4000	12,000	373D488G08	373D488G09
For Front-Connected Type PBF Breakers				
2000	1500	5000	PBF25000TM	PBF35000TM
2000	2000	6000	PBF26000TM	PBF36000TM
2000	2500	7000	PBF27000TM	PBF37000TM
2000	3000	8000	PBF28000TM	PBF38000TM
2000	3500	10,000	PBF210000TM	PBF310000TM
2000	4000	12,000	PBF212000TM	PBF312000TM

Accessories and Modifications

Special Calibrations

Special calibration price additions apply to ampere ratings not listed as standard, or for ambients other than 40 °C or 50 °C. For frequencies other than 0–60 Hz AC, refer to Eaton. See Application Data 29-160 for information regarding special conditions.

Note: Not UL Listed.

50 °C Calibration

Add suffix "V" to catalog number for complete breaker or trip unit only, when ordering breakers to be used in 50 °C ambients.

Type PB breakers meet the requirements for Class 25a circuit breakers as defined by Federal Specification W-C-375b.

Interrupting Ratings

Maximum Volts	Amperes
240 AC ②	150,000 asymmetrical, 125,000 symmetrical
480 AC ②	115,000 asymmetrical, 100,000 symmetrical
600 AC ②	115,000 asymmetrical, 100,000 symmetrical
250 DC ⑤	75,000 A ④

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Magnetic Only Breakers

To order a complete breaker, select trip unit, plus frame and connectors.

Note: Not UL Listed.

Bus Bar Connections

"T" Connector



Bus Bar Connections—"T" Connector (For Cu/Al Bus)

Catalog Number
BA2000PB

Two required per pole. For rear bus connection of breakers through 2000 A. Accepts up to four bus bolts. May be rotated 90°.

Note: Shipped separately from breaker.

"C" Connector



"C" Connector (For Cu/Al Bus)

Breaker Amperes	Catalog Number
2500	BA2500PB

Two required per pole. For rear bus connection of 2500 A breakers.

Cable Connector



Cable Connector

Catalog Number
505C706G04

Fits "T" Connector and 2000 A front-connected breakers. Accepts four 400–600 kcmil copper cables.

Notes

⑤ Not UL Listed.

① Frames, connectors, dimensions and shipping weights are same as thermal-magnetic breakers.

② Set on high side, adjustable to lower limits.

③ Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.

④ Based on NEMA test procedure.

Shaded area denotes obsolete or discontinued products and services.

Types LC, LCC, LCA, LCCA, MARK 75 Types HLC, HLCC, HLCA, HLCCA SELTRONIC with Solid-State Trip Units 600 Vac, 50/60 Hz

Complete breaker requires frame and rating plug. See the table and terminals on **Page V12-T3-386**. Extra current transformer included for neutral. See accessories on **Page V12-T3-391** for remote ground fault trip indicator.

LCA: 600 Vac



Breakers for Standard Applications—Frame Only

Number of Poles ①	Standard (Long Delay and Short Time) Catalog Number	Short Time Only ② Catalog Number	Long Delay, Short Time and Adjustable Short Delay Time (0.06–0.22 sec.) Catalog Number
Types LC 150 and LCA 150 (75–150 A)			
2	LC2150F	LC2150FM	LCA2150F
3	LC3150F	LC3150FM	LCA3150F
MARK 75 Types HLC 150 and HLCA 150 (75–150 A)			
2	HLC2150F	HLC2150FM	HLCA2150F
3	HLC3150F	HLC3150FM	HLCA3150F
Types LC 300 and LCA 300 (150–300 A)			
2	LC2300F	LC2300FM	LCA2300F
3	LC3300F	LC3300FM	LCA3300F
MARK 75 Types HLC 300 and HLCA 300 (150–300 A)			
2	HLC2300F	HLC2300FM	HLCA2300F
3	HLC3300F	HLC3300FM	HLCA3300F
Types LC 400 and LCA 400 (200–400 A)			
2	LC2400F	LC2400FM	LCA2400F
3	LC3400F	LC3400FM	LCA3400F
MARK 75 Types HLC 400 and HLCA 400 (200–400 A)			
2	HLC2400F	HLC2400FM	HLCA2400F
3	HLC3400F	HLC3400FM	HLCA3400F
Types LC 600 and LCA 600 (300–600 A)			
2	LC2600F	LC2600FM	LCA2600F
3	LC3600F	LC3600FM	LCA3600F
MARK 75 Types HLC 600 and HLCA 600 (300–600 A)			
2	HLC2600F	HLC2600FM	HLCA2600F
3	HLC3600F	HLC3600FM	HLCA3600F

Breakers for Applications at 100% Rating—Frame Only

Number of Poles ①	Standard (Long Delay and Short Time) Catalog Number	Short Time Only ② Catalog Number	Long Delay, Short Time and Adjustable Short Delay Time (0.06–0.22 sec.) Catalog Number
Types LCC 600 and LCCA 600 (300–600 A)			
3	LCC3600F	—	LCCA3600F
MARK 75 Types HLCC 600 and HLCCA 600 (300–600 A)			
3	HLCC3600F	—	HLCCA3600F

Notes

① Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.

② UL Recognized component.

MARK 75 frame color changed from gray to black in mid-2002.

Shaded area denotes obsolete or discontinued products and services.

Types LCG, LCCG, LCGA, LCCGA, MARK 75 HLCG, HLCCG, HLCGA, HLCCGA SELTRONIC with Built-In Ground Fault Protection

Complete breaker requires frame and rating plug. See the table and terminals on **Page V12-T3-386**. Extra current transformer included for neutral. See accessories on **Page V12-T3-391** for remote ground fault trip indicator.

Note: Available without extra CT for neutral. Order by description as similar to above except without neutral CT or external CT terminal connections at same price. Note the standard ground fault unit can also be used without the neutral CT.

Note: These breakers use LC terminals. The fourth CT uses MC breaker terminals, **Page V12-T3-379**.

Breakers for Standard Application—Frame Only

Number of Poles ①	Standard (Long Delay, Short Time) and Ground Fault Trip Catalog Number	Long Delay, Short Time, Adjustable Short Delay Time and Ground Fault Trip	Ground Fault Characteristics Pickup Setting Amperes	Time Setting
Types LCG 150 and LCGA 150 (75–150 A) ②				
3	**LCG3150F**	**LCGA3150F**	50–150	3.5–30 Cy
MARK 75 Types HLCG 150 and HLCGA 150 (75–150 A) ②				
3	**HLCG3150F**	**HLCGA3150F**	50–150	3.5–30 Cy
Types LCG 300 and LCGA 300 (150–300 A) ②				
3	**LCG3300F**	**LCGA3300F**	60–300	3.5–30 Cy
MARK 75 Types HLCG 300 and HLCGA 300 (150–300 A) ②				
3	**HLCG3300F**	**HLCGA3300F**	60–300	3.5–30 Cy
Types LCG 400 and LCGA 400 (200–400 A) ②				
3	**LCG3400F**	**LCGA3400F**	0–400	3.5–30 Cy
MARK 75 Types HLCG 400 and HLCGA 400 (200–400 A) ②				
3	**HLCG3400F**	**HLCGA3400F**	80–400	3.5–30 Cy
Types LCG 600 and LCGA 600 (300–600 A) ②				
3	**LCG3600F**	**LCGA3600F**	120–600	3.5–30 Cy
MARK 75 Types HLCG 600 and HLCGA 600 (300–600 A) ②				
3	**HLCG3600F**	**HLCGA3600F**	120–600	3.5–30 Cy

Breakers for Application at 100% Rating—Frame Only

Number of Poles ①	Standard (Long Delay, Short Time) and Ground Fault Trip Catalog Number	Long Delay, Short Time, Adjustable Short Delay Time and Ground Fault Trip	Ground Fault Characteristics Pickup Setting Amperes	Time Setting
Types LCCG 600 and LCCGA 600 (300–600 A) ②				
3	**LCCG3600F**	**LCCGA3600F**	120–600	3.5–30 Cy
MARK 75 Types HLCCG 600 and HLCCGA 600 (300–600 A) ②				
3	**HLCCG3600F**	**HLCCGA3600F**	120–600	3.5–30 Cy

Notes

① Two-pole breakers supplied in three-pole frames with current carrying parts omitted from center pole.

② For applications other than standard residual scheme, see Application Data 29-160.

MARK 75 frame color changed from gray to black in mid-2002.

Shaded area denotes obsolete or discontinued products and services.

Types LCG, LCCG, LCGA, LCCGA, MARK 75 HLCG, HLCCG, HLCGA, HLCCGA SELTRONIC with Built-In Ground Fault Protection Accessories and Modifications

Field-Mountable Attachments ①②③④⑤

Description	Style Number
Provision to trip flux transfer shunt trip from external source 32 to 120 Vdc to 60 Hz ⑥	**1371D11G22**
240 to 600 Vac, 50/60 Hz ⑦	**1371D11G32**
Provision to trip flux transfer shunt trip from external source, plus a 1A-1B auxiliary switch 32 to 120 Vdc to 60 Hz ⑥	**1371D11G15**
240 to 600 Vac, 50/60 Hz ⑦	**1371D11G25**
Provision to trip flux transfer shunt trip from 24 Vdc source	**1371D93G01**
1A-1B auxiliary switch	**1371D11G03**
24 Vdc shunt trip and 1A-1B auxiliary switch	**1371D94G08**

For CSA, see Page V12-T3-374.

Type LC breakers meet requirements for Class 21a circuit breakers, and Type HLC meet requirements for Class 23a as defined by Federal Specification W-C-375b.

UL Listed Interrupting Ratings ⑧

Maximum Volts	Amperes
Standard Breakers	
240 AC	50,000 Asymmetrical, 42,000 Symmetrical
480 AC	35,000 Asymmetrical, 30,000 Symmetrical
600 AC	25,000 Asymmetrical, 22,000 Symmetrical
MARK 75 Breakers	
240 AC	75,000 Asymmetrical, 65,000 Symmetrical
480 AC	40,000 Asymmetrical, 35,000 Symmetrical
600 AC	30,000 Asymmetrical, 25,000 Symmetrical

For all three-phase delta, grounded B phase applications, contact EatonCare Technical Resource Center at **1-800-356-1243**.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Terminals

Note: Order separately.

Two terminals are required per pole.

Terminals are UL Listed for wire type and range listed below. When used with aluminum cable, use joint compound.

150, 300 and 400 A Frames Only

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Al/Cu Pressure Terminals		
225	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al	**TA225LA1**
400	(1) #4–250 kcmil Al/Cu, plus (1) 3/0–600 kcmil Al/Cu	**TA400LA1**
Optional Copper Pressure Terminals		
225	(1) #6–350 kcmil Cu	**T225LA**
225	(1) #6–250 kcmil Cu	**T225LBF**
400	(1) #4–250 kcmil Cu, plus (1) 3/0–600 kcmil Cu	**T401LA**

600 A Frame Only

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Al/Cu Pressure Terminals		
500	(2) 250–350 kcmil Al/Cu	**TA602LD**
600	(2) 400–500 kcmil Al/Cu	**TA603LA**
600 (std.)	(2) 250–500 kcmil Al/Cu	**TA600LA**
Optional Copper Pressure Terminals		
600	(2) 250–500 kcmil Cu	**T600LA**

Notes

① Only one attachment may be mounted per breaker.
② Contact EatonCare Technical Resource Center for other combinations.
③ Molded-case switches do not use standard SELTRONIC attachments, and should be ordered by description for factory mounting.
④ Does not void listing of UL Listed breakers.
⑤ Left pole mounting.
⑥ Rated 48 volts minimum for ground fault applications requiring tripping at 55% of voltage.
⑦ Not for use on ground fault applications.
⑧ Interrupting capacities shown do not apply to molded-case switches.

MARK 75 frame color changed from gray to black in mid-2002.

Shaded area denotes obsolete or discontinued products and services. ①

Types MC, MCC, MCA, MCCA, MARK 75 Types HMC, HMCC, HMCA, HMCCA SELTRONIC with Solid-State Trip Units 600 Vac, 50/60 Hz

MCA: 600 Vac



Breakers for Standard Applications—Frame Only

Number of Poles ②	Standard (Long Delay and Short Time) Catalog Number	Short Time Only ③ Catalog Number	Long Delay, Short Time and Adjustable Short Delay Time (0.08 –0.30 seconds) Catalog Number
Types MC and MCA (400–800 A)			
2	**MC2800F**	**MC2800FM**	**MCA2800F**
3	**MC3800F**	**MC3800FM**	**MCA3800F**
MARK 75 Types HMC and HMCA (400–800 A)			
2	**HMC2800F**	**HMC2800FM**	**HMCA2800F**
3	**HMC3800F**	**HMC3800FM**	**HMCA3800F**

Breakers for Application at 100% Rating—Frame Only ①

Number of Poles ②	Standard (Long Delay and Short Time) Catalog Number	Short Time Only ③ Catalog Number	Long Delay, Short Time and Adjustable Short Delay Time (0.08 –0.30 seconds) Catalog Number
Types MCC and MCCA (400–800 A)			
3	**MCC3800F**	—	**MCCA3800F**
MARK 75 Types HMCC and HMCCA (400–800 A)			
3	**HMCC3800F**	—	**HMCCA3800F**

Notes

① These frames are obsolete. Effective 2/1/02, only the MARK 75 version is available.

② Two-pole breakers are supplied in three-pole frames with current-carrying parts omitted from center pole.

③ UL Recognized component.

Type MC800 molded-case switch; refer to **Page V12-T3-388**. MARK 75 frame color changed from gray to black in mid-2002.

Shaded area denotes obsolete or discontinued products and services.①

Types MCG, MCCG, MCGA, MCCGA and MARK 75 Types HMCG, HMCCG, HMCGA, HMCCGA SELTRONIC with Built-In Ground Fault Protection

Complete breaker requires frame and rating plug. See the table and terminals on **Page V12-T3-386**. Extra current transformer included for neutral. See accessories on **Page V12-T3-391** for remote ground fault trip indicator.

Note: Available without extra CT for neutral. Order by description as similar to above except without neutral CT or external CT terminal connections at same price.

Note: Order two of the desired terminals for each pole of the breaker and two for the neutral CT. The standard ground fault unit can also be used without the neutral CT. MARK 75 frame color changed from gray to black in mid-2002.

Breakers for Standard Applications—Frame Only

Number of Poles	Standard (Long Delay, Short Time and Ground Fault Trip) Catalog Number	Long Delay, Short Time, Adjustable Short Delay Time and Ground Fault Trip	Ground Fault Characteristics Pickup Setting Amperes	Time Setting
Types MCG and MCGA (400–800 A) ②				
3	**MCG3800F**	**MCGA3800F**	80–800	3.5–30 Cy
MARK 75 Types HMCG and HMCGA (400–800 A) ②				
3	**HMCG3800F**	**HMCGA3800F**	80–800	3.5-30 Cy

Breakers for Application at 100% Rating—Frame Only

Number of Poles	Standard (Long Delay, Short Time and Ground Fault Trip) Catalog Number	Long Delay, Short Time, Adjustable Short Delay Time and Ground Fault Trip Catalog Number	Ground Fault Characteristics Pickup Setting Amperes	Time Setting
Types MCCG and MCCGA (400–800 A) ②				
3	**MCCG3800F**	**MCCGA3800F**	80–800	3.5–30 Cy
MARK 75 Types HMCCG and HMCCGA (400–800 A) ②				
3	**HMCCG3800F**	**HMCCGA3800F**	80–800	3.5–30 Cy

Accessories and Modifications

Field-Mountable Attachments ③④⑤⑥

Description	Style Number
Provision to trip flux transfer shunt trip from external source 32 to 120 Vdc to 60 Hz ⑦	**1371D72G22**
240 to 600 Vac, 50/60 Hz ⑧	**1371D72G32**
Provision to trip flux transfer shunt trip from external source, plus 1a-1b auxiliary switch 32 to 120 Vdc to 60 Hz ⑦	**1371D72G15**
240 to 600 Vac, 50/60 Hz ⑧	**1371D72G25**
Provision to trip flux transfer shunt trip from external 24 Vdc source	**1370D85G01**
1A-1B auxiliary switch	**1371D72G03**

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Rating Plugs

Select from the table on **Page V12-T3-386**.

For CSA, see Page V12-T3-374.

Type MC SELTRONIC breakers meet requirements for Class 21a, and MARK 75. Type HMC meet Class 23a as defined by Federal Spec. W-C-375b.

UL Listed Interrupting Capacity, rms Symmetrical Amperes ⑨

Breaker	AC Volts 240	480	600
MC, MCG	42,000	30,000	22,000
HMC, HMCG	65,000	50,000	25,000

Terminals

Terminals—Two Terminals Required Per Pole

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Al/Cu Pressure Terminals		
600	(2) #1–500 kcmil	**TA700MA1** ⑩
800 (std.)	(3) 3/0–400 kcmil	**TA800MA2** ⑩
800	(2) 500–750 kcmil	**TA801MA** ⑩
Optional Copper Pressure Terminals		
600	(2) 2/0–500 kcmil	**T600MA1**
800	(3) 3/0–300 kcmil	**T800MA1**

Notes

① These frames are obsolete. Effective 2/1/02, only the MARK 75 version is available. .
② For applications other than standard residual scheme, see Application Data 29-160.
③ Does not void listing of UL Listed breakers.
④ Only one of the attachments may be mounted per breaker.
⑤ For other possible combinations, refer to factory.
⑥ Molded-case switches do not use standard SELTRONIC attachments and should be ordered by description.
⑦ Rated 48 V minimum for ground fault applications requiring tripping at 55% of voltage.
⑧ Not for ground fault applications.
⑨ Interrupting capacities shown do not apply to molded-case switches.
⑩ Type Al/Cu pressure terminal.

Also used on breakers with ground fault and on separately mounted neutral current transformers. MARK 75 frame color changed from gray to black in mid-2002.

Shaded area denotes obsolete or discontinued products and services. ①

Types NC, NCA, NCG, NCGA, MARK 75 Type HNC, HNCA, HNCG, HNCGA SELTRONIC with Solid-State Trip Units, 600 Vac

Complete breaker requires frame and rating plug. See the table and terminals on **Page V12-T3-386**. Extra current transformer included for neutral. See accessories on **Page V12-T3-391** for remote ground fault trip indicator.

NC: 600 Vac



Type NC, NCA, MARK 75 Type HNC, HNCA SELTRONIC with Solid-State Trip Units, 600 Vac—Frame Only ②

Number of Poles ③	Standard (Long Delay and Short Time) Catalog Number	Short Time Only ④ Catalog Number	Long Delay, Short Time and Adjustable Short Delay Time (0.08 –0.30 Seconds) Catalog Number
Types NC and NCA (800–1200 A)			
2	**NC21200F**	**NC21200FM**	**NCA21200F**
3	**NC31200F**	**NC31200FM**	**NCA31200F**
Mark 75 Types HNC and HNCA (800–1200 A)			
2	**HNC21200F**	**HNC21200FM**	**HNCA21200F**
3	**HNC31200F**	**HNC31200FM**	**HNCA31200F**

Types NCG, NCGA, and MARK 75 Types HNCG, HNCGA SELTRONIC with Built-In Ground Fault Protection

Complete breaker requires frame and rating plug. See the table and terminals on **Page V12-T3-386**. Extra current transformer included for neutral. See accessories on **Page V12-T3-391** for remote ground fault trip indicator.

Note: The standard ground fault unit above can also be used without the neutral CT. Order two of the desired terminals for each pole of the breaker and two for the neutral CT.

Types NCG, NCGA and MARK 75 Type HNCG, HNCGA SELTRONIC with Built-In Ground Fault Protection—Frame Only

Number of Poles	Standard (Long Delay, Short Time and Ground Fault Trip) Catalog Number	Long Delay, Short Time, Adjustable Short Delay Time, and Ground Fault Trip Catalog Number	Ground Fault Characteristics Pickup Setting Amperes	Time Setting
Types NCG and NCGA (800–1200 A) ⑤				
3	**NCG31200F**	**NCGA31200F**	120–1200	3.5–30 Cy
MARK 75 Types HNCG and HNCGA (800–1200 A) ⑤				
3	**HNCG31200F**	**HNCGA31200F**	120–1200	3.5–30 Cy

Notes

① These frames are obsolete. Effective 2/1/02, only the MARK 75 version is available.
② Complete breaker requires frame and rating plug. See the table on **Page V12-T3-386**. For terminals, see the table on **Page V12-T3-381**.
③ Two-pole breakers are supplied in three-pole frames with current-carrying parts omitted from center pole.
④ UL Recognized component.
⑤ For applications other than standard residual scheme, see Application Data 29-160.

Type NC 1200 A molded-case switch; refer to **Page V12-T3-388**. MARK 75 frame color changed from gray to black in mid-2002.

Shaded area denotes obsolete or discontinued products and services. ①

Types NC, NCA, NCG, NCGA, MARK 75 Type HNC, HNCA, HNCG, HNCGA SELTRONIC with Solid-State Trip Units, 600 Vac Accessories and Modifications

Field-Mountable Attachments—Left Handed ①②③④⑤

Description	Style Number
Provision to trip flux transfer shunt trip from external source	
32 to 120 Vdc to 60 Hz ⑥	**1372D39G13**
240 to 600 Vac, 50/60 Hz ⑦	**1372D39G23**
Provision to trip flux transfer shunt trip from external source, plus a 1A-1B auxiliary switch	
32 to 120 Vdc to 60 Hz ⑥	**1372D39G16**
240 to 600 Vac, 50/60 Hz ⑦	**1372D39G26**
Provision to trip flux transfer shunt trip from external 24 Vdc source	**1371D94G05**
1A-1B auxiliary switch	**1371D39G03**
24 Vdc shunt trip and 1A-1B auxiliary switch	**1371D94G08**

For CSA, see Page V12-T3-374.

Type NC SELTRONIC breakers meet requirements for Class 21a, and MARK 75. Type HNC meet Class 23a as defined by Federal Spec. W-C-375b.

UL Listed Interrupting Capacity, rms Symmetrical Amperes ⑧

	AC Volts		
Breaker	**240**	**480**	**600**
NC, NCG	42,000	30,000	22,000
HNC, HNCG	65,000	50,000	25,000

Rating Plugs

Select from the table on **Page V12-T3-386**.

Terminals

Note: Two terminals required per pole.

Terminals ⑨

Maximum Amperes	Number of Cables, Wire Range, Type	Catalog Number
Al/Cu Pressure Terminals		
1000	(3) 3/0–400 kcmil	**TA1000NB1** ⑩
1200 (std.)	(4) 4/0–500 kcmil	**TA1200NB1** ⑩
1200	(3) 500–750 kcmil	**TA1201NB1** ⑩
Optional Copper Pressure Terminals		
1000	(3) 3/0–500 kcmil	**T1000NB1**
1200	(4) 3/0–400 kcmil	**T1200NB1**

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Note: MARK 75 frame color changed from gray to black in mid-2002.

Notes

① For other possible combinations, refer to factory.
② Molded-case switches do not use standard SELTRONIC attachments and should be ordered by description.
③ Does not void listing of UL Listed breakers.
④ Only one of the attachments may be mounted per breaker.
⑤ Left pole mounting.
⑥ Rated 48 V minimum for ground fault applications requiring tripping at 55% of voltage.
⑦ Not for ground fault applications.
⑧ Interrupting capacities shown do not apply to molded-case switches.
⑨ Also used on breakers with ground fault and on separately mounted neutral current transformers.
⑩ Type Al/Cu pressure terminal.

Shaded area denotes obsolete or discontinued products and services.

Types PC, PCA, PCC, PCCA 2000, 2500 and 3000 A SELTRONIC with Solid-State Trip Units, 600 Vac, 50/60 Hz

Complete breaker requires frame and rating plug. See the table on **Page V12-T3-386** and rear connectors (connectors are included in 3000 A and all front-connected frames.) Suitable for reverse-feed applications.

PC: 600 Vac



Breakers for Standard Applications—Frame Only

Number of Poles ①	Standard (Long Delay and Short Time) Catalog Number	Short Time Only ② Catalog Number	Long Delay, Short Time Trip, and Adjustable Short Delay Time (0.08 –0.30 seconds) Catalog Number
Type PC 2000, 1000 to 2000 A ③ Rear-Connected Breakers			**Type PCA 2000 ③ Rear-Connected Breakers**
2	PC22000F	PC22000FM	PCA22000F
3	PC32000F	PC32000FM	PCA32000F
Front-Connected Breakers			**Front-Connected Breakers**
2	PCF22000F	PCF22000FM	PCFA22000F
3	PCF32000F	PCF32000FM	PCFA32000F
Type PC 2500, 1400 to 2500 A ③ Rear-Connected Breakers			**Type PCA 2500 ③ Rear-Connected Breakers**
2	PC22500F	PC22500FM	PCA22500F
3	PC32500F	PC32500FM	PCA32500F
Front-Connected Breakers			**Front-Connected Breakers**
2	PCF22500F	PCF22500FM	PCFA22500F
3	PCF32500F	PCF32500FM	PCFA32500F
Type PC 3000, 1600 to 3000 A ③			**Type PCA 3000 ③**
2	PC23000F	PC23000FM	PCA23000F
3	PC33000F	PC33000FM	PCA33000F

Breakers for Standard Application at 100% Rating—Frame Only

Number of Poles ①	Standard (Long Delay and Short Time) Catalog Number	Short Time Only ② Catalog Number	Long Delay, Short Time Trip, and Adjustable Short Delay Time (0.08 –0.30 seconds) Catalog Number
Type PCC 2000, 1000 to 2000 A ④—Rear-Connected Breakers			
2	PCC22000F	PCC22000FM	PCCA22000F
3	PCC32000F	PCC32000FM	PCCA32000F
Front Connected Breakers			
2	PCCF22000F	PCCF22000FM	PCCFA22000F
3	PCCF32000F	PCCF32000FM	PCCFA32000F
Type PCC 2500, 1400 to 2500 A ④—Rear-Connected Breakers			
2	PCC22500F	PCC22500FM	PCCA22500F
3	PCC32500F	PCC32500FM	PCCA32500F
Front-Connected Breakers			
2	PCCF22500F	PCCF22500FM	PCCFA22500F
3	PCCF32500F	PCCF32500FM	PCCFA32500F
Type PC 3000, 1600 to 3000 A ④			
2	PCC23000F	PCC23000FM	PCCA23000F
3	PCC33000F	PCC33000FM	PCCA33000F

Notes

① Two-pole breakers are supplied in three-pole frames with current carrying parts omitted from center pole.
② UL Recognized component.
③ UL Listed for standard applications.
④ These breakers are UL Listed for application at 100% of rating per NEC exceptions when used in a properly ventilated and listed enclosure.

Accessories and Modifications

Drawout Mounting Breakers, Three-Pole Only

Breaker frame and complete drawout frame with safety tripping interlock.

Order by description. Secondary contacts supplied as required at no extra charge. Order required rating plug separately. Refer to **Page V12-T3-405**.

Note: Includes breakers without adjustable short delay time.

Rating Plugs

Select from the table on **Page V12-T3-386**.

Stationary portion of drawout frame only for future breaker installations, three-pole only. Refer to **Page V12-T3-405**.

Special Type PCC Breakers for SCR Power Supplies

These drawout mounting breakers are designed with a 2 to 4 times magnetic trip adjustment and special time delay trip characteristics to provide maximum protection and coordination with SCR power supplies on offshore drilling rigs. Suitable for application at 100% of rating.

Order by description. Secondary contacts supplied as required. Order standard rating plugs separately.

Availability: PCC2000, PCC2500 drawout-mounting breakers.

Type PC and PCC meet requirements of Class 25a as defined in Federal Spec. W-C-375b.

For CSA, see Page V12-T3-374.

UL Listed Interrupting Capacity rms Symmetrical Amperes (Standard and Ground Fault Breakers) ①

	AC Volts		
Breaker	**240**	**480**	**600**
PC, PCC	125,000	100,000	100,000

Note

① Interrupting capacities shown do not apply to molded-case switches.

Additional Accessories and Modifications

Refer to **Pages V12-T3-391–V12-T3-405**.

Shaded area denotes obsolete or discontinued products and services

Types PCG, PCGA, PCCG, PCCGA SELTRONIC with Built-In Ground Fault Protection Includes Extra Current Transformer for Neutral (Optional Remote Ground Fault Trip Indicator Kit, Page V12-T3-391)

Complete breaker requires frame and rating plug. See the table on **Page V12-T3-386** and rear connectors (except front-connected frames and 3000 A frames include connectors).

Note: Available without extra CT for neutral. Order by description as similar to above except without neutral CT or external CT terminal connections at same price. Older catalog numbers: PCFGX—"X" means without fourth CT.

Note: The standard ground fault unit listed can also be used without the neutral CT.

Breakers for Standard Application—Frame Only

Number of Poles	Standard (Long Delay, Short Time and Ground Fault Trip) Catalog Number	Long Delay, Short Time, Ground Fault Trip, and Adjustable Short Delay Time (0.08 –0.30 Seconds) Catalog Number	Ground Fault Characteristics Pickup Setting	Time Setting
Type PCG 2000 ①② —Rear-Connected Breakers		**Type PCGA 2000 ①② 1000 to 2000 A ② —Rear-Connected Breakers**		
3	**PCG32000F**	**PCGA32000F**	200–1200	3.5–30 cycles
Front-Connected Breakers				
3	**PCFG32000F**	**PCFGA32000F**	200–1200	3.5–30 cycles
Type PCG 2500 ①② —Rear-Connected Breakers		**Type PCGA 2500 ①② 1400 to 2500 A ② —Rear-Connected Breakers**		
3	**PCG32500F**	**PCGA32500F**	240–1200	3.5–30 cycles
Front-Connected Breakers				
3	**PCFG32500F**	**PCFGA32500F**	240–1200	3.5–30 cycles
Type PCG 3000 ①②		**Type PCGA 3000 ①② 1600 to 3000 A ②**		
3	**PCG33000F**	**PCGA33000F**	300–1200	3.5–30 cycles

Breakers for Application at 100% Rating—Frame Only

Number of Poles	Standard (Long Delay, Short Time and Ground Fault Trip) Catalog Number	Long Delay, Short Time, Ground Fault Trip, and Adjustable Short Delay Time (0.08 –0.30 Seconds) Catalog Number	Ground Fault Characteristics Pickup Setting	Time Setting
Type PCCG 2000 ③ —Rear-Connected Breakers		**Type PCCGA 2000 ③ 1000 to 2000 A ② —Rear-Connected Breakers**		
3	**PCCG32000F**	**PCCGA32000F**	200–1200	3.5–30 cycles
Front-Connected Breakers				
3	**PCCFG32000F**	**PCCFGA32000F**	200–1200	3.5–30 cycles
Type PCCG 2500 ③ —Rear-Connected Breakers		**Type PCCGA 2500 ③ 1400 to 2500 A ② —Rear-Connected Breakers**		
3	**PCCG32500F**	**PCCGA32500F**	240–1200	3.5–30 cycles
Front-Connected Breakers				
3	**PCCFG32500F**	**PCCFGA32500F**	240–1200	3.5–30 cycles
Type PCCG 3000 ③		**Type PCCGA 3000 ③ 1600 to 3000 A ②**		
3	**PCCG33000F**	**PCCGA33000F**	300–1200	3.5–30 cycles

Notes

① UL Listed for standard applications.

② For application other than standard residual schemes, refer to Application Data 29-160.

③ These breakers are UL Listed for application at 100% of rating per NEC exceptions when used in a properly ventilated and listed enclosure.

Shaded area denotes obsolete or discontinued products and services.

Types PCG, PCGA, PCCG, PCCGA SELTRONIC with Built-In Ground Fault Protection Accessories and Modifications

PC breakers are not UL Listed.

Field-Mountable Attachments ①②③

Description	Style Number
Provision to trip flux transfer shunt trip from external source 32 to 120 Vdc to 60 Hz ④	**1372D35G22**
240 to 600 Vac, 50/60 Hz ⑤	**1372D35G32**
Provision to trip flux transfer shunt trip from external source plus 1A-1B auxiliary switch 32 to 120 Vdc to 60 Hz ④	**1372D35G15**
240 to 600 Vac, 50/60 Hz ⑤	**1372D35G25**
2A-2B auxiliary switch	**1372D35G18**
Provision to trip flux transfer shunt trip from external 24 Vdc source	**1371D95G01**
1A-1B auxiliary switch	**1372D35G03**
1A-1B auxiliary switch and 24 Vdc shunt trip	**1371D95G04**
2A-2B auxiliary switch and 24 Vdc shunt trip	**1371D95G07**
3A-3B auxiliary switch and 24 Vdc shunt trip	**1371D95G10**

Rear Bus Connectors

Two required per pole. Fixed mounting breakers.

Rear Bus Connectors

Breaker Frame ⑥	Connector Style/Catalog Number
PC2000 ⑦, PCC2000 ⑦	**BA2000PB**
PC2500 ⑦, PCC2500 ⑦	**BA2500PB**
PC3000, PCC3000	Included in frame

Racking Crank for Drawout Frames

To engage or withdraw the moving portion of the drawout. A standard 0.50-inch hex socket with extension can be used for this purpose.

Racking Crank

Style Number
765A767G01

Cell Switches Mounted on Drawout Frames, All Ratings

A maximum of four switches can be provided. Order by description. Each switch provides a NO and NC contact that transfers before reaching the test position when being withdrawn, and after the test position when being racked in.

Approximate Shipping Weights, PC and PCC Breakers (Three-Pole)

Rating	Breaker PC, PCC	PCF, PCCF	PCG, PCCG	PCFG, PCCFG
2000	136 lb	163 lb	160 lb	185 lb
2500	145 lb	175 lb	170 lb	200 lb
3000	220 lb	—	245 lb	—

Bus Bar Connections

"T" Connector



Bus Bar Connections—"T" Connector (For Cu/Al Bus)

Catalog Number
BA2000PB

Two required per pole. For rear bus connection of breakers through 2000 A. Accepts up up to four bus bolts. May be rotated 90°.

Note: Shipped separately from breaker.

"C" Connector



"C" Connector (For Cu/Al Bus)

Breaker Amperes	Catalog Number
2500	**BA2500PB**

Two required per pole. For rear bus connection of 2500 A breakers.

Cable Connector



Cable Connector

Catalog Number
505C706G04

Fits "T" Connector and 2000 A front-connected breakers. Accepts four 400–600 kcmil copper cables.

Notes

① For other possible combinations, contact your local Eaton Field Sales office.
② Only one of these attachments may be mounted per breaker.
③ Left pole mounting.
④ Rated 48V minimum for ground fault applications.
⑤ Not for ground fault applications.
⑥ Also apply to equivalent ratings of PCG and PCCG ground fault breakers.
⑦ Not required for front-connected frames.

SELTRONIC Rating Plug Selection Data

Rating plugs listed below are for both standard breakers and breakers with built-in ground fault protection.

Rating Plug Selection Data

Rating Plugs Only (For Two- or Three-Pole Frames)

Continuous Ampere Rating ①	Magnetic Trip Setting, Amperes Low	High	Fixed Rating Plugs Catalog Number	Adjustable Rating Plugs ②③ Catalog Number
For 150 A Frames: LC, LCA, LCG, LCGA, HLC, HLCA, HLCG, HLCGA				
75	225	750	**1LC75**	—
90	270	900	**1LC90**	—
100	300	1000	**1LC100**	**A1LC100** ④
125	375	1250	**1LC125**	**A1LC125**
150	450	1500	**1LC150**	**A1LC150** ⑤
For 300 A Frames: LC, LCA, LCG, LCGA, HLC, HLCA, HLCA, HLCG, HLCGA				
150	450	1500	**3LC150**	—
175	525	1750	**3LC175**	—
200	600	2000	**3LC200**	—
225	675	2250	**3LC225**	**A3LC225**
250	750	2500	**3LC250**	**A3LC250**
275	825	2750	**3LC275**	**A3LC275**
300	900	3000	**3LC300**	**A3LC300** ⑤
For 400 A Frames: LC, LCA, LCG, LCGA, HLC, HLCA, HLCG, HLCGA				
200	600	2000	**4LC200**	—
225	675	2250	**4LC225**	—
250	750	2500	**4LC250**	—
300	900	3000	**4LC300**	**A4LC300**
350	1050	3500	**4LC350**	**A4LC350**
400	1200	4000	**4LC400**	**A4LC400** ⑤
For 600 A Frames: LC, LCA, LCG, LCGA, HLC, HLCA, HLCG, HLCGA, LCC, LCCA, HLCC, HLCCA, LCCG, LCCGA, HLCCG, HLCCGA				
300	900	3000	**6LC300**	—
350	1050	3500	**6LC350**	—
400	1200	4000	**6LC400**	**A6LC400** ④
450	1350	4500	**6LC450**	**A6LC450**
500	1500	5000	**6LC500**	**A6LC500**
600	1800	6000	**6LC600**	**A6LC600** ⑤
For 800 A Frames: MC, MCA, MCG, MCGA, HMC, HMCA, HMCG, HMCGA, MCC, MCCA, HMCC, HMCCA, MCCG, MCCGA, HMCCG, HMCCGA, MDS				
400	1200	4000	**8MC400**	—
500	1500	5000	**8MC500**	**A8MC500** ⑥
600	1800	6000	**8MC600**	**A8MC600**
700	2100	7000	**8MC700**	**A8MC700**
800	2400	8000	**8MC800**	**A8MC800** ⑤

Rating Plugs Only (For Two- or Three-Pole Frames)

Continuous Ampere Rating ①	Magnetic Trip Setting, Amperes Low	High	Fixed Rating Plugs Catalog Number	Adjustable Rating Plugs ②③ Catalog Number
For 1200 A Frames: NC, NCA, NCG, NCGA, HNC, HNCA, HNCG, HNCGA				
800	1600	6400	**12NC800**	**A12NC800** ④
900	1800	7200	**12NC900**	**A12NC900**
1000	2000	8000	**12NC1000**	**A12NC1000**
1200	2400	9600	**12NC1200**	**A12NC1200** ⑤
For 2000 A Frames: PC, PCA, PCC, PCCA, PCG, PCGA, PCCG, PCCGA				
1000	2000	8000	**20PC1000**	—
1200	2400	9600	**20PC1200**	—
1400	2800	11,200	**20PC1400**	—
1600	3200	12,800	**20PC1600**	**A20PC1600**
1800	3600	14,400	**20PC1800**	**A20PC1800**
2000	4000	16,000	**20PC2000**	**A20PC2000** ⑤
For 2500 A Frames: PC, PCA, PCC, PCCA, PCG, PCGA, PCCG, PCCGA				
1400	2800	11,200	**25PC1400**	—
1600	3200	12,800	**25PC1600**	—
1800	3600	14,400	**25PC1800**	**A25PC1800**
2000	4000	16,000	**25PC2000**	**A25PC2000**
2500	5000	20,000	**25PC2500**	**A25PC2500** ⑤
For 3000 A Frames: PC, PCA, PCC, PCCA, PCG, PCGA, PCCG, PCCGA				
1600	3200	12,800	**30PC1600**	—
1800	3600	14,400	**30PC1800**	—
2000	4000	16,000	**30PC2000**	—
2500	5000	20,000	**30PC2500**	**A30PC2500**
3000	6000	24,000	**30PC3000**	**A30PC3000** ⑤

Notes

① Ampere rating when used in short time only frames:
LC-150: 150 A MC-800: 800 APC-3000: 3000 A
LC-300: 300 A NC-1200: 1200 ALCL-250: 250 A
LC-400: 400 A PC-2000: 2000 ALCL-400: 400 A
LC-600: 600 A PC-2500: 2500 A

② Magnetic trip range of adjustable rating plugs:
LC, HLC, MC, HMC: 3 to 10 times ampere setting
NC, HNC, PC, PCC, LCL-400: 2 to 8 times ampere setting
LCL-250: 3 to 9 times ampere setting

③ Adjustable 70 to 100% except as noted.

④ Adjustable 75 to 100%.

⑤ Adjustable 50 to 100%.

⑥ Adjustable 80 to 100%.

Contact EatonCare Technical Resource Center for old style (three prong) ground fault rating plugs.

Shaded area denotes obsolete or discontinued products and services.

Molded Case Switches

Molded-case switches are UL Listed devices and are available only as high magnetic trip type with fixed trip setting.

Molded Case Switches with High Magnetic Trip (Fixed Trip Setting) -

Number of Poles	Maximum Volts	Maximum Amperes	Switch Catalog Number ①②
2	240	400	**DA2400WK**
3	240	400	**DA3400WK**
1	120	100	**EB1100LK**
2	240	100	**EB2100LK**
3	240	100	**EB3100LK**
3	240	100	**EB3100SLK**
1	277	100	**EHB1100LK**
2	480	100	**EHB2100LK**
3	480	100	**EHB3100LK**
3	480	100	**EHB3100SLK**
2	600	100	**FB2100LK**
2	600	150	**FB2150LK**
3	600	100	**FB3100LK**
3	600	150	**FB3150LK**
3	600	150	**FB3150SLK**
4	277/480	100	**FB4100LK**
4	277/480	150	**FB4150LK**
2	600	225	**JA2225WK**
2	600	225	**JA2225WSK**
3	600	225	**JA3225WK**
3	600	225	**JA3225WSK**
2	600	250	**JB2250WK**
2	600	250	**JB2250WSK**
3	600	250	**JB3250WK**
3	600	250	**JB3250WSK**
2	600	225	**KA2225WK**
2	600	225	**KA2225WSK**
3	600	225	**KA3225WK**
3	600	225	**KA3225WSK**
2	600	250	**KB2250WK**
2	600	250	**KB2250WSK**
3	600	250	**KB3250WK**
3	600	250	**KB3250WSK**
2	600	400	**LB2400WK**
2	600	400	**LB2400WSK**
3	600	400	**LB3400WK**
3	600	400	**LB3400WSK**
2	600	400	**LBB2400WK**
2	600	400	**LBB2400WSK**
3	600	400	**LBB3400WK**
3	600	400	**LBB3400WSK**

Molded Case Switch Terminal Data

MCS Type	Maximum Switch Amperes	Wire Type	Number of Wires	Wire Range	Terminal Type or Catalog Number
Standard Terminals					
DA, LB, LBB	400	Cu only	2	3/0–250 kcmil	**T400DA2**
EB, EHB, FB	100	Cu	1	#14–1/0	Pressure
FB	150	Cu/Al	1	#4–4/0	Pressure
JA, KA	225	Cu/Al	1	#4–350 kcmil	**TA225LA1**
JB, KB	250	Cu/Al	1	#4–350 kcmil	**TA250KB**
Optional Terminals					
DA, LB, LBB	400	—	—	—	—
EB, EHB, FB	100	Cu/Al	1	#4–4/0	Pressure
FB	150	—	—	—	—
JA, KA	225	Cu	1	#6–350 kcmil	**T225LA**
JB, KB	250	Cu	1	#4–350 kcmil	**T250KB**

Molded Case Switches with High Magnetic Trip—Trip Setting and Tolerance

Frame	Rating	Trip Setting (Amperes)	Tolerance (%)
EB	100	1000	±20
EHB/FB	100	1200	±20
FB	150	1500	±20
DA/LB/LBB	400	4000	+10 – 0
JA/KA	225	2250	+10 – 0
JB/KB	250	2500	+10 – 0

Notes

① Catalog number suffix identification:
K= Molded-case switch with high magnetic trip (fixed trip setting)
S= Saf-T-Vue cover
L= With line and load terminals
W= No terminals

② Molded-case switch dimensions are the same as the equivalent thermal-magnetic breaker. Refer to Dimension Sheet 29-171.

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Shaded area denotes obsolete or discontinued products and services.

Molded Case Switches with High Magnetic Trip (Fixed Trip Setting)

Number of Poles	Maximum Volts	Maximum Amperes	Switch Catalog Number ①②
2	240	225	**CA2225KW**
3	240	225	**CA3225KW**
2	600	400	**LA2400WK**
2	600	400	**LA2400WSK**
2	600	600	**LA2600WK**
2	600	600	**LA2600WSK**
3	600	400	**LA3400WK**
3	600	400	**LA3400WSK**
3	600	400	**LA3600WK**
3	600	400	**LA3600WSK**
2	600	400	**LAB2400WK**
2	600	400	**LAB2400WSK**
3	600	400	**LAB3400WK**
3	600	400	**LAB3400WSK**
2	600	600	**LC2600WK** ③
3	600	600	**LC3600WK** ③
2	600	600	**LCC2600WK** ③
3	600	600	**LCC3600WK** ③
2	600	800	**MA2800WK**
2	600	800	**MA2800WSK**
3	600	800	**MA3800WK**
3	600	800	**MA3800WSK**
2	600	800	**MC2800WK** ③
3	600	800	**MC3800WK** ③
2	600	800	**MCC2800WK** ③
3	600	800	**MCC3800WK** ③
2	600	1200	**NB21200WK**
2	600	1200	**NB21200WSK**
3	600	1200	**NB31200WK**
3	600	1200	**NB31200WSK**
2	600	1200	**NC21200WK** ③
3	600	1200	**NC31200WK** ③
2	600	2000	**PB22000WK**
2	600	2500	**PB22500WK**
3	600	2000	**PB32000WK**
3	600	2500	**PB32500WK**
2	600	2000	**PBF22000K**
3	600	2000	**PBF32000WK**
2 ④	600	2000	**PC22000WK**
2 ④	600	2500	**PC22500WK**
2 ④	600	3000	**PC23000K**
3 ④	600	2000	**PC32000WK**
3 ④	600	2500	**PC32500WK**
3 ④	600	3000	**PC33000K**
2 ④	600	2000	**PCC22000WK**
2 ④	600	2500	**PCC22500WK**
2 ④	600	3000	**PCC23000K**
3 ④	600	2000	**PCC32000WK**
3 ④	600	2500	**PCC32500WK**
3 ④	600	3000	**PCC33000K**
2 ④	600	2000	**PCF22000K**
3 ④	600	2000	**PCF32000K**

Molded Case Switch

MCS Type	Maximum Switch Amperes	Wire Range	Wire Type	Number of Wires	Terminal Type or Catalog Number
Standard Terminals (Aluminum Body)					
CA	225	#1–300 kcmil	Cu/Al	1	**TA225CA2**
LA400, LAB	400	#4–250 kcmil, plus 3/0–600 kcmil	Cu/Al	1	**TA400LA1**
LA600, LC600	600	250/500 kcmil	Cu/Al	2	**TA600LA**
MC, MA	800	3/0–400 kcmil	Cu/Al	3	**TA800MA2**
NC, NB	1200	4/0–500 kcmil	Cu/Al	4	**TA1200NB1**
NC, NB	1200	—	—	—	**—**
PC2000, PCC2000	2000	BA2000PB rear bus connector			
PC2500, PCC2500	2500	BA2500PB rear bus connector			
PC3000, PCC3000	3000	Rear bus connector included in frame			
Optional Terminals					
CA	225	—	—	—	**—**
LA400, LAB	400	#4–250 kcmil, plus 3/0–600 kcmil	Cu	1	**T401LA**
LA600, LC600	600	250/500 kcmil	Cu	2	**T600LA**
MC, MA	800	3/0–300 kcmil	Cu	3	**T800MA1**
NC, NB	1200	3/0–400 kcmil	Cu	4	**T1200NB1**
NC, NB	1200	500–750 kcmil	Cu/Al	3	**TA1201NB1**
PC2000, PCC2000	2000	BA2000PB rear bus connector			
PC2500, PCC2500	2500	BA2500PB rear bus connector			
PC3000, PCC3000	3000	Rear bus connector included in frame			

Terminal Data

Molded Case Switches With High Magnetic Trip—Trip Setting and Tolerance

Frame	Rating	Trip Setting (Amperes)	Tolerance (%)
CA	225	2250	+20 −10
LA (400)	400	4000	+10 −0
LA/LC	600	6000	+10 −0
MA/MC	800	8000	+10 −0
NB/NC	1200	12,000	+10 −0
PB/PC	2000–3000	12,000	+10 −0

Notes

① Catalog number suffix identification:
K=Molded-case switch with high magnetic trip (fixed trip setting)
S=Saf-T-Vue cover
W=No terminals

② Molded-case switch dimensions are the same as the equivalent thermal-magnetic breaker. Refer to Dimension Sheet 29-171.

③ For molded-case switch types LC, LCC—use LA attachments;
MC and MCC—use MA attachments;
NC—use NB attachments.

④ For molded-case switch types PC, PCC and PCF, rating plug is included and use SELTRONIC PC attachments.

Type MCP Motor Circuit Protector

The motor circuit protector (MCP) is designed specifically for the protection of motor circuits. It operates on the magnetic principle with a current sensing coil in each of the three poles, with the trip-point adjustable from the front. MCPs are the fastest devices available for clearing low level faults and offer circuit breaker features and convenience—resettable, quick-make quick-break, deadfront and protection against single phasing.

MCPs are rated to correspond to NEMA starter size.

Current Limiter Attachment

The EL current limiter is an attachment that bolts to the load end of the MCP to provide increased interrupting capacity. The combination is UL Listed as a recognized component for application at up to 200,000 A symmetrical at 600 Vac. It is coordinated with the MCP so that normal short circuits will be cleared automatically by the MCP, opening all three poles, and only the rare high fault will cause the limiter to function. Current limiters must be applied as shown in the terminal table above.

Note: Sizes 0–4 only.

Terminals

Terminals are included with both the MCP and the current limiter. Standard terminals are aluminum alloy, with non-aluminum terminals optional for use with only the MCP. Both standard and optional terminals will accommodate aluminum or copper conductors.

Note: Except 400 A Size 5. Non-aluminum terminal suitable for copper only.

When using aluminum conductors, use of joint compound is recommended. Wire ranges are listed in the terminal table above.

Shaded area denotes obsolete or discontinued products and services.

Sizes 0–4 MCP with Current Limiter



Terminals

MCP or Limiter (Amperes)	Terminals Standard Aluminum	Optional Non-Aluminum
Size 0, 1, 2	#14–#4	#14–1/0
Size 3	#6–3/0	#14–1/0
Size 4	#4–4/0	#4–4/0
Size 5 (250)	#4–350 kcmil	#4–350 kcmil
Size 5 (400)	—	(2) 3/0–250 kcmil
Limiters to 50	#14–#2	—
Limiters to 100	#1–4/0	—
Limiters to 150	#1–4/0	—

Size 5 MCP 532500



Motor Circuit Protectors

Starter Size	Trip Range, Amperes	Continuous Ampere Rating	With Standard Aluminum Alloy Terminals Catalog Number	With Optional Non-Aluminum Terminals ① Catalog Number
0	7–22	3	**MCP0322R**	**MCP0322CR**
0	18–58	7	**MCP0358R**	**MCP0358CR**
0	50–150	15	**MCP03150R**	**MCP03150CR**
1	100–300	30	**MCP13300R**	**MCP13300CR**
2	160–480	50	**MCP23480R**	**MCP23480CR**
3	275–1000	100	**MCP331000R**	**MCP331000CR**
4	450–1550	150	**MCP431550R**	**MCP431550CR**
4	575–1800	150	**MCP431800R**	**MCP431800CR**
5	1250–2500	250	**MCP532500**	**MCP532500C**
5	2000–4000	400	—	**MCP534000C**

UL Listed

The MCP is UL Listed as a recognized component and requires additional listing by the control manufacturer in combination with a contactor and overload relay.

Modifications for MCP

These modifications must be factory installed. Consult factory for pricing.

Modifications for MCP ②

Description
Auxiliary switches ③—1A and 1B, 2As and 2Bs
Shunt trip ③
Undervoltage release ③④⑤
Moisture-fungus treatment

Accessories for MCP

For handle mechanisms refer to **Pages V12-T3-421–V12-T3-438**.

Note: On 400 A Size 5, an external resistor is supplied for voltages, above 240 Vac and 24 Vdc.

Accessories for MCP

For MCP Size	Use Accessories For
Sizes 0–4	FB
5 (250 A)	KB
5 (400 A)	LB

Current Limiters

Limiter Catalog Numbers	For MCP Catalog Numbers ⑥
EL3003R	**MCP0322R**
EL3007R	**MCP0358R**
EL3015R	**MCP03150R**
EL3030R	**MCP13300R**
EL3050R	**MCP23480R**
EL3100R	**MCP331000R**
EL3150R	**MCP431550R**
EL3150R	**MCP431800R**

Interrupting Ratings

Maximum application current shall be determined by testing the MCP in combination with a contactor and overload relay. Additional capacity can be obtained by using the current limiter attachment.

Base Mounting Hardware

No charge when ordered with MCP. Order separately when required.

Base Mounting Hardware

Description	Style Number
Sizes 0–4	**21C6782G18**
Size 5 (250 A)	**673B125G12**
Size 5 (400 A)	**21C6782G22**

Notes

① Catalog numbers ending in CR were previously listed ending in RC. This is a catalog number change only, not a material change.
② Not UL Listed.
③ Mounts only in right pole; only one Modification marked can be used in MCP (Sizes 0–4).
④ On 400 A Size 5, an external resistor is supplied for voltages above 240 Vac and 24 Vdc.
⑤ On Sizes 0–4 and 250 A Size 5, an external resistor is supplied for customer mounting, except for 120 Vac, 12, 24, 125 Vdc.
⑥ Also applicable to MCPs with optional terminals.

Series C 30 mA Ground Fault (Earth Leakage)

The Series C units (prefix only listed below) that included a breaker and integral Earth Leakage module have been replaced by the Series G solution that has the flexibility to add the Earth Leakage module in the field. The Series G solution has an extended range of 15–630 A.

Shaded area denotes obsolete or discontinued products and services.

Series C 30 mA Ground Fault (Earth Leakage)

Ampere Range—15–400 A

Catalog Prefix

Three-Pole	Four-Pole
ELFD	EL4FD
ELFW	EL4FW
ELHMCP	EL4HFD
ELHFD	EL4HFW
ELHFW	EL4HJW
ELHJD	EL4HKW
ELHJW	EL4JW
ELHKD	EL4KW
ELHKW	—
ELJD	—
ELJW	—
ELKD	—
ELKW	—

Note: Please contact Eaton customer service for assistance with crossing from the obsolete product to the new Series G.

Earth Leakage

Ampere Rating	Series C Four-Pole	Series G MCCB	Series G MCCB Alt	Series G Earth Leakage Module
15	EL4FD3015L	EGS4015FFG	EGC4015FFG	ELEBN4125G
20	EL4FD3020L	EGS4020FFG	EGC4020FFG	ELEBN4125G
25	EL4FD3025L	EGS4025FFG	EGC4025FFG	ELEBN4125G
30	EL4FD3030L	EGS4030FFG	EGC4030FFG	ELEBN4125G
35	EL4FD3035L	EGS4035FFG	EGC4035FFG	ELEBN4125G
40	EL4FD3040L	EGS4040FFG	EGC4040FFG	ELEBN4125G
45	EL4FD3045L	EGS4045FFG	EGC4045FFG	ELEBN4125G
50	EL4FD3050L	EGS4050FFG	EGC4050FFG	ELEBN4125G
60	EL4FD3060L	EGS4060FFG	EGC4060FFG	ELEBN4125G
70	EL4FD3070L	EGS4070FFG	EGC4070FFG	ELEBN4125G
80	EL4FD3080L	EGS4080FFG	EGC4080FFG	ELEBN4125G
90	EL4FD3090L	EGS4090FFG	EGC4090FFG	ELEBN4125G
100	EL4FD3100L	EGS4100FFG	EGC4100FFG	ELEBN4125G
110	EL4FD3110L	EGS4110FFG	EGC4110FFG	ELEBN4125G
125	EL4FD3125L	EGS4125FFG	EGC4125FFG	ELEBN4125G
150	EL4FD3150L	JGE4150FAG	JGC4150FAG	ELJBN4150W
50	EL4FW3050JL	GES4050AFM	—	ELEBE4125G
50	EL4FWC3050JL	GEC4050AFM	—	ELEBE4125G
15	EL4HFD3015L	EGH4015FFG	—	ELEBN4125G
20	EL4HFD3020L	EGH4020FFG	—	ELEBN4125G
25	EL4HFD3025L	EGH4025FFG	—	ELEBN4125G
30	EL4HFD3030L	EGH4030FFG	—	ELEBN4125G
35	EL4HFD3035L	EGH4035FFG	—	ELEBN4125G
40	EL4HFD3040L	EGH4040FFG	—	ELEBN4125G
45	EL4HFD3045L	EGH4045FFG	—	ELEBN4125G
50	EL4HFD3050L	EGH4050FFG	—	ELEBN4125G
60	EL4HFD3060L	EGH4060FFG	—	ELEBN4125G
70	EL4HFD3070L	EGH4070FFG	—	ELEBN4125G
80	EL4HFD3080L	EGH4080FFG	—	ELEBN4125G
90	EL4HFD3090L	EGH4090FFG	—	ELEBN4125G
100	EL4HFD3100L	EGH4100FFG	—	ELEBN4125G
110	EL4HFD3110L	EGH4110FFG	—	ELEBN4125G
125	EL4HFD3125L	EGH4125FFG	—	ELEBN4125G
150	EL4HFD3150L	JGH3150FAG	—	ELJBN4150W

Shaded area denotes obsolete or discontinued products and services.

Portable Test Kit and Remote Ground Fault Trip Indicator

Portable Test Kit



Provides verification of performance of all frame sizes of SELTRONIC breakers while devices are still in service under varying load and/or phase unbalance. The tester operates on 120 V, 50/60 Hz, and includes complete instructions and test times for testing the long time, instantaneous operation and optional ground fault operation of the breaker.

Portable Test Kit

Style Number
STK2

Remote Ground Fault Trip Indicator



For use only with SELTRONIC circuit breakers (LCG, HLCG, MCG, HMCG, NCG, HNCG, PCG and PCCG) with built-in ground fault protection.

Note: UL Listed as a recognized component.

The SELTRONIC ground fault indicator is a remotely mounted device with a combination indicating light/reset/test button that will light when the breaker trips on a ground fault. Tripping from overloads or short circuits will not activate the device. A separate 120 V, 50/60 Hz power source is required to power the light and internal relay, which has 1NO/1NC contacts for customer connected alarm, etc. Designed for panel mounting, it can be face-mounted by ordering the optional mounting bracket below.

Remote Ground Fault Indicator

Style Number	Catalog Number
1259C14G01	GFAU

Face Mounting Bracket



Face Mounting Bracket for Ground Fault Indicator

Style Number
1264C67G01

Molded Case Circuit Breakers

Replacement Capabilities

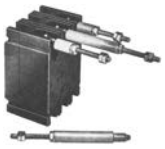
Shaded area denotes obsolete or discontinued products and services.

Accessories

Rear-Connected Studs

For complete stud assembly, order a stud and an appropriate tube based on thickness of customer's mounting panel. A short stud must be assembled adjacent to a long stud to maintain clearances required by Underwriters Laboratories. 400 A LA studs of the same length have sufficient clearance; however, customer connections may make it necessary to use a short stud adjacent to a long stud. Two studs are required per pole. Refer to DS29171 Dimension Sheets for stud sizes and extensions behind breaker.

Rear Connected Stud



For DA, EB, EHB, FB, JA, KA, JB, KB, LB, LBB, HFB, HKA, HKB and HLB Breakers ①

Mounting Panel Thickness, Inches	Stud ② Length	Style Number	Tube ③ Length	Style Number
DA, LB, LBB and HLB Breakers				
3/4–1	Short	**656D565G03**	27/32	**313C909H17**
3/4–1	Long	**656D565G04**	3-25/32	**313C909H20**
1/2–3/4	Short	**656D565G03**	1-3/32	**313C909H18**
1/2–3/4	Long	**656D565G04**	4-1/32	**313C909H21**
1/4–1/2	Short	**656D565G03**	1-11/32	**313C909H19**
1/4–1/2	Long	**656D565G04**	4-9/32	**313C909H22**
EB, EHB, FB and HFB (100 A Maximum)				
1	Short	**451D874G01**	1-1/16	**32B9446H20**
1	Long	**451D874G02**	3-7/16	**32B9446H24**
1-1/16–15/16	Short	**451D874G01**	1-3/8	**32B9446H21**
1-1/16–15/16	Long	**451D874G02**	3-3/4	**32B9446H25**
3/8–5/8	Short	**451D874G01**	1-11/16	**32B9446H22**
3/8–5/8	Long	**451D874G02**	4-1/16	**32B9446H26**
1/4–5/16	Short	**451D874G01**	2	**32B9446H23**
1/4–5/16	Long	**451D874G02**	4-3/8	**32B9446H27**
FB, HFB 150 A Breakers				
1	Short	**374D883G01**	1-1/16	**374D883H06**
1	Long	**374D883G02**	4-5/16	**374D883H10**
11/16–15/16	Short	**374D883G01**	1-3/8	**374D883H07**
11/16–15/16	Long	**374D883G02**	4-5/8	**374D883H11**
3/8–5/8	Short	**374D883G01**	1-11/16	**374D883H08**
3/8–5/8	Long	**374D883G02**	4-15/16	**374D883H12**
1/4–5/16	Short	**374D883G01**	2	**374D883H09**
1/4–5/16	Long	**374D883G02**	5-1/4	**374D883H13**
JA, KA and HKA Breakers				
3/4–1	Short	**656D565G01**	27/32	**456D983H05**
3/4–1	Long	**656D565G02**	3-25/32	**456D983H08**
1/2–3/4	Short	**656D565G01**	1-3/32	**456D983H06**
1/2–3/4	Long	**656D565G02**	4-1/32	**456D983H09**
1/4 –1/2	Short	**656D565G01**	1-11/32	**456D983H07**
1/4 –1/2	Long	**656D565G02**	4-9/32	**456D983H10**
JB, KB and HKB Breakers				
3/4–1	Short	**5010D23G01**	27/32	**456D983H05**
3/4–1	Long	**5010D23G02**	3-7/8	**5010D23H05**
1/2–3/4	Short	**5010D23G01**	1-3/32	**456D983H06**
1/2–3/4	Long	**5010D23G02**	4-1/8	**5010D23H06**
1/4 –1/2	Short	**5010D23G01**	1-11/32	**456D983H07**
1/4 –1/2	Long	**5010D23G02**	4-3/8	**5010D23H07**

Notes

① For insulated panels only; two required per pole.
② Not UL Listed.
③ Included at no charge when ordered with stud.

Shaded area denotes obsolete or discontinued products and services.

For LAB, LA, MA, HLA, HMA and HNB Breakers ①

Stud Ampere Rating	Diameter, Inches and Thread	Extension Back of Breaker, Inches	Stud Style Number
LAB, LA, HLA, LC and HLC Breakers			
225 ②	1/2–13	3-7/32	**1241 345**
225 ②	1/2–13	6-9/32	**1241 346**
225 ②③	1/2–13	4-31/32	**1241 392**
400 ②	3/4–16	5-15/32	**5B7383G15**
400 ②	3/4–16	7-31/32	**5B7383G16**
400 ②	3/4–16	10-15/32	**5B7383G17**
600 ④	1–12	5-29/32	**314C960G07**
600 ④	1–12	5-13/32	**314C960G08**
600 ④	1–12	5-29/32	**314C960G09**
MA, HMA, MC, HMC, MD and MDS Breakers			
225	1/2–13	3-21/32	**314C960G01**
400	3/4–16	5-29/32	**314C960G04**
400	3/4–16	8-13/32	**314C960G05**
400	3/4–16	10-29/32	**314C960G06**
600	1–12	5-29/32	**314C960G07**
600	1–12	8-13/32	**314C960G08**
600	1–12	10-29/32	**314C960G09**
800	1-1/8–12	5-29/32	**314C960G10**
800	1-1/8–12	8-13/32	**314C960G11**
800	1-1/8–12	10-29/32	**314C960G12**
NB, HNB, NC and HNC Breakers			
800	1-1/8–12	5-1/2	**623B222G01**
800	1-1/8–12	8	**623B222G02**
800	1-1/8–12	10-1/2	**623B222G03**
1200	1-1/4–12	5-1/2	**373B375G04**
1200	1-1/4–12	10-1/2	**373B375G03**

Notes

① For insulated panels only; two required per pole.
② 150, 250, 300 and 400 A frames only.
③ This is a special stud that includes six contact nuts for use where bus contact nuts must be used.
④ 600 A frames only.

Shaded area denotes obsolete or discontinued products and services.

Panelboard Connecting Straps

For connecting line end of breakers to panelboard bus.

Panelboard Connecting Strap



For DA, EB, EHB, FB, JA, KA, JB, KB, LB, LBB, HFB, HKB and HLB Breakers

Ampere Rating	Connector Type ①	Style Number
EB, EHB, FB and HFB Breakers Narrow Distribution Panelboards ②		
50	Center	**673B142G02**
50	Outside	**673B142G09**
100	Center	**673B142G02**
100	Outside	**673B142G10**
150	Center	**673B142G04**
150	Outside	**673B142G03**
Power Panelboards (Convertible) ③		
50	Center	**1253C72G01**
50	Outside	**1253C72G03**
100	Center	**1253C73G03**
100	Outside	**1253C73G06**
150	Center	**1253C73G01**
150	Outside	**1253C73G05**
Three-pole mounting bracket		**624B600H01**
Two-pole mounting bracket		**624B600H02**
DA, LB, LBB and HLB Breakers ③		
400	Center	**314C940G04**
400	Outside	**505C680G01**
Mounting bracket (one required)		**208B264H01**
JA, KA and HKA Breakers ③		
225	Center	**314C940G03**
225	Outside	**180C074G01**
Mounting bracket (one required)		**208B264H01**
JB, KB and HKB Breakers ③		
250	Center	**2600D26G01**
250	Outside	**2600D26G02**
Mounting bracket (one required)		**1576707**

For CA, LAB, LA, MA, HLA, HMA and HNB Breakers

Ampere Rating	Connector Type ①	Style Number
CA Breaker Power Panelboards (Convertible) ③		
225	Center	**1253C74G01**
225	Outside	**1253C74G02**
Three-pole mounting bracket		**624B624H01**
Two-pole mounting bracket		**624B624H02**
LAB, LA, HLA, LC, HLC 150, 300 and 400 A Frames ③		
400	Center	**32B4570G02**
400	Outside	**314C541G01**
Mounting bracket (two required)		**208B297H01**
LA, HLA, LC and HLC 600 A Frames ③		
600	Center	**624B609G01**
600	Outside	**506C052G01**
Mounting bracket (two required)		**208B297H01**
MA, HMA, MC, HMC, MD and MDS Breakers ③		
800	Short	**314C996G01**
800	Medium	**314C996G02**
800	Long	**314C996G03**
Mounting bracket (four required)		**315C270H01**
NB, HNB, NC and HNC Breakers ③		
1200	Short	**505C606G04**
1200	Medium	**505C606G05**
1200	Long	**505C606G06**
Mounting bracket (four required)		**315C270H01**

Notes

① Not UL Listed.
② Bus spacing 2.75 inches in box 5.75 inches deep (600 V maximum).
③ Bus spacing 3.50 inches.

Shaded area denotes obsolete or discontinued products and services. ①

Plug-In Adapter Kits

For rear-connected applications such as switchboards. Facilitates ease of installation and front removal of breaker. Includes conductor for mounting on breaker, plug-in mounting blocks with matching conductor, rear studs and mounting hardware. Order two mounting blocks style number when line and load are required; order one mounting block style number when either line or load is required.

Flat Bus Type



Flat Bus Type

Description	Style Number
EB, EHB, FB Thermal-Magnetic Breakers ② Flat Bus Type—One Mounting Block, Line or Load	
Two-pole, 100 A	**1480D13G05**
Two-pole, 150 A	**1480D13G05**
Three-pole, 100 A	**1480D13G06**
Three-pole, 150 A	**1480D13G06**
FB and HFB Magnetic Only, HFB Thermal-Magnetic ② Flat Bus Type—One Mounting Block, Line or Load	
Two-pole, 100 A	**1480D13G05**
Two-pole, 150 A	**1480D13G05**
Three-pole, 100 A	**1480D13G06**
Three-pole, 150 A	**1480D13G06**
JB, KB, HKB Breakers ① Flat Bus Type—Two Mounting Blocks, Line and Load	
Two-pole	**506C144G17**
Three-pole	**506C144G18**
One Mounting Block, Line Only	
Two-pole	**1260C86G01**
Three-pole	**1260C86G02**
Two-pole	**1260C86G03**
Three-pole	**1260C86G04**
LAB, LA, HLA, LC and HLC (150, 250, 300 and 400 A Frame) (Threaded Studs Type)—Two Mounting Blocks, Line and Load	
Two-pole	**313C644G25**
Three-pole	**313C644G26**
One Mounting Block, Line or Load	
Two-pole	**450D010G15**
Three-pole	**450D010G16**
DA, LB, LBB, HLB Breakers ② Flat Bus Type—Two Mounting Blocks, Line and Load	
Two-pole	**313C644G45**
Three-pole	**313C644G46**
One Mounting Block, Line or Load	
Two-pole	**314C932G03**
Three-pole	**314C932G04**
MA, HMA, MC, HMC, MD and MDS Breakers ③ Threaded Studs—Two Mounting Blocks, Line and Load	
Two-pole, 125–600 A	**313C644G27**
Two-pole, 700–800 A	**176C544G01** ③
Three-pole, 125–600 A	**313C644G28**
Three-pole, 700–800 A	**176C544G02** ③
One Mounting Block, Line or Load	
Two-pole, 125–600 A	**313C370G03**
Two-pole, 700–800 A	**507C049G01** ③
Three-pole, 125–600 A	**313C370G04**
Three-pole, 700–800 A	**507C049G02** ③

Threaded Stud Type



Threaded Studs Type

Description	Style Number
JA, KA and HKA Breakers ④ (Threaded Studs Type)—Two Mounting Blocks, Line and Load	
Two-pole	**313C644G29**
Three-pole	**313C644G30**
One Mounting Block, Line or Load	
Two-pole	**314C932G01**
Three-pole	**314C932G02**
LA, HLA, LC and HLC (600 A Frames) ② (Threaded Studs)—Two Mounting Blocks, Line and Load	
Two-pole	**313C644G50**
Three-pole	**313C644G51**
One Mounting Block, Line or Load	
Two-pole	**506C059G03**
Three-pole	**506C059G04**
One Mounting Block, Line or Load Flat Bus Type	
Two-pole	**1288C19G01**
Three-pole	**1288C19G02**
MA, HMA, MC, HMC, MD, MDS, NB, HNB, NC, HNC and NB TRI-PAC Breakers ④ (Flat Bus Type)—One Mounting Block, Line or Load	
MA, HMA, MC, HMC, MD, MDS two-pole	**2614D53G05**
MA, HMA, MC, HMC, MD, MDS three-pole	**2614D53G06**
NB, HNB, NC, HNC, NB TRI-PAC two-pole	**2614D53G03**
NB, HNB, NC, HNC, NB TRI-PAC three-pole	**2614D53G04**

Mounting Plates

Description	Style Number
Predrilled panels for:	
EB, EHB, FB, HFB	**507C047H01**
JB, KB	**179C207H01**
JA, KA	**504C823H01**
DA, LB, LBB, ALB	**178C781H01**
LA, LAB, HLA, LC, HLC	**504C824H01**
MA, HMA, MC, MMC, NB, HNB, NC, HNC	**1290C73H01**

Notes

① These accessories are no longer available.
② These plug-in adapter kits are UL Listed as recognized components.
③ 700–1200 A adapter kit is front removable, bolt-on design—not plug-in type.
④ Not UL Listed.

Shaded area denotes obsolete or discontinued products and services.

Extended Line Terminal Shields

For shielding line side terminal connections. One shield required per breaker. Order separately when needed. Sold only in lots of 10, including hardware.

Line Terminal Shield



Extended Line Terminal Shields ①

Breaker Frame	Style Number
JB, KB, HKB	**1266C07G01**
MA, HMA, MC, HMC	**208B966G01**
NB, HNB, NC, HNC	**208B966G02**
LAB, LA, (Saf-T-Vue)	**314C420G02**
JA, KA, LB, LBB (Saf-T-Vue)	**314C420G04**
LAB, LA, HLA, LC, HLC	**314C420G05**
DA	**314C420G06**
JA, KA, HKA, LB, LBB, HLB (standard breaker)	**314C420G06**
EB, EHB, FB, HFB	**625B229G08** ②

Base Mounting Hardware

No charge when ordered with breaker. Order separately when needed.

Line Terminal Shield

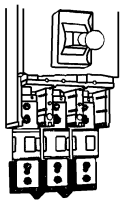


Base Mounting Hardware

Description	Style Number
Single-Pole Breakers	
EB, EHB, HFB ③	**624B375G01**
EB, EHB, HFB ④	**624B375G02**
Two- and Three-Pole Breakers	
LAB, LA, HLA, LC, HLC, MA, NB, HMA, HNB, MC	**21C6782G05**
HMC, NC, HNC	**1091716**
PB, PC, PCC	**624B375G22**
DA, JA, KA, HKA, LB, LBB, HLB	**21C6782G22**
EB, EHB, FB, HFB, MCP	**21C6782G18**
JB, KB, HKB	**673B125G12**
CA two-pole	**21C6782G28**
CA three-pole	**21C6782G29**

Fuse Mounting Base for PB Breakers

For 2000 A non-automatic breakers only.



Fuse Mounting Base for PB Breakers

Style Number
FMB2000PB ①

For use with non-automatic, three-pole circuit breaker. Includes fuse mounting base and hardware to mount standard Class L current limiting fuses, 801–2000 A (fuses not included).

Note: Interrupters used with fuse mounting base will accept all standard PB accessories. See Dimension Sheet 29-171 for mounting details.

For complete installation, order:

1. Front-connected, non-automatic PB breaker. (Order similar to standard front connected, except omit load conductor extensions.)
2. Fuse mounting base.
3. Fuses (from distributor).

Handle Locks

Non-Padlockable

For prevention of unintentional operation of breaker. Fits over breaker handle and may be removed.

Padlockable

For prevention of unauthorized operation of breaker. Is non-removable once installed on breaker. Meets Underwriters Laboratories and California Code requirements.

Handle Locks



Handle Locks ①⑤

Breaker Frame	Style Number
Non-Padlockable	
FA, EA, CA, EB, EHB, FB, HFB	**29B2721H01**
LAB, LA, LC, HLC, MA, NB, HLA, HMA, HNB, MC, HMC, NC, HNC	**28B4596G01**
GB, GC, GHB, GHC	**1294C01H01**
DA, JA, KA, HKA, LB, LBB, HLB	**29B2721H04**
Padlockable	
CA	**506C438G01**
FA, EA, EB, EHB, FB, HFB, MCP150	**765A754G01**
DA, JA, KA, LB, LBB, HKA, HLB, MCP400	**673B796G02**
JB, KB, HKB, MCP250	**673B796G01**
LAB, LA, HLA, LC, HLC	**373B591G02**
MA, HMA, MC, HMC, MD, MDS	**6591C30G02–OFF**
MA, HMA, MC, HMC, MD, MDS	**6591C30G05–ON/OFF**
NB, HNB, NC, HNC	**6591C30G01–OFF**
NB, HNB, NC, HNC	**6591C30G04–ON/OFF**
PA, SPCB, PB, Tri-Pac PB, PC	**6591C30G03–OFF**

Notes

① Not UL Listed.
② One of style **625B229G08** is one package of 10.
③ Individually mounted.
④ Group mounted.
⑤ All breakers are trip free and will trip with handle locks attached. Cannot be used when handle extension is used.

Shaded area denotes obsolete or discontinued products and services.

Cable Connectors

The fuse mounting base will accept the following terminals for front cable connection (omit "T" connectors from rear connected breakers).

Cable Connectors

Wire Range, Type Number of Cables	Style Number
(3) 3/0–400 kcmil Cu	**672B655G01**
(4) 400–500 kcmil Cu	**180C046G03**

Molded Type Handle Extension

For LAB, LA and HLA Breakers ①

Style Number
372B399G01

For MA, HMA, MC, HMC, NB, HNB, NC and HNC Breakers ①

Style Number
1251C65G01 ②

For PB, PC, PCC and PA/RD Breakers ①

Style Number
6635C78G02 ②

Modifications

Only two internally mounted modifications—shunt trip, undervoltage release, auxiliary switch, alarm switch—may be mounted in EB through PB. Only one of these modifications may be mounted in FB, HFB magnetic only, two-pole EB, EHB, FB and SELTRONIC breakers. None are available in single-pole breakers except alarm switch in EB, EHB and HFB. Contact EatonCare Technical Resource Center for possible special combinations of the following modifications not in tabulations. Contact factory for pricing if accessories are factory installed.

Shunt Trip

For tripping breaker from a remote point. A solenoid device mounts within breaker case. Breaker trips when coil is energized.

Shunt trips should not be used as circuit interlocks using maintained contact pilot devices.

A cutoff switch breaks the circuit to the momentary rated coil when the breaker opens. Available for control voltages up to 250 Vdc or 600 Vac. Voltage and frequency must be specified. Standard leads extend 18.00 inches outside the breaker. Longer leads may be specified.

Factory-Mounted Shunt Trips

Factory-mounted shunt trips only can be supplied for the following breakers: CA, HCA, CAH, HFB magnetic only and PB/PBF non-automatic breakers (molded-case switches). They are 120 Vac rated, suitable for 55% pickup for ground fault application. Right hand mounting is standard and they are not UL Listed.

Notes

① Not UL listed.
② Included with frame at no charge.

Shaded area denotes obsolete or discontinued products and services.

Shunt Trip



Shunt Trip for Field Mounting ①②③

Voltage/Hz	Breaker Type Catalog Number EB, EHB, FB, HFB ④ (Thermal-Magnetic Only)	JB, KB, HKB	JA, KA, HKA, DA, LB, LBB, HLB	LA, LAB, HLA	MA, HMA	NB, HNB	PB TRI-PAC and PA
Right-Hand Mounting							
600/50–60 Hz	**2609D39G15**	**2609D42G15**	**2605D15G15**	**2606D56G15**	**2606D57G15**	**2606D58G15**	**2606D59G15**
480/50–60 Hz	**2609D39G16**	**2609D42G16**	**2605D15G16**	**2606D56G16**	**2606D57G16**	**2606D58G16**	**2606D59G16**
240/50–60 Hz	**2609D39G17**	**2609D42G17**	**2605D15G17**	**2606D56G17**	**2606D57G17**	**2606D58G17**	**2606D59G17**
208/50–60 Hz	**2609D39G18**	**2609D42G18**	**2605D15G18**	**2606D56G18**	**2606D57G18**	**2606D58G18**	**2606D59G18**
120/50–60 Hz	**2609D39G19**	**2609D42G19**	**2605D15G19**	**2606D56G19**	**2606D57G19**	**2606D58G19**	**2606D59G19**
60/50–60 Hz	**2609D39G20**	**2609D42G20**	**2605D15G20**	**2606D56G20**	**2606D57G20**	**2606D58G20**	**2606D59G20**
48/50–60 Hz	**2609D39G21**	**2609D42G21**	**2605D15G21**	**2606D56G21**	**2606D57G21**	**2606D58G21**	**2606D59G21**
24/50–60 Hz	**2609D39G22**	**2609D42G22**	**2605D15G22**	**2606D56G22**	**2606D57G22**	**2606D58G22**	**2606D59G22**
250 DC	**2609D39G23**	**2609D42G23**	**2605D15G23**	**2606D56G23**	**2606D57G23**	**2606D58G23**	**2606D59G23**
125 DC	**2609D39G24**	**2609D42G24**	**2605D15G24**	**2606D56G24**	**2606D57G24**	**2606D58G24**	**2606D59G24**
60 DC	**2609D39G25**	**2609D42G25**	**2605D15G25**	**2606D56G25**	**2606D57G25**	**2606D58G25**	**2606D59G25**
48 DC	**2609D39G26**	**2609D42G26**	**2605D15G26**	**2606D56G26**	**2606D57G26**	**2606D58G26**	**2606D59G26**
24 DC	**2609D39G27**	**2609D42G27**	**2605D15G27**	**2606D56G27**	**2606D57G27**	**2606D58G27**	**2606D59G27**
12 DC	**2609D39G28**	**2609D42G28**	**2605D15G28**	**2606D56G28**	**2606D57G28**	**2606D58G28**	**2606D59G28**
Left-Hand Mounting							
600/50–60 Hz	**2609D39G01**	**2609D42G01**	**2605D15G01**	**2606D56G01**	**2606D57G01**	**2606D58G01**	**2606D59G01**
480/50–60 Hz	**2609D39G02**	**2609D42G02**	**2605D15G02**	**2606D56G02**	**2606D57G02**	**2606D58G02**	**2606D59G02**
240/50–60 Hz	**2609D39G03**	**2609D42G03**	**2605D15G03**	**2606D56G03**	**2606D57G03**	**2606D58G03**	**2606D59G03**
208/50–60 Hz	**2609D39G04**	**2609D42G04**	**2605D15G04**	**2606D56G04**	**2606D57G04**	**2606D58G04**	**2606D59G04**
120/50–60 Hz	**2609D39G05**	**2609D42G05**	**2605D15G05**	**2606D56G05**	**2606D57G05**	**2606D58G05**	**2606D59G05**
60/50–60 Hz	**2609D39G06**	**2609D42G06**	**2605D15G06**	**2606D56G06**	**2606D57G06**	**2606D58G06**	**2606D59G06**
48/50–60 Hz	**2609D39G07**	**2609D42G07**	**2605D15G07**	**2606D56G07**	**2606D57G07**	**2606D58G07**	**2606D59G07**
24/50–60 Hz	**2609D39G08**	**2609D42G08**	**2605D15G08**	**2606D56G08**	**2606D57G08**	**2606D58G08**	**2606D59G08**
250 DC	**2609D39G09**	**2609D42G09**	**2605D15G09**	**2606D56G09**	**2606D57G09**	**2606D58G09**	**2606D59G09**
125 DC	**2609D39G10**	**2609D42G10**	**2605D15G10**	**2606D56G10**	**2606D57G10**	**2606D58G10**	**2606D59G10**
60 DC	**2609D39G11**	**2609D42G11**	**2605D15G11**	**2606D56G11**	**2606D57G11**	**2606D58G11**	**2606D59G11**
48 DC	**2609D39G12**	**2609D42G12**	**2605D15G12**	**2606D56G12**	**2606D57G12**	**2606D58G12**	**2606D59G12**
24 DC	**2609D39G13**	**2609D42G13**	**2605D15G13**	**2606D56G13**	**2606D57G13**	**2606D58G13**	**2606D59G13**
12 DC	**2609D39G14**	**2609D42G14**	**2605D15G14**	**2606D56G14**	**2606D57G14**	**2606D58G14**	**2606D59G14**

Notes

① 120 Vac ratings suitable for 55% pickup for ground fault applications.

② Not field mountable on non-automatic breakers (molded-case switches).

③ Field mounting voids breakers' UL listing except on LA, HLA, MA, HMA, NB, HNB, PB, KB, HKB, KA, HKA, LB, HLB and SELTRONIC breakers.

④ Available similar to this except "Leads out the load end—(not UL Listed)." Order by description.

Shaded area denotes obsolete or discontinued products and services.

Left-Hand Mounting Kits for SELTRONIC Breakers

Left-Hand Mounting Kits for SELTRONIC Breakers

Description	Breaker Type	Style Number
Provision to trip flux transfer shunt trip from external 32 to 120 Vdc and Vac to 60 Hz source ①②	MC, HMC	**1371D72G22**
	NC, HNC	**1372D39G13**
	PC, PCC	**1372D35G22**
	LC, HLC	**1371D11G22**
Provision to trip flux transfer shunt trip from external 240 to 600 Vac, 50/60 Hz source ②③	MC, HMC	**1371D72G32**
	NC, HNC	**1372D39G23**
	PC, PCC	**1372D35G32**
	LC, HLC	**1371D11G32**

Shunt Trip Coil Data

Shunt Trip Voltage Rating	For All Breakers Listed in Previous Table and on Previous Page Except CA and SELTRONIC Coil Inrush		SELTRONIC Coil Inrush	
	Amperes	Volt-Amperes	Amperes	Volt-Amperes
600 AC	0.105	63.0	—	—
480 AC	0.085	40.8	—	—
240 AC	1.7	408.0	—	—
208 AC	1.4	291.2	—	—
120 AC	0.88	105.6	15	18
60 AC	9.10	546.0	—	—
48 AC	7.50	360.0	—	—
24 AC	3.95	94.8	—	—
250 DC	2.5	625.0	—	—
125 DC	0.975	121.9	—	—
60 DC	0.525	31.5	—	—
48 DC	1.3	62.4	—	—
24 DC (FB)	6	144.0	—	—
24 DC (KB)	3.8	91.2	—	—
24 DC (others)	8	192	—	—
12 DC	6	72	—	—

Notes

① Rated 48V minimum for ground fault applications.
② Also available for 24 Vdc. Order by description.
③ Not for ground fault.

Standard Undervoltage Release

For undervoltage protection. A solenoid device mounts within a breaker case. Coil must be energized before closing breaker. Trips breaker when voltage drops below 35 to 70% of coil rating. Picks up and seals in at 85% of coil rating. For line voltages up to 250 Vdc or 600 Vac. Externally mounted resistors are supplied for certain ratings. Standard leads extend 18.00 inches outside of breaker. Longer leads may be specified.

Note: Undervoltage release attachments are not designed for, and should not be used as, circuit interlocks. For further information, Contact EatonCare Technical Resource Center at **1-800-356-1243**.

Factory-Mounted Undervoltage Releases

All of the above undervoltage releases can be specified for factory mounting. Contact factory for pricing. These attachments have the leads out the side and are UL Listed when factory mounted unless other non-UL Listed modifications are used.

Note: Right-hand mounting is considered standard unless specified otherwise except JA, KA, DA, HKA, LB, LBB, HLB and SELTRONIC available for left-hand only. JB, KB, HKB are obsolete.

Factory-mounted undervoltage releases only can be supplied for the following breakers:

- SELTRONIC breakers (120 Vac, 60 Hz only standard), MC, HMC, NC, HNC, PC, PCC, LC, HLC
- SELTRONIC breakers with remote trip provisions, MC, HMC ②, NC, HNC ②, PC, PCC ②, LC, HLC ②
- EB ③, EHB ③, FB ③, HFB ③, FB ④⑤ and HFB magnetic only ④⑤
- No UVR available for CA, CAH and HCA

Shaded area denotes obsolete or discontinued products and services.

Standard Undervoltage Release



Undervoltage Release Attachment Kits for Field Mounting ⑥⑦

Attachment Voltage, Hz	Breaker Type JA, KA, DA, HKA, LB, LBB, HLB	LA, LAB, HLA	MA, HMA	NB, HNB	PB, PA ④
For Right-Hand Mounting					
24, 60	—	**60A9355G17**	—	—	—
48, 60	—	**60A9355G08**	—	—	**5674D29G16**
120, 60	—	**60A9355G01**	**457D727G01**	**373D632G01**	**5674D29G09**
208, 60	—	**60A9355G02**	**457D727G19**	**373D632G19**	**5674D29G10**
240, 60	—	**60A9355G03**	**457D727G02**	**373D632G02**	**5674D29G11**
480, 60	—	**60A9355G05**	**457D727G03**	**373D632G03**	**5674D29G13**
600, 60	—	**60A9355G06**	**457D727G04**	**373D632G04**	**5674D29G14**
12 DC	—	**458D020G01**	**457D727G09**	**372D032G01**	**4976D85G01**
24 DC	—	**458D020G02**	**457D727G10**	**372D032G02**	**4976D85G02**
48 DC	—	**458D020G03**	**457D727G11**	**372D032G03**	**4976D85G03**
60 DC	—	**458D020G04**	**457D727G21**	—	**4976D85G04**
125 DC	—	**458D020G07**	**457D727G12**	**372D032G04**	**4976D85G07**
250 DC	—	**458D020G08**	**457D727G13**	**372D032G05**	**4976D85G08**
For Left-Hand Mounting					
48, 60	—	**60A9355G16**	—	—	**5674D29G08**
120, 60	**458D070G01**	**60A9355G09**	**457D727G05**	**373D632G05**	**5674D29G01**
208, 60	**458D070G05**	**60A9355G10**	**457D727G20**	**373D632G20**	**5674D29G02**
240, 60	**458D070G02**	**60A9355G11**	**457D727G06**	**373D632G06**	**5674D29G03**
480, 60	**458D070G03**	**60A9355G13**	**457D727G07**	**373D632G07**	**5674D29G05**
600, 60	**458D070G04**	**60A9355G14**	**457D727G08**	**373D632G08**	**5674D29G06**
12 DC	**458D070G09**	**458D020G11**	**457D727G14**	**372D032G06**	**4976D85G11**
24 DC	**458D070G10**	**458D020G12**	**457D727G15**	**372D032G07**	**4976D85G12**
48 DC	**458D070G11**	**458D020G13**	**457D727G16**	**372D032G08**	**4976D85G13**
60 DC	—	**458D020G14**	**457D727G22**	—	**4976D85G14**
125 DC	**458D070G12**	**458D020G17**	**457D727G17**	**372D032G09**	**4976D85G17**
250 DC	**458D070G13**	**458D020G18**	**457D727G18**	**372D032G10**	**4976D85G18**

Notes

① Cannot be used with other attachments except a small 1A-1B auxiliary switch rated 250 V can be supplied in right-hand pole.
② Provided with two leads (total of four) for use with a remote normally open contact (pushbutton, etc.) to trip the breaker. No external power required.
③ Not available on ambient compensating breakers.
④ Not UL Listed.
⑤ Right-hand mounting only.
⑥ Not field mountable on non-automatic breakers (molded-case switches).
⑦ Field mounting voids UL listing of breaker except on LA, HLA, MA, HMA, NB, HNB, PB, KA, HKA, LB and HLB.

Undervoltage Release Coil Data

	Breaker Type								
	EB, EHB, FB, HFB, JB, KB and HKB			JA, KA, HKA, DA, LB, LBB and HLB			LA, LAB, HLA and PB		
Voltage Rating Hz	Coil Amperes	External Series Resistance (Ohms)	Total VA	Coil Amperes	External Series Resistance (Ohms)	Total VA	Coil Amperes	External Series Resistance (Ohms)	Total VA
600 AC	0.020	25,000	12.0	0.012	50,000	7.2	0.029	20,000	17.4
480 AC	0.016	20,000	7.7	0.013	30,000	6.3	0.014	—	6.8
240 AC	0.021	6000	5.1	0.013	—	3.2	0.036	—	8.7
208 AC	0.019	6000	4.0	0.018	—	3.8	0.036	—	7.5
120 AC	0.023	—	2.8	0.023	—	2.8	0.073	—	8.8
60 AC	0.203	250	12.2	—	—	—	—	—	—
48 AC	0.245	150	11.8	—	—	—	0.152	—	7.3
24 AC	0.250	50	6.0	—	—	—	—	—	—
250 DC	0.026	5000	6.5	0.013	16,500	3.3	0.035	5000	8.8
125 DC	0.026	—	3.3	0.013	6500	1.7	0.039	1500	4.9
60 DC	0.248	200	14.9	0.013	1500	0.8	0.034	—	2.1
48 DC	0.260	150	12.5	0.012	600	0.6	0.040	—	2.0
24 DC	0.141	—	3.4	0.023	—	0.6	0.069	—	1.7
12 DC	0.286	—	3.5	0.048	—	0.6	0.136	—	1.7
	MA and HMA			NB and HNB			MC, HMC, NC, HNC, PC, PCC, LC and HLC		
	Coil Amperes	External Series Resistance (Ohms)	Total VA	Coil Amperes	External Series Resistance (Ohms)	Total VA	Coil Amperes	External Series Resistance (Ohms)	Total VA
600 AC	0.012	50,000	7.2	0.016	35,000	9.6	—	—	—
480 AC	0.013	30,000	6.3	0.013	30,000	6.3	—	—	—
240 AC	0.013	—	3.2	0.013	—	3.2	—	—	—
208 AC	0.018	—	3.8	0.018	—	3.8	—	—	—
120 AC	0.023	—	2.8	0.023	—	2.8	0.5	—	6
60 AC	—	—	—	—	—	—	—	—	—
48 AC	—	—	—	—	—	—	—	—	—
24 AC	—	—	—	—	—	—	—	—	—
250 DC	0.013	16,500	3.3	0.013	16,500	3.3	—	—	—
125 DC	0.013	6500	1.7	0.013	6500	1.7	—	—	—
60 DC	0.013	1500	0.8	—	—	—	—	—	—
48 DC	0.012	600	0.6	0.012	600	0.6	—	—	—
24 DC	0.02	—	0.6	0.023	—	0.6	—	—	—
12 DC	0.048	—	0.6	0.048	—	0.6	—	—	—

3

Alarm Switch

Availability: EB through PC. For light or alarm indication when breaker trips. Does not function with manual operation. Automatically resets when breaker is relatched. Standard leads extend 18.00 inches outside of breaker. Longer leads may be specified. Not field mountable.

Alarm Switch Contact Rating (Non-Inductive)

- MC, HMC, LA, LAB, HLA, LC, HLC: 10 A, 120 Vac; 5 A, 240 Vac
- EB, EHB, FB, HFB: 5 A, 120 Vac
- All other breakers: 10 A, 120–240 Vac

Auxiliary Switch

For auxiliary control circuits. Miniature switches mount within breaker. Commonly used for remote indication of open or closed breaker and electrically interlocking component control circuits. "A" contacts are closed when breaker is closed. "B" contacts are open when breaker is closed. Standard leads extend 18.00 inches outside of breaker. Longer leads may be specified.

Note: Right-hand mounting standard for EB, EHB, FB, HFB, JB, KB and HKB. All others are left-hand mounting as standard unless otherwise specified.

Shaded area denotes obsolete or discontinued products and services. ⑨

Factory-Mounted Auxiliary Switches

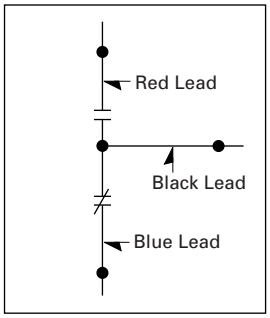
All of the above auxiliary switches can be specified for factory mounting at the same price as listed for the kit. These attachments have the leads out the side of the breaker and are UL Listed when factory mounted unless other non-UL Listed modifications are used (except as noted).

Note: Right-hand mounting standard for EB, EHB, FB, HFB, JB, KB and HKB. All others are left-hand mounting as standard unless otherwise specified.

Factory-mounted switches only can be supplied for the following breaker:

- JB, LBB, LAB, JA, DA, FB ⑫ magnetic only ②⑬ and HFB magnetic only ②⑬

Switch Schematic



Switch with 2A-2B Contacts



Alarm Switch

Breaker Frame	Normal Pole Mounting	Contact Operation (Specify Type Desired)
DA ①	Left	Make or break
EB ①, EHB ①, FB ①, HFB ②③	Mechanism	Make or break
JA ①, KA ①, LB ①, LBB ①, HKA, HLB	Left	Make or break
JB ①, KB ①, HKB ①	Left	Make or break
LAB ①, LA ①, MA ①, NB ①, HLA, HMA, HNB	Left	Make or break
LC ①, HLC	Left ④	Make or break
MC ①, HMC	Left only ④	Make or break
NC ①, HNC	Left only ④	Make or break
PB	Left	Make or break
PC, PCC	Left ④⑤	Make or break

Auxiliary Switch Attachment Kits for Field Mounting ⑥⑦⑧

Breaker Type	Maximum AC Voltage Rating ⑩	Non-inductive Amperes	For Left-Hand Mounting 1A-1B	For Left-Hand Mounting 2A-2B	For Right-Hand Mounting 1A-1B	For Right-Hand Mounting 2A-2B
EB, EHB, FB, HFB ⑪	240	5	4979D06G03	4979D06G09	4979D06G03	4979D06G08
JA, KA, DA, HKA, LB	480	10	458D067G03	—	458D067G08	—
LBB, HLB	240	5	—	656D527G01 ②	—	656D527G09 ②
JB, KB, HKB	480	10	2600D97G03	—	2600D97G08	—
JB, KB, HKB	240	5	—	2609D45G03 ⑨	—	2609D45G08 ⑨
LA, LAB, HLA	480	10	655D555G12	655D555G13	655D555G05	655D555G06
MA, HMA	480	10	458D013G12	458D013G13	458D013G05	458D013G06
NB, HNB	480	10	4980D16G12	4980D16G13	4980D16G05	4980D16G06
PB, PA	480	10	2602D32G11	2602D32G12	2602D32G14	2602D32G15
MC, HMC, MCG, HMCG	480	6 (10 at 24)	1371D72G03	1371D72G06	—	—
NC, HNC, NCG, HNCG	480	6 (10 at 24)	1372D39G03	1372D39G06	—	—
PC, PCC, PCG, PCCG	480	6 (10 at 24)	1372D35G03	1372D35G06	—	—
LC, HLC, LCG, HLCG	480	6 (10 at 24)	1371D11G03	1371D11G06	—	—

Notes

① Alarm switches are no longer available for these frames.
② Not UL Listed.
③ Not available for magnetic only, ambient compensating, or breakers with undervoltage release.
④ When alarm switch is used in conjunction with auxiliary switch, the auxiliary switch is rated 250 Vac, 5 A maximum.
⑤ Except when other attachments are used, must be mounted in right pole.
⑥ Not for use on molded-case switches.
⑦ All switches are multiples of 1A-1B with a common electrical connection (see diagram above right).
⑧ Field mounting voids UL listing of breaker except on LA, HLA, MA, HMA, NB, HNB, KB, HKB, KA, HKA, LB, HLB and SELTRONIC breakers.
⑨ These accessories are no longer available.
⑩ For DC applications, refer to factory.
⑪ Thermal-magnetic only.
⑫ Auxiliary switches are no longer available for these frames.
⑬ Right-hand mounting only.

Shaded area denotes obsolete or discontinued products and services.

Moisture-Fungus-Corrosion Treatment

Availability: EB through PC.

Treatment can be provided to meet customer's specific atmospheric conditions. Moisture-fungus treating material used meets JAN-T-152; treatment meets MIL-V-173a. Requests and orders should specify government specifications or conditions to be met.

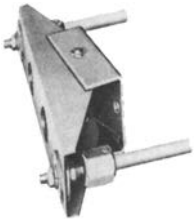
Note: Not UL Listed.

Mechanical Interlocks (A-C)

For mechanically interlocking a pair of breakers so that only one may be closed at one time, but both may be open simultaneously.

Note: Not UL Listed.

A. Walking Beam Type



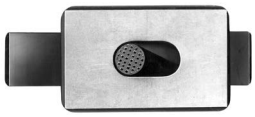
Walking Beam

Availability: EB through PC.

Mounts on panel (not included) at rear of breaker. Standard breaker spacing: center to center; LAB, LA, LC, HLC, MA, MC, NB, NC, HLA, HMA, HMC, HNB and HNC 8.50-inch center to center; PB, PC and PCC 12.25-inch center to center; DA, JA, KA, HKA, LB, LBB and HLB 5.75 inch center to center; EB, EHB, FB, JB, KB, HFB and HKB 4.375 inch center to center. Order as a set of two special factory drilled breakers and one walking beam interlock. Specify breaker type, panel thickness and center to center dimension of breakers.

Note: Not UL Listed. 2000 A maximum for PB breaker. Not available on drawout breakers.

B. Sliding Bar Type (Field Mountable)

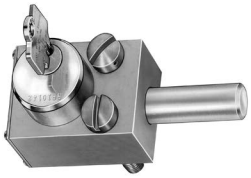


Sliding Bar Type

Availability: HFB through PC.

Mounts on panel (not included) fitting over front of breakers. Standard breaker spacing: HLC, HLA, HMA, HMC, HNB and HNC 8.50-inch center to center; HKA and HLB 5.75-inch center to center; HFB 4.1875-inch center to center.

C. Kirk Key Interlock



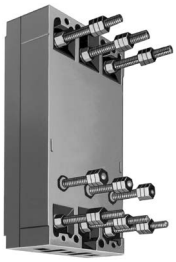
Kirk Key Interlock

Availability: EB through PC.

Permits interlocking of two breakers or one breaker with other devices. Before breaker can be closed, key must be inserted and turned in breaker interlock. Breaker must be opened before key can be removed. It can then be inserted in interlock or other devices to permit their closure. Requests and orders should completely outline interlocking scheme, ultimate user and address.

Note: Not available on motor operated breakers. (No CA, LCL, FCL breakers.)

Center Studs



Center Studs

Availability: 600 A frames (LA) through (NB) 1200 A frames except SELTRONIC and current limiting breakers.

Provides connections for dual voltage generators, so that same trip unit can be used for protection at both voltages. At higher voltage, the trip unit carries full load current. At lower voltage, half the current bypasses the trip unit through the center studs. Trip rating cannot exceed 50% of frame rating.

Field Discharge Switch
Availability: 400, 600 A frame (LA).

Breaker is used exclusively to discharge the field of a DC motor or generator, usually through a resistor. When the two outer poles open, the center pole closes.

Note: Not UL Listed.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

Motor Operators

Motor operators provide complete remote control by means of a pushbutton or a similar pilot device.

Note: The pilot device must be maintained contact type for EB, EHB, FB, HFB, DA, JA, KA, JB, KB, HKB and LB mechanisms, momentary contact type for all others.

Positive switching action is accomplished by use of an operating arm engaging the breaker handle. The unit is energized momentarily to actuate the lever arm moving it to either the ON or OFF position. The control is broken by an internal cutoff switch. Means for emergency manual operations is provided.

Motor operations are available with motors rated 120 Vac, 208 Vac and 240 Vac.

Note: LA and larger available for 125 Vdc.

The 480 V operators use a 120 Vac motor in conjunction with a 480/240 V to 120 V dual voltage transformer. (On LA and larger operators, the transformer is supplied for separate mounting by the customer.)

Note: The motor operator is intended only for infrequent operation in line with Underwriters Laboratories endurance standards for molded-case breakers. Minimum 1 kVA transformer is required for use with all motor operations.

Back Mounting Plates

Breaker Type	120, 208, 240, 480 Vac Style Number
EB, EHB, FB, HFB	**503C707G01**
DA, JA, KA, LB, HLB	**503C981G01**



For LAB, LA, HLA Breakers



For MA, HMA, NB, HNB Breakers



For PB Breakers

For EB, EHB, FB and HFB



Motor Operator Selection ①②

Breaker Type	Style Number—AC Voltage 120	208	240	480	Style Number—DC Voltage 125	24
EB, EHB, FB, HFB	**656D148G11**	**656D148G04**	**656D148G02**	**656D148G13**	—	—
DA, JA, KA, HKA	**657D819G23**	**657D819G10**	**657D819G08**	**657D819G24**	—	—
LB, LBB, HLB	**657D819G25**	**657D819G16**	**657D819G14**	**657D819G26**	—	—
LAB, LA, HLA, LC, HLC	**2607D97G37**	**2607D97G40**	**2607D97G38**	**2607D97G39**	**2607D97G51**	**2607D97G42**
MA, HMA, MC, HMC	**5664D54G75**	**5664D54G78**	**5664D54G76**	**5664D54G77**	**5664D54G96**	**5664D54G81**
NB, HNB, NC, HNC. SPCB1200	**1494D60G31**	**1494D60G32**	**1494D60G33**	**1494D60G34**	**1494D60G35**	**1494D60G36**
PB, PC, PCC, PA, SPCB2000	**5661D52G01**	**5661D52G04**	**5661D52G02**	**5661D52G03**	**5661D52G17**	—

For DA, JA, KA, JB, LB, LBB, HKA, HKB and HLB Breakers



Motor Data

Breaker Type	Motor Type	Hp	Inrush Current, Ampere (Peak) 120 V	208 V	240 V	Continuous Current (rms) 120 V	208 V	240 V	Operating Time, Open or Close
EB, EHB, FB, HFB	Split-phase	1/75	10	4	5	2.3	1.17	1.65	1.5 seconds
DA, JA, KA, JB, KB, LB, LBB, HKB, HLB	Split-phase	1/50	14	6	7	3.5	1.6	1.75	1.5 seconds
LAB, LA, HLA	Reversing	—	8	5	4	—	—	—	12 cycles
MA, HMA, NB, HNB, SPCB1200	Reversing	—	11	7	6	—	—	—	12 cycles
PB, PA, SPCB2000	Reversing	—	20	12	11	—	—	—	10 cycles

Notes

① AC voltage rated operators are UL Listed as recognized components.

② See Dimension Sheet 29-170.

Drawout Frame

These drawout frames are for use with standard three-pole Cutler-Hammer molded-case circuit breakers. They consist of two separate parts: stationary mounting frame and movable carrier frame. Slide rails are drawer-type, and a screw mechanism is used to engage or withdraw the movable carrier frame.

The drawout frames have three positions: connected, test and disconnected. The frames do not include a safety tripping interlock or secondary contacts. These are optional items and may be ordered at additional cost.

Breakers mounted in the drawout frames can be equipped with standard breaker accessories including shunt trip, undervoltage release, auxiliary switch, alarm switch and motor operator.

Optional Features

Safety Interlock
This feature trips the breaker as the movable carrier frame is withdrawn, and must be factory installed. Order as follows.

Note: Safety interlock not available on MC, NC, HMC, HNC, LC and HLC.

For LA, MA and NB Breakers
Order standard stationary mounting frame. Order breaker and movable carrier frame assembled with safety interlock.

Secondary Contacts
These are used to disconnect auxiliary circuits when attachments such as shunt trip or motor operator are used. Available in multiples of four contacts with a maximum of 24 contacts for the LA 600 or 32 contacts for the MA and NB. They must be factory mounted. Order by description as similar to stationary or moving frame and specify number of contacts required.

Shaded area denotes obsolete or discontinued products and services.

Drawout Frame



Selection Data ①②

Breaker Type	Stationary Mounting Frame Style Number	Movable Carrier Frame Style Number
HLA600, HLC600, LA600, LD, HLD ③	**2603D84G01**	**2608D35G06**
HMA, HMC, MDL, HMDL ③	**2603D85G01**	**2608D34G10**
HNB, HNC, ND, HND ③	**2603D85G01**	**2608D34G08**
PB, PC, PCC 2000 A ④	**2601D18G04**	Order by description ⑤
PB 2500 A, PC, PCC 2500 A and 3000 A ④	**2601D18G05**	Order by description ⑤

Ordering Information

Note: SELTRONIC circuit breakers with built-in ground fault require a special breaker frame with leads out the side in place of standard terminal block. Order by description the breaker frame and carrier as one assembly.

Standard Installation
Order one stationary mounting frame and one movable carrier frame.

Order breakers without terminals or rear connectors.

Order any attachments desired (shunt trip, undervoltage release, etc.)

Order secondary contacts as required:

- A shunt trip, an under-voltage release or an alarm switch requires two contacts
- A 1A-1B auxiliary switch requires three contacts
- A motor operator requires a maximum of four contacts
- Others as required

With Safety Interlock
Order stationary mounting frame and movable carrier frame as directed under optional features.

Racking Crank
A special crank to engage or withdraw the moving portion of the drawout. A standard 0.50-inch hex socket with extension can be used for this purpose.

Racking Crank

Style Number
765A767G01

Cell Switches Mounted on Drawout Frames, All Ratings
Up to four switches can be provided. Order by description.

Each switch provides NO and NC contact that transfers before reaching the test position when being withdrawn, and after the test position when being racked in. Contact factory for pricing.

Notes

① Safety interlock not available on MC, NC, HMC, HNC, LC and HLC.
② SELTRONIC circuit breakers with built-in ground fault require a special breaker frame with leads out the side in place of standard terminal block. Order by description the breaker frame and carrier as one assembly.
③ These units are UL Listed.
④ Not UL Listed.
⑤ Factory installed only.

Panelboard "Only" Replacement Breaker Selection Guide

Panelboard "Only" replacement breakers are generally for use as replacement for out-of-production panelboard branch circuit breakers where both physical and electrical interchangeability is required. Where possible, consideration should be given to application of either current Series C or Series G circuit breakers.

For additional information, consult the charts on **Pages V12-T3-410** and **V12-T3-411** or contact your local Eaton Field Sales office or the Breaker Service Centers.

Replacement Chart ①

Current Panelboard Circuit Breaker Type	Out-of-Production Circuit Breaker Type	Vac (50/60 Hz) 240	480	600
REA ①	EA ①	●		
RE	E ①	●		
REH	EH ①		●	
RFA ①	FA ①			●
RHFA	HFA ①			●
RF ①	F ①			●
RHF	HF ①			●
RJ	J ②			●
RK ①	K ②			●
RHK	HK ②			●
RKL ①	KL ②			●
RHKL	HKL ②			●
RLM ①	LM ②			●
RHLM	HLM ②			●
HLA	JK ②			●
HLA ①	JKL ②			●

Shaded area denotes obsolete or discontinued products and services. ③

Panelboard "Only" Replacement Breaker Selection Guide

Breaker Type	Amperes	Panelboard Replacement Breaker Interrupting Ampere Rating 120 Vac Sym.	Asym.	240 Vac Sym.	Asym.	277 (Single-Pole) Sym.	Asym.	480 Vac Sym.	Asym.	600 Vac Sym.	Asym.	125 (Single-Pole)	250 Vdc
RE	15–20	—	—	—	—	10,000	10,000	—	—	—	—	—	—
RE	15–100	7500	7500	7500	7500	—	—	—	—	—	—	5000	5000
REA	15–20	—	—	—	—	10,000	10,000	—	—	—	—	—	—
REA	15–100	7500	7500	7500	7500	—	—	—	—	—	—	5000	5000
REH	15–100	—	—	18,000	20,000	10,000	10,000	14,000	15,000	—	—	—	10,000
RF	15–100	—	—	18,000	20,000	—	—	14,000	15,000	14,000	15,000	—	10,000
RFA	15–150	—	—	18,000	20,000	—	—	14,000	15,000	14,000	15,000	—	10,000
RHF	15–100	—	—	65,000	75,000	—	—	25,000	30,000	18,000	20,000	—	20,000
RHFA	15–100	—	—	65,000	75,000	—	—	25,000	30,000	18,000	20,000	—	20,000
RJ	70–225	—	—	22,000	25,000	—	—	18,000	20,000	14,000	15,000	—	10,000
HLA	70–225	—	—	42,000	50,000	—	—	30,000	35,000	22,000	25,000	—	20,000
HLA	125–400	—	—	42,000	50,000	—	—	30,000	35,000	22,000	25,000	—	20,000
RK	70–225	—	—	42,000	50,000	—	—	22,000	25,000	22,000	25,000	—	10,000
RKL	125–400	—	—	42,000	50,000	—	—	30,000	35,000	22,000	25,000	—	20,000
RLM	125–800	—	—	42,000	50,000	—	—	30,000	35,000	22,000	25,000	—	20,000
RHK	70–225	—	—	65,000	75,000	—	—	35,000	40,000	25,000	30,000	—	20,000
RHKL	125–400	—	—	65,000	75,000	—	—	35,000	40,000	25,000	30,000	—	20,000
RHLM	125–800	—	—	65,000	75,000	—	—	35,000	40,000	25,000	30,000	—	20,000

Replacement of all out-of-production panelboard circuit breakers are designated by the easily identifiable addition of an "R" prefix to the out-of-production circuit breaker catalog number that they replace.

An Example:

RHF3100 is a newly manufactured, three-pole, 100 A trip panelboard replacement breaker for an out-of-production **HF3100**.

R Designates new panelboard "only" replacement breaker.

HF Identifies the out-of-production circuit breaker frame.

3 Number of poles.

100 Trip ampere rating.

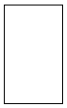
Notes:

1. Panelboard "only" replacement circuit breakers have non-interchangeable trip units and the same interrupting capacity as the out-of-production circuit breakers that they replace.
2. The RE breaker has off-center terminals just like the E breaker it is replacing.
3. For out-of-production breakers, the "B" suffix denotes 277 Vac rating for the panelboard replacement breaker. (Example: RE3020B)
4. Some panelboard "only" replacement breakers do not have the same physical dimensions or mounting holes as the breakers that they replace. For example, the types REH and RHFA are 6.00 inches in length and the breakers that they replace, EH and HFA, are 6.50 inches in length. Mounting hardware is provided with each breaker to resolve these differences, and must be installed to ensure a proper fit.
5. Panelboard "only" replacement breakers can be installed in the following styles of out-of-production Westinghouse panelboards:
6. ABH, A2B, NHEB, NA1B, NA1B-LX, NDP, NEB, NHDP, NH1B, NLAB-AB, NLAB-ABH

Notes

① Last manufacture date—1974.
② Last manufacture date—1967.
③ These frames are obsolete. Call 803-481-6843 for other panelboard solutions.

Panelboard "Only" Replacement Circuit Breaker Guide—Dimensions in Inches (Per Three-Pole Breaker)

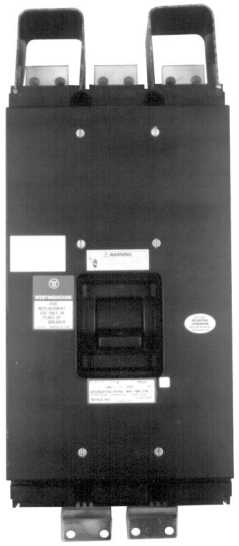
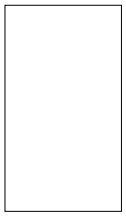
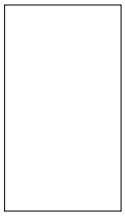
Description	Maximum Amperes 100 A			225 A
Current Design				
Panelboard "only" replacement circuit breakers These circuit breakers, when used in a panelboard, are direct replacements for the circuit breakers listed below both electrically and physically.	**RE ①, REA ②**	**REH**	**RFA ③, RHFA**	**RF ④, RHF**
				
	Width: 4.13 Height: 6.00 Depth: 3.38	Width: 4.13 Height: 6.00 Depth: 3.38	Width: 4.13 Height: 6.00 Depth: 3.38	Width: 4.13 Height: 9.38 Depth: 3.81
Out-of-Production Westinghouse Circuit Breakers				
These circuit breakers are no longer manufactured These circuit breakers, when used in a panelboard, are directly replaced by the circuit breakers listed above. *Indicates last date of manufacture.	**E, EA**	**EH**	**FA, HFA**	**F, HF**
				
	*1974	*1974	*1974	*1974
	Width: 4.13 Height: 6.00 Depth: 3.38	Width: 4.13 Height: 6.50 Depth: 3.38	Width: 4.13 Height: 6.50 Depth: 3.38	Width: 4.13 Height: 9.38 Depth: 3.81

Notes

① Obsolete—no replacement.
② Obsolete—use REH (available in three-pole only).
③ Obsolete—use RHFA (available in three-pole only).
④ Obsolete—use RHF (available in three-pole only).

Panelboard "Only" Replacement Circuit Breaker Guide—Dimensions in Inches (Per Three-Pole Breaker), continued

Maximum Amperes

225 A	400 A	400 A	800 A
Current Design			
RJ	**RK ①, RHK**	**RKL ②, RHKL**	**RLM ③, RHLM**
			
Width: 8.25 Height: 10.13 Depth: 4.06	Width: 8.25 Height: 15.50 Depth: 4.06	Width: 8.25 Height: 16.00 Depth: 4.06	Width: 8.25 Height: 22.00 Depth: 5.50
Out-of-Production Westinghouse Circuit Breakers			
J	**K, HK**	**KL, HKL**	**LM, HLM**
			
*1967	*1967	*1967	*1967
Width: 8.25 Height: 10.13 Depth: 4.06	Width: 8.25 Height: 15.50 Depth: 4.06	Width: 8.25 Height: 16.00 Depth: 4.06	Width: 8.25 Height: 22.00 Depth: 5.50

Further Information

Publication Number	Description
IL 15558	Mounting information for the RE, REA breakers
IL 15559	Mounting information for the RF, RHF breakers
IL 15562	Mounting information for the REH, RFA, RHFA breakers
IL 15563	Mounting information for the RJ breaker
IL 15564	Mounting information for the RK, RHK breakers
IL 15565	Mounting information for the RKL, RHKL breakers
IL 15566	Mounting information for the RLM, RHLM breakers

Notes

① Obsolete—use RHK (available in three-pole only).
② Obsolete—use RHKL (available in three-pole only).
③ Obsolete—use RHLM (available in three-pole only).

Shaded area denotes obsolete or discontinued products and services. ①

Type REA



Type REA, Single-, Two- and Three-Pole, 240 Vac Maximum, Thermal-Magnetic

Continuous Ampere Rating at 40 °C	Catalog Number Single-Pole, 120 Vac	Two-Pole, 240 Vac	Three-Pole, 240 Vac
10	REA1010	—	—
15	REA1015	REA2015	REA3015
20	REA1020	REA2020	REA3020
25	REA1025	REA2025	REA3025
30	REA1030	REA2030	REA3030
40	REA1040	REA2040	REA3040
50	REA1050	REA2050	REA3050
60	REA1060	REA2060	REA3060
70	REA1070	REA2070	REA3070
80	REA1080	REA2080	REA3080
90	REA1090	REA2090	REA3090
100	REA1100	REA2100	REA3100

Type REH



Type REH, Single-, Two- and Three-Pole, 480 Vac Maximum, Thermal-Magnetic

Continuous Ampere Rating at 40 °C	Catalog Number Single-Pole, 277 Vac	Two-Pole, 480 Vac	Three-Pole, 480 Vac
10	REH1010	—	—
5	REH1015	REH2015	REH3015
20	REH1020	REH2020	REH3020
25	REH1025	REH2025	REH3025
30	REH1030	REH2030	REH3030
40	REH1040	REH2040	REH3040
50	REH1050	REH2050	REH3050
60	REH1060	REH2060	REH3060
70	REH1070	REH2070	REH3070
80	REH1080	REH2080	REH3080
90	REH1090	REH2090	REH3090
100	REH1100	REH2100	REH3100

Type RE



Type RE, Single-, Two- and Three-Pole, 240 Vac Maximum, Thermal-Magnetic

Continuous Ampere Rating at 40 °C	Catalog Number Single-Pole, 120 Vac	Two-Pole, 240 Vac	Three-Pole, 240 Vac
10	RE1010	—	—
15	RE1015	RE2015	RE3015
20	RE1020	RE2020	RE3020
25	RE1025	RE2025	RE3025
30	RE1030	RE2030	RE3030
40	RE1040	RE2040	RE3040
50	RE1050	RE2050	RE3050
60	RE1060	RE2060	RE3060
70	RE1070	RE2070	RE3070
80	RE1080	RE2080	RE3080
90	RE1090	RE2090	RE3090
100	RE1100	RE2100	RE3100

Terminals

Maximum Amperes	Wire Type	Wire Range	Style Number ②
Standard Pressure Type Terminals			
20 (EB, EHB)	Al/Cu	#14–#10	**624B100G14**
100	Al/Cu	#14–1/0	**624B100G02**
150	Al/Cu	#4–4/0	**624B100G17**
Optional Al/Cu Pressure Terminals			
50	Al/Cu	#14–#4	**624B100G10**
100	Al/Cu	#4–4/0	**624B100G17**

Accessories and Modifications

All accessories and modifications available for Replacement Breakers Types EB, EHB and FB are also available for Panelboard Replacement Breakers Types RE, REH, RFA, RF, RHF, REA and RHFA.

For accessories and modifications, refer to **Pages V12-T3-391–V12-T3-405**.

Terminals

See table on **Page V12-T3-409**.

50 °C Calibration

Add suffix "V" to catalog number for breakers to be used in 50 °C ambients. Same price as standard 40 °C breakers.

Note: Not UL Listed.

Notes

① These frames are obsolete. For replacement solutions call 803-481-6843 for other panelboard solutions call 803-481-6843 for other panelboard solutions.

② Package of three.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services. ①

Panelboard Replacement Circuit Breakers (Includes Terminals on Load Side Only)

Continuous Ampere Rating at 40 °C	Catalog Number Two-Pole, 600 Vac	Three-Pole, 600 Vac
Type RFA Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
15	RFA2015	RFA3015
20	RFA2020	RFA3020
25	RFA2025	RFA3025
30	RFA2030	RFA3030
35	RFA2035	RFA3035
40	RFA2040	RFA3040
50	RFA2050	RFA3050
60	RFA2060	RFA3060
70	RFA2070	RFA3070
80	RFA2080	RFA3080
90	RFA2090	RFA3090
100	RFA2100	RFA3100
125	RFA2125	RFA3125
150	RFA2150	RFA3150
Type RF Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
15	RF2015	RF3015
20	RF2020	RF3020
25	RF2025	RF3025
30	RF2030	RF3030
35	RF2035	RF3035
40	RF2040	RF3040
50	RF2050	RF3050
60	RF2060	RF3060
70	RF2070	RF3070
80	RF2080	RF3080
90	RF2090	RF3090
100	RF2100	RF3100
Type RHFA Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
15	RHFA2015	RHFA3015
20	RHFA2020	RHFA3020
25	RHFA2025	RHFA3025
30	RHFA2030	RHFA3030
35	RHFA2035	RHFA3035
40	RHFA2040	RHFA3040
50	RHFA2050	RHFA3050
60	RHFA2060	RHFA3060
70	RHFA2070	RHFA3070
80	RHFA2080	RHFA3080
90	RHFA2090	RHFA3090
100	RHFA2100	RHFA3100
125	RHFA2125	RHFA3125
150	RHFA2150	RHFA3150

Type RFA



Type RF



Type RHFA



Note

① These frames are obsolete. For replacement solutions call 803-481-6843 for other panelboard solutions.

Shaded area denotes obsolete or discontinued products and services. ①

Panelboard Replacement Circuit Breakers (Includes Terminals on Load Side Only)

Type RHF



Continuous Ampere Rating at 40 °C	Catalog Number Two-Pole, 600 Vac	Three-Pole, 600 Vac
Type RHF Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
15	RHF2015	RHF3015
20	RHF2020	RHF3020
25	RHF2025	RHF3025
30	RHF2030	RHF3030
40	RHF2040	RHF3040
50	RHF2050	RHF3050
60	RHF2060	RHF3060
70	RHF2070	RHF3070
80	RHF2080	RHF3080
90	RHF2090	RHF3090
100	RHF2100	RHF3100

Type RJ



Type RJ Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
70	RJ2070	RJ3070
90	RJ2090	RJ3090
100	RJ2100	RJ3100
125	RJ2125	RJ3125
150	RJ2150	RJ3150
175	RJ2175	RJ3175
200	RJ2200	RJ3200
225	RJ2225	RJ3225
225 MCS	RJ2225K	RJ3225K

Type RK



Type RK Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
70	RK2070	RK3070
90	RK2090	RK3090
100	RK2100	RK3100
125	RK2125	RK3125
150	RK2150	RK3150
175	RK2175	RK3175
200	RK2200	RK3200
225	RK2225	RK3225
225 MCS	RK2225K	RK3225K

Type RKL



Type RKL Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
125	RKL2125	RKL3125
150	RKL2150	RKL3150
175	RKL2175	RKL3175
200	RKL2200	RKL3200
225	RKL2225	RKL3225
250	RKL2250	RKL3250
300	RKL2300	RKL3300
350	RKL2350	RKL3350
400	RKL2400	RKL3400
400 MCS	RKL2400K	RKL3400K

Note

① These frames are obsolete. For replacement solutions call 803-481-6843 for other panelboard solutions.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services. ①

Panelboard Replacement Circuit Breakers (Includes Terminals on Load Side Only)

Continuous Ampere Rating at 40 °C	Catalog Number Two-Pole, 600 Vac	Three-Pole, 600 Vac
Type RLM Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
125	**RLM2125**	**RLM3125**
150	**RLM2150**	**RLM3150**
175	**RLM2175**	**RLM3175**
200	**RLM2200**	**RLM3200**
225	**RLM2225**	**RLM3225**
250	**RLM2250**	**RLM3250**
275	**RLM2275**	**RLM3275**
300	**RLM2300**	**RLM3300**
350	**RLM2350**	**RLM3350**
400	**RLM2400**	**RLM3400**
500	**RLM2500**	**RLM3500**
600	**RLM2600**	**RLM3600**
600 MCS	**RLM2600K**	**RLM3600K**
700	**RLM2700**	**RLM3700**
800	**RLM2800**	**RLM3800**
Type RHK Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
70	**RHK2070**	**RHK3070**
90	**RHK2090**	**RHK3090**
100	**RHK2100**	**RHK3100**
125	**RHK2125**	**RHK3125**
150	**RHK2150**	**RHK3150**
175	**RHK2175**	**RHK3175**
200	**RHK2200**	**RHK3200**
225	**RHK2225**	**RHK3225**
225 MCS	**RHK2225K**	**RHK3225K**
Type RHKL Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
125	**RHKL2125**	**RHKL3125**
150	**RHKL2150**	**RHKL3150**
175	**RHKL2175**	**RHKL3175**
200	**RHKL2200**	**RHKL3200**
225	**RHKL2225**	**RHKL3225**
250	**RHKL2250**	**RHKL3250**
300	**RHKL2300**	**RHKL3300**
350	**RHKL2350**	**RHKL3350**
400	**RHKL2400**	**RHKL3400**
400 MCS	**RHKL2400K**	**RHKL3400K**

Type RLM



Type RHK



Type RHKL



Note

① These frames are obsolete. For replacement solutions call 803-481-6843 for other panelboard solutions.

Shaded area denotes obsolete or discontinued products and services. ①

Type RHLM



Panelboard Replacement Circuit Breakers (Includes Terminals on Load Side Only)

Continuous Ampere Rating at 40 °C	Catalog Number Two-Pole, 600 Vac	Three-Pole, 600 Vac
Type RHLM Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic		
125	**RHLM2125**	**RHLM3125**
150	**RHLM2150**	**RHLM3150**
175	**RHLM2175**	**RHLM3175**
200	**RHLM2200**	**RHLM3200**
225	**RHLM2225**	**RHLM3225**
250	**RHLM2250**	**RHLM3250**
275	**RHLM2275**	**RHLM3275**
300	**RHLM2300**	**RHLM3300**
325	**RHLM2325**	**RHLM3325**
350	**RHLM2350**	**RHLM3350**
400	**RHLM2400**	**RHLM3400**
450	**RHLM2450**	**RHLM3450**
500	**RHLM2500**	**RHLM3500**
550	**RHLM2550**	**RHLM3550**
600	**RHLM2600**	**RHLM3600**
600 MCS	**RHLM2600K**	**RHLM3600K**
700	**RHLM2700**	**RHLM3700**
800	**RHLM2800**	**RHLM3800**

Accessories and Modifications

All accessories and modifications available for replacement breakers types KA, LA and MA are also available for panelboard replacement breakers types RJ, RK, RKL, RLM, RHK, RHKL and RHLM.

For additional accessories and modifications, refer to **Pages V12-T3-391–V12-T3-405.**

Terminals

Panelboard Circuit Breakers	Terminals ②
RJ	**TA225LA1**
RK	**TA225LA1**
RHK	**TA225LA1**
RKL	**TA400LA1**
RHKL	**TA400LA1**
RLM	**TA700MA1** (for <600 A)
RHLM	**TA800MA1** (for 700–800 A)

50 °C Calibration

Add suffix "V" to catalog number for breakers to be used in 50 °C ambients. Same price as standard 40 °C breakers.

Note: Not UL Listed.

Special Breakers

Magnetic only (includes load terminals). Available for all ampere ratings for two- and three-pole RJ, RK, RKL, RLM, RHK, RHKL and RHLM.

High magnetic molded-case switches (K suffix) are available to replace out-of-production non-automatic breakers (N suffix).

Note: Not UL Listed.

Panelboard and Switchboard Replacement Breaker Ordering Instructions

1. Choose the breaker frame and amperage.
2. Select the proper connector kit (if needed).
3. Call your local distributor with catalog numbers and request Eaton's Free Express Service.

Compatible with Panelboards and Switchboards from:

Westinghouse Distribution and Control Business Unit

1987–1998

1991–1998

1994–2000

Cutler-Hammer

2000–2009

2009–Present

Connector Kits for Pow-R-Line 4 Panelboards and Pow-R-Line C Switchboards

Breaker Type	Catalog Number Single	Twin
F-Frame	—	**KPRL4FD**
J-Frame	**KPRL4JDS**	**KPRL4JDT**
K-Frame	**KPRL4KDS**	**KPRL4KDT**
L-Frame	**KPRL4LD**	—
M-Frame	**KPRL4MC**	—
N-Frame	**KPRL4ND**	—

Notes

① These frames are obsolete. For replacement solutions call 803-481-6843 for other panelboard solutions.

② Packaged individually.

Molded Case Circuit Breakers

Replacement Capabilities

Shaded area denotes obsolete or discontinued products and services.

Replacement Capabilities

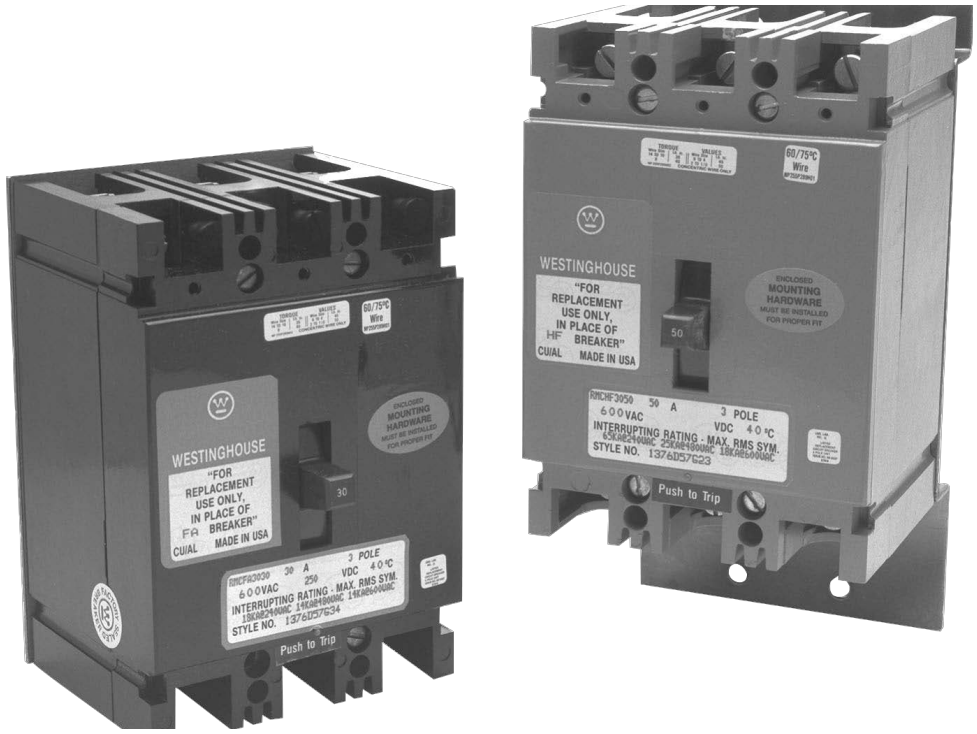
Cutler-Hammer motor control center replacement circuit breakers are newly manufactured and tested to the latest applicable standards at the Eaton molded-case circuit breaker plant in Beaver, PA. This plant has a long and well-recognized tradition of product safety, integrity and quality.

The motor control center replacement circuit breaker solution eliminates the need to consider alternative approaches. Eaton customers are ensured that the high standards of product quality and reliability do not have to be sacrificed when replacing Westinghouse out-of-production circuit breakers.

All motor control center replacement circuit breakers are easily identified by the prefix "RMC" added to the out-of-production type circuit breaker catalog number they replace.

Replacement Chart

Current MCC Circuit Breaker Type	Out-of-Production Circuit Breaker Type ①	Volts AC (50/60 Hz) 600
RMCFA	FA	●
RMCHFA	HFA	●
RMCF	F	●
RMCHF	HF	●



Replacement Motor Control Center Breakers

Motor Control Center Replacement Breaker Interrupting Ampere Ratings

Breaker Type	Amperes	240 Vac	480 Vac	600 Vac	250 Vac
RMCF ②③	15–100	18,000	14,000	14,000	10,000
RMCFA ②③④	15–150	18,000	14,000	14,000	10,000
RMCHF ②③	15–100	65,000	25,000	18,000	20,000
RMCHFA ②③④	15–150	65,000	25,000	18,000	20,000

Example:

An RMCF3100 is a newly manufactured, three-pole, 100 A trip panelboard replacement circuit breaker. It replaces an out-of-production F circuit breaker.

Example:

RMC Designates new motor control center replacement circuit breaker.

F Identifies the out-of-production circuit breaker frame.

3 Number of poles.

100 Trip unit ampere rating.

Contact **1-800-OLD-UNIT** for replacement or **Page V12-T3-417** for Series C retrofit kits.

Notes

① Last manufacture date—1974.

② Motor control center replacement breakers do not have the same physical dimensions or mounting holes as the breakers they replace. Types **RMCFA** and **RMCHFA** are 6.00 inches long and the breakers they replace, **FA** and **HFA**, are 6.50 inches long. Types **RMCF** and **RMCHF** are 6.00 inches long and the breakers they replace, F and HF, are 9.375 inches long. A mounting plate is provided with each breaker to resolve these differences, and must be installed to ensure a proper fit.

③ Motor control center replacement circuit breakers have non-interchangeable trip units and the same interrupting capacity as the out-of-production circuit breakers they replace.

④ **RMCFA** and **RMCHFA** two-pole breakers are supplied in a three-pole frame with current carrying parts omitted from the center pole.

Shaded area denotes obsolete or discontinued products and services. ①

Types RMCFA, RMCF, RMCHFA and RMCHF—Motor Control Center Replacement

Motor Control Center Replacement Circuit Breakers

	Continuous Ampere Rating at 40 °C	Catalog Number Single-Pole	Two-Pole	Three-Pole
Type RMCFA	**Type RMCFA—15–100 A Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic**			
	15	—	RMCFA2015	RMCFA3015
	20	—	RMCFA2020	RMCFA3020
	25	—	RMCFA2025	RMCFA3025
	30	—	RMCFA2030	RMCFA3030
	35	—	RMCFA2035	RMCFA3035
	40	—	RMCFA2040	RMCFA3040
	50	—	RMCFA2050	RMCFA3050
	60	—	RMCFA2060	RMCFA3060
	70	—	RMCFA2070	RMCFA3070
	80	—	RMCFA2080	RMCFA3080
	90	—	RMCFA2090	RMCFA3090
	100	—	RMCFA2100	RMCFA3100
Type RMCF	**Type RMCF—15–150 A Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic**			
	15	—	RMCHF2015	RMCHF3015
	20	—	RMCHF2020	RMCHF3020
	25	—	RMCHF2025	RMCHF3025
	30	—	RMCHF2030	RMCHF3030
	35	—	RMCHF2035	RMCHF3035
	40	—	RMCHF2040	RMCHF3040
	50	—	RMCHF2050	RMCHF3050
	60	—	RMCHF2060	RMCHF3060
	70	—	RMCHF2070	RMCHF3070
	80	—	RMCHF2080	RMCHF3080
	90	—	RMCHF2090	RMCHF3090
	100	—	RMCHF2100	RMCHF3100
	125	—	RMCHF2125	RMCHF3125
	150	—	RMCHF2150	RMCHF3150

Notes

① These frames are obsolete. For more information, call **1-800-OLD-UNIT** for Cutler-Hammer motor control solutions.

See **Page V12-T3-417** for Series C retrofit kits.

Shaded area denotes obsolete or discontinued products and services. ①

Motor Control Center Replacement Circuit Breakers

Type RMCHFA



Continuous Ampere Rating at 40 °C	Catalog Number Single-Pole	Two-Pole	Three-Pole
Type RMCHFA—15–100 A Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic			
15	—	**RMCHFA2015**	**RMCHFA3015**
20	—	**RMCHFA2020**	**RMCHFA3020**
25	—	**RMCHFA2025**	**RMCHFA3025**
30	—	**RMCHFA2030**	**RMCHFA3030**
35	—	**RMCHFA2035**	**RMCHFA3035**
40	—	**RMCHFA2040**	**RMCHFA3040**
50	—	**RMCHFA2050**	**RMCHFA3050**
60	—	**RMCHFA2060**	**RMCHFA3060**
70	—	**RMCHFA2070**	**RMCHFA3070**
80	—	**RMCHFA2080**	**RMCHFA3080**
90	—	**RMCHFA2090**	**RMCHFA3090**
100	—	**RMCHFA2100**	**RMCHFA3100**
125	—	**RMCHFA2125**	**RMCHFA3125**
150	—	**RMCHFA2150**	**RMCHFA3150**
Type RMCHF—15–100 A Two-, Three-Pole, 600 Vac Maximum, Thermal-Magnetic			
15	—	**RMCHF2015**	**RMCHF3015**
20	—	**RMCHF2020**	**RMCHF3020**
25	—	**RMCHF2025**	**RMCHF3025**
30	—	**RMCHF2030**	**RMCHF3030**
35	—	**RMCHF2035**	**RMCHF3035**
40	—	**RMCHF2040**	**RMCHF3040**
50	—	**RMCHF2050**	**RMCHF3050**
60	—	**RMCHF2060**	**RMCHF3060**
70	—	**RMCHF2070**	**RMCHF3070**
80	—	**RMCHF2080**	**RMCHF3080**
90	—	**RMCHF2090**	**RMCHF3090**
100	—	**RMCHF2100**	**RMCHF3100**

Type RMCHF



Notes

① These frames are obsolete. For more information, call **1-800-OLD-UNIT** for Cutler-Hammer motor control solutions.

See **Page V12-T3-417** for Series C retrofit kits.

Technology Upgrades

Series C Retrofit Kits

Series C Retrofit Kits are to be used to upgrade existing Type W and 5 Star motor control center units by changing out the old breakers with new Series C models. These kits can be applied to both starter and feeder units.

Some of the breakers that these kits will upgrade include:

- MCP, F, FA, FB, HFB, K, KA, KB, HKB, L, LA, LB and HLB breakers

5 Star Series C Retrofit Kit



5 Star Series C Retrofit Kit

The 5 Star Series C retrofit kit includes:

- Series C device, 65 kA (either HMCP or thermal-magnetic breaker)
- Operating handle, including tripped indication and push-to-trip mechanism
- Label stating that the MCC unit has been retrofitted with Series C device suitable for 65 kA (similar to UL quality label)
- Templates for desired frame size
- Assembly instructions

Customer benefits:

- Ease of ordering—one catalog number for all required parts
- Series C technology—higher AIC rating
- All new components associated with the breaker, including new stab assembly, operating mechanism and door, if required

Type W Series C Retrofit Kit



Type W Series C Retrofit Kit

The Type W Series C retrofit kit includes:

- Series C device, 65 kA (either HMCP or thermal-magnetic breaker)
- Operating handle, including tripped indication and push-to-trip mechanism
- Label stating that the MCC unit has been retrofitted with Series C device suitable for 65 kA (similar to UL quality label)
- Templates for proper hole placement for desired frame size
- Series C breaker mounting hardware
- New door and hardware
- New stab assembly
- Assembly instructions

310+ Electronic Trip Unit

The 310+ electronic trip unit has advantages and upgraded features over the Series C 310 electronic trip unit as follows:

- Adjustable I_r continuous current setting eliminates the need for rating plugs
- Cause of trip information can be extracted from the breaker
- Zone selective interlocking option for breaker coordination
- Ground fault alarm only option to keep critical equipment on-line when a ground fault is present
- Arcflash Reduction Maintenance System™ to improve worker safety

Note: Available only for the LG, NG, RG/RD 310+ models.

The 310+ electronic trip unit is available for the following MCCB breakers:

- Series C FDE
- Series G JG
- Series G LG
- Series G NG
- Series G RG
- Series C RD (available as a field retrofit kit)

Series C to Series G Upgrades

The Series C 250 A JD and 600 A LD breakers are being replaced by Series G 250 A JG and 600 A LG breakers respectively. There are several advantages in moving from these Series C to Series G breakers.

Series G 250 A JG Molded Case Circuit Breaker

- Smaller breaker footprint than Series C JD
- Breaker is duel rated, UL and IEC
- Interruption ratings up to 200 kAIC at 480 Vac
- Accessories are field installable thru-cover
- Now available with an electronic, 310+ trip unit
- Can accommodate the ANSI C12.1 Power Monitoring/Metering Module (PM3)

Series G 600 A LG Molded Case Circuit Breaker:

- Smaller breaker footprint Series C LD
- Breaker is duel rated, UL and IEC
- Interruption ratings up to 200 kAIC at 480 Vac
- Accessories are field installable thru-cover
- Upgraded from 310 electronic trip unit to a 310+ electronic trip unit
- Can accommodate the ANSI C12.1 Power Monitoring Metering Module (PM3)

Advantages of 310+ Electronic Trip Unit Technology Versus the 310 Electronic Trip Unit:

- Adjustable I_r continuous current setting eliminates the need for rating plugs
- Cause of trip information can be extracted from the breaker
- Zone selective interlocking option for breaker coordination
- Ground fault alarm only option to keep critical equipment on-line when a ground fault is present
- Arcflash Reduction Maintenance System to improve worker safety (not available in the JG 310+ electronic trip unit)

Molded Case Circuit Breakers

Replacement Capabilities

F10 Series C Retrofit Kit



F10 Series C Retrofit Kit

The F10 Series C retrofit kit includes:

- Series C device, 65 kA (either HMCP or thermal-magnetic breaker)
- Operating handle mechanism, including tripped indication push-to-trip
- Label stating that the MCC unit has been retrofitted with Series C device suitable for 65 kA (similar to UL quality label)
- Templates for desired frame size
- Assembly instructions

Shaded area denotes obsolete or discontinued products and services.

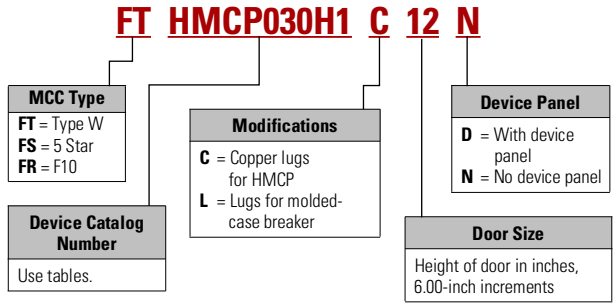
Series C Molded Case Circuit Breakers

Frame Type	Interrupting Rating (kAIC) 240 V	480 V	600 V	Trip Rating Amperes	Catalog Number
HFD	100	65	25	15	**HFD3015**
HFD	100	65	25	20	**HFD3020**
HFD	100	65	25	25	**HFD3025**
HFD	100	65	25	30	**HFD3030**
HFD	100	65	25	40	**HFD3040**
HFD	100	65	25	50	**HFD3050**
HFD	100	65	25	60	**HFD3060**
HFD	100	65	25	70	**HFD3070**
HFD	100	65	25	80	**HFD3080**
HFD	100	65	25	90	**HFD3090**
HFD	100	65	25	100	**HFD3100**
HFD	100	65	25	125	**HFD3125**
HFD	100	65	25	150	**HFD3150**
FDC	200	100	35	15	**FDC3015**
FDC	200	100	35	20	**FDC3020**
FDC	200	100	35	25	**FDC3025**
FDC	200	100	35	30	**FDC3030**
FDC	200	100	35	40	**FDC3040**
FDC	200	100	35	50	**FDC3050**
FDC	200	100	35	60	**FDC3060**
FDC	200	100	35	70	**FDC3070**
FDC	200	100	35	80	**FDC3080**
FDC	200	100	35	90	**FDC3090**
FDC	200	100	35	100	**FDC3100**
FDC	200	100	35	125	**FDC3125**
FDC	200	100	35	150	**FDC3150**
HJD	100	65	25	175	**HJD3175**
HJD	100	65	25	200	**HJD3200**
HJD	100	65	25	225	**HJD3225**
HJD	100	65	25	250	**HJD3250**
JDC	200	100	35	175	**JDC3175**
JDC	200	100	35	200	**JDC3200**
JDC	200	100	35	225	**JDC3225**
JDC	200	100	35	250	**JDC3250**
HKD	100	65	35	300	**HKD3300**
HKD	100	65	35	350	**HKD3350**
HKD	100	65	35	400	**HKD3400**
KDC	200	100	50	300	**KDC3300**
KDC	200	100	50	350	**KDC3350**
KDC	200	100	50	400	**KDC3400**

Series C Motor Circuit Protectors

Starter Size	Magnetic Trip Range Amperes	Continuous Rating Amperes	Catalog Number
0	9–30	3	**HMCP003A0**
0	21–70	7	**HMCP007C0**
0	45–150	15	**HMCP015E0**
0	40–60	25	**HMCP025D0**
1	90–300	30	**HMCP030H1**
2	80–120	50	**HMCP050G2**
2	150–500	50	**HMCP050K2**
2	115–170	70	**HMCP070J2**
2	210–700	70	**HMCP070M2**
3	160–240	100	**HMCP100L3**
3	300–1000	100	**HMCP100R3**
4	450–1500	150	**HMCP150T4**
4	750–2500	150	**HMCP150U4**
4, 5	350–700	250	**HMCP250A5**
5	450–900	250	**HMCP250C5**
5	500–1000	250	**HMCP250D5**
5	625–1250	250	**HMCP250F5**
5	750–1500	250	**HMCP250G5**
5	875–1750	250	**HMCP250J5**
5	1000–2000	250	**HMCP250K5**
5	1125–2250	250	**HMCP250L5**
5	1250–2500	250	**HMCP250W5**
5	500–1000	400	**HMCP400D5**
5	625–1250	400	**HMCP400F5**
5	750–1500	400	**HMCP400G5**
5	875–1750	400	**HMCP400J5**
5	1000–2000	400	**HMCP400K5**
5	1125–2250	400	**HMCP400L5**
5	1250–2500	400	**HMCP400M5**
5	1500–3000	400	**HMCP400N5**
5	1750–3500	400	**HMCP400R5**
5, 6	2000–4000	400	**HMCP400X5**

Series C Retrofit Kit Catalog Numbering System



How to Order

Step 1: Select the correct Series C molded-case circuit breaker from the table on **Page V12-T3-418** or the Series C motor circuit protector from the table on this page.

Step 2: Create a catalog number based on the MCC type, device selected, modifications, door size and device panel.

Step 3: Select price from PL04304002E.

Shaded area denotes obsolete or discontinued products and services.

OPTIM 550 Trip Units for Upgrading Thermal/Magnetic Trips



Digitrip OPTIM 550

Replacement of the OPTIM 550 trip units and the associated accessories allows a customer to easily upgrade an existing Series C, K- or L-Frame molded-case circuit breaker equipped with a standard thermal-magnetic trip unit, without the need to purchase a new circuit breaker.

Key features and benefits of the OPTIM 550 trip unit include:

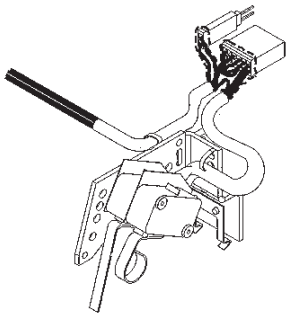
- 10 set points providing for premium protection and coordination
- Cause-of-Trip indication (LEDs and digital memory)
- Load monitoring to provide information for energy management
- Diagnostics to assist in system troubleshooting
- Communications and zone interlocking options—field or factory installed

OPTIM 550 Trip Units for Upgrading Thermal/Magnetic Trips

Maximum Ampere Rating (Sensor)	Catalog Number Type of OPTIM 550 Trip Unit LSI	LSIA	LSIG
KD, HKD, KDC, CKD and CHKD Breaker Frames			
125	**KEP3125T52**	**KEP3125T57**	**KEP3125T56**
250	**KEP3250T52**	**KEP3250T57**	**KEP3250T56**
400	**KEP3400T52**	**KEP3400T57**	**KEP3400T56**
LD, HLD, LDC, CLD, CHLD and CLDC Breaker Frames			
125	**LEP3125T52**	**LEP3125T57**	**LEP3125T56**
250	**LEP3250T52**	**LEP3250T57**	**LEP3250T56**
400	**LEP3400T52**	**LEP3400T57**	**LEP3400T56**
600	**LEP3600T52**	**LEP3600T57**	**LEP3600T56**

Cutler-Hammer PowerNet™ and Zone Interlock Kits (OPTIM 550 Only) K-, L- and N-Frames

PowerNet Communication Kit



The Cutler-Hammer PowerNet communications kit can be ordered to add PowerNet communications to an existing OPTIM 550 breaker in the field. An 18.00-inch wiring pigtail is routed to the rear of the breaker: two wires for PowerNet and two wires for 24 Vdc (45 mA load). It is recommended that the power supply be an "isolated high quality" unit.

PowerNet and Zone Interlock Kits

Circuit Breaker	PowerNet Factory Install Suffix	PowerNet Catalog Number	Zone Interlocking/Ground ① Factory Install Suffix	Zone Interlocking/Ground ① Catalog Number	PowerNet and Zone Interlocking/Ground ① Factory Install Suffix	PowerNet and Zone Interlocking/Ground ① Catalog Number
K-Frame	PN	**ICK550K**	ZG	**ZGK550K**	ZGP	**ZGPK550K**
L-Frame	PN	**ICK550L**	ZG	**ZGK550L**	ZGP	**ZGPK550L**
N-Frame	PN	**ICK550N**	ZG	**ZGK550N**	ZGP	**ZGPK550N**

Notes

① Includes a ground fault alarm signal that can drive the ground fault alarm unit (catalog number GFAU).

Instruction leaflet numbers (K) 29C506, (L) 29C897, (N) 29C898.

Shaded area denotes obsolete or discontinued products and services.

Handle Mechanisms

MCCB Handle Mechanism Introduction

Eaton offers a broad range of handle mechanisms for molded-case circuit breakers. Each of these has been designed specifically for safe, dependable operation and ease of installation.

Handle mechanisms are used in a wide variety of applications including enclosed molded-case circuit breakers, control panels and motor control centers.

Whether replacing a damaged handle mechanism with a like unit, switching from fuses to circuit breakers in order to limit downtime, or upgrading to take advantage of the many benefits associated with applying communicating, programmable molded-case circuit breaker technology, Eaton has the handle mechanism solution that is right for you.



***Flex-Shaft Type*—Page V12-T3-433**



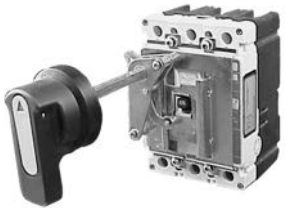
***Type SM Safety Handle*—Page V12-T3-427**



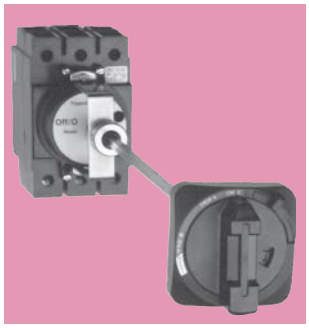
***Type AMT Vari-Depth*—Page V12-T3-430**



***Slide Plate Type*—Page V12-T3-425**



***Universal Rotary Type*—Page V12-T3-436**



G-Frame Vari-Depth



***Universal Direct*—Page V12-T3-437**



***Vari-Depth Type*—Page V12-T3-431**



***Type MC Motor Control*—Page V12-T3-429**



***Series C Rotary Type*—Page V12-T3-435**



***G Direct*—Page V12-T3-437**



***Euro IEC Direct*—Page V12-T3-437**

Handle Mechanism Selection and Availability Guide

Circuit Breaker and Switch Type	Door Mounted Vari-Depth	Door Mounted Series C ① Rotary	Door Mounted Slide Plate	Door Mounted MC	Flange Mounted Series C ① Flex Shaft	Flange Mounted SM	Flange Mounted AMT Fixed Width	Flange Mounted AMT Vari-Depth
Series C Breakers								
F-Frame/F HMCP ②	●	●	●	●	●	●	●	●
J-Frame/J HMCP	●	●	●	●	●	●	●	●
K-Frame/K HMCP	●	●	●	●	●	●	●	●
L-Frame/L HMCP	●	●	●	●	●	●	●	●
M-Frame	●	●	●	●	●	●		●
N-Frame		●			●			
R-Frame			●		●			
Other Industrial Breakers								
GB/GHB/GC/GHC/GD/GMCP	●							
LA/LAB/HLA	●		●	●		●	●	●
LC/HLC/LCG	●		●	●		●	●	●
MA/HMA	●		●	●		●		●
MC/HMC	●		●	●		●		●
NB/HNB	●		●	●		●		●
NC/HNC	●		●	●		●		●
PB			●					
PC/PCC			●					
FB TRI-PAC	●		●	●		●		●
LA TRI-PAC	●		●			●		●
NB TRI-PAC	●		●			●		●
PB TRI-PAC			●					
FCL	●			●		●		
LCL	●			●		●		●
EB/EHB/FB/HFB	●		●	●		●	●	●
JA/KA/HKA/DA/LB/LBB/HLB	●		●	●		●	●	●
Disconnect Switches								
DE-ION® 30, 60, 100	●		●					
DS 30, 60, 100, 200	●		●	●		●	●	●
DS 400, 600			●					
Visi-Flex Model "T" 30, 60, 100			●					

Notes

① For application only with Series C molded-case circuit breakers and HMCPs.
② Series C F-Frame includes EHD, ED, FDB, FD, HFD and FDC designations.

Vari-Depth Type

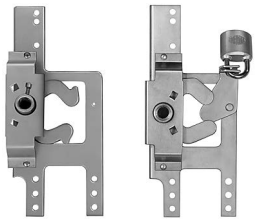
General purpose vari-depth handle mechanisms are suitable for use with Type 1 fabricated enclosures. They are designed for use with breakers or disconnect switches when used in deep enclosures.

Required for a standard application are a padlockable operating handle, a shaft and a mechanism. Two variable depth shafts are offered to better cover the wide range of depths of various enclosures...these are referred to in the table as the standard and the long shaft. The dimensions for panel depth given in the following table are from the mounting surface of the breaker or the disconnect to the inside of the enclosure cover.

Standard mechanisms do not include an internal lockoff device. Mechanisms with this feature are, however, offered as an optional item. The internal lockoff provides a means of padlocking the breaker or the switch in the OFF position while the enclosure door is open.

These mechanisms may also be used in conjunction with Type 4, 7 and 9 cast enclosures. When used with these enclosures, the special handle kits shown as accessory items must be ordered in place of the standard handle.

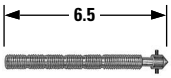
The adapter bushing, a component of the special handle kit, may be ordered separately.



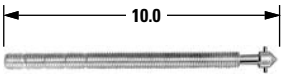
Mechanism



Handle



Standard Shaft



Long Shaft

Vari-Depth Type



Vari-Depth Type Catalog Numbers

For Complete Applications, Order Mechanism, Handle and Shaft	Mechanism ①② Standard–(No Internal Lockoff) Style Number	Mechanism ①② Special–(With Internal Lockoff) Style Number	Handle ③ Type 1, 3R, 12 (With Hardware) Style Number	Shaft Standard Panel Depth	Shaft Standard Style Number	Shaft Long Panel Depth	Shaft Long Style Number
Circuit Breakers							
Series C F-Frame and HMCP F ④	**373D958G22**	**373D958G23**	**504C323G07**	5–10-1/4	**47A4446G36**	10-1/2–14	**47A4446G37**
EB, EHB, FB, HFB, MCP	**373D958G05**	**373D958G06**	**504C323G07**	5–10-1/4	**47A4446G36**	10-1/2–14	**47A4446G37**
CA	**458D493G20**	**458D493G21**	**504C323G07**	4-3/4–9-3/4	**47A4446G36**	9-3/4–13-1/2	**47A4446G37**
Series C J-Frame and HMCP J	**5092A62G03**	**5092A62G04**	**504C323G07**	5-7/8–11-1/8	**47A4446G36**	11-1/8–14-7/8	**47A4446G37**
Series C K-Frame and HMCP K	**5092A62G01**	**5092A62G02**	**504C323G07**	5-7/8–11-1/8	**47A4446G36**	11-1/8–14-7/8	**47A4446G37**
Series C L-Frame and HMCP L	**5092A62G05**	**5092A62G06**	**504C323G07**	6-1/8–11-1/4	**47A4446G36**	11-1/4–15	**47A4446G37**
JA, KA, HKA, DA, LB, LBB, HLB	**458D493G03**	**458D493G11**	**504C323G07**	5-7/8–11-1/8	**47A4446G36**	11-1/8–14-7/8	**47A4446G37**
LA, HLA, LC, HLC	**458D493G04**	**458D493G12**	**504C323G07**	6-1/8–11-1/4	**47A4446G36**	11-1/4–15	**47A4446G37**
TRI-PAC FB	**373D958G10**	**373D958G11**	**504C323G07**	5–10-1/4	**47A4446G36**	10-1/4–14	**47A4446G37**
FCL	**373D958G16**	**373D958G17**	**504C323G07**	5–10-1/4	**47A4446G36**	10-1/4–14	**47A4446G37**
MA, HMA, MC, HMC, Series C MD, MDS Frame (not MDL)	**458D493G05**	**458D493G13**	**504C323G07**	6-11/16–11-13/16	**47A4446G36**	11-13/16–15-9/16	**47A4446G37**
NB, HNB, NC, HNC	**373D958G07**	**373D958G08**	**504C323G07**	7-15/16–13-1/4	**47A4446G36**	12-15/16–16-15/16	**47A4446G37**
TRI-PAC LA	**374D075G02**	**374D075G01**	**504C323G07**	6-1/8–11-1/4	**47A4446G36**	11-1/4–15	**47A4446G37**
TRI-PAC NB	**373D958G12**	**373D958G13**	**504C323G07**	7-15/16–13-1/4	**47A4446G36**	12-15/16–16-15/16	**47A4446G37**
LCL	**458D493G22**	**458D493G23**	**504C323G07**	6-11/16–11-13/16	**47A4446G36**	11-13/16–15-9/16	**47A4446G37**
Circuit Breakers							
30, 60, 100 A DE-ION ⑤	**47A4446G34**	—	⑤	5-3/4–11	⑤	11–14-3/4	**47A4446G37**
Type DS 30, 60, 100 A	**4987D14G02**	—	**504C323G07**	5-3/8–10-5/8	**47A4446G36**	10-3/8–14-5/16	**47A4446G37**
Type DS 200 A	**4987D14G01**	—	**504C323G07**	6-11/16–11-3/16	**47A4446G36**	10-7/8–14-7/8	**47A4446G37**
200 A DE-ION	**458D493G04**	**458D493G12**	**504C323G07**	6-1/8–11-1/4	**47A4446G36**	11-1/4–15	**47A4446G37**

Notes

① Includes hardware.
② When used with plug-in adapter kits or rear-connected studs, special mounting hardware is required. Refer to Eaton.
③ UL File No. E56845 Vol. 1 Section 4.
④ Extra long shaft includes support bracket for Series C F-Frame with no internal lockoff. Order **373D958G24**, which includes the mechanism, shaft and bracket. Order handle separately. Panel depth 16-3/8–24-1/4.
⑤ Mechanism style includes a handle and a standard shaft. A long shaft may be ordered separately if required.

Vari-Depth Type

Special Handles

Meet **Type 4 sheet steel requirements**. These handles are similar to standard handles, except they include an internal neoprene gasket. Due to gasketing effect between handle and housing, handle will not indicate a tripped position when used with circuit breakers.

UL File No. E56845 Vol. 1 Section 4.

Handle Kits

These kits are for use with **Type 4, 7 and 9 cast enclosures.** They include a special operating handle, mounting bolts and an adapter bushing (bushing may be purchased separately). Kits may be used with standard mechanisms and shafts. Instruction drawing **314C809** applies for assembly.

Handle Kits



Handle Kits

Description	Style Number
Standard finish	**504C323G08**
For Type 4, 9 enclosure	**314C794G10**
For Type 7 enclosure	**314C794G09**
Adapter bushing only	**314C794G04**

Slide Plate Type

These compact slide plate handle mechanisms are especially designed for use with AB DE-ION circuit breakers and disconnect switches when they are mounted in a shallow enclosure. They are suitable for use on Type 1 applications.

Because of the mechanisms' simplified installation—three mounting holes—and preassembled construction, these units are commonly used where high volume, standardized enclosures are being fabricated.

The mechanism styles listed on this page are for use on enclosures that have covers hinged on the right side. If these mechanisms are used on enclosures that have covers hinged on the left side, the door interlock will not function.

Vertical and Horizontal Mounting



Standard Slide Plate Mechanism Catalog Numbers

Enclosure Cover Hinged on Right	Vertical Mounting Padlocks in OFF Position Style Number	Vertical Mounting Padlocks in ON or OFF Position Style Number	Horizontal Mounting Padlocks in OFF Position Style Number
Circuit Breakers			
KL and HKL frame MA, HMA, MC and HMC breaker LA, HLA, LC and HLC breaker JA, KA, HKA, DA, LB, LBB and HLB breaker NB, HNB, NC and HNC breaker JB, KB and HKB breaker LCL breaker	**314C386G01**	**314C386G08**	**314C386G04**
EH breaker 2P with long handle EH breaker 3P with long handle F-Frame 2P F- and HF-Frame 3P Type AQB and NQB 100 A frames and Type PF 15–100 A frame	**314C386G02**	**314C386G09**	**314C386G05**
EH standard 2P EH standard 3P and FA magnetic only 2 and 3P FA 2 and 3P thermal-magnetic EB, EHB, FB, HFB 3P MCP, HMCP (0-4) 2P FCL breaker	**314C386G03**	**314C386G10**	**314C386G06**
PB, TRI-PAC PB, PC, PCC, PCF	**505C294G03**	—	—
Series C Circuit Breakers			
F-Frame Series C + HMCP-F	**314C386G03**	**314C386G10**	**314C386G06**
J-Frame Series C + HMCP-J K-Frame Series C + HMCP-K	**314C386G02**	**314C386G09**	**314C386G05**
L-Frame Series C + HMCP-L, MDL	**314C386G18**	**314C386G08**	**314C386G04**
M-Frame Series C	**314C386G01**	**314C386G08**	**314C386G04**
R-Frame ①	**505C294G03**	—	—
TRI-PAC switches			
225 A TRI-PAC Type K 400 A TRI-PAC Type KL LA TRI-PAC NB TRI-PAC	**314C386G01**	**314C386G08**	**314C386G04**
100 A TRI-PAC	**314C386G02**	**314C386G09**	**314C386G05**
FB TRI-PAC	**314C386G03**	**314C386G10**	**314C386G06**
Visi-Flex Switches (Model T) ②			
60–100 A Visi-Flex	**314C386G01**	**314C386G08**	**314C386G04**
30 A and Special 60 A Visi-Flex	**314C386G02**	**314C386G09**	**314C386G05**
DE-ION Switches and Disconnect Switches			
30–60 A (long handle) DE-ION 100 A (long handle) DE-ION 200 A disconnect switch 200 DS switch	**314C386G01**	**314C386G08**	**314C386G04**
30–60 A disconnect switch 100 A disconnect switch	**314C386G02**	**314C386G09**	**314C386G05**
30, 60, 100 A DS switch	**314C386G03**	**314C386G10**	**314C386G06**
400 and 60 A DS switch	**314C386G15**	—	—

Notes

① Does not padlock in OFF position. Type 3R version available as special. Contact EatonCare Technical Resource Center.

② Handle mechanisms cannot be used on Visi-Flex switches with 200 A fuse kits.

Outdoor or Hazardous Type

This handle mechanism is designed for use with fabricated or cast, Type 3, 4 or 5 enclosures. A butterfly cam type mechanism may be used on enclosures with either right- or left-hand hinged covers or on enclosures with bolted covers. The mechanism has a provision for padlocking. Will accept up to three locks. Assembly of this mechanism is accomplished by welding it to the enclosure door or the cover. Refer to IL29C287 for drilling plan. For PB, PC and RD, refer to drawing 372D690.

Shaded area denotes obsolete or discontinued products and services.

Outdoor or Hazardous Location Type



Mechanisms for Outdoor or Hazardous Locations

Description	Drilling Plan Reference	Complete Handle Mechanisms Type 3, 4, 5 Padlocks in OFF Position Style Number	Complete Handle Mechanisms Type 3, 4, 5 Padlocks in ON or OFF Position Style Number
Circuit Breakers			
Series C F-Frame EB, EHB, FB, HFB	**48A3656**	**48A3656G03**	**48A3656G04**
JA, KA, LA, MA, HKA, HLA, HMA, LB, HLB	**452D028**	**452D028G01**	—
DE-ION Switches			
30, 60, 100 A	**48A3656**	**48A3656G03**	**48A3656G04**

Accessories

Door Interlock Kits

Description	Drilling Plan Reference	Style Number
3 point—for mechanisms, style numbers: 314C386G01, 02, 03, 04, 05, 06, 08, 09, 10	**208B624**	**28A2656G08**
2 point—for PB mechanism, style number 505C294G03	**372D690**	**1532990**

Note: For use with slide plate mechanisms used in larger panels where regular interlock is not adequate.

Type SM Safety Handle



Enclosed Breaker with SM Handle





Type SM safety handle mechanism is designed to prevent tampering by unauthorized individuals and provides the optimum in personnel safety. When properly applied, these mechanisms conform to Type 12 and J.I.C. requirements, and are well-suited for use by the automotive and machine tool industries.

Completely preassembled in a rugged cast housing, the Type SM safety handle mechanism includes a predrilled mounting plate for simplified customer installation. Standard handles are 5.125 inches long and can be padlocked in the OFF position with as many as three padlocks. A shorter handle 3.875 inches long can be supplied on SM100, SM101 or SM150 mechanisms when specified.

All Type SM safety handle mechanisms can be used on any size enclosure. Order handle mechanism from the table at right, plus desired door hardware for complete application. Dress nameplate required to meet automotive specifications is available from accessories section.

Type SM Safety Handle Mechanism Catalog Numbers

Handle Mechanism for Use With:	Catalog Number ① Right-Hand Mounting Enclosure Cover Hinged On Left	Left-Hand Mounting Enclosure Cover Hinged On Right
Series C—F-Frame, MCP, HMCP F, EB, EHB, FB, HFB breakers, and Type DS 30, 60, 100 A non-fusible switches	**SM150R**	**SM150L**
Type DS 30, 60, 100 A fusible switches	**SM100SFR**	**SM100SFL**
FB TRI-PAC, FB breaker with current limiter, or Type FCL	**SM101PR**	**SM101PL**
30, 60, 100 A DE-ION switches	**SM100R**	**SM100L**
DA, JA, KA, HKA, LB, LBB, HLB breakers	**SM225R**	**SM225L**
Series C—J-Frame, HMCP J	**SM250JR**	**SM250JL**
Series C—K-Frame, HMCP K	**SM400KR**	**SM400KL**
LAB, LA, HLA, LC, HLC breakers (400 and 600 A)	**SM400R**	**SM400L**
Series C—L-Frame, HMCP L, MDL	**SM600R**	**SM600L**
Series C—M-Frame, MD, MDS	**SM800R**	**SM800L**
MA, HMA, MC, HMC breakers	**SM800R**	**SM800L**
TRI-PAC LA breaker	**SM400PR**	**SM400PL**
TRI-PAC NB	**SM800PR**	**SM800PL**
NB, HNB, NC, HNC breakers	**SM1200R**	**SM1200L**
Type DS 200 A non-fusible switch	**SM200SR**	**SM200SL**
Type DS 200 A fusible switch	**SM200SFR**	**SM200SFL**
Type LCL	**SM400LCLR**	**SM400LCLL**

Further Information

Publication Number	Description
IL 14439	F-Frame, EB, EHB, FB, FCL, HFB, MCP, FB-P, 30–100 A DS switch
IL 29C274	J- and K-Frame
IL 29C284	L-Frame
IL 13282	JA, KA, JB, KB, LAB, LA, MA, NB, HLA, NB-P, 200 A DS switch
IL 13327	DH1L door hardware
IL 13326	DH1R door hardware
IL 13325	DH2R door hardware
IL 13324	DH3L door hardware
IL 13322	DH3R door hardware
IL 13287	Electrical interlock

Notes

① Must be ordered with door hardware; if not, door-operated defeater kit is required.

Mechanisms for Type 4 Applications—Mechanisms with stainless steel parts and special gasketing can be supplied. Order by description. 30% adder.

3

Type SM Safety Handle

Door Hardware

Three choices of door hardware and an auxiliary handle are offered to provide the best latching scheme for individual needs. The door hardware is designed with a provision for padlocking, and a coin-proof slot that requires the use of a tool to open the door, for maximum security.

Select desired hardware from the table below. Additional latches can be ordered from accessories section if desired. Type 1, 12 only.

Door Hardware

	Description	Catalog Number Right Hand	Left Hand
	With sliding latches for smaller panels up to approximately 30.00 inches high	DH1R ①	DH1L ②
	With 2-roller latches for intermediate panels up to approximately 40.00 inches high	DH2R ①	DH2L ②
	With 3-roller latches for larger panels, approximately 40.00 inches and higher	DH3R ①	DH3L ②
	Auxiliary handle for larger panels	DH4R ①	DH4L ②

Dress Nameplates

Required to meet automotive specifications. Mounts from inside enclosure and covers operating mechanism mounting bolts, making mechanism non-removable when enclosure door is closed.

Dress Nameplate



Dress Nameplate

Description	Style Number
For SM100, SM150 mechanisms	373D260G05
For SM200, and larger mechanisms	373D260G05

Shaded area denotes obsolete or discontinued products and services.

Auxiliary Latch Kits

Provide an additional latch for use with applications where 2-point latching may not be adequate.

Slide and Roller Latches



Auxiliary Latch Kits

Description	Style Number
Door hardware using sliding latches, right- or left-hand mounting	656D669G01
Door hardware using roller latches, right-hand mounting	370D801G04
Left-hand mounting	370D802G04

Electrical Interlock Kit

Provides 1NC and 1NO contacts (SPDT switch) for use with auxiliary circuits. Mounts to end of mechanism housing as shown.

Electrical Interlock Kit



Electrical Interlock Kit

Style Number
622B747G01

Door Operated Interlock Defeater Kit

Required when door hardware is not used; operates as door closes. Additional method of securing door such as screw latch, also required (to be supplied by box manufacturer).

Door Operated Interlock Defeater Kit

Style Number
623B214G02

Notes

① Enclosure cover hinged on left.
② Enclosure cover hinged on right.

Type MC Motor Control



225 A Mechanism

Type MC handle mechanisms are linear drive, fixed depth mechanisms designed for through-door mounting in standardized or shallow depth enclosures such as motor control centers or enclosed circuit breakers.

Mounting directly to the front of the disconnect, these mechanisms provide positive operation and handle indication. Both disconnect and mechanism mount simultaneously with mounting hardware supplied with the mechanism.

For security, the handle can be padlocked in the OFF position with up to three 0.375-inch hasp padlocks. Also, the mechanism is interlocked with the enclosure door so that the disconnect must be OFF before the door can be opened. A defeater is provided to bypass this interlock.

Catalog numbers listed include the mechanism, mounting hardware and door interlock clip.

Shaded area denotes obsolete or discontinued products and services.

Type MC Motor Control Catalog Numbers









Handle Mechanism ① For Use With	Catalog Number ②③ Type 1 Enclosure	Type 12 Enclosure
Series C F-Frame HMCP F	**SMCU150FD**	**CMCU150FD**
EB, EHB, FB, HFB breakers and MCP (Size 0–4)	**SMCU150FD**	**CMCU150FD**
FB TRI-PAC	**SMCU100FBP**	**CMCU100FBP**
FCL breakers	**SMCU100FCL**	**CMCU100FCL**
30, 60,100 A DS switch fusible, non-fusible	**SMCU100DS**	**CMCU100DS**
200 A DS switch fusible, non-fusible	**SMCU200DS**	**CMCU200DS**
Series C J-Frame HMCP J	**SMCU250JD**	**CMCU250JD**
Series C K-Frame HMCP K, DA, JA, KA, HKA, LB, LBB, HLB	**SMCU400KD**	**CMCU400KD**
Breakers, Size 5 MCP (400 A)	**SMCU225KA**	**CMCU225KA**
Series C L-Frame HMCP L, MDL	**SMCU600LD**	**CMCU600LD**
Series C M-Frame not MDL	**SMCU800MA**	**CMCU800MA**
LAB, LA, HLA, LC, HLC breakers (400 and 600 A frame)	**SMCU400LA**	**SMCU400LA**
LA TRI-PAC	**SMCU400LAP**	**SMCU400LAP**
MA, HMA, MC, HMC Breakers (800 A frame)	**SMCU800MA**	**SMCU800MA**
NB, HNB, NC, HNC Breakers (1200 A frame)	**SMCU1200NB**	**SMCU1200NB**
LCL225 and 400	**SMCU400LCL**	**SMCU400LCL**
Series C L-Frame HMCP L	**SMCU600LD**	**SMCU600LD**

Further Information

Publication Number	Description
IL 14572	F-Frame, EB, EHB, FB, MCP, HFB
IL 29C273	J- and K-Frame
IL 29C283	L-Frame
IL 14571	FB-P
IL 14938	JB, KB
IL 14573	30, 60, 100 A DS switch
IL 14574	200 A DS switch

Notes

① Mechanisms are shown mounted on breaker for illustration purposes only. Breakers are not included.
② These mechanisms are recognized under the component program of Underwriters Laboratories.
③ Selection data for handle mechanism only; circuit breaker not included.

3

AMT Vari-Depth

Fixed Width Type—Type AMT for Below Handle Mounting











Breaker or Switch Type	Complete Assembly ①② Catalog Number	Backplate and Yoke Assembly Catalog Number	Rod and Brace Assembly Catalog Number	Pivot Mechanism Assembly Catalog Number	Operating Handle Assembly Catalog Number
Below the Handle—Fixed Width—with Short Brace and/or Rod as Listed (For all enclosures including Hoffman A-25 Enclosures)					
Series C F-Frame HMCP F ③	**AMTFDBSFH**	**AMTFD-B**	**AMTR**	**AMTPM-FH**	**AMTOP**
Series C J-Frame HMCP J ③	**AMTJDBSFH**	**AMTKB-B**	**AMTRB1**	**AMTPM-FSH**	**AMTOP**
Series C K-Frame HMCP K ③	**AMTKDBSFH**	**AMTLB-B**	**AMTRB1**	**AMTPM-FSH**	**AMTOP**
Series C L-Frame HMCP L ③	**AMTLDBSFH**	**AMTLD-B**	**AMTRB1**	**AMTPM-FS**	**AMTOP**
DS-30, 60, 100 unfused	**AMTDSBSFH**	**AMTDS100-B**	**AMTR**	**AMTPM-FH**	**AMTOP**
DS-30, 60, 100 fused ④	**AMTDSFBSFH**	**AMTDS100F-B**	**AMTR**	**AMTPM-FH**	**AMTOP**
DS-30, 60, 100 fused ⑤	**AMTDSF1BSFH**	**AMTDS100F1-B**	**AMTR**	**AMTPM-FH**	**AMTOP**
DS-200 unfused	**AMTDS2BSFH**	**AMTDS200-B**	**AMTRB1**	**AMTPM-FSH**	**AMTOP**
DS-200 fused	**AMTDS2FBSFH**	**AMTDS200F-B**	**AMTRB1**	**AMTPM-FSH**	**AMTOP**
Below the Handle—Fixed Width—with Short Brace and/or Rod as Listed (Not for use with Hoffman A-25 Enclosures)					
EB, EHB, FB, HFB, MCP (0-4)	**AMTFBBSF**	**AMTFD-B**	**AMTR**	**AMTPM-F**	**AMTOP**
JB, KB, MCP (250 A)	**AMTKBBSF**	**AMTKB-B**	**AMTRB1**	**AMTPM-FS**	**AMTOP**
JA, KA, HKA, LB, LBB, HLB, DA MCP (400 A)	**AMTLBBSF**	**AMTLB-B**	**AMTRB1**	**AMTPM-FS**	**AMTOP**
FB TRI-PAC, FCL	**AMTFBPBSF**	**AMTFBP-B**	**AMTR** Optional rod and brace ⑥ AMTRB2 long rod and brace AMTRB3 extended rod and brace	**AMTPM-F**	**AMTOP**

Standard Door Hardware ⑦⑧

Catalog Number
DH1R
DH2R
DH3R

Door Hardware Adapter Kit ⑨

Catalog Number
AMTDHA

Door Hardware Kit for Hoffman A-25 Enclosure ⑩⑪

Catalog Number
HDH-2R ⑫
HDH-3R ⑬

Further Information

Publication Number	Description
IL 29C277	AMT Vari-Depth Handle Mechanism

Notes

① AMTR is rod only; AMTRI is rod and brace assembly.
② Complete assembly not available, order components parts listed above.
③ Also for use with equivalent HMCP Frame.
④ For switches using 30, 60, 100 A, 600 V NEC Class H, R or J fuses.
⑤ For switches using 30, 60, 100 A, 250 V NEC Class H or R fuses.
⑥ AMTR and AMTRB1 for use with enclosure depth of 6.50–14.25 inches. For 12.25–18.25 inch depth, use optional AMTRB2. For 18.00–24.00 inch depth, use optional AMTRB3.
⑦ Requires adapter kit shown in Door Hardware Adapter Kit table.
⑧ For standard door hardware description, see **Page V12-T3-428**.
⑨ Required on standard door hardware only when used with any AMT handle mechanisms.
⑩ Kit consists of special door hardware and door interlock pin. Available for right-hand flange mounting only.
⑪ For use with AMT fixed width mechanisms only.
⑫ 2-point latch for use with panels up to approximately 40.00 inches high.
⑬ 3-point latch for use with panels approximately 40.00 inches and higher.

AMT Vari-Depth

Vari-Width Type—Type AMT for Above Handle Mounting

The Type AMT is an extra heavy-duty handle mechanism designed for mounting in flange-type enclosures, and has provisions for mounting in various depth enclosures and for varying the width relationship between the disconnect device and the external handle.

A door interlock is provided to prevent opening the enclosure door with the disconnect in the ON position or to close the disconnect with the enclosure door open. The external handle can be locked in the OFF position with up to three padlocks. The AMT mechanism is supplied for mounting in right-hand flange enclosures but can be easily converted for left-hand mounting.

AMT mechanisms are available for above the handle mounting or below the handle mounting. Mechanisms for below the handle mounting are also available as fixed width units. When door hardware is used with an AMT handle mechanism, a door hardware adapter kit is required.

Accessories

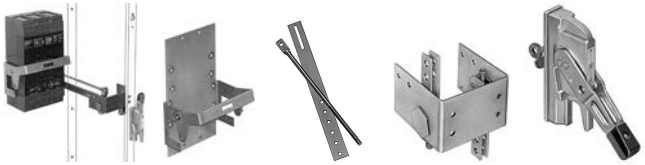
Spacer kit to Vari-Width (not for use with fixed mechanisms) catalog number AMTSK1 for up to 1.00-inch variation.

Note: This spacer kit is for up to 1.00-inch variation and consists of multiples of thin spacers to be used as required. A maximum of two kits per installation may be used. Due to the possible variation in dimensions, hardware is not supplied. Use standard 1/4–20 bolts.

Further Information

Pub. Number	Description
IL 14946	AMT Vari-Depth handle mechanism

MD, MSMVari-Width Type—Type AMT for Above Handle Mounting



Breaker or Switch Type	Complete Assembly ①② Catalog Number	Backplate and Yoke Assembly Catalog Number	Operating Rod and Brace Assembly Catalog Number	Flange Mounted Pivot Mechanism Assembly ③④ Catalog Number	External Operating Handle Catalog Number
Above the Handle Mounting with Short Rod and Brace					
Series C F-Frame ⑤ EB, EHB, FB, HFB, MCP (0–4)	**AMTFDASV**	**AMTFB**	**AMTRB1**	**AMTPM**	**AMTOP**
Series C J-Frame ⑤	**AMTJDASV**	**AMTJD**	**AMTRB1**	**AMTPM**	**AMTOP**
Series C K-Frame ⑤	**AMTKDASV**	**AMTKD**	**AMTRB1**	**AMTPM**	**AMTOP**
Series C L-Frame, MDL ⑤	**AMTLDASV**	**AMTLD**	**AMTRB1**	**AMTPM**	**AMTOP**
JA, KA, HKA, LB, LBB, HLB, DA, MCP (400 A)	**AMTLBASV**	**AMTLB**	**AMTRB1**	**AMTPM**	**AMTOP**
LA, HLA, LC, HLC	**AMTLAASV**	**AMTLA**	**AMTRB1**	**AMTPM**	**AMTOP**
MD, MDS, MA, HMA, MC, HMC, Series C M-Frame, LCL	**AMTMAASV**	**AMTMA**	**AMTRB1**	**AMTPM**	**AMTOP**
NB, HNB, NC, HNC	**AMTNBASV**	**AMTNB**	**AMTRB1**	**AMTPMNB**	**AMTOP**
FB TRI-PAC, FCL	**AMTFBASV**	**AMTFB**	**AMTRB1**	**AMTPM**	**AMTOP**
LA TRI-PAC	**AMTLAPASV**	**AMTLAP**	**AMTRB1**	**AMTPM**	**AMTOP**
NB TRI-PAC	**AMTNBPASV**	**AMTNBP**	**AMTRB1**	**AMTPMNB**	**AMTOP**
DS-30, 60, 100 unfused	**AMTDSASV**	**AMTDS100**	**AMTRB1**	**AMTPM**	**AMTOP**
DS-30, 60, 100 fused ⑥	**AMTDSFASV**	**AMTDS100F**	**AMTRB1**	**AMTPM**	**AMTOP**
DS-30, 60, 100 fused ⑦	**AMTDSF1ASV**	**AMTDS100F1**	**AMTRB1**	**AMTPM**	**AMTOP**
DS-200 unfused	**AMTDS2ASV**	**AMTDS200**	**AMTRB1**	**AMTPM**	**AMTOP**
DS-200 fused	**AMTDS2FASV**	**AMTDS200F**	**AMTRB1**	**AMTPM**	**AMTOP**
Above the Handle Mounting with Long Rod and Brace					
Series C F-Frame ⑤ EB, EHB, FB, HFB, MCP (0–4)	**AMTFDALV**	**AMTFB**	**AMTRB2**	**AMTPM**	**AMTOP**
Series C J-Frame ⑤	**AMTJDALV**	**AMTJD**	**AMTRB2**	**AMTPM**	**AMTOP**
Series C K-Frame ⑤	**AMTKDALV**	**AMTKD**	**AMTRB2**	**AMTPM**	**AMTOP**
Series C L-Frame, MDL ⑤	**AMTLDALV**	**AMTLD**	**AMTRB2**	**AMTPM**	**AMTOP**
JA, KA, HKA, LB, LBB, HLB, DA, MCP (400 A)	**AMTLBALV**	**AMTLB**	**AMTRB2**	**AMTPM**	**AMTOP**
LA, HLA, LC, HLC	**AMTLAALV**	**AMTLA**	**AMTRB2**	**AMTPM**	**AMTOP**
MD, MDS, MA, HMA, MC, HMC, Series C M-Frame, LCL	**AMTMAALV**	**AMTMA**	**AMTRB2**	**AMTPM**	**AMTOP**
NB, HNB, NC, HNC	**AMTNBALV**	**AMTNB**	**AMTRB2**	**AMTPMNB**	**AMTOP**
FB TRI-PAC, FCL	**AMTFBALV**	**AMTFB**	**AMTRB2**	**AMTPM**	**AMTOP**
LA TRI-PAC	**AMTLAPALV**	**AMTLAP**	**AMTRB2**	**AMTPM**	**AMTOP**
NB TRI-PAC	**AMTNBPALV**	**AMTNBP**	**AMTRB2**	**AMTPMNB**	**AMTOP**
DS-30, 60, 100 unfused	**AMTDSALV**	**AMTDS100**	**AMTRB2**	**AMTPM**	**AMTOP**
DS-30, 60, 100 fused ⑥	**AMTDSFALV**	**AMTDS100F**	**AMTRB2**	**AMTPM**	**AMTOP**
DS-30, 60, 100 fused ⑦	**AMTDSF1ALV**	**AMTDS100F1**	**AMTRB2**	**AMTPM**	**AMTOP**
DS-200 unfused	**AMTDS2ALV**	**AMTDS200**	**AMTRB2**	**AMTPM**	**AMTOP**
DS-200 fused	**AMTDS2FALV**	**AMTDS200F**	**AMTRB2**	**AMTPM**	**AMTOP**

Notes

① Assembled Type AMT for above handle mounting (breaker not included).
② Complete assembly not available, order components parts listed above.
③ Width spacer kit not included.
④ This spacer kit is for up to 1.00-inch variation and consists of multiples of thin spacers to be used as required. A maximum of two kits per installation may be used. Due to the possible variation in dimensions, hardware is not supplied. Use standard 1/4–20 bolts.
⑤ Also for use with equivalent HMCP frame.
⑥ For switches using 30, 60, 100 A, 600 V NEC Class H, R or J fuses.
⑦ For switches using 30, 60, 100 A, 600 V NEC Class H or R fuses.

Vari-Width Type—Type AMT for Below Handle Mounting











Breaker or Switch Type	Complete Assembly ①② Catalog Number	Backplate and Yoke Assembly Catalog Number	Rod and Brace Assembly Catalog Number	Flange Mounted Pivot Mechanism Assembly ③④ Catalog Number	External Operating Handle Assembly Catalog Number
Below the Handle Mounting with Short Rod and Brace					
Series C F-Frame ⑤ EB, EHB, FB, HFB, MCP (0–4)	**AMTFDBSV**	**AMTFD-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
Series C J-Frame ⑤	**AMTJDBSV**	**AMTJD-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
Series C K-Frame ⑤	**AMTKDBSV**	**AMTKD-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
Series C L-Frame MDL ⑤	**AMTLDBSV**	**AMTLD-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
JA, KA, HKA, LB, LBB, HLB, DA, MCP (400 A)	**AMTLBBSV**	**AMTLB-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
LA, HLA, LC, HLC	**AMTLABSV**	**AMTLA-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
MD, MDS, MA, HMA, MC, HMC, Series C M-Frame, LCL	**AMTMABSV**	**AMTMA-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
NB, HNB, NC, HNC	**AMTNBBSV**	**AMTNB-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
FB TRI-PAC, FCL	**AMTFBPBSV**	**AMTFBP-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
LA TRI-PAC	**AMTLAPBSV**	**AMTLAP-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
NB TRI-PAC	**AMTNBPBSV**	**AMTNBP-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
DS-30, 60, 100 unfused	**AMTDSBSV**	**AMTDS100-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
DS-30, 60, 100 fused ⑥	**AMTDSFBSV**	**AMTDS100F-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
DS-30, 60, 100 fused ⑦	**AMTDSF1BSV**	**AMTDS100F1-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
DS-200 unfused	**AMTDS2BSV**	**AMTDS200-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
DS-200 fused	**AMTDS2FBSV**	**AMTDS200F-B**	**AMTRB1**	**AMTPM-B**	**AMTOP**
Below the Handle Mounting with Long Rod and Brace					
Series C F-Frame ⑤ EB, EHB, FB, HFB, MCP (0–4)	**AMTFDBLV**	**AMTFD-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
Series C J-Frame ⑤	**AMTJDBLV**	**AMTJD-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
Series C K-Frame ⑤	**AMTKDBLV**	**AMTKD-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
Series C L-Frame MDL ⑤	**AMTLDBLV**	**AMTLD-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
JA, KA, HKA, LB, LBB, HLB, DA, MCP (400 A)	**AMTLBBLV**	**AMTLB-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
LA, HLA, LC, HLC	**AMTLABLV**	**AMTLA-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
MD, MDS, MA, HMA, MC, HMC, Series C M-Frame, LCL	**AMTMABLV**	**AMTMA-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
NB, HNB, NC, HNC	**AMTNBBLV**	**AMTNB-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
FB TRI-PAC, FCL	**AMTFBPBLV**	**AMTFBP-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
LA TRI-PAC	**AMTLAPBLV**	**AMTLAP-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
NB TRI-PAC	**AMTNBPBLV**	**AMTNBP-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
DS-30, 60, 100 unfused	**AMTDSBLV**	**AMTDS100-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
DS-30, 60, 100 fused ⑥	**AMTDSFBLV**	**AMTDS100F-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
DS-30, 60, 100 fused ⑦	**AMTDSF1BLV**	**AMTDS100F1-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
DS-200 unfused	**AMTDS2BLV**	**AMTDS200-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**
DS-200 fused	**AMTDS2FBLV**	**AMTDS200F-B**	**AMTRB2**	**AMTPM-B**	**AMTOP**

Notes

① AMTR is rod only; AMTRI is rod and brace assembly.
② Complete assembly not available, order components parts listed above.
③ Width spacer kit not included.
④ This spacer kit is for up to 1-inch variation and consists of multiples of thin spacers to be used as required. A maximum of two kits per installation may be used. Due to the possible variation in dimensions, hardware is not supplied. Use standard 1/4–20 bolts.
⑤ Also for use with equivalent HMCP Frame.
⑥ For switches using 30, 60, 100 A, 600 V NEC Class H, R or J fuses.
⑦ For switches using 30, 60, 100 A, 600 V NEC Class H or R fuses.

Accessories

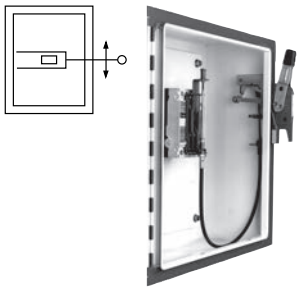
Spacer kit to Vari-Width (not for use with fixed mechanisms) catalog number AMTSK1 for up to 1.00-inch variation.

Note: This spacer kit is for up to 1.00-inch variation and consists of multiples of thin spacers to be used as required. A maximum of two kits per installation may be used. Due to the possible variation in dimensions, hardware is not supplied. Use standard 1/4–20 bolts.

Ordering Information

- Complete assembly not available, order components parts as listed on **Pages V12-T3-430**, **V12-T3-431** and **V12-T3-432**
- Order spacer kits or door hardware adapter as required
- Individual component parts may be ordered by catalog number

Flex Shaft



Flex Shaft

The Flex Shaft is an extra heavy-duty mechanism that includes a flexible shaft in various lengths, 3 feet (0.9m) through 10 feet (3m) for use with various size enclosures.

The Flex Shaft handle will accept up to three padlock shackles, each with a maximum diameter of 0.375-inch (9.5 mm). Can be used with Type 1, 3R and 12 fabricated enclosures. An optional handle is available for Flex Shaft that is suitable for use with Type 4 and 4X environments. Flex Shaft comes preset from the factory, requiring only minor field adjustments on installation, which takes about 10 minutes—a significant time savings compared to installation of other types of flange handle mechanisms. The Flex Shaft mechanism also takes up less interior enclosure space than competitive designs and the handle fits standard flange cutouts. Flex Shaft handle can be remotely mounted from breaker, where an operator can use it by "funneling" the cable through conduit.

Flex Shaft is UL Listed under File E64983 and meets CSA requirements.

Flex Shaft Ordering Information (Three-Pole Only) ①②③

Breaker Frame	Flexible Shaft Length in Feet (m) 3.00 (0.9) Catalog Number	4.00 (1.2)	5.00 (1.5)	6.00 (1.8)	7.00 (2.1)	8.00 (2.4)	9.00 (2.7)	10.00 (3.0)
E125	**EHMFS03**	**EHMFS04**	**EHMFS05**	**EHMFS06**	—	—	—	—
J250	**JHMFS03**	**JHMFS04**	**JHMFS05**	**JHMFS06**	**JHMFS07**	**JHMFS08**	**JHMFS09**	**JHMFS10**
G	**F0S03C**	**F0S04C**	**F0S05C**	**F0S06C**	—	—	—	—
F	**F1S03C**	**F1S04C**	**F1S05C**	**F1S06C**	**F1S07C**	**F1S08C**	**F1S09C**	**F1S10C**
F (Dual)	**F1S03CD**	**F1S04CD**	**F1S05CD**	**F1S06CD**	**F1S07CD**	**F1S08CD**	**F1S09CD**	**F1S10CD**
J	**F2S03C**	**F2S04C**	**F2S05C**	**F2S06C**	**F2S07C**	**F2S08C**	**F2S09C**	**F2S10C**
K	**F3S03C**	**F3S04C**	**F3S05C**	**F3S06C**	**F3S07C**	**F3S08C**	**F3S09C**	**F3S10C**
L and MDL	—	**F4S04C**	**F4S05C**	**F4S06C**	—	—	—	**F4S10C**
N	—	**F5S04C**	**F5S05C**	**F5S06C**	—	—	—	**F5S10C**
R	—	**F6S04**	**F6S05**	**F6S06**	—	—	—	—
MD	—	**F7S04C**	**F7S05C**	**F7S06C**	—	—	—	**F7S10C**

Flex Shaft Accessories (F- through R-Frame)

NEMA 12 Safety Door Hardware for Flex Shaft ④

Handle Length in Inches (mm)	Catalog Number ⑤
4.00 (101.6)	**C361KJ4**
6.00 (152.4)	**C361KJ6**
Roller latch ⑥	**C361KR**

Notes

① Type 4/4X handle mechanisms are available. Add Suffix **X** to complete catalog number. Add Suffix **I** to complete catalog number for IEC handle. Add Suffix **L** (Standard on F, J, K and L) to complete catalog number for 6.00-inch (152.4 mm) handle. Original narrow handle design (no **C** suffix) is available. Remove **C** from catalog number.

② When selecting the length of shaft, ensure minimum bending radius of 4.00 inches (101.6 mm) is maintained to operate properly. The standard method of shipment includes the mechanism preset at the factory; however, minor field adjustments may be required.

③ Dual breakers operator available on F-Frame only.

④ Customer: Consult with box manufacturer for correct door hardware and any adapters required for assembly.

⑤ The 0.25 inch x 0.50 inch (6.35 x 12.7 mm) standard mill rectangular locking bar is not supplied with these kits.

⑥ Third roller latch for use with 4.00- or 6.00-inch (101.6 or 152.4 mm) handle when 3-point latching is required.

Refer to handle mechanisms in the molded-case circuit breaker section of Volume 4—Circuit Protection Catalog, CA08100005E, Tab 2.

The Type C371 circuit breaker operating mechanisms are designed for installation in control enclosures where main or branch circuit protective devices are required. All circuit breaker mechanisms are suitable for right-hand mounting.

Auxiliary contacts are not available for mounting on operating mechanisms. Where required, have them installed in circuit breaker.

Type C371 is UL Listed under File E62635.

Type C371 Ordering Information—Dimensions in Inches (mm)

Circuit Breaker or Motor Circuit Protector	Frame Size	Variable Depth Mounting Range Min./Max. ①②	Operating Mechanism Only ③ Catalog Number	Operating Mechanism With 4.00-Inch Handle For Type 1–12 Enclosure Catalog Number	Operating Mechanism With 4.00-Inch Handle For Type 4 Enclosure Catalog Number
HMCP and Series C EHD, FDB, FD, FDC, HFD, ED	150	6.50–160 (165.1–406.4)	**C371E**	**C371E1**	**C371E2**
HMCP and Series C HJD, JD, JDB, JDC	250	6.50–16.63 (165.1–422.4)	**C371F**	**C371F5**	**C371F6**
HMCP and Series C DK, HKD, KD, KDB	400	6.50–16.63 (165.1–422.4)	**C371F**	**C371F5**	**C371F6**
Series C HLD, LD, LDC	600	8.50–22.00 (215.9–558.8)	**C371G**	**C371G5**	**C371G6**
Series C MD, MDS	800	8.75–22.00 (222.3–558.8)	**C371K**	**C371K5**	**C371K6**
Series C HND, ND, NDC	1200	9.75–22.00 (247.7–558.8)	**C371K**	**C371K5**	**C371K6**

Handle Only—Dimensions in Inches (mm)

Circuit Breaker Frame Size (Amperes)	NEMA Enclosure Type	Operating Handle Length	Catalog Number
150	1, 3R, 3, 12	4.00 (101.6)	**C371H1**
	4/4X	4.00 (101.6)	**C371H2**
	1, 3R, 3, 12	4.00 (101.6)	**C371H3**
	4/4X	4.00 (101.6)	**C371H4**
250–1200	1, 3R, 3, 12	4.00 (101.6)	**C371H5**
	4/4X	4.00 (101.6)	**C371H6**
	1, 3R, 3, 12	4.00 (101.6)	**C371H7**
	4/4X	4.00 (101.6)	**C371H8**

Channel Support Kit (Rod Not Supplied) ④

Catalog Number
C371CS6

Connecting Rods ⑤

Application	Catalog Number
Disconnect switches (30, 60, 100, 200 A sizes)	**C371CS1**
Circuit breakers (150, 250, 400 A sizes)	**C371CS1**
Circuit breakers (600, 800, 1200 A sizes)	**C371CS2**

Flange-Mounted Instruction Leaflets

Breaker Frame	Instruction Leaflet Number
Flex Shaft	
E125	**IL0510TE0002**
J250	**IL0510TE0005**
G	**TBD**
F	**15609**
J	**15605**
K	**15604**
L and M	**15606**
N	**15606**
R	**15606**

Notes

① For increased maximum allowable depth, see connecting rods table to the left.

② Dimensions shown are from panel flange surface.

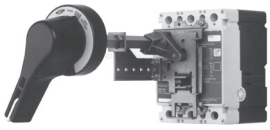
③ Does not include handle.

④ For use to prevent bending of the operating handle mounting surface. This is especially useful when the operating handle is mounted on a channel in a multi-door enclosure. Included in 600–1200 A.

⑤ Increase maximum allowable depth by 5.00 inches (127.0 mm).

Refer to handle mechanisms in the molded-case circuit breaker section of Volume 4—Circuit Protection Catalog, CA08100005E, Tab 2.

Series C Rotary and Universal Rotary



Series C Rotary

Series C rotary and universal rotary handle mechanisms are for use with molded-case circuit breakers (G, F, J, K, L, MDL), molded-case switches and motor circuit protectors.

Series C rotary is suitable for use with Type 1, 3R, 12 and 4/4X enclosure types. Type 4/4X application requires special handle, see "Ordering Information."

The universal rotary is suitable for use with Type 1 and 12 enclosure types. All rotary handle mechanisms include a handle "Lock Off," to prevent turning the breaker ON while in the OFF position. All rotary handles indicate ON/OFF/ Tripped/Reset positions; however, Universal Rotary has the added feature of international markings for ON (I) and OFF (O). Series C rotary handle is metal. Universal rotary is made of molded material. Series C rotary handle is black and universal rotary is available in black or yellow/red.

Series C rotary handle was ergonomically designed with extra clearance for a "gloved hand" to operate. Handle has a 45° rotation. Universal Rotary has a 90° rotation ("pipe valve" operation) where ON is vertical and OFF is horizontal. Shafts include a support brace to ensure proper alignment.

In addition, the 16.00-inch (406.4 mm) and 24.00-inch (609.6 mm) extra long shafts include an adjustable support bracket.

Series C rotary and universal rotary, are UL Listed and meet CSA requirements. Universal rotary also meets IEC947-1/2 for international compliance. Rotary UL File Number is E64983.

Series C Rotary Ordering Information

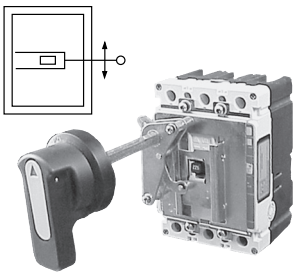
Shaft Length Inches (mm)	Complete Catalog Number ①	Separate Catalog Number			Catalog Number	
		Standard Handle ②	Breaker Mechanism ③	Shaft ④	IEC IP65 ⑤⑥	IEC IP66 ⑤⑥
F-Frame						
6.00 (152.4)	**HM1R06**	**6648C22G01**	**6648C23G11**	**4217B37G04**	**WHM1R06**	**WHM1R06X**
12.00 (304.8)	**HM1R12**	**6648C22G01**	**6648C23G11**	**4217B37G01**	**WHM1R12**	**WHM1R12X**
16.00 (406.4)	**HM1R16**	**6648C22G01**	**6648C23G11**	**4217B37G02**	**WHM1R16**	**WHM1R16X**
24.00 (609.6)	**HM1R24**	**6648C22G01**	**6648C23G11**	**4217B37G03**	**WHM1R24**	**WHM1R24X**
J-Frame						
6.00 (152.4)	**HM2R06**	**6648C22G01**	**6648C23G21**	**4217B37G04**	**WHM2R06**	**WHM2R06X**
12.00 (304.8)	**HM2R12**	**6648C22G01**	**6648C23G21**	**4217B37G01**	**WHM2R12**	**WHM2R12X**
16.00 (406.4)	**HM2R16**	**6648C22G01**	**6648C23G21**	**4217B37G02**	**WHM2R16**	**WHM2R16X**
24.00 (609.6)	**HM2R24**	**6648C22G01**	**6648C23G21**	**4217B37G03**	**WHM2R24**	**WHM2R24X**
K-Frame						
6.00 (152.4)	**HM3R06**	**6648C22G01**	**6648C23G25**	**4217B37G04**	**WHM3R06**	**WHM3R06X**
12.00 (304.8)	**HM3R12**	**6648C22G01**	**6648C23G25**	**4217B37G01**	**WHM3R12**	**WHM3R12X**
16.00 (406.4)	**HM3R16**	**6648C22G01**	**6648C23G25**	**4217B37G02**	**WHM3R16**	**WHM3R16X**
24.00 (609.6)	**HM3R24**	**6648C22G01**	**6648C23G25**	**4217B37G03**	**WHM3R24**	**WHM3R24X**
L- and MDL-Frame						
6.00 (152.4)	**HM4R06**	**6648C22G11**	**6648C23G19**	**4217B37G04**	**WHM4R06**	**WHM4R06X**
12.00 (304.8)	**HM4R12**	**6648C22G11**	**6648C23G19**	**4217B37G01**	**WHM4R12**	**WHM4R12X**
16.00 (406.4)	**HM4R16**	**6648C22G11**	**6648C23G19**	**4217B37G02**	**WHM4R16**	**WHM4R16X**
24.00 (609.6)	**HM4R24**	**6648C22G11**	**6648C23G19**	**4217B37G03**	**WHM4R24**	**WHM4R24X**
MD/MDS						
6.00 (152.4)	**HM7R06**	**6648C22G21**	**6648C23G17**	**4217B37G04**	—	—
12.00 (304.8)	**HM7R12**	**6648C22G21**	**6648C23G17**	**4217B37G01**	—	—
16.00 (406.4)	**HM7R16**	**6648C22G21**	**6648C23G17**	**4217B37G02**	—	—
24.00 (609.6)	**HM7R24**	**6648C22G21**	**6648C23G17**	**4217B37G03**	—	—
N-Frame						
6.00 (152.4)	**HM5R06**	**6648C22G21**	**6648C23G08**	**4217B37G04**	**WHM5R06**	**WHM5R06X**
12.00 (304.8)	**HM5R12**	**6648C22G21**	**6648C23G08**	**4217B37G01**	**WHM5R12**	**WHM5R12X**
16.00 (406.4)	**HM5R16**	**6648C22G21**	**6648C23G08**	**4217B37G02**	**WHM5R16**	**WHM5R16X**
24.00 (609.6)	**HM5R24**	**6648C22G21**	**6648C23G08**	**4217B37G03**	**WHM5R24**	**WHM5R24X**

Notes

① Complete catalog number includes the standard handle, mechanism, shaft and support brace/bracket.
② Handle is designed suitable for Types 1, 3R and 12 enclosures. Use style number **6648C22G03** for Type 4/4X handle or add **X** Suffix to complete catalog number.
③ Breaker mechanism includes a shaft support bracket and its parts.
④ Longer shafts,16.00-inch (406.4 mm) and 24.00-inch (609.6 mm), include an adjustable support extension.
⑤ IEC handle mechanism supplied with metric thread mounting hardware.
⑥ Complete catalog number includes a handle, mechanism and shaft.

Refer to handle mechanisms in the molded-case circuit breaker section of Volume 4—Circuit Protection Catalog, CA08100005E, Tab 2.

Universal Rotary



Universal Rotary

Type 4/4X handles are similar to standard handles except that they include an internal neoprene gasket. Type 4/4X handle style number is 6648C22G03. Due to gasketing effect between the handle and the housing, the handle may not indicate a tripped position.

Series C Rotary Accessories

As an option, an auxiliary switch is offered so that the control panel builder may electrically indicate the status of the breaker. This accessory would be mounted on the mechanism and comes with 24.00-inch (609.6 mm) pigtail leads.

Series C Auxiliary Switch

Catalog Number
5108A61G01

Universal Rotary Ordering Information

Shaft Length in Inches (mm)	Handle Color	Complete Catalog Number
E125 Frame		
6.00 (152.4)	Black	**EHMVD06B**
12.00 (304.8)	Black	**EHMVD12B**
6.00 (152.4)	Red	**EHMVD06R**
12.00 (304.8)	Red	**EHMVD12R**
J250 Frame		
6.00 (152.4)	Black	**FJHMVD06B**
12.00 (304.8)	Black	**FJHMVD12B**
6.00 (152.4)	Red	**FJHMVD06R**
12.00 (304.8)	Red	**FJHMVD12R**
G-Frame		
6.00 (152.4)	Black	**GHMVD06B**
12.00 (304.8)	Black	**GHMVD12B**
6.00 (152.4)	Red	**GHMVD06R**
12.00 (304.8)	Red	**GHMVD12R**
F-Frame		
6.00 (152.4)	Black	**FHMVD06B**
12.00 (304.8)	Black	**FHMVD12B**
6.00 (152.4)	Red	**FHMVD06R**
12.00 (304.8)	Red	**FHMVD12R**
J-Frame		
6.00 (152.4)	Black	**JHMVD06B**
12.00 (304.8)	Black	**JHMVD12B**
6.00 (152.4)	Red	**JHMVD06R**
12.00 (304.8)	Red	**JHMVD12R**
K-Frame		
6.00 (152.4)	Black	**KHMVD06B**
12.00 (304.8)	Black	**KHMVD12B**
6.00 (152.4)	Red	**KHMVD06R**
12.00 (304.8)	Red	**KHMVD12R**
L- and MDL-Frames		
6.00 (152.4)	Black	**LHMVD06B**
12.00 (304.8)	Black	**LHMVD12B**
6.00 (152.4)	Red	**LHMVD06R**
12.00 (304.8)	Red	**LHMVD12R**

Through-the-Door Instruction Leaflets Number

Breaker Frame	Series C Rotary	Universal Rotary
E125	—	IL0510TE0001
J250	—	IL0510TE0001
G	—	29C250
F	15594	29C250
J	15599	29C250
K	15600	29C250
L and MDL	15601	29C250
N	15602	—

Note: Refer to handle mechanisms in the molded-case circuit breaker section of Volume 4—Circuit Protection Catalog, CA08100005E, Tab 2.

Direct (Close-Coupled) Handle Mechanisms



Universal Direct



Euro IEC Direct



G Direct

Direct (close-coupled) handle mechanisms mount directly to the circuit breaker. They are used in shallow enclosures where the standard variable depth through-the-door type mechanism is not practical or cannot be used. They are typically for applications where high volume, standardized enclosures are being fabricated.

The Universal Direct handle mechanism is designed exclusively for the new Cutler-Hammer E125 and J250 circuit breakers. It is available as standard with a door interlock to prevent opening the enclosure while the circuit breaker is in the ON position. It is also available without a door interlock.

The Euro IEC Direct handle mechanism can be used on F- through R-Frames.

The G Direct is available with a black or a yellow handle, and with or without a shroud. It is suitable for use with Type 1 enclosures. It is for use only with the G-Frame (GD, GC, GHC, GMCP).

An escutcheon ring and an interlock clip are provided as standard. The standard design includes a lock-off feature.

The Universal Direct handle mechanism is UL 489 Listed, IEC947-1/2 and meets CSA requirements. The Euro IEC Direct handle mechanism is IEC-240-1. G Direct is UL Listed and meets CSA requirements.

Universal Direct Ordering Information

Frame	Universal Direct Domestic With Interlock (White) Catalog Number	Domestic Without Interlock (White) Catalog Number	International Without Interlock (Charcoal With Global Label) Catalog Number
E125	**EHMCCBI**	**EHMCCB**	**EHMCCR**
J250	**JHMCCBI**	**JHMCCB**	**JHMCCR**

Euro IEC Direct Ordering Information

Frame	Black Handle Catalog Number	Red Handle Catalog Number
F	**HMCC1B**	**HMCC1R**
J	**HMCC2B**	**HMCC2R**
K	**HMCC3B**	**HMCC3R**
L and M	**HMCC4B**	**HMCC4R**
N	**HMCC5B**	**HMCC5R**
R	**HMCC6B**	**HMCC6R**

G Direct Ordering Information ①

Frame	Black Handle With Shroud Catalog Number	Black Handle Without Shroud Catalog Number	Yellow Handle With Shroud Catalog Number	Yellow Handle Without Shroud Catalog Number
GD/GHC	**HRGCC1S**	**HRGCC10**	**HRGCC3S**	**HRGCC30**
GMCP	**HRGMC1S**	**HRGMC10**	**HRGMC3S**	**HRGMC30**

Direct (Close-Coupled) Instruction Leaflets

Frame	Instruction Leaflet Number Universal Direct	Euro IEC Direct	G Direct
E125	29C255	—	—
J250	29C256	—	—
G	—	—	15567
F	—	29C288A	—
J	—	29C288A	—
K	—	29C288A	—
L and MDL	—	29C289	—
N	—	29C290	—
R	—	29C291	—

Notes

① Suitable for use on two- or three-pole G-Frame.

Refer to handle mechanisms in the molded-case circuit breaker section of Volume 4—Circuit Protection Catalog, CA08100005E, Tab 2.

Molded Case Circuit Breakers

Replacement Capabilities

Handle Extensions



Handle Extension

Handle extension is not included with J-, K-, L- and M-Frame breakers. It must be purchased separately.

Handle Extension

Frame	Style Number
J, K	**HEX3**
L, M	**HEX4**

Handle extension is included with breaker with N- and R-Frame breakers.

Handle Extension

Frame	Style Number
N	**HEX5**
R	**HEX6**

Note: Refer to handle mechanisms in the molded-case circuit breaker section of Volume 4—Circuit Protection Catalog, CA08100005E, Tab 2.

Replacement and Service Capabilities

Breaker Service Center Factory Service for Mining and Industrial Molded Case Circuit Breakers

Eaton owns and operates two fully authorized Breaker Service Centers (BSC) in Skelton, WV, and Evansville, IN. They are available to support all non-warranty service needs for Cutler-Hammer industrial molded-case breakers 600 A and above and all frames of mining duty breakers.

The Breaker Service Centers, as extensions of our manufacturing plants, are the only facilities authorized to provide breaker service solutions for Eaton, Cutler-Hammer and historic Westinghouse molded-case circuit breakers. Staff are dedicated to providing genuine factory-supported solutions to our customers.

This is just another example of how Eaton supports a complete offering of solutions for circuit breakers.

See the following for the benefits of choosing the BSC and our service offerings.

Offerings

Basic Tune-Up
Clean, test and re-certify.

Basic Modification
Replace accessories and attachments including terminals, trip units, UVRs, shunt trips and auxiliary switches.

Basic Service
Replace components including covers, handles and stationary contacts.

Custom Service
Replace frame or trip unit, with or without accessories.

Full Service
Replace both frame and trip unit, with or without accessories.

Factory Modifications
For new or existing operational breakers

- Trip unit upgrades
- Addition of accessories and attachments
- UL modifications to factory-sealed breakers

Facilities

- Dedicated sites supported by engineering and manufacturing
- Staffed by factory trained technicians with experience servicing molded-case circuit breakers
- State-of-the-art cleaning and testing equipment

The Breaker Service Centers are open to help you. Give us a call at **1-877-BRK-SRVC** or contact your local Eaton authorized distributor or sales office for more information.

Know What You're Getting—Here's the Reality of Third-Party Repair

- Breakers are serviced using least worn, counterfeit or reverse engineered components
- You get no technical support from the original manufacturer
- There is no option for an upgrade to new technology
- You could end up with a breaker that doesn't perform as expected

Reasons to Use Eaton's Breaker Service Centers

- Eaton is a world leader in circuit breaker technology and manufacturing
- The Breaker Service Centers are staffed by factory trained technicians
- One year warranty.
- Eaton uses only genuine replacement parts and components
- Full engineering support—original product specifications and manufacturing data
- State-of-the-art cleaning equipment—uses a non-destructive cleaning process while maintaining integrity of the breaker
- Modern test equipment—the breaker service center uses the same hi-tech test equipment used by engineering, development and manufacturing facilities. This allows the breaker service center to match original test conditions at the factory
- Exchange option—we can upgrade to the newest technology
- Competitive price—all the benefits of third-party prices

For more information on Eaton products and services, call 1-877-386-2273. Select option 1 for technical support and select option 6 for Eaton's Electrical Services & Systems, or visit our website at www.eaton.com/electrical.

GP, FP, KP, LP and MP Frames



Definite Purpose Molded Case Circuit Breaker Family

Contents

Description	*Page*
Definite Purpose Molded Case Circuit Breakers	
Product Selection Guide	**V12-T3-440**
Features	**V12-T3-441**
Accessories	**V12-T3-441**
Catalog Number Selection	**V12-T3-442**
Product Selection	**V12-T3-443**
Dimensions	**V12-T3-444**

Definite Purpose Molded Case Circuit Breakers

Optimized solution for HVAC/R and Pumping Applications.

Product Overview

GP, FP, KP, LP and MP Frames
15–800 Amperes
NEMA 480 Vac

Eaton's Definite Purpose molded case circuit breakers are available in three-pole configurations, and are designed to meet the specific requirements of HVAC/R and pumping applications.

As with other members of Eaton's family of molded case circuit breakers, Definite Purpose breakers provide high quality, reliability, unmatched performance and outstanding value.

Eaton's Definite Purpose breakers are rated from 15–800 A and are available in five frame sizes. Each frame size has the same compact outside dimensions as Series C breakers.

Additionally, Definite Purpose breakers have been rigorously tested to the UL 489 standard. They are assembled in an ISO certified facility.

Trip Units and Terminals

Definite Purpose breakers contain factory-sealed thermal-magnetic trip units.

The GP-Frame breaker (15–100 A) includes line and load terminals and breaker mounting hardware.

FP (15–225 A), KP (200– 400 A), LP (450–600 A) and MP (700–800 A) Frames ship standard without mounting hardware. For line and load terminals, add "L" to the end of the catalog number or "W" for no terminals.

External Accessories

Definite Purpose breakers use the same external accessories as Series C breakers: handle mechanisms, motor operators, lock-off devices, bus bar extensions and multiple terminal arrangements.

Molded Case Circuit Breakers

Definite Purpose

Product Selection Guide

Electrical Characteristics







Breaker Type		GPS	FPS	FPH	KPS	KPH
Amperage range		15–100 A	15–225 A	15–225 A	200–400 A	200–400 A
Performance level		**S**	**S**	**H**	**S**	**H**
Breaker capacity (kA rms)	240 Vac	65	65	100	65	100
NEMA, UL, CSA	480 Vac	22	35	65	35	65
	600 Vac	—	18	25	25	35
Number of poles		3	3	3	3	3
Maximum voltage (Vac)		480	600	600	600	600
Thermal-magnetic		●	●	●	●	●
Current replacement		**GD**	**FD/PDG2**	**HFD/PDG2**	**KD/PDG3**	**HKD/PDG3**

Electrical Characteristics, continued






Breaker Type		LPS	LPH	MPS	MPH
Amperage range		450–600 A	450–600 A	700–800 A	700–800 A
Performance level		**S**	**H**	**S**	**H**
Breaker capacity (kA rms)	240 Vac	65	100	65	100
NEMA, UL, CSA	480 Vac	35	65	50	65
	600 Vac	25	35	25	35
Number of poles		3	3	3	3
Maximum voltage (Vac)		600	600	600	600
Thermal-magnetic		●	●	●	●
Current replacement		**LD/PDG3**	**HLD/PDG3**	**MDL/PDG4**	**HMDL/PDG4**

Shaded area denotes obsolete or discontinued products and services.

Features

Base Mounting Hardware

English base mounting hardware is included with GP frame only. For all other frames, order base mounting hardware separately as per the table to the right.

Frame	Catalog Number English	Metric
KP	**BMH3**	**BMH3M**
LP	**BMH4**	**BMH4M**
MP	**BMH5**	**BMH5M**

Note: Base mounting hardware, is included with GP-Frame breakers. A separate catalog number is not required.

Line and Load Termination

Breaker	Termination Type	Awg Wire Range	Metric Wire Range (mm)	Wire Type	Bolt Size English	Bolt Size Metric	Torque Lb–In	Torque Nm	Catalog Number
GP	Wire	#14–1/0	2.5–50	Cu only	—	—	45	5.1	**Included**

Optional Line and Load Terminals

Line and Load Terminals

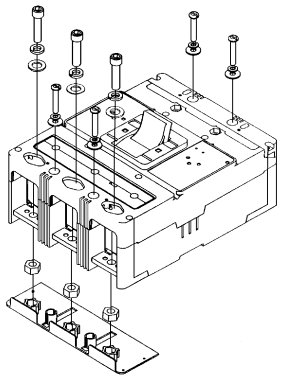
Both line and load terminals are included with GP-Frame Definite Purpose breakers. For all other frames, add "L" for line and load terminals to be included or "W" for no terminals.

Breaker	Maximum Amperes	Awg Wire Range	Wire Type	Catalog Number	Catalog Number with Control Wire Termination
FP	100	#14–#10	Cu/Al	**3T100FB** ①	—
	100	#8	Cu/Al	**3T100FB** ①	—
	100	#6–#4	Cu/Al	**3T100FB** ①	—
	100	#3–4/0	Cu/Al	**3T100FB** ①	—
	200	#3–4/0	Cu only	**3T150FB** ①	—
	225	#4–4/0	Cu/Al	**3TA225FB** ①	—
	225	#6–300	Cu/Al	**3TA225FDK3** ①	—
	225	#6–300	Cu/Al	**3TA225FDK** ①②	—
KP	400	250–500 (1)	Cu/Al	**TA350K**	—
	400	3/0–250 (2)	Cu/Al	**3TA400K** ①	**3TA400KCW**
LP	500	250–350 (2)	Cu/Al	**TA602LD**	**TA602LDCW**
	600	400–500 (2)	Cu/Al	**3TA603LDK** ①	**3TA603LDKCW**
MP	800	3/0–400 (3)	Cu/Al	**TA800MA2**	**TA800MA2CWT**
	800	500–750 (2)	Cu/Al	**TA801MA**	**TA801MACWT**

Notes

① Package of three terminals.
② Replacement use only.

End Cap Accessory Kit



Accessories

End Cap Accessory Kit

End caps for line and load conductor termination are optional with each breaker. End caps secure the conductor with a ring-type connector. The kit includes one end cap, three cap screws, three nuts and three lock washers.

Base Mounting Hardware

Frame	Catalog Number English	Metric
GP	Included	—
FP	**BMH1**	**BMH1M**

Molded Case Circuit Breakers

Definite Purpose

Shaded area denotes obsolete or discontinued products and services.

Catalog Number Selection

This information is presented only as an aid to understanding catalog numbers.
It is not to be used to build catalog numbers for circuit breakers or trip units.

FP S 3 150 L

Frame Size
GP = GP-Frame
FP = FP-Frame
KP = KP-Frame
LP = LP-Frame
MP = LP-Frame

Interrupting Rating
S = Standard
H = High ①

Number of Poles
3 = Three-pole

Options
K = Molded case switch ②
L = Line and load terminals
W = Without terminals or mounting hardware ①

Ampere Rating				
GP-Frame	**FP-Frame**	**KP-Frame**	**LP-Frame**	**MP-Frame**
015 = 15 A	**015** = 15 A	**175** = 175 A	**450** = 450 A	**700** = 700 A
020 = 20 A	**020** = 20 A	**200** = 200 A	**500** = 500 A	**800** = 800 A
025 = 25 A	**025** = 25 A	**250** = 250 A	**600** = 600 A	
030 = 30 A	**030** = 30 A	**300** = 300 A		
035 = 35 A	**035** = 35 A	**400** = 400 A		
040 = 40 A	**040** = 40 A			
045 = 45 A	**045** = 45 A			
050 = 50 A	**050** = 50 A			
060 = 60 A	**060** = 60 A			
070 = 70 A	**070** = 70 A			
080 = 80 A	**080** = 80 A			
090 = 80 A	**100** = 100 A			
100 = 100 A	**110** = 110 A			
	125 = 125 A			
	150 = 150 A			
	175 = 175 A			
	200 = 200 A			
	225 = 225 A			

Notes

① Not available on GP-Frame.

② When choosing a molded case switch, select the highest amperage rating for the frame and the standard interrupting rating.

Shaded area denotes obsolete or discontinued products and services.

Product Selection

Catalog Numbers

When ordering Definite Purpose breakers, use the appropriate catalog numbers given below.

GP 100



GP-Frame/15–100 A

Frame/ Ampere Rating	Three-Pole Catalog Number
GP/15–100 A circuit breakers	**GPS3015**
	GPS3020
	GPS3025
	GPS3030
	GPS3035
	GPS3040
	GPS3045
	GPS3050
	GPS3060
	GPS3070
	GPS3080
	GPS3090
	GPS3100
GP/100 A molded case switch	**GPS3100K**

Note: All GP frames come standard with line and load terminals and base mounting hardware. Not available without terminals.

FP 225



FP-Frame/15–225 A

Frame/ Ampere Rating	Three-Pole Catalog Number
FP/15–225 A circuit breakers	**FPS3015**
	FPS3020
	FPS3025
	FPS3030
	FPS3035
	FPS3040
	FPS3045
	FPS3050
	FPS3060
	FPS3070
	FPS3080
	FPS3090
	FPS3100
	FPS3110
	FPS3125
	FPS3150
	FPS3175
	FPS3200
	FPS3225
	FPH3015
	FPH3020
	FPH3025
	FPH3030
	FPH3035
	FPH3040
	FPH3045
	FPH3050
	FPH3060
	FPH3070
	FPH3080
	FPH3090
	FPH3100
	FPH3110
	FPH3125
	FPH3150
	FPH3175
	FPH3200
	FPH3225
FP/225 A molded case switch	**FPS3225K**

Note: At the end of catalog number, add "L" for terminals or "W" for no terminals.

Molded Case Circuit Breakers

Definite Purpose

Shaded area denotes obsolete or discontinued products and services.

KP 250



KP-Frame/200–400 A

Frame/ Ampere Rating	Three-Pole Catalog Number
KP/175–400 A circuit breakers	**KPS3175**
	KPS3200
	KPS3250
	KPS3300
	KPS3400
	KPH3175
	KPH3200
	KPH3250
	KPH3300
	KPH3400
KP/400 A molded case switch	**KPS3400K**

LP 400



LP-Frame/450–600 A

Frame/ Ampere Rating	Three-Pole Catalog Number
LP/450–600 A circuit breakers	**LPS3450**
	LPS3500
	LPS3600
	LPH3450
	LPH3500
	LPH3600
LP/600 A molded case switch	**LPS3600K**

MP 800



MP-Frame/700–800 A

Frame/ Ampere Rating	Three-Pole Catalog Number
MP/700–800 A circuit breakers	**MPS3700**
	MPS3800
	MPH3700
	MPH3800
MP/800 A molded case switch	**MPS3800K**

Note: For KP, LP, MP frames above, add "L" for terminals or W" for no terminals to end of catalog number.

Dimensions

Approximate Dimensions in Inches (mm)

All dimensions are provided for guidance and should not be used for construction purposes unless approved.

Contact Eaton for detailed outline drawings.

GP, FP, KP, LP and MP Definite Purpose Frames

	Breaker Type GP	FP	KP	LP	MP
Width	3.00 (76.2)	4.13 (104.9)	5.49 (139.4)	8.25 (209.6)	8.25 (209.6)
Height	4.88 (124.0)	6.00 (152.4)	10.12 (257.0)	10.75 (273.1)	16.00 (406.4)
Depth	2.63 (66.7)	3.38 (85.9)	4.31 (109.6)	3.81 (96.8)	4.06 (103.1)

PM3 Modules



Power Monitoring and Metering with Modbus RTU

Contents

Description	*Page*
PM3 Monitoring and Metering Module	
Product Selection	**V12-T3-446**
Technical Data and Specifications	**V12-T3-446**
Dimensions and Weights	**V12-T3-447**

PM3 Monitoring and Metering Module

Product Description

The PM3 is the perfect solution for main, branch circuit and standalone monitoring/metering applications. With information at your fingertips, you can meter, monitor and communicate phase current and voltage with calculated power and energy.

The PM3 is versatile, as it connects to the load side of a molded-case circuit breaker (MCCB) and communicates easily to a local network or the Internet through Eaton Power Xpert® Gateways (PXGs). Cost of ownership is reduced through ease of installation. The PM3 is your ideal MCCB metering solution.

Application Description

- Communications via Modbus® and Eaton's INCOM™ protocol; compatible with Eaton's PXG for Web page and Ethernet capabilities
- Works in 240 Vac PM3, 480 Vac and 600 Vac applications
  - 480 Vac PM3 has internal power supply to power electronics
  - 600 Vac PM3 requires 24 Vdc auxiliary power
- Seamlessly integrates with thermal-magnetic or electronic trip units

Features and Benefits

- Communicates electrical system data and circuit breaker status
- Calculates power and energy to an accuracy of 1.0% of reading
- Configurable with thermal-magnetic or electronic trip units
- Suitable for reverse-feed applications
- Easy to install

PM3 Benefits When Combined with 310+ Electronic Trip Unit

- Alarming: high load and ground fault
- Zone selective interlocking
- Arcflash Reduction Maintenance System™
- Cause-of-trip localized information through Digiview and TRIP-LED
- Modbus/INCOM communications
- HMI connectivity through PXG
- Current and voltage metering to 0.5% of reading
- Power and energy monitoring to 1.0% of reading
- Reduces cost of ownership

Standards and Certifications

- Meets ANSI C12.1 revenue grade standard with a current and voltage accuracy of 0.5% of reading
- UL 489, Annex J
- IEC 61000-4-2—ESD
- IEC 61000-4-4—EFT
- IEC 61000-4-5—SURGE
- IEC 61000-4-6—EMC
- ANSI C12.1 (1% accuracy)
- UL/cUL/CE

Listed Listed

Product Selection

PM3 Modules

Frame	Catalog Number 480 V	600 V
Modbus		
FD	—	**PM3FM**
JG	—	**PM3JM**
KD and LG	—	**PM3LM**
INCOM		
FD	**PM3FI480**	**PM3FI600**
JG	**PM3JI480**	**PM3JI600**
KD and LG	**PM3LI480**	**PM3LI600**

End Cap Kits (Sold Separately)

Frame	Description	Catalog Number
FD	Metric end cap kit for F-Frame	**KPEKM1**
	English end cap kit for F-Frame	**KPEK1**
JG	Metric end cap kit for JG-Frame	**FJ3RTWK**
	English end cap kit for JG-Frame	**FJ3RTDK**
KD	Metric end cap kit for K-Frame	**KPEKM3**
	English end cap kit for K-Frame	**KPEK3**
LG	Metric end cap kit for LG-Frame	**L3RTWK**

Technical Data and Specifications

Metered parameters

- I_A, I_B, I_C
- V_{AB}, V_{BC}, V_{CA}, V_{an}, V_{bn}, V_{cn}
- Apparent Energy, Forward Real Energy, Reverse Real Energy, Net Real Energy, Lagging Reactive Energy, Leading Reactive Energy, Net Reactive Energy
- Apparent Power A, B, C; Apparent Power Total; Reactive Power A, B, C; Reactive Power Total; Real Power A, B, C; Real Power Total
- Frequency, Apparent Power Factor, Apparent PFA, Apparent PFB, Apparent PFC

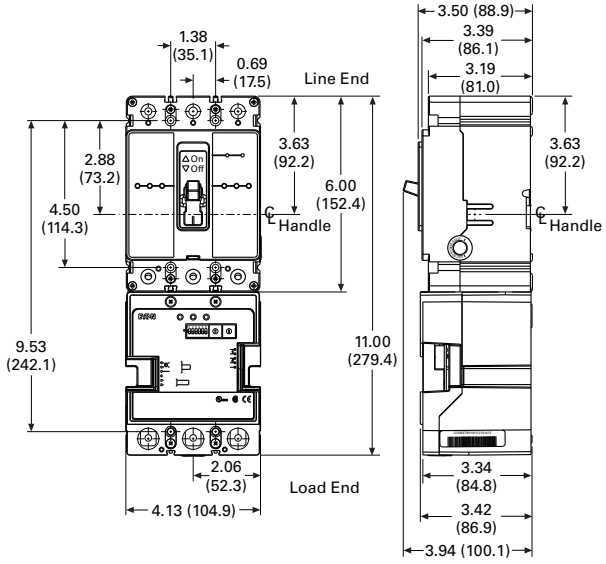
PM3 Power Monitoring and Communications Module Technical Specifications for Modbus RTU

Description	Specification	
Current Inputs		
Pickup current	0.3A rms	
Maximum reported current	FD/JG 250 A rms	
	KD/LD 630 A rms	
Accuracy	0.5% of reading	
Voltage Inputs		
Range	Line-to-neutral 30–366 Vac	
	Line-to-line 52–635 Vac	
Supported systems	Three-element wye, three-element wye + neutral	
	Two-element delta, four-wire delta systems	
Input impedance	996 kiloohm/phase	
Burden per phase	0.36 VA/phase max. at 600 V; 0.014 VA at 120 V	
Phase voltage connections	Internal via screw terminal to bus bar For wye system, a neutral is required to be connected to the PM3 on the right Phoenix connector.	
Neutral connection	If neutral is not available, the meter will calculate a virtual neutral based on the phase-to-phase rms voltage. The system voltage must be balanced for this to be accurate.	
Frequency		
Frequency	50/60 Hz	
Accuracy	± 0.1 Hz	
Resolution	0.1 Hz	
Power and Energy		
Accuracy	1% of reading (ANSI C12.1)	
Isolation		
All inputs and outputs are galvanically isolated to 2500 V.		
Environmental Ratings		
Operating temperature	–20 °C to +50 °C	
Storage temperature	–20 °C to +50 °C	
Operating humidity	5 to 95% RH noncondensing	
Sensing Method		
Voltage, current	True rms	
Sampling rate	13.02K samples per second	
Update Rate		
Watts, VAR and VA	1.03 sec at 60 Hz	
All other parameters	1.07 sec at 60 Hz	
Power Supply (External)		
DC voltage	18–30 Vdc	
Maximum current	30.0 mA at 24 Vdc	
Burden	0.72W	
Standard Communication Format		
Connection type	Three-wire RS-485 (A, B, Common)	
Com port baud rate	9600 or 19,200 bauds	Default: 19,200 bauds
Modbus address range	01–247	
Data format	Selectable (8, N, 1 | 8, N, 2 | 8, Even, 1 | 8, Odd, 1)	Default: 8, N, 2
Protocols	Modbus RTU	
Internal termination resistor selectable ON or OFF	Via DIP switch	Default: Enabled

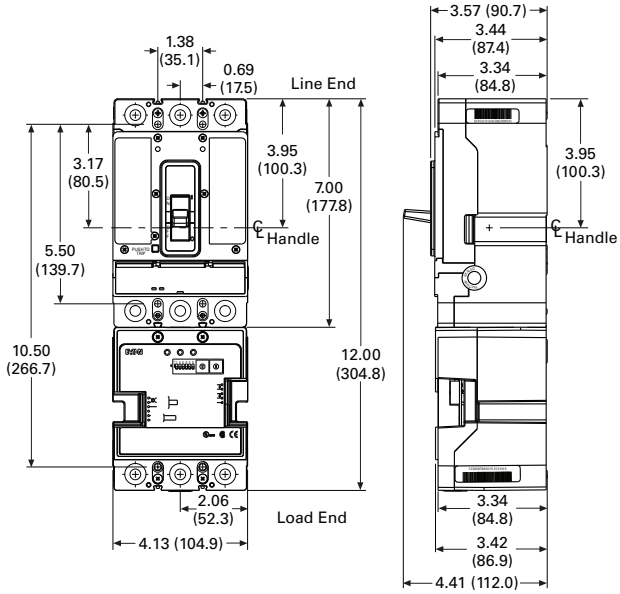
Dimensions and Weights

Approximate Dimensions in Inches (mm)

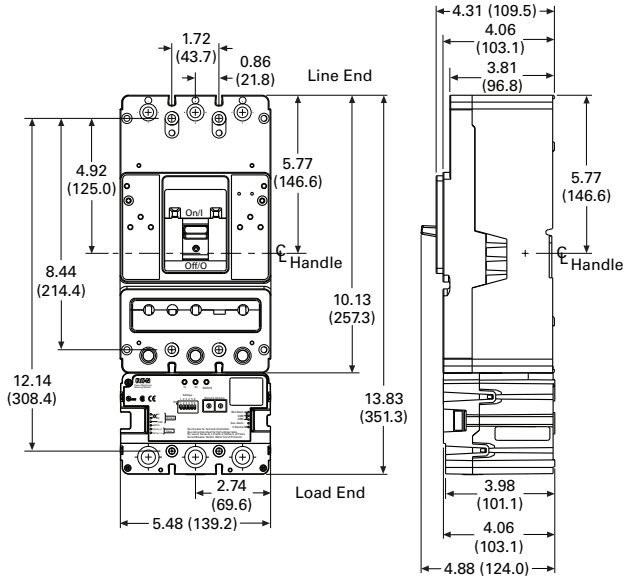
FD Three-Pole with PM3 Modbus



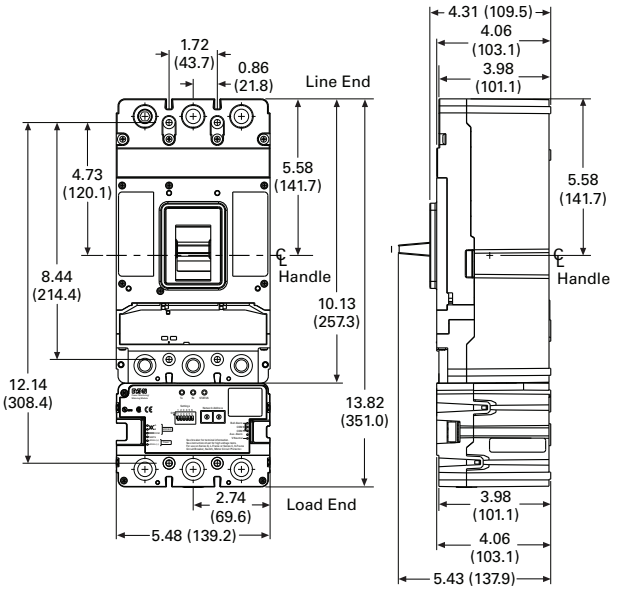
JG Three-Pole with PM3 Modbus



KD Three-Pole with PM3 Modbus



LG Three-Pole with PM3 Modbus



PM3 Dimensions and Shipping Weights

Description	Frame	Dimensions and Weights
Weight in lb (kg)	FD	1.26 (0.57)
	JG	1.60 (0.73)
	KD/LG	2.25 (1.02)
Basic unit in inches (mm)	FD	4.13 W x 5.00 L x 3.39 H (104.9 x 127.0 x 86.1)
	JG	4.13 W x 5.00 L x 3.39 H (104.9 x 127.0 x 86.1)
	KD/LG	5.48 W x 3.70 L x 4.06 H (139.2 x 94.0 x 103.2)
Shipping container dimensions in inches (mm)	FD/JG	8.00 x 5.13 x 5.50 (203.2 x 130.3 x 139.7)
	KD/LG	6.25 x 8.25 x 7.00 (158.7 x 209.5 x 177.8)

Classic Mining Breaker



Contents

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Classic Mining Breakers	
Product Selection	**V12-T3-450**
Accessories	**V12-T3-455**
Classic Mining to E2 Cross Reference	**V12-T3-457**

Classic Mining Breakers

Product Overview

Classic mining service circuit breakers continue to be manufactured and are primarily applied to achieve an exact physical and electronic replacement of previously Cutler-Hammer installed Westinghouse equipment. To upgrade to the current offering of E^2 mining circuit breakers, consult the cross reference information on **Page V12-T3-457.**

AC Interrupting Capacity, Symmetrical Amperes

	Breaker Type				
60 Hz AC Volts	KAM	LAM, MAM, NBM	HKAM	HLAM ②	All Other 1000 Volt Breakers ②
240	25,000	42,000	—	—	—
480	22,000	30,000	—	—	—
600	22,000	22,000	—	—	—
1000 ①	—	—	10,000	12,000	14,000

Special DC Interrupting Capacity

		Interrupting Capacity (Amperes) at 300–330 Vdc			
		Single-Pole		Two Poles in Series ④	
Breaker Type	Maximum Ampere Rating	0.0–0.15 mH Inductance ③	0.15–0.5 mH Inductance	0.5–0.9 mH Inductance	2.4 mH Inductance
KAM	225	15,000	10,000	15,000	5000
LAM	400/600	15,000	10,000	15,000	5000
MAM	800	15,000	10,000	15,000	5000
NBM	1200	15,000	10,000	15,000	5000

Notes

① Based on circuit power factor of 50% or greater.
② HLAM must be rear stud connected. If front connected, interrupting capacity rating is 10,000 amperes.
③ Resistive circuit.
④ Two poles in electrical series in ungrounded leg of circuit.

Classic Circuit Breakers For Mining Service

Undervoltage Release Data

Undervoltage releases are calibrated to pick up at 72 to 85% of rated voltage dropout between 35 to 70% of rated voltage.

Breaker Type	Volts	Line Amperes	Series Resistors ①	Total VA
KAM, HKAM ①	480/60	0.021	10,000	10.1
	240/60	0.019	—	4.6
	120/60	0.021	—	2.5
	120/60 ②	0.13	—	15.6
LAM, HLAM, MAM, HMAM, NBM, HNBM ①	480/60	0.033	12,000 ③	15.9
	240/60	0.028	6,000	6.7
	120/60	0.029	—	3.5
	120/60 ②	0.13	—	15.6

Shunt Trip Coil Data

Breaker Type	Volts	Amperes	VA
KAM, HKAM, LAM, HLAM, MAM, HMAM, NBM, HNBM	480/60	0.085	40.8
	240/60	1.7	408
	120/60	0.88	105.6
	48 DC	8.0	384

Notes

① Supplied for external customer mounting.
② New design electrical reset UVR.
③ 16,000 for Type MAM and HMAM.

Product Selection

For reference only. Replace these frames with E2 Series. See Cross-Reference information beginning on **Page V12-T3-457**.

Classic Mining Service Circuit Breakers

Breaker Type	Frame Style Numbers ①②	Poles	Amperes	Trip Type	Accessories (Included in Frame)	Magnetic Trip Range, Amperes ③
KAM	**2609D60G64**	2	180	M	None	200–400
	1291C26G07	2	180	M	UVR ④	200–400
	2609D60G66	2	180	M	Standard shunt trip ③	200–400
	1291C26G01	2	225	TM	UVR ④	300–700
	1291C26G02	2	225	TM	UVR ④	500–1000
	2609D60G67	3	180	M	None	200–400
	1291C26G08	3	180	M	UVR ④	200–400
	2609D60G69	3	180	M	Standard shunt trip ③	200–400
	5685D48G75	3	225	TM	None	300–700
	5685D48G74	3	225	TM	None	500–1000
	1291C26G03	3	225	TM	UVR ④	300–700
	1291C26G04	3	225	TM	UVR ④	500–1000
	2609D60G01	3	225	TM	Standard shunt trip ③	300–700
	2609D60G02	3	225	TM	Standard shunt trip ③	500–1000
	2609D60G40	3	225	M	None	300–700
	2609D60G41	3	225	M	None	500–700
	1291C26G05	3	225	M	UVR ④	300–700
	1291C26G06	3	225	M	UVR ④	500–1000
LAM	**1291C32G01**	2	400	TM	UVR ④	500–1000
	2609D60G61	2	400	M	Shunt trip (48 Vdc)	750–1500
	1291C32G03	3	400	TM	UVR ④	500–1000
	5685D48G73	3	400	TM	None	800–1600
	1291C32G02	3	400	TM	UVR ④	800–1600
	2609D60G03	3	400	TM	Standard shunt trip ③	800–1600
	2609D60G44	3	400	M	None	800–1600
	1291C32G04	3	400	M	UVR ④	800–1600

Notes

① Terminals not included in style number.
② All breakers listed are complete with accessories indicated.
③ Rated 120 volts/60 Hz: undervoltage release is handle reset type.
④ UVR is auto-reset type, 120 Vac.

M = magnetic only; TM = thermal-magnetic.

For reference only. Replace these frames with E2 Series. See Cross-Reference information beginning on **Page V12-T3-457**.

Classic Mining Service Circuit Breakers, continued

Breaker Type	Frame Style Numbers ①②	Poles	Amperes	Trip Type	Accessories (Included in Frame)	Magnetic Trip Range, Amperes ③
MAM	**2609D60G17**	2	600	TM	UVR ③	750–1500
	2609D60G18	2	800	TM	UVR ③	1000–2000
	2609D60G63	3	400	TM	UVR ③	2000–4000
	5685D48G72	3	600	TM	None	1500–3000
	2609D60G19	3	600	TM	UVR ③	1500–3000
	2609D60G04	3	600	TM	Standard shunt trip ③	1500–3000
	2609D60G05	3	800	TM	Standard shunt trip ③	2000–4000
	5685D48G71	3	800	TM	None	2000–4000
	2609D60G20	3	800	TM	UVR ③	2000–4000
	2609D60G46	3	800	M	None	1500–3000
	2609D60G47	3	800	M	UVR ③	1500–3000
	2609D60G48	3	800	M	None	2000–4000
	2609D60G49	3	800	M	UVR ③	2000–4000
NBM	**1229C37G13**	2	1000	TM	UVR ④	1500–3000
	1229C37G14	2	1200	TM	UVR ④	2000–4000
	1227C36G10	3	1000	TM	None	2500–5000
	1229C37G15	3	1000	TM	UVR ④	2500–5000
	1227C36G13	3	1000	TM	Standard shunt trip ③	2500–5000
	1227C36G14	3	1200	TM	Standard shunt trip ③	2500–5000
	1227C36G09	3	1200	TM	None	2500–5000
	1229C37G16	3	1200	TM	UVR ④	2500–5000
	1227C36G19	3	1200	M	None	2500–5000
	1229C37G17	3	1200	M	UVR ④	2500–5000

Notes

① Terminals not included in style number.
② All breakers listed are complete with accessories indicated.
③ Rated 120 volts/60 Hz: undervoltage release is handle reset type.
④ UVR is auto-reset type, 120 Vac.

M = magnetic only; TM = thermal-magnetic.

Shaded area denotes obsolete or discontinued products and services.

1000 Volt Classic Mining Service Circuit Breakers

Breaker Type	Frame Style Numbers	Poles	Amperes	Trip Type	Accessories (Included in Frame)	Magnetic Trip Range, Amperes ①
HKAM 	HKAM **2609D60G70**	3	180	M	None	200–400
	1291C26G16	3	180	M	UVR ②	200–400
	5685D48G87	3	225	TM	None	300–700
	1291C26G12	3	225	TM	UVR ②	300–700
	5685D48G86	3	225	TM	None	500–1000
	1291C26G13	3	225	TM	UVR ②	500–1000
	1291C26G14	3	225	M	UVR ②	300–700
	1291C26G15	3	225	M	UVR ②	500–1000
HLAM 	HLAM **5685D48G85**	3	400	TM	None	800–1600
	1291C32G07	3	400	TM	UVR ②	800–1600
	1291C32G09	3	400	M	UVR ②	800–1600
HMAM 	HMAM **5685D48G84**	3	600	TM	None	1500–3000
	2609D60G28	3	600	TM	UVR ③	1500–3000
	5685D48G83	3	800	TM	None	2000–4000
	2609D60G29	3	800	TM	UVR ③	2000–4000
	2609D60G57	3	800	M	UVR ③	1500–3000
	2609D60G58	3	800	M	UVR ③	2000–4000
HNAM 	HNBM **1227C36G12**	3	1000	TM	None	2500–5000
	1229C37G19	3	1000	TM	UVR ②	2500–5000
	1227C36G11	3	1200	TM	None	2500–5000
	1229C37G20	3	1200	TM	UVR ②	2500–5000
	1229C37G18	3	1200	M	UVR ②	2500–5000

Notes

① The magnetic trip range does not change when rating plug is changed.

② 120 volt, 60 Hz electrical reset type.

③ Rated 120 volts, 60 Hz; undervoltage release is handle reset type.

M = magnetic only; TM = thermal-magnetic.

Shaded area denotes obsolete or discontinued products and services.

Classic Mining Service Breaker Frames Only

Breaker Type	Frame Size, Amperes	Number of Poles	Style Numbers
KAM ①	225	2	**2602D86G11**
	225	3	**2602D86G12**
KAMH ①	225	2	**2602D86G13**
	225	3	**2602D86G14**
HKAM ①	225	3	**1264C99G05**
LAM ②	400	2	**2602D99G05**
	400	3	**2602D99G06**
LAMH ②	400	2	**2602D99G07**
	400	3	**2602D99G08**
HLAM ②	400	3	**1264C99G02**
LAM3600F	600	3	**2603D48G07**
LAMH3600F	600	3	**2603D48G08**
HLAM3600F	600	3	**2603D48G09**

Breaker Type	Frame Size, Amperes	Number of Poles	Style Numbers
MAM ②	800	2	**2600D43G11**
	800	3	**2600D43G12**
MAMH ②	800	2	**2600D43G13**
	800	3	**2600D43G14**
HMAM ②	800	3	**1264C99G03**
NBM ②	1200	2	**2610D64G07**
	1200	3	**2610D64G08**
NBMH ②	1200	2	**2610D64G09**
	1200	3	**2610D64G10**
HNBM ②	1200	3	**2610D64G13**

Trip Units for Classic Mining Circuit Breakers

Breaker Type	Conductor Size	Magnetic Trip Range, Amperes	Maximum Continuous Amperes	Thermal-Magnetic Three-Pole ③ Style Numbers	Magnetic Only Three-Pole Style Numbers
HKAM	#6	150–400	180	—	**2609D99G22**
	#4–#3	300–700	225	**5685D48G40**	**2611D75G01**
	#4–#1	500–1000	225	**5685D48G34**	**2611D75G02**
HLAM	#4–#1	750–1500	400	**5685D48G97**	**2609D99G21**
	#2–#2/0	800–1600	400	**5685D48G28**	**2611D75G03**
HLAM600	#2–2/0	750–1500	600	**2609D99G20**	—
	2/0–500 kcmil	1500–3000	600	**2609D99G19**	—
HMAM	#2–#2/0	750–1500	600	—	—
	2/0–500 kcmil	1500–3000	600	**5685D48G22**	**2611D75G04** ④
	#1–3/0	1000–2000	800	—	—
	3/0–500 kcmil	2000–4000	800	**5685D48G16**	**2611D75G05**
HNBM	2/0–500 kcmil	1500–3000	1000	—	—
	4/0–500 kcmil	2500–5000	1000	**5685D48G10**	—
	3/0–500 kcmil	2000–4000	1200	—	—
	4/0–500 kcmil	2500–5000	1200	**5685D48G04**	**2611D75G07**

Notes

① Frame modified for left-hand mounting of UVR attachment.
② Frame modified for right-hand mounting of UVR attachment.
③ Three-pole trip units only are suitable for replacement in 1000 volt mining service circuit breakers.
④ 800 amperes.

Terminals For Classic Mining Service Breakers

Terminals are UL listed for wire type and range listed below.
When used with aluminum conductors, use joint compound.

Breaker Type	Terminal Type	Maximum Amperes	Package of 3 Line Terminals Style Number	Wire Range, Type
FBM, HFBM	Style pressure type terminals	100	**624B100G02**	#14–1/0 Al/Cu
	Optional Al/Cu pressure terminals	50	**624B100G10**	#14–#4 Al/Cu
		100	**624B100G17**	# 4–4/0 Al/Cu

Terminals For Mining Service Breakers

Breaker Type	Terminal Type	Maximum Amperes	Terminal Catalog Number	Wire Range, Type Number of Cables
KAM, HKAM	Standard pressure terminals (copper only)	225	**T225LA**	(1) #6–350 kcmil
	Optional Al/Cu pressure terminals	225	**TA225LA1**	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al
LAM	Standard copper pressure terminals	225	**T225LA**	(1) #6–350 kcmil Cu
		400	**T401LA**	(1) #4–250 kcmil Cu plus (1) 3/0–600 kcmil Cu
	Optional Al/Cu pressure terminals	225	**TA225LA1**	(1) #6–350 kcmil Cu, or (1) #4–350 kcmil Al
		400	**TA400LA1**	(1) #4–250 kcmil Al/Cu, plus (1) 3/0–600 kcmil Al/Cu
		400	**TA401LA**	(1) 600–750 kcmil Al
LAM-600, LAMH-600, HLAM-600	Standard copper pressure terminals	600	**T600LA**	(2) 250–500 kcmil Cu
	Optional Al/Cu pressure terminals	600	**TA600LA**	(2) 250–500 kcmil Al/Cu
MAM, HMAM, MAMH	Standard copper pressure terminals	350	**T350MA**	(1) #1–600 kcmil Cu
		600	**T600MA1**	(2) 2/0–500 kcmil Cu
		800	**T800MA1**	(3) 3/0–300 kcmil Cu
	Optional Al/Cu pressure terminals	600	**TA700MA1**	(2) #1–500 kcmil Al/Cu
		800	**TA800MA2**	(3) 3/0–400 kcmil Al/Cu
		800	**TA801MA**	(2) 500–750 kcmil Al/Cu
NBM, HNBM, NBMH	Standard copper pressure terminals	1000	**T1000NB1**	(3) 3/0–500 kcmil Cu
		1200	**T1200NB1**	(4) 3/0–400 kcmil Cu
	Optional Al/Cu pressure terminals	1000	**TA1000NB1**	(3) 3/0–400 kcmil Al/Cu
		1200	**TA1200NB1**	(4) 4/0–500 kcmil Al/Cu
		1200	**TA1201NB1**	(3) 500–750 kcmil Al/Cu

Accessories

Classic Mining Circuit Breakers

Rear Connected Studs ①

For complete stud assembly, order a stud and tube based on thickness of customer's mounting panel. A short stud must be assembled adjacent to a long stud to maintain clearances required by Underwriters Laboratories.② Two studs required per pole. For List Prices, see Eaton's Price and Availability Digest.

Mounting Panel Thickness In Inches (mm)	Stud Length	Stud Style Numbers	Tube Length In Inches (mm)	Tube Style Numbers
KAM, HKAM Breakers				
0.75 (19.1)–1.00 (25.4)	Short	**656D565G01**	0.84 (21.3)	**456D983H05**
	Long	**656D565G02**	3.78 (96.0)	**456D983H08**
0.50 (12.7)–0.75 (19.1)	Short	**656D565G01**	1.09 (27.7)	**456D983H06**
	Long	**656D565G02**	4.03 (102.4)	**456D983H09**
0.25 (6.4)–0.50 (12.7)	Short	**656D565G01**	1.34 (34.0)	**456D983H07**
	Long	**656D565G02**	4.28 (108.7)	**456D983H10**

Rear Connected Studs For Insulated Panels Only: Two Per Pole

Stud Ampere Number	Diameter, In Inches (mm) and Thread	Extension Back of Breaker In Inches (mm)	Stud Style Numbers
LAM, HLAM Breakers			
225 ③	0.50 (12.7)–13	3.22 (81.8)	**1241 345**
	0.50 (12.7)–13	6.28 (159.5)	**1241 346**
225 ③④	0.50 (12.7)–13	4.97 (126.2)	**1241 392**
400 ③	0.75 (19.1)–16	5.47 (138.9)	**05B7383G22**
	0.75 (19.1)–16	7.97 (202.4)	**05B7383G23**
	0.75 (19.1)–16	10.47 (265.9)	**05B7383G24**
600	1.00 (25.4)–12	5.91 (150.1)	**314C960G16**
	1.00 (25.4)–12	8.41 (213.6)	**314C960G17**
	1.00 (25.4)–12	10.91 (277.1)	**314C960G18**
MAM, HMAM, MAMH Breakers			
225	0.50 (12.7)–13	3.66 (93.0)	**314C960G01**
400	0.75 (19.1)–16	5.91 (150.1)	**314C960G04**
	0.75 (19.1)–16	8.41 (213.6)	**314C960G05**
	0.75 (19.1)–16	10.91 (277.1)	**314C960G06**
600	1.00 (25.4)–12	5.91 (150.1)	**314C960G07**
	1.00 (25.4)–12	8.41 (213.6)	**314C960G08**
	1.00 (25.4)–12	10.91 (277.1)	**314C960G09**
800	1.13 (28.7)–12	4.91 (124.7)	**314C960G10**
	1.13 (28.7)–12	8.41 (213.6)	**314C960G11**
	1.13 (28.7)–12	10.91 (277.1)	**314C960G12**
NBM, HNBM, NBMH Breakers			
800	1.13 (28.7)–12	5.50 (139.7)	**623B222G01**
	1.13 (28.7)–12	8.00 (203.2)	**623B222G02**
	1.13 (28.7)–12	10.50 (266.7)	**623B222G03**
1200	1.25 (31.8)–12	5.50 (139.7)	**373B375G04**
	1.25 (31.8)–12	10.50 (266.7)	**373B375G03**

Line and Load Terminal Shields ⑤

Breaker Type	Description	Style Numbers
KAM	Line terminals	**1261C93G01**
	Load terminals	**1262C46G01**
LAM-400	Line terminals	**1261C95G01**
	Load terminals	**1262C48G01**
MAM	Line terminals	**1261C97G01**
	Load terminals	**1261C97G02**

Notes

① Not UL listed.
② 400 ampere LA studs of the same length have sufficient clearance; however, customer connections may make it necessary to use a short stud adjacent to a long stud.
③ 150, 300 and 400 ampere frames only.
④ This is a special stud that includes six contact nuts for use where bus contact nuts must be used.
⑤ For breakers used with terminals and cable connections. Sold in packages of 10.

3

Standard Handle Reset Undervoltage Release

For Classic breakers field mountable on special frames listed on **Page V12-T3-457**, or replacement on breakers originally equipped with this type UVR.

For undervoltage protection. A solenoid device mounts within breaker case. Coil must be energized before closing breaker. Trips breaker when voltage drops below 35 to 70% of coil rating. Picks up and seals in at 72 to 85% of coil rating. For line voltages up to 250 Vdc or 600 Vac. Externally mounted resistors are supplied for certain ratings. Standard leads extend 18.00 inches (457.2 mm) outside of breaker. Longer leads may be specified.

Breaker Type	Volts	Style Numbers
Right-Hand Mounting		
LAM, HLAM	120 Vac	**4995D12G11**
	120 Vac ①	**1228C76G03**
	240 Vac	**4995D12G13**
	480 Vac	**4995D12G14**
	125 Vdc	**4995D12G09**
MAM, HMAM, MAMH	120 Vac	**5672D69G11**
	120 Vac ①	—
	240 Vac	**5672D69G13**
	480 Vac	**5672D69G14**
NBM, HNBM, NBMH	120 Vac	**4995D11G11**
	120 Vac ①	**1229C35G03**
	240 Vac	**4995D11G13**
	480 Vac	**4995D11G14**
Left-Hand Mounting		
KAM, HKAM	120 Vac	**4995D10G01**
	120 Vac ①	**1228C76G03**
	240 Vac	**4995D10G03**
	480 Vac	**4995D10G04**

Shunt Trips

For tripping breaker from a remote point. A solenoid device mounts within breaker case. Breaker trips when coil is energized. A cutoff switch breaks the circuit to the momentary rated coil when breaker opens. Available for control voltages up to 250 Vdc or 600 Vac. Voltage and frequency must be specified. Standard leads extend 18.00 inches (457.2 mm) outside of breaker. Longer leads may be specified.

Breaker Type	Volts (50–60 Hz)	Style Numbers
Right-Hand Mounting		
KAM, HKAM	480 Vac	**2605D15G16**
	240 Vac	**2605D15G17**
	120 Vac	**2605D15G19**
LAM, HLAM	480 Vac	**2606D56G16**
	240 Vac	**2606D56G17**
	120 Vac	**2606D56G19**
	48 Vdc	**2606D56G07**
MAM, HMAM, MAMH	480 Vac	**2606D57G16**
	240 Vac	**2606D57G17**
	120 Vac	**2606D57G19**
NBM, HNBM, NBMH	480 Vac	**2606D58G16**
	240 Vac	**2606D58G17**
	120 Vac	**2606D58G19**
Left-Hand Mounting		
KAM, HKAM	480 Vac	**2605D15G02**
	240 Vac	**2605D15G03**
	120 Vac	**2605D15G05**
LAM, HLAM	480 Vac	**2606D56G02**
	240 Vac	**2606D56G03**
	120 Vac	**2606D56G05**
MAM, HMAM, MAMH	480 Vac	**2606D57G02**
	240 Vac	**2606D57G03**
	120 Vac	**2606D57G05**
NBM, HNBM, NBMH	480 Vac	**2606D58G02**
	240 Vac	**2606D58G03**
	120 Vac	**2606D58G05**

Notes

① Electrical reset UVR.
② Auto reset type.

Classic Mining to E2 Cross Reference

E² Cross-Reference

Series C Mining	Superseded by E² Mining
1491D72G31	E2J3070T
1491D72G32	E2J3090T
1491D72G33	E2J3100T
1491D72G37	E2J3200T
6622C87G27	E2K3225AWU66
6622C87G28	E2K3225DWU66
6622C87G32	E2K3400GWU66
E2KM3100	E2KEM3100W
E2KM3100U66	E2KEM3100WU66
E2KM3125	E2KEM3125W
E2KM3125U66	E2KEM3125WU66
E2KM3150	E2KEM3150W
E2KM3150MU66	E2KEM3150WU66
E2KM3150TM	E2KEM3150MW
E2KM3150U66	E2KEM3150MWU66
E2KM3200	E2KEM3200W
E2KM3200U66	E2KEM3200WU66
E2KM3225	E2KEM3225W
E2KM3225F	E2KM3400F
E2KM3225FUV	E2KM3400F
E2KM3225MU66	E2KEM3225MWU66
E2KM3225TM	E2KEM3225TM
E2KM3225U66	E2KEM3225WU66
E2LM3300U66	E2LEM3300WU66
E2LM3350U66	E2LEM3350WU66
E2LM34002U66	E2LEM34002WU66
E2LM3400F	E2LM3600F
E2LM3400FUV	E2LM3600F
E2LM3400M2U66	E2LEM3400M2WU66
E2LM3400MU66	E2LEM3400MWU66
E2LM3400U66	E2LEM3400WU66
FDBM3015	E2F3015
FDBM3015WU62	E2F3015WU62
FDBM3020	E2F3020
FDBM3025	E2F3025
FDBM3025U62	E2F3025U62
FDBM3030	E2F3030
FDBM3030U62	E2F3030WU62
FDBM3030WU62	E2F3030WU62
FDBM3035	E2F3035
FDBM3040	E2F3040
FDBM3045	E2F3045
FDBM3050	E2F3050
FDBM3050U62	E2F3050U62
FDBM3050WU62	E2F3050WU62
FDBM3060	E2F3060
FDBM3070	E2F3070
FDBM3070WU62	E2F3070WU62
FDBM3080	E2F3080
FDBM3090	E2F3090
FDBM3100	E2F3100
FDBM3100LM04U62	E2F3100M04U62
FDBM3125	E2F3125
FDBM3150	E2F3150
FDBM3150L	E2F3150L
FDM3015	E2F3015
FDM3015L	E2F3015L
FDM3015LU62	E2F3015LU62
FDM3020	E2F3020
FDM3020LU62	E2F3020LU62
FDM3025	E2F3025
FDM3025L	E2F3025L
FDM3025LS22	E2F3025LS22
FDM3025LU62	E2F3025LU62
FDM3030	E2F3030
FDM3030LS22	E2F3030LS22
FDM3040	E2F3040
FDM3040L	E2F3040L
FDM3040LU62	E2F3040LU62
FDM3050	E2F3050
FDM3050LU62	E2F3050LU62
FDM3050U62	E2F3050U62
FDM3060	E2F3060
FDM3060LU62	E2F3060LU62
FDM3070	E2F3070
FDM3070A02U62	E2F3070A02U62
FDM3080	E2F3080
FDM3090	E2F3090
FDM3100	E2F3100
FDM3100LS22	E2F3100LS22

E² Cross-Reference, continued

Series C Mining	Superseded by E² Mining
FDM3100LU62	E2FLU62
FDM3125	E2F3125
FDM3125LU62	E2F3125LU62
FDM3150	E2F3150
HFDM003AM	E2F003AM
HFDM003AMLU62	E2F003AMLU62
HFDM007CM	E2F007CM
HFDM007CMU62	E2F007CMU62
HFDM015EM	E2F015EM
HFDM015EMA02	E2F015EMA02
HFDM015EMLU62	E2F015EMLU62
HFDM015EMU62	E2F015EMU62
HFDM030HM	E2F030HM
HFDM030HMLU62	E2F030HMLU62
HFDM030HMU62	E2F030HMU62
HFDM050KM	E2F050KM
HFDM050KML	E2F050KML
HFDM050KMLU62	E2F050KMLU62
HFDM050KMU62	E2F050KMU62
HFDM070MM	E2F070MM
HFDM070MMU62	E2F070MMU62
HFDM1001M	E2F1001M
HFDM1001MS22	E2F1001MS22
HFDM100LM	E2F100LM
HFDM100LMA02	E2F100LMA02
HFDM100LMU62	E2F100LMU62
HFDM 100RM	E2F100RM
HFDM100RML	E2F100RML
HFDM100RMS22	E2F100RMS22
HFDM100RMU62	E2F100RMU62
HFDM150TM	E2F150TM
HFDM150TML	E2F150TML
HFDM150TMU62	E2F150TMU62
HFDM150UM	E2F150UM
JCDA2D1S30	E2JM250MDA2D1S30
JCMA2D1S30	E2JM250MFA2D1S30
JDCM3070W	E2JM3070W
JDCM3090W	E2JM3090W
JDCM3100W	E2JM3100W
JDCM3125W	E2JM3125W

Series C Mining	Superseded by E² Mining
JDCM3150W	E2JM3150W
JDCM3175W	E2JM3175W
JDCM3200W	E2JM3200W
JDCM3225A5W	E2JM3225AW
JDCM3225D5W	E2JM3225DW
JDCM3225W	E2JM3225W
JDCM3250A5MW	E2JM3250MAW
JDCM3250A5MWU18	E2JM3250MAWU18
JDCM3250A5W	E2JM3250AW
JDCM3250C5MW	E2JM3250MCW
JDCM3250D5MW	E2JM3250MDW
JDCM3250D5MWA06	E2JM3250MDWA06
JDCM3250D5W	E2JM3250DW
JDCM3250D5WS10	E2JM3250DWS10
JDCM3250F	E2JM3250F
JDCM3250F5MD01	E2JM3250MFD01
JDCM3250F5MW	E2JM3250MFW
JDCM3250G5MW	E2JM3250MGW
JDCM3250G5WA02D01	E2JM3250MGA02D01
JDCM3250J5MW	E2JM3250MJW
JDCM3250J5MWA02	E2JM3250MJA02
JDCM3250J5WA02D01	E2JM3250MJA02D01
JDCM3250J5WD01	E2JM3250MJD01
JDCM3250K5MW	E2JM3250MKW
JDCM3250L5MW	E2JM3250MLW
JDCM3250MW	E2JM3250MW
JDCM3250W	E2JM3250W
JDCMAA2D1	E2JM3250MM02D01
JDCMDD1S30	E2JM3250MDS30D01
JDCMFD01	E2JM3250MFD01
JDCMGA02D1	E2JM3250MGA02D01
JDCMJA2D1	E2JM3250MJA02D01
JDCMJD01	E2JM3250MJD01
JDM2250F	E2JM3250F
JDM3070W	E2J3070W
JDM3090W	E2J3090W
JDM3100W	E2J3100W
JDM3125W	E2J3125W
JDM3150W	E2J3150W
JDM3150WU18	E2J3150WU18

E² Cross-Reference, continued

Series C Mining	Superseded by E² Mining
JDM3175W	E2J3175W
JDM3200W	E2J3200W
JDM3200WA06	E2J3200WA06
JDM3225A5W	E2J3225AW
JDM3225D5W	E2J3225DW
JDM3225W	E2J3225W
JDM3250A5MW	E2J3250MAW
JDM3250A5W	E2J3250AW
JDM3250C5MW	E2J3250CW
JDM3250D5MW	E2J3250MDW
JDM3250D5W	E2J3250DW
JDM3250F	E2J3250F
JDM3250F5MW	E2J3250MFW
JDM3250G5MW	E2J3250MGW
JDM3250J5MW	E2J3250MJW
JDM3250K5MW	E2J3250MKW
JDM3250L5MW	E2J3250MLW
JDM3250MW	E2J3250MW
JDM3250W	E2J3250W
JDM3250WS10	E2J3250WS10
JM2225T1125-2250	E2J3225T
JM3070T	E2J3070T
JM3090T	E2J3090T
JM3100T	E2J3100T
JM3125T	E2J3125T
JM3150T	E2J3150T
JM3175T	E2J3175T
JM3200T	E2J3200T
JM3225T	E2J3225T
JM3225TA5	E2J3225TA
JM3225TD5	E2J3225TD
JM3250T	E2J3250T
JM3250TA5	E2J3250TA
JM3250TA5M_350-700	E2J3250TMA
JM3250TC5M	E2J3250TMC
JM3250TD5_500-1000	E2J3250TMD
JM3250TF5M_625-1250	E2J3250TMF
JM3250TG5M_750-1500	E2J3250TMG
JM3250TJ5M_875-1750	E2J3250TMJ
JM3250TK5M_1000-2000	E2J3250TMK

Series C Mining	Superseded by E² Mining
JM3250TL5M_1125-2250	E2J3250TML
JM3250TM	E2J3250TM
KDCM3100W	E2KM3100W
KDCM3125W	E2KM3125W
KDCM3150W	E2KM3150W
KDCM3175W	E2KM3175W
KDCM3200W	E2KM3200W
KDCM3225A5MW	E2KM3200MAW
KDCM3225D5MW	E2KM3200MDW
KDCM3225W	E2KM3225W
KDCM3250W	E2KM3250W
KDCM3250WU18	E2KM3250WU18
KDCM3300W	E2KM3300W
KDCM3350W	E2KM3350W
KDCM3400D5MA02D09H04	E2KM3400MDA02D09H04
KDCM3400D5MW	E2KM3400MDW
KDCM3400D5MWA02D07	E2KM3400MDA02D07
KDCM3400D5W	E2KM3400DW
KDCM3400D5WD09	E2KM3400DD09
KDCM3400F	E2KM3400F
KDCM3400F5MW	E2KM3400MFW
KDCM3400FD09G04	E2KM3400MFD09G04
KDCM3400G5MW	E2KM3400MGD09G05
KDCM3400G5MWD09H04	E2KM3400MGD09H04
KDCM3400G5W	E2KM3400MGW
KDCM3400G5WD07	E2KM3400MGD07
KDCM3400J5MA02D09	E2KM3400MJA02D09
KDCM3400J5MA2D9G4S30	E2KM3400MJA2D9G4S30
KDCM3400J5MD09	E2KM3400MJD09
KDCM3400J5MD09H04S30	E2KM3400MJD09H04S30
KDCM3400J5MW	E2KM3400MJW
KDCM3400J5MWA02D07	E2KM3400MJA02D07
KDCM3400J5MWA06	E2KM3400MJWA06
KDCM3400J5MWD07S30	E2KM3400MJD07S30
KDCM3400J5WD07	E2KM3400MJD07
KDCM3400K5MW	E2KM3400MKW
KDCM3400K5MWS10	E2KM3400MKWS10
KDCM3400K5MWU18	E2KM3400MKWU18
KDCM3400L5MW	E2KM3400MLW
KDCM3400L5MWD09H04	E2KM3400MLD09H04

E² Cross-Reference, continued

Series C Mining	Superseded by E² Mining
KDCM3400L5MWS10	E2KM3400MLWS10
KDCM3400L5WD07	E2KM3400MLD07
KDCM3400MW	E2KM3400MW
KDCM3400N5MW	E2KM3400MNW
KDCM3400N5MWA06	E2KM3400MNWA06
KDCM3400N5WA02D07	E2KM3400MNA02D07
KDCM3400R5MW	E2KM3400MRW
KDCM3400W	E2KM3400W
KDCM3400W5MW	E2KM3400MWW
KDCMDMD07	E2KM3400MDD07
KDCMNA2D7	E2KM3400MNA02D07
KDM2400F	E2K2400F
KDM2400G5MS50	E2K2400MGWS50
KDM2400G5MW	E2K2400MGW
KDM2400W5MW	E2K2400MWW
KDM2400W5MWA06D07S10	E2K2400MWA06D07S10
KDM2400W5MWA06D10S10	E2K2400MWA06D10S10
KDM2400W5MWD07	E2K2400MWD07
KDM2400W5MWD07S10	E2K2400MWD07S10
KDM2400W5MWD10	E2K2400MWD10
KDM2400W5MWD10S10	E2K2400MWD10S10
KDM2400W5MWS10	E2K2400MWWS10
KDM3100W	E2K3100W
KDM3125W	E2K3125W
KDM3150W	E2K3150W
KDM3150WA06	E2K3150WA06
KDM3175W	E2K3175W
KDM3200W	E2K3200W
KDM3225A5W	E2K3225AW
KDM3225D5A13D09U18	E2K3225DA13D09U18
KDM3225D5MW	E2K3400MDW
KDM3225D5W	E2K3225DW
KDM3225F	E2K3400F
KDM3225W	E2K3225W
KDM3225WK37	E2KE3225W
KDM3225WK37U18	E2KE3225WU18
KDM3225WK38	E2KE3225MW
KDM3250W	E2K3250W
KDM3300W	E2K3300W
KDM3300WA06U18	E2K3300WA06U18

Series C Mining	Superseded by E² Mining
KDM3300WS10	E2K3300WS10
KDM3350W	E2K3350W
KDM3400D5MW	E2K3400MDW
KDM3400D5W	E2K3400DW
KDM3400D5WU18	E2K3400DWU18
KDM3400F	E2K3400F
KDM3400F5MW	E2K3400MFW
KDM3400FK37A06D09D18	E2KE3400A06D09D18
KDM3400G5A06D09U18	E2K3400GA06D09U18
KDM3400G5A13D09U18	E2K3400GA13D09U18
KDM3400G5MW	E2K3400MGW
KDM3400G5W	E2K3400GW
KDM3400G5WA06	E2K3400GWS10
KDM3400G5WS10	E2K3400GWS10
KDM3400G5WU18	E2K3400GWU18
KDM3400J5MW	E2K3400MJW
KDM3400K5MS54	E2K3400MKWS54
KDM3400K5MW	E2K3400MKW
KDM3400L5MW	E2K3400MLW
KDM3400MW	E2K3400MW
KDM3400MWA06U18	E2K3400MWA06U18
KDM3400N5MW	E2K3400MNW
KDM3400R5MW	E2K3400MRW
KDM3400W	E2K3400W
KDM3400W5MW	E2K3400MWW
KEM3100T	KEM3100T
KEM3125T	KEM3125T
KEM3150T	KEM3150T
KEM3150TM	KEM3150TM
KEM3200T	KEM3200T
KEM3225T	KEM3225T
KEM3225T2	KEM3225T2
KEM3225TM	KEM3225TM
KEM3225TM2	KEM3225TM2
KM2225TA5	E2K2225TA
KM2225TA5M	E2K2400TMA
KM2225TD5	E2K2225TD
KM2225TD5M	E2K2400TMD
KM2400TD5	E2K2400TD
KM2400TD5M	E2K2400TMD

E² Cross-Reference, continued

Series C Mining	Superseded by E² Mining
KM2400TG5M	E2K2400TMG
KM2400TN5M	E2K2400TMN
KM2400TW5M	E2K2400TMW
KM3100T	E2K3100T
KM3125T	E2K3125T
KM3150T	E2K3150T
KM3175T	E2K3175T
KM3200T	E2K3200T
KM3225T	E2K3225T
KM3225TA5	E2K3225TA
KM3225TA5M	E2K3400TMA
KM3225TD5	E2K3225TD
KM3225TD5M	E2K3400TMD
KM3250T	E2K3250T
KM3300T	E2K3300T
KM3350T	E2K3350T
KM3400T	E2K3400T
KM3400TD5	E2K3400TD
KM3400TF5M	E2K3400TMF
KM3400TG5M	E2K3400TMG
KM3400TJ5M	E2K3400TMJ
KM3400TK5M	E2K3400TMK
KM3400TL5M	E2K3400TML
KM3400TM	E2K3400TM
KM3400TN5M	E2K3400TMN
KM3400TR5M	E2K3400TMR
KM3400TW5M	E2K3400TMW
LDCM3600EMA05W	E2LEM3600MA05W
LDCM3600F	E2LM3600F
LDM3600F	E2L3600F

Series C Mining	Superseded by E² Mining
LEM3300T	LEM3300T
LEM3350T	LEM3350T
LEM3400T	LEM3400T
LEM3400T2	LEM3400T2
LEM3400TM	LEM3400TM
LEM3400TM2	LEM3400TM2
LEM3600T	LEM3600T
LEM3600TM	LEM3600TM
LM3600TL6M	E2L3600TML
LM3600TN6M	E2L3600TMN
LM3600TP6M	E2L3600TMP
LM3600TR6M	E2L3600TMR
LM3600TS6M	E2L3600TM
LM3600TX6M	E2L3600TMX
UVE3LP08K	UVE3LP08K
UVE4LP08K	UVE4LP08K

Additional Information on Mining Breakers

Source	Description
TD01217001E	E² Mining Circuit Breaker Dimensional Data
BR01217001E	E² Mining Circuit Breaker Brochure
TC01217001E	E² Mining Circuit Breaker Time Current Curves
www.eaton.com/mining	Mining and Metals

Mining Breaker Replacement Cross-Reference

Replacement Breaker		Replacements		
Mining and 1000 V Catalog Number	Style Number	MARK 75 Catalog Number	E2 Style Number	Notes (See Page V12-T3-16)
1227C36G09	1227C36G09	1227C36G11	E2N312W	1–3, 5, 7, 8
1227C36G10	1227C36G10	1227C36G12	E2N310W	1–3, 5, 7, 8
1227C36G11	1227C36G11	—	E2NM312W	1–3, 5, 7, 8
1227C36G12	1227C36G12	—	E2NM310W	1–3, 5, 7, 8
1227C36G13	1227C36G13	—	E2N310WS10	1–3, 5, 7, 8
1227C36G14	1227C36G14	—	E2N312WS10	1–3, 5, 7, 8
1227C36G19	1227C36G19	—	E2N312MW	1–3, 5, 7, 8
1227C37G15	1227C37G15	—	E2N310WU66	1–3, 5, 7, 8
1227C37G16	1227C37G16	—	E2N312WU66	1–3, 5, 7, 8
1227C37G17	1227C37G17	1227C36G12	E2N310W	1–3, 5, 7, 8
1227C37G18	1227C37G18	1229C37G19	E2N310WU66	1–3, 5, 7, 8
1227C37G19	1227C37G19	—	E2N310WS10	1–3, 5, 7, 8
1227C37G21	1227C37G21	—	E2N312WS10	1–3, 5, 7, 8
1227C37G22	1227C37G22	1227C36G12	E2N312W	1–3, 5, 7, 8
1227C37G23	1227C37G23	1229C37G20	E2N312WU66	1–3, 5, 7, 8
1227C37G27	1227C37G27	—	E2N312MW	1–3, 5, 7, 8
1227C37G28	1227C37G28	1229C37G18	E2N312MWU66	1–3, 5, 7, 8
1228C81G01	1228C81G01	—	—	1–3, 5, 7, 8
1228C81G02	1228C81G02	—	—	1–3, 5, 7, 8
1228C81G03	1228C81G03	—	—	1–3, 5, 7, 8
1228C81G04	1228C81G04	—	—	1–3, 5, 7, 8
1228C82G01	1228C82G01	—	—	1–3, 5, 7, 8
1228C82G02	1228C82G02	—	—	1–3, 5, 7, 8
1228C82G03	1228C82G03	—	—	1–3, 5, 7, 8
1228C82G04	1228C82G04	—	—	1–3, 5, 7, 8
1229C37G13	1229C37G13	—	E2N310WU66	1–3, 5, 7, 8
1229C37G14	1229C37G14	—	E2N312WU66	1–3, 5, 7, 8
1229C37G15	1229C37G15	1229C37G19	E2N310WU66	1–3, 5, 7, 8
1229C37G16	1229C37G16	—	E2N312WU66	1–3, 5, 7, 8
1229C37G17	1229C37G17	1227C37G28	E2N312MWU66	1–3, 5, 7, 8
1229C37G18	1229C37G18	—	E2NM312MWU66	1–3, 5, 7, 8
1229C37G19	1229C37G19	—	E2NM310WU66	1–3, 5, 7, 8
1229C37G20	1229C37G20	—	E2NM312WU66	1–3, 5, 7, 8
1259C52G12	1259C52G12	—	E2FM050YM	1–3, 5, 7, 8
1259C52G13	1259C52G13	—	E2FM050KM	1–3, 5, 7, 8
1259C52G14	1259C52G14	—	E2FM100KM	1–3, 5, 7, 8
1259C52G15	1259C52G15	—	E2FM150TM	1–3, 5, 7, 8
1259C52G16	1259C52G16	—	E2FM050YM	1–3, 5, 7, 8
1259C52G17	1259C52G17	—	E2FM100KM	1–3, 5, 7, 8
1278C71G03	1278C71G03	5685D48G87	E2KE3225W	1–3, 5, 7, 8
1278C71G04	1278C71G04	5685D48G86	E2KE3225W	1–3, 5, 7, 8
1278C71G07	1278C71G07	—	E2KE3225WS10	1–3, 5, 7, 8
1278C71G08	1278C71G08	—	E2KE3225WS10	1–3, 5, 7, 8
1278C71G11	1278C71G11	—	E2KE3225MW	1–3, 5, 7, 8
1278C71G12	1278C71G12	—	E2KE3225MW	1–3, 5, 7, 8
1278C72G02	1278C72G02	5685D48G85	E2KE34002W	1–3, 5, 7, 8

Mining Breaker Replacement Cross-Reference

Replacement Breaker		Replacements		
Mining and 1000 V Catalog Number	Style Number	MARK 75 Catalog Number	E2 Style Number	Notes (See Page V12-T3-16)
1278C72G04	1278C72G04	—	E2KE34002WS10	1–3, 5, 7, 8
1278C72G06	1278C72G06	—	E2KE3400M2W	1–3, 5, 7, 8
1278C73G01	1278C73G01	—	E2N3600WU66	1–3, 5, 7, 8
1278C73G02	1278C73G02	—	E2N3800WU66	1–3, 5, 7, 8
1278C73G03	1278C73G03	5685D48G84	E2N3600WU66	1–3, 5, 7, 8
1278C73G04	1278C73G04	2609D60G28	E2N3600WU66	1–3, 5, 7, 8
1278C73G05	1278C73G05	—	E2N3600WS10	1–3, 5, 7, 8
1278C73G07	1278C73G07	—	E2N3800WS10	1–3, 5, 7, 8
1278C73G08	1278C73G08	5685D48G83	E2N3800W	1–3, 5, 7, 8
1278C73G09	1278C73G09	2609D60G29	E2N3800WU66	1–3, 5, 7, 8
1278C73G11	1278C73G11	—	E2N3800MW	1–3, 5, 7, 8
1278C73G12	1278C73G12	2609D60G57	E2N3800MWU66	1–3, 5, 7, 8
1278C73G13	1278C73G13	—	E2N3800MW	1–3, 5, 7, 8
1278C73G14	1278C73G14	2609D60G58	E2N3800MWU66	1–3, 5, 7, 8
1284C67G01	1284C67G01	1284C68G01	E2KE3150W	1–3, 5, 7, 8
1284C67G02	1284C67G02	1284C68G02	E2KE3150WS10	1–3, 5, 7, 8
1284C67G03	1284C67G03	1284C68G03	E2KE3150WU66	1–3, 5, 7, 8
1284C67G04	1284C67G04	1284C68G04	E2KE3150WU66	1–3, 5, 7, 8
1284C67G05	1284C67G05	1284C68G05	E2LE3300W	1–3, 5, 7, 8
1284C67G06	1284C67G06	1284C68G06	E2LE3300WS10	1–3, 5, 7, 8
1284C67G07	1284C67G07	1284C68G07	E2LE3300WU66	1–3, 5, 7, 8
1284C67G08	1284C67G08	1284C68G08	E2LE3300WU66	1–3, 5, 7, 8
1284C67G09	1284C67G09	1284C68G09	E2LE3600W	1–3, 5, 7, 8
1284C67G10	1284C67G10	1284C68G10	E2LE3600WS10	1–3, 5, 7, 8
1284C67G11	1284C67G11	1284C68G11	E2LE3600WU66	1–3, 5, 7, 8
1284C67G12	1284C67G12	1284C68G12	E2LE3600WU66	1–3, 5, 7, 8
1284C68G01	1284C68G01	—	E2KEM3150W	1–3, 5, 7, 8
1284C68G02	1284C68G02	—	E2KEM3150WS10	1–3, 5, 7, 8
1284C68G03	1284C68G03	—	E2KEM3150WU66	1–3, 5, 7, 8
1284C68G04	1284C68G04	—	E2KEM3150WU66	1–3, 5, 7, 8
1284C68G05	1284C68G05	—	E2KEM3400W	1–3, 5, 7, 8
1284C68G06	1284C68G06	—	E2KEM3400WS10	1–3, 5, 7, 8
1284C68G07	1284C68G07	—	E2KEM3400WU66	1–3, 5, 7, 8
1284C68G08	1284C68G08	—	E2KEM3400WU66	1–3, 5, 7, 8
1284C68G09	1284C68G09	—	E2LEM3600W	1–3, 5, 7, 8
1284C68G10	1284C68G10	—	E2LEM3600WS10	1–3, 5, 7, 8
1284C68G11	1284C68G11	—	E2LEM3600WU66	1–3, 5, 7, 8
1284C68G12	1284C68G12	—	E2LEM3600WU66	1–3, 5, 7, 8
1284C80G01	1284C80G01	1284C68G01	E2KE3150W	1–3, 5, 7, 8
1284C80G02	1284C80G02	1284C68G02	E2KE3150WS10	1–3, 5, 7, 8
1284C80G03	1284C80G03	1284C68G03	E2KE3150WU66	1–3, 5, 7, 8
1284C80G04	1284C80G04	1284C68G04	E2KE3150WU66	1–3, 5, 7, 8
1284C80G05	1284C80G05	1284C68G05	E2LE3300W	1–3, 5, 7, 8
1284C80G06	1284C80G06	1284C68G06	E2LE3300WS10	1–3, 5, 7, 8
1284C80G07	1284C80G07	1284C68G07	E2LE3300WU66	1–3, 5, 7, 8
1284C80G08	1284C80G08	1284C68G08	E2LE3300WU66	1–3, 5, 7, 8

Mining Breaker Replacement Cross-Reference

Replacement Breaker		Replacements		
Mining and 1000 V Catalog Number	Style Number	MARK 75 Catalog Number	E2 Style Number	Notes (See Page V12-T3-16)
1284C80G09	1284C80G09	1284C68G09	E2LE3600W	1–3, 5, 7, 8
1284C80G10	1284C80G10	1284C68G10	E2LE3600WS10	1–3, 5, 7, 8
1284C80G11	1284C80G11	1284C68G11	E2LE3600WU66	1–3, 5, 7, 8
1284C80G12	1284C80G12	1284C68G12	E2LE3600WU66	1–3, 5, 7, 8
1284C81G01	1284C81G01	1284C83G01	E2N3800W	1–3, 5, 7, 8
1284C81G02	1284C81G02	1284C83G02	E2N3800WS10	1–3, 5, 7, 8
1284C81G03	1284C81G03	1284C83G03	E2N3800WU66	1–3, 5, 7, 8
1284C81G04	1284C81G04	1284C83G04	E2N3800WU66	1–3, 5, 7, 8
1284C82G01	1284C82G01	1284C83G01	E2N3800W	1–3, 5, 7, 8
1284C82G02	1284C82G02	1284C83G02	E2N3800WS10	1–3, 5, 7, 8
1284C82G03	1284C82G03	1284C83G03	E2N3800WU66	1–3, 5, 7, 8
1284C82G04	1284C82G04	1284C83G04	E2N3800WU66	1–3, 5, 7, 8
1284C83G01	1284C83G01	—	E2NM3800W	1–3, 5, 7, 8
1284C83G02	1284C83G02	—	E2NM3800WS10	1–3, 5, 7, 8
1284C83G03	1284C83G03	—	E2NM3800WU66	1–3, 5, 7, 8
1284C83G04	1284C83G04	—	E2NM3800WU66	1–3, 5, 7, 8
1291C26G01	1291C26G01	—	E2K3225AWU66	1–3, 5, 7, 8
1291C26G02	1291C26G02	—	E2K3225DWU66	1–3, 5, 7, 8
1291C26G03	1291C26G03	1291C26G12	E2K3225AWU66	1–3, 5, 7, 8
1291C26G04	1291C26G04	1291C26G13	E2K3225DWU66	1–3, 5, 7, 8
1291C26G05	1291C26G05	1291C26G14	E2K3400MAWU66	1–3, 5, 7, 8
1291C26G06	1291C26G06	1291C26G15	E2K3400MDWU66	1–3, 5, 7, 8
1291C26G07	1291C26G07	—	E2K3400MAWU66	1–3, 5, 7, 8
1291C26G08	1291C26G08	1291C26G16	E2K3400MAWU66	1–3, 5, 7, 8
1291C26G12	1291C26G12	—	E2KEM3225WU66	1–3, 5, 7, 8
1291C26G13	1291C26G13	—	E2KEM3225WU66	1–3, 5, 7, 8
1291C26G14	1291C26G14	—	E2KEM3225MWU66	1–3, 5, 7, 8
1291C26G15	1291C26G15	—	E2KEM3225MWU66	1–3, 5, 7, 8
1291C26G16	1291C26G16	—	E2KEM3225MWU66	1–3, 5, 7, 8
1291C26G17	1291C26G17	—	E2KE3225WU66	1–3, 5, 7, 8
1291C26G18	1291C26G18	—	E2KE3225WU66	1–3, 5, 7, 8
1291C26G19	1291C26G19	1291C26G12	E2KE3225WU66	1–3, 5, 7, 8
1291C26G20	1291C26G20	1291C26G13	E2KE3225WU66	1–3, 5, 7, 8
1291C26G21	1291C26G21	—	E2KE3225MWU66	1–3, 5, 7, 8
1291C26G22	1291C26G22	1291C26G15	E2KE3225MWU66	1–3, 5, 7, 8
1291C32G01	1291C32G01	—	E2LE3400WU66	1–3, 5, 7, 8
1291C32G02	1291C32G02	1291C32G07	E2LE3400WU66	1–3, 5, 7, 8
1291C32G03	1291C32G03	OMIT	E2LE3400WU66	1–3, 5, 7, 8
1291C32G04	1291C32G04	1291C32G09	E2LE3400MWU66	1–3, 5, 7, 8
1291C32G05	1291C32G05	—	E2KE3400WU66	1–3, 5, 7, 8
1291C32G06	1291C32G06	1291C32G07	E2KE34002WU66	1–3, 5, 7, 8
1291C32G07	1291C32G07	—	E2KEM34002WU66	1–3, 5, 7, 8
1291C32G08	1291C32G08	1291C32G09	E2KE3400M2WU66	1–3, 5, 7, 8
1291C32G09	1291C32G09	—	E2KEM3400M2WU66	1–3, 5, 7, 8
1366D21G01	1366D21G01	—	E2F030EM	1–3, 5, 7, 8
1366D21G02	1366D21G02	—	E2F050YM	1–3, 5, 7, 8

Mining Breaker Replacement Cross-Reference

Replacement Breaker		Replacements		
Mining and 1000 V Catalog Number	Style Number	MARK 75 Catalog Number	E2 Style Number	Notes (See Page V12-T3-16)
1366D21G03	1366D21G03	—	E2F050YM+ 625B229G08	1–3, 5, 7, 8
1366D21G04	1366D21G04	—	E2F100KM	1–3, 5, 7, 8
1366D21G05	1366D21G05	—	E2F100KMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G06	1366D21G06	—	E2F050YM+ 625B229G08	1–3, 5, 7, 8
1366D21G07	1366D21G07	—	E2F100KMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G08	1366D21G08	—	E2F030EM	1–3, 5, 7, 8
1366D21G09	1366D21G09	—	E2F030EM+ 625B229G08	1–3, 5, 7, 8
1366D21G10	1366D21G10	—	E2F030EMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G11	1366D21G11	—	E2F030EMS22+ 625B229G08	1–3, 5, 7, 8
1366D21G12	1366D21G12	—	E2F030EMU62	1–3, 5, 7, 8
1366D21G13	1366D21G13	—	E2F030EM	1–3, 5, 7, 8
1366D21G14	1366D21G14	—	E2F3030	1–3, 5, 7, 8
1366D21G15	1366D21G15	—	E2F3030U62	1–3, 5, 7, 8
1366D21G16	1366D21G16	—	E2F3030S22	1–3, 5, 7, 8
1366D21G17	1366D21G17	—	E2F050YM	1–3, 5, 7, 8
1366D21G18	1366D21G18	—	E2F100KM	1–3, 5, 7, 8
1366D21G19	1366D21G19	—	E2F100KM+ 625B229G08	1–3, 5, 7, 8
1366D21G20	1366D21G20	—	E2F100KMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G22	1366D21G22	—	E2F100KMS22+ 625B229G08	1–3, 5, 7, 8
1366D21G23	1366D21G23	—	E2F100KM+ 625B229G08	1–3, 5, 7, 8
1366D21G24	1366D21G24	—	E2F100KMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G27	1366D21G27	—	E2F100KMU62	1–3, 5, 7, 8
1366D21G28	1366D21G28	—	E2F3100	1–3, 5, 7, 8
1366D21G29	1366D21G29	—	E2F3100U62	1–3, 5, 7, 8
1366D21G30	1366D21G30	—	E2F100KM	1–3, 5, 7, 8
1366D21G31	1366D21G31	—	E2F100KMU62	1–3, 5, 7, 8
1366D21G32	1366D21G32	—	E2F100KMS22	1–3, 5, 7, 8
1366D21G33	1366D21G33	—	E2F3100S22	1–3, 5, 7, 8
1366D21G34	1366D21G34	—	E2F050YMU62	1–3, 5, 7, 8
1366D21G35	1366D21G35	—	E2F050YM+ 625B229G08	1–3, 5, 7, 8
1366D21G36	1366D21G36	—	E2F050YMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G37	1366D21G37	—	E2F050YMS22	1–3, 5, 7, 8
1366D21G38	1366D21G38	—	E2F050YMU62	1–3, 5, 7, 8
1366D21G39	1366D21G39	—	E2F050YM+ 625B229G08	1–3, 5, 7, 8

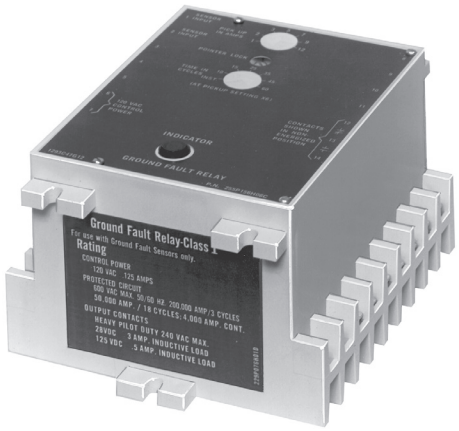
Mining Breaker Replacement Cross-Reference

Replacement Breaker		Replacements		
Mining and 1000 V Catalog Number	Style Number	MARK 75 Catalog Number	E2 Style Number	Notes (See Page V12-T3-16)
1366D21G40	1366D21G40	—	E2F050YMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G41	1366D21G41	—	E2F050YMS22	1–3, 5, 7, 8
1366D21G42	1366D21G42	—	E2F030EMU62+ 625B229G08	1–3, 5, 7, 8
1366D21G43	1366D21G43	—	E2F100KMS22+ 625B229G08	1–3, 5, 7, 8
1366D21G44	1366D21G44	—	E2F100KMS22+ 625B229G08	1–3, 5, 7, 8
1366D21G45	1366D21G45	—	E2F100RMS22	1–3, 5, 7, 8
1366D21G46	1366D21G46	—	E2F3015U62	1–3, 5, 7, 8
1373D88G13	1373D88G13	1373D89G09	E2N312W	1–3, 5, 7, 8
1373D88G14	1373D88G14	1373D89G10	E2N312WS10	1–3, 5, 7, 8
1373D88G15	1373D88G15	1373D89G11	E2N312WU66	1–3, 5, 7, 8
1373D88G16	1373D88G16	1373D89G12	E2N312WU66	1–3, 5, 7, 8
1373D88G17	1373D88G17	1373D89G09	E2N312W	1–3, 5, 7, 8
1373D88G18	1373D88G18	1373D89G10	E2N312WS10	1–3, 5, 7, 8
1373D88G19	1373D88G19	1373D89G11	E2N312WU66	1–3, 5, 7, 8
1373D88G20	1373D88G20	1373D89G12	E2N312WU66	1–3, 5, 7, 8
1373D89G09	1373D89G09	—	E2NM312W	1–3, 5, 7, 8
1373D89G10	1373D89G10	—	E2NM312WS10	1–3, 5, 7, 8
1373D89G11	1373D89G11	—	E2NM312WU66	1–3, 5, 7, 8
1373D89G12	1373D89G12	—	E2NM312WU66	1–3, 5, 7, 8
2600D43G11	2600D43G11	1264C99G03	—	—
2600D43G12	2600D43G12	1264C99G03	—	—
2600D43G14	2600D43G14	1264C99G03	—	—
2602D86G11	2602D86G11	1264C99G05	—	—
2602D86G12	2602D86G12	1264C99G05	—	—
2602D86G13	2602D86G13	1264C99G05	—	—
2602D86G14	2602D86G14	1264C99G05	—	—
2602D99G05	2602D99G05	1264C99G02	—	—
2602D99G06	2602D99G06	1264C99G02	—	—
2602D99G07	2602D99G07	1264C99G02	—	—
2602D99G08	2602D99G08	1264C99G02	—	—
2603D48G07	2603D48G07	2603D48G09	—	—
2603D48G08	2603D48G08	2603D48G09	—	—
2609D60G01	2609D60G01	—	E2K3225AWS10	1–3, 5, 7, 8
2609D60G02	2609D60G02	—	E2K3225DWS10	1–3, 5, 7, 8
2609D60G03	2609D60G03	—	E2LE3400WS10	1–3, 5, 7, 8
2609D60G04	2609D60G04	—	E2N3600WS10	1–3, 5, 7, 8
2609D60G05	2609D60G05	—	E2N3800WS10	1–3, 5, 7, 8
2609D60G08	2609D60G08	—	E2FM100KM	1–3, 5, 7, 8
2609D60G09	2609D60G09	—	E2FM100KMU13	1–3, 5, 7, 8
2609D60G10	2609D60G10	—	E2FM050YM	1–3, 5, 7, 8
2609D60G17	2609D60G17	—	E2N3600WU66	1–3, 5, 7, 8
2609D60G18	2609D60G18	—	E2N3800WU66	1–3, 5, 7, 8
2609D60G19	2609D60G19	—	E2N3600W	1–3, 5, 7, 8
2609D60G20	2609D60G20	2609D60G29	E2N3800WU66	1–3, 5, 7, 8

Mining Breaker Replacement Cross-Reference

Replacement Breaker		Replacements		
Mining and 1000 V Catalog Number	Style Number	MARK 75 Catalog Number	E2 Style Number	Notes (See Page V12-T3-16)
2609D60G28	2609D60G28	—	E2LEM36002WU66	1–3, 5, 7, 8
2609D60G29	2609D60G29	—	E2NM3800WU66	1–3, 5, 7, 8
2609D60G40	2609D60G40	—	E2K3400MAW	1–3, 5, 7, 8
2609D60G41	2609D60G41	—	E2K3400MDW	1–3, 5, 7, 8
2609D60G44	2609D60G44	—	E2LE3400MW	1–3, 5, 7, 8
2609D60G46	2609D60G46	—	E2N3800MW	1–3, 5, 7, 8
2609D60G47	2609D60G47	—	E2N3800MWU66	1–3, 5, 7, 8
2609D60G48	2609D60G48	—	E2N3800MW	1–3, 5, 7, 8
2609D60G49	2609D60G49	2609D60G58	E2N3800MWU66	1–3, 5, 7, 8
2609D60G57	2609D60G57	—	E2NM3800MW	1–3, 5, 7, 8
2609D60G58	2609D60G58	—	E2NM312MW	1–3, 5, 7, 8
2609D60G61	2609D60G61	—	E2LE3400MWS86	1–3, 5, 7, 8
2609D60G63	2609D60G63	—	E2LE34002WU66	1–3, 5, 7, 8
2609D60G64	2609D60G64	—	E2K3400MAW	1–3, 5, 7, 8
2609D60G66	2609D60G66	—	E2K3400MAWS10	1–3, 5, 7, 8
2609D60G67	2609D60G67	2609D60G70	E2K3400MAW	1–3, 5, 7, 8
2609D60G69	2609D60G69	—	E2K3400MAWS10	1–3, 5, 7, 8
2609D60G70	2609D60G70	—	E2KEM3225MW	1–3, 5, 7, 8
2610D64G07	2610D64G07	2610D64G13	—	—
2610D64G08	2610D64G08	2610D64G13	—	—
2610D64G09	2610D64G09	2610D64G13	—	—
2610D64G10	2610D64G10	2610D64G13	—	—
5685D48G45	5685D48G45	—	E2FM100KMU13+ 625B229G08	1–3, 5, 7, 8
5685D48G71	5685D48G71	5685D48G83	E2N3800W	1–3, 5, 7, 8
5685D48G72	5685D48G72	5685D48G84	E2N3600W	1–3, 5, 7, 8
5685D48G73	5685D48G73	5685D48G85	E2LE3400W	1–3, 5, 7, 8
5685D48G74	5685D48G74	5685D48G86	E2K3225DW	1–3, 5, 7, 8
5685D48G75	5685D48G75	1291C26G12	E2K3225AW	1–3, 5, 7, 8
5685D48G83	5685D48G83	—	E2NM3800W	1–3, 5, 7, 8
5685D48G84	5685D48G84	—	E2LEM36002W	1–3, 5, 7, 8
5685D48G85	5685D48G85	—	E2KEM34002W	1–3, 5, 7, 8
5685D48G86	5685D48G86	—	E2KEM3225W	1–3, 5, 7, 8
5685D48G87	5685D48G87	—	E2KEM3225W	1–3, 5, 7, 8
5685D48G88	5685D48G88	—	E2FM100KM+ 625B229G08	1–3, 5, 7, 8
5685D48G89	5685D48G89	—	E2FM050YM+ 625B229G08	1–3, 5, 7, 8
5685D48G90	5685D48G90	—	E2FM050YMU13	1–3, 5, 7, 8
2609D99G06	2609D99G06	—	—	—
5685D48G42	5685D48G42	—	—	—
5685D48G36	5685D48G36	—	—	—
5685D48G30	5685D48G30	—	—	—
5685D48G24	5685D48G24	—	—	—
5685D48G18	5685D48G18	—	—	—
5685D48G12	5685D48G12	—	—	—
5685D48G06	5685D48G06	—	—	—

GFR Relay



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Add-On Ground Fault Protection—Type GFR

Product Description

A Type GFR ground fault protection system, when properly installed on a grounded electrical system, will sense phase-to-ground fault currents. When the level of fault current is in excess of the pre-selected current pickup and time delay settings, the GFR relay will initiate a trip action of a disconnect device, which will open the faulted circuit and clear the fault.

The GFR devices are UL Class I devices designed to protect electrical equipment against extensive damage from arcing ground faults.

A basic Type GFR ground fault protection system consists of a ground fault relay, a ground fault current sensor and a disconnect device equipped with a shunt trip device. This disconnect device can be a molded case circuit breaker, a power circuit breaker, a bolted pressure switch or other fusible disconnect device, suitable for application with UL Class I ground fault sensing and relaying equipment.

Note: Suitable for either surface or semi-flush mounting.

Standards and Certifications

Eaton's GFR ground fault relays, current sensors, test panels and accessory devices are UL listed by Underwriters Laboratories in accordance with their standard for ground fault sensing and relaying equipment, UL 1053, under File E48381.

Note: Relays are also listed with CSA under their file number 43357.

Listed

Product Selection

Each installation requires:

- One relay unit (select trip ampere as required)
- One current sensor (select configuration required)
- One circuit breaker or disconnect device with shunt trip, or a shunt trip attachment for mounting in existing breaker
- Test panel (optional)

GFR Relay



GFR Relay

GFR Relay Types	Ground Fault Pickup Amperes 1–12 Catalog Number ①	5–60 Catalog Number ①	100–1200 Catalog Number ①
For 120 Volt 50/60 Hz Control			
Electrical reset with zone interlocking	**GFR12EI**	**GFR60EI**	**GFR1200EI**
Electrical reset without zone interlocking	**GFR12E**	**GFR60E**	**GFR1200E**
Mechanical reset with zone interlocking	**GFR12MI**	**GFR60MI**	**GFR1200MI**
Mechanical reset without zone interlocking	**GFR12M**	**GFR60M**	**GFR1200M**
For 120 Vdc Control			
Electrical reset with zone interlocking	—	—	**GFR1200EID**
Electrical reset without zone interlocking	—	—	**GFR1200ED**
Mechanical reset with zone interlocking	—	—	**GFR1200MID**
Mechanical reset without zone interlocking	—	—	**GFR1200MD**

Typical Current Sensor



Current Sensor

Window Size in Inches (mm)	Catalog Number
Used with Relays Rated 1–12 Amperes	
5.50 (139.7) I.D.	**1283C45G01**
Used with Relays Rated 5–60 Amperes	
2.50 (63.5) I.D.	**179C768G01**
5.50 (139.7) I.D.	**1256C13G01**
7.81 x 11.00 (198.4 x 279.4) Rect. ②	**1257C88G04**
3.31 x 24.94 (84.1 x 760.5) Rect. ②	**1257C92G03**
Used with Relays Rated 100–1200 Amperes	
2.50 (63.5) I.D.	**179C768G02**
5.50 (139.7) I.D.	**1256C13G02**
8.25 (209.6). I.D.	**179C767G02**
7.81 x 11.00 (198.4 x 279.4) Rect. ②	**1257C88G03**
9.94 x 16.94 (252.5 x 430.3) Rect. ②	**1257C90G02**
9.94 x 23.94 (252.5 x 608.1) Rect. ②	**1257C91G02**
15.94 x 19.94 (404.9 x 506.4) Rect. ②	**1257C89G02**
3.31 x 24.94 (84.1 x 633.5) Rect. ②	**1257C92G04**
6.75 x 29.64 (171.5 x 752.9) Rect. ②	**1255C39G03**

Notes

① Suitable for either surface or semi-flush mounting.
② One end removable for installation.

Accessories

Options

Additional optional equipment can be added to the protection system to meet the requirements of the specifying engineer, including:

- Ground fault test panel
- Ground fault warning indicator relay
- Ground fault indicating ammeter

GFR relays are available with zone selective interlocking circuitry to interlock several relays within the same system. This allows the relay which detects a ground fault to instantly clear the fault by tripping the disconnect device. The relay simultaneously sends a signal to relay units "upstream" from the fault to time delay or to block their operation completely. Current sensors in various designs provide a range of "window" sizes to accommodate standard bus and cable arrangements.

Shunt trip attachments may be ordered for field mounting in Eaton's molded case circuit breakers, or may be ordered factory installed in the breaker.

Test Panel (120 Vac)

Used to test the ground fault system, to give an indication the relay has tripped the breaker, and to reset the relay after tripping. These functions may be separately mounted pilot devices.

Note: When a mechanically reset relay is used with a test panel, both the relay and test panel must be reset following either a simulated ground fault test or actual ground fault. Not UL listed.

Optional Test Panel

Control	Test	Catalog Number
120 Volt 50/60 Hz	120 Volt 50/60 Hz	**GFRTP**

Ground Fault Warning Indicator

This is an accessory item for use with GFR relays with interlocking circuitry. At approximately 30–50% of the relay pickup setting, the indicator switches separate 120 Vac control power to a lamp or relay, (not included) to give an indication of a ground fault. The indicator is rated 110/120 Vac 50/60 Hz for a maximum indicator load of 0.5 amperes.

Ground Fault Warning Indicator

Description	Catalog Number
Manual reset	**1234C67G01**
Self-resetting	**1234C67G02**

Indicating Ammeter

The optional indicating ammeter connects to the sensor terminals through a momentary contact pushbutton, and will indicate (in amperes) any ground fault current flowing through the sensor. Kit includes the ammeter and pushbutton.

Note: Not UL listed.

Ammeter Kit

GFR System Used with	Kit Catalog Number
1–12 ampere	**752B820G01**
5–60 ampere	**752B820G02**
100–1200 ampere	**752B820G03**

Shunt Trip Attachments

Use 120 Vac shunt trips.

Faceplate

Recommended when these relays are semi-flush mounted, to close the door cutout opening.

Face Plate

Description	Catalog Number
Faceplate	**752B410G01**

Technical Data and Specifications

Sensor

- 600 volt, 50/60 Hz maximum system voltage

Electrical Ratings

GFR Relay

- Ground fault detection ranges:
  - 1 to 12, 5 to 60 or 100 to 1200 amperes
- Output contacts:
  - 240 volt, 50/60 Hz: 3.0 amperes
  - 120 volt, 50/60 Hz: 6.0 amperes
  - 28 Vdc: 3.0 amperes
  - 125 Vdc: 0.5 amperes
- Control power requirements:
  - 120 volt, 50/60 Hz or 125 Vdc (optional)