Technical Data

Original Instructions

Allen-Bradley by ROCKWELL AUTOMATION

Molded Case Circuit Breaker Specifications

Bulletin 140G, 140G2, 140MG, and 140MG2

Summary of Changes

This publication contains the following new or updated information.
This list includes substantive updates only and is not intended to reflect all changes.

Topic	Page
Corrected catalog numbers in Table 196, Terminal Covers	109
Added technical data publication for Bulletin 140G Frame Size K, M, N, and NS legacy products to Additional Resources	325

Terminology

This publication contains several acronyms. See the table below for a list of these acronyms.

Acronym	Term
Cu	Copper
CuAl	Copper-aluminum
FLA	Full-load current
ETU	Electronic trip unit
IEC	International Electrotechnical Commission
LIU	Low-interruption unit
LSI	Long-time, short-time, and instantaneous
LSIG	Long-time, short-time, instantaneous, and ground fault
MCCB	Molded case circuit breaker
MCP	Motor circuit protector
MCS	Molded case switch
MCSD	Molded case switch disconnector
MPCB	Motor protection circuit breaker
NEC	National Electrical Code
NCT	Neutral Current Sensors
NEMA	National Electrical Manufacturers Association
rms	Root mean squared (rms)
UL	Underwriters Laboratories
SCCR	Short-circuit current rating
SCPD	Short-circuit protective devices

Circuit Breaker Basics

Throughout this section, the terms Bulletin 140G, 140G2, 140MG, and 140MG2 broadly refer to all Bulletin 140G, 140G2, 140MG, and 140MG2 devices and accessories.

A circuit breaker is a reusable semi-automatic switching device. Circuit breakers are designed to protect downstream devices and wiring from harmful conditions in the power supply that run through the circuit breaker, while also allowing the complex power demands of the system to pass through.

Circuit breaker design specifics are defined by multiple standards: Bulletin 140G and Bulletin 140G2 circuit breakers are broadly designed for global industrial application for low-voltage, three-phase power systems and are subject to the details of both (Underwriters Laboratories) UL and International Electrotechnical Commission (IEC) standards. The technical definition of a circuit breaker varies between standards organizations. Following are some commonly used definitions:

Bulletin 140G Circuit Breakers

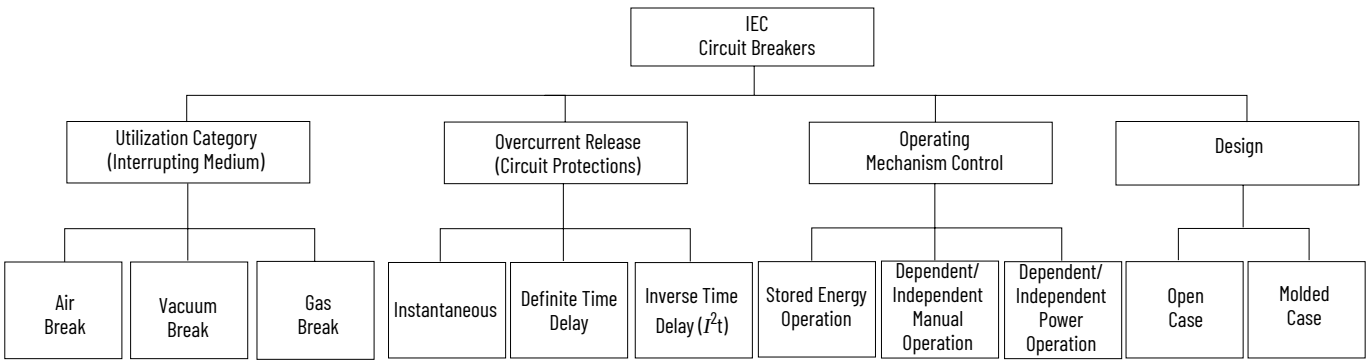
- The National Electrical Manufacturers Association (NEMA) defines circuit breakers as "devices designed to open and close a circuit by non-automatic means, and to open the circuit automatically on a predetermined overcurrent without injury to itself when properly applied within its rating."
- The IEC Standard IEC 60947-2 defines a circuit breaker as "a mechanical switching device, capable of making, carrying and breaking currents under normal circuit conditions and also making, carrying for a specified time, and breaking currents under specified abnormal circuit conditions such as those of short-circuit."

Circuit breakers are referred to by specific design elements for type of construction and functionality. For example, Figure 1 shows the IEC specification that includes several distinctions of circuit breakers. Under these classifications, Bulletin 140G circuit breakers can be referred to as molded-case and air-break devices, with a mix of dependent operation and stored-energy operation, as well as a variety of overcurrent release protection packages.

The term "molded case" means that the construction of the circuit breaker is an assembled unit surrounded by an insulated housing. The term air-break means that the internal arcing chambers of the circuit breaker have normal air as opposed to an inert gas or a sealed vacuum space.

The Anatomy of Bulletin 140G and Bulletin 140G2 Circuit Breakers on page 6 explains operating mechanism types and circuit protection options.

Figure 1 - IEC Circuit Breaker Classifications



Bulletin 140G and Bulletin 140MG offers circuit breakers that are tailored to specific applications including industrial control panels, motors, and general switching use. The circuit breakers are designed to operate with high interrupting capacity and a minimal mounting footprint in global three-phase power applications that range from 10…3000 A at 220…690V AC.

You can also apply Bulletin 140G and Bulletin 140MG circuit breakers in single-phase systems, DC power systems, and systems with neutral conductors. Your exact circuit breaker selection is driven by the needs of your application. Table 1 lists the broad hardware categories and considerations required for each. You must consider all of the categories to develop a full solution.

Table 1 - Circuit Breaker and Accessory Considerations

Device Type	Functional Consideration	Additional Information
Main Device Type	Application purpose, standards compliance, high-level features	Device Types on page 4
Breaking Frame Size	Operating current, interrupting capacity	Anatomy of Bulletin 140G and Bulletin 140G2 Circuit Breakers on page 6
Trip Unit Type	Circuit protection features, adjustability	
Internal Accessories	Additional protection, data signaling, control	
External Accessories	Operation, isolation, personnel protection	
Terminal Connection Accessories	Power supply connection on line and load sides	

Device Types

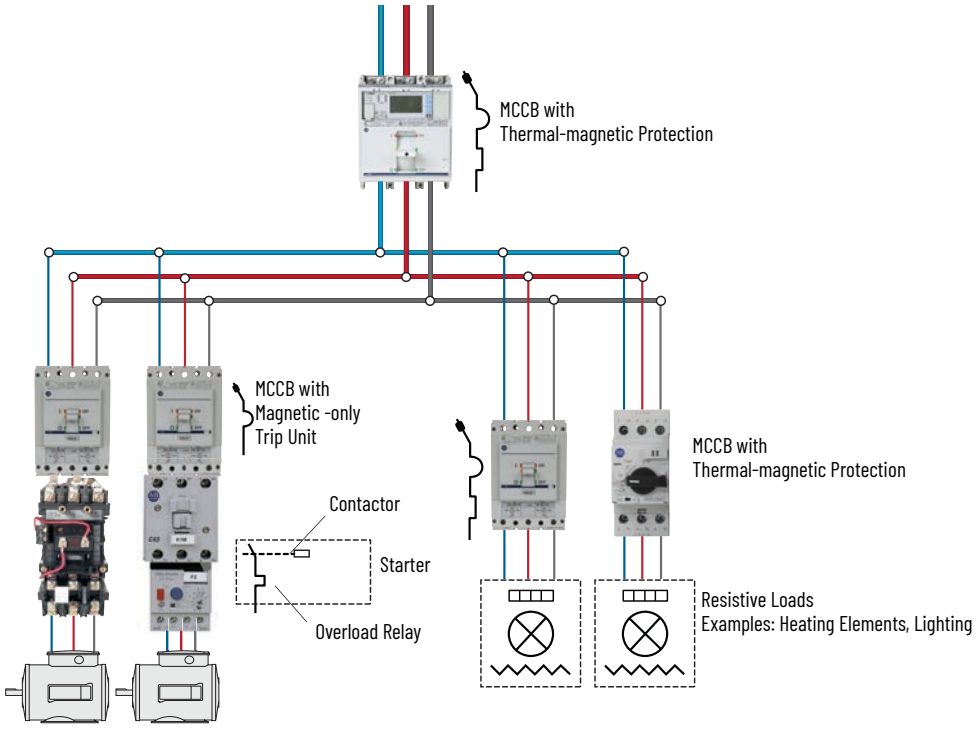
There are five device types in the Bulletin 140G, 140G2, 140MG, and 140MG2 product families.

- Three of these devices — Molded Case Circuit Breakers (MCCBs), Motor Circuit Protectors (MCPs), and Motor Protection Circuit Breakers (MPCBs) — are full circuit breakers with various circuit protections tailored to their intended application.
- The other two devices — Molded Case Switches (MCSs) and Molded Case Switch Disconnectors (MCSDs) — are switches that use the MCCB platform for improved performance.

These five device types are often used together in an electrical system to distribute power and protect devices and connections. Figure 2 represents a typical multi-starter control panel that is comprised of multiple 140G products.

- The device at the top is an MCCB, which serves as the main disconnect and feeder protection.
- The main MCCB feeds several branches downstream.
- The MCPs and MPCBs on the left protect the motor loads.
- The MCCBs on the right provide branch short-circuit protection and overload protection for general loads.

Figure 2 - Typical Multi-starter Control Panel



MCCBs (Bulletin 140G and Bulletin 140G2)

MCCBs are designed to provide overcurrent protection for conductors and equipment by opening automatically before the current reaches a value and duration that causes excessive or dangerous temperature to the conductors or conductor insulation. These devices can also serve as the main disconnecting means for a control panel. MCCBs are commonly implemented as feeder breakers or branch protection devices. The main purpose of these devices is to provide low-level overcurrent and short-circuit current protections. These types of circuit breakers are often described as thermal-magnetic devices. However, electronic circuit breakers are becoming more widely used due to their enhanced functionality and adjustability, which allows the protection curves to be customized to a specific application.

Bulletin 140G MCCBs include a variation of the MCCB that is defined as **current limiting**. Current limiting circuit breakers under UL 489 have a specific additional function that limits the energy that is allowed through the circuit breaker when the circuit breaker is tripped. According to UL 489 standard, current-limiting circuit breakers are identified with "Current Limiting" on the front and have a label on the right side that specifies peak current and specific let-through energy values.

In the United States, the National Electrical Code (NEC) defines how this protection is selected in Sections 240-2, 240-3, and 240-4. In Canada, there are similar references in the Canadian Electric Code, C22.1-12. For IEC applications, IEC 60204-1 provides guidance for the construction of industrial control panels.

MPCBs (Bulletin 140MG and 140MG2)

MPCBs are an application-specific variation of the MCCB that combines the short-circuit current protection and circuit isolation functionality of the MCCB with the motor overcurrent protection of a traditional overload relay. These devices are traditionally used in two-component starter applications, with a contactor to control a motor load. MPCBs are UL 489 listed as circuit breakers and verified as motor overload relays. Circuit breakers that are applied in North America are typically 80% rated, meaning that they can only be used continuously at 80% of their thermal rating (see 80% and 100% Continuous Rated Circuit Breakers on page 15). Allen-Bradley® MPCBs are 100% rated, allowing full use of the circuit breakers' thermal capacity in motor protection applications.

MCPs (Bulletin 140MG and 140MG2)

Another application-specific version of the MCCB is the MCP, a magnetic-trip-only version of the MCCB. These circuit breakers provide no overload protection and must be used with a controller to provide short-circuit current and overcurrent protection when they are applied in motor circuits. In the United States, the MCP is UL Listed in combination with a controller and together they form a combination starter. The advantage of this combination is the choice in overload protection that can be applied to the starter. Listed combinations can include mechanical and electronic overload relays, providing protection that is customized for specific applications. Allen-Bradley MCPs are available in high-magnetic-trip versions, allowing them to be used with high-efficiency motors, reducing the chance of nuisance tripping due to the characteristic high inrush currents that are associated with these motors.

MCSs (Bulletin 140G and 140G2)

The function of a MCS is to disconnect the downstream circuit in which it is installed. In the OFF position, the switch ensures sufficient electrical isolation to the circuit by using the same design theory as the MCCBs. Other types of devices applied as a disconnecting means may not have these same properties. The mechanical function of a molded case switch is the same as that of a circuit breaker with both an ON and OFF feature that is controlled with a toggle switch. It features the same overall dimensions and can accept the same electrical and mechanical accessories as an MCCB. The MCS provides local motor installation isolation. When disconnected, the MCS can isolate a single machine or group of machines. Likewise, MCSs can provide bus-tie isolation.

MCSs are not designed to automatically break under short-circuit or overload conditions. For this reason, the circuit must be protected with a coordinated device that protects against short-circuit currents. Bulletin 140G MCSs feature a self-protection magnetic override for high-fault conditions, so the device does not experience damage. This is not considered circuit protection.

MCSDs (Bulletin 140G and Bulletin 140G2)

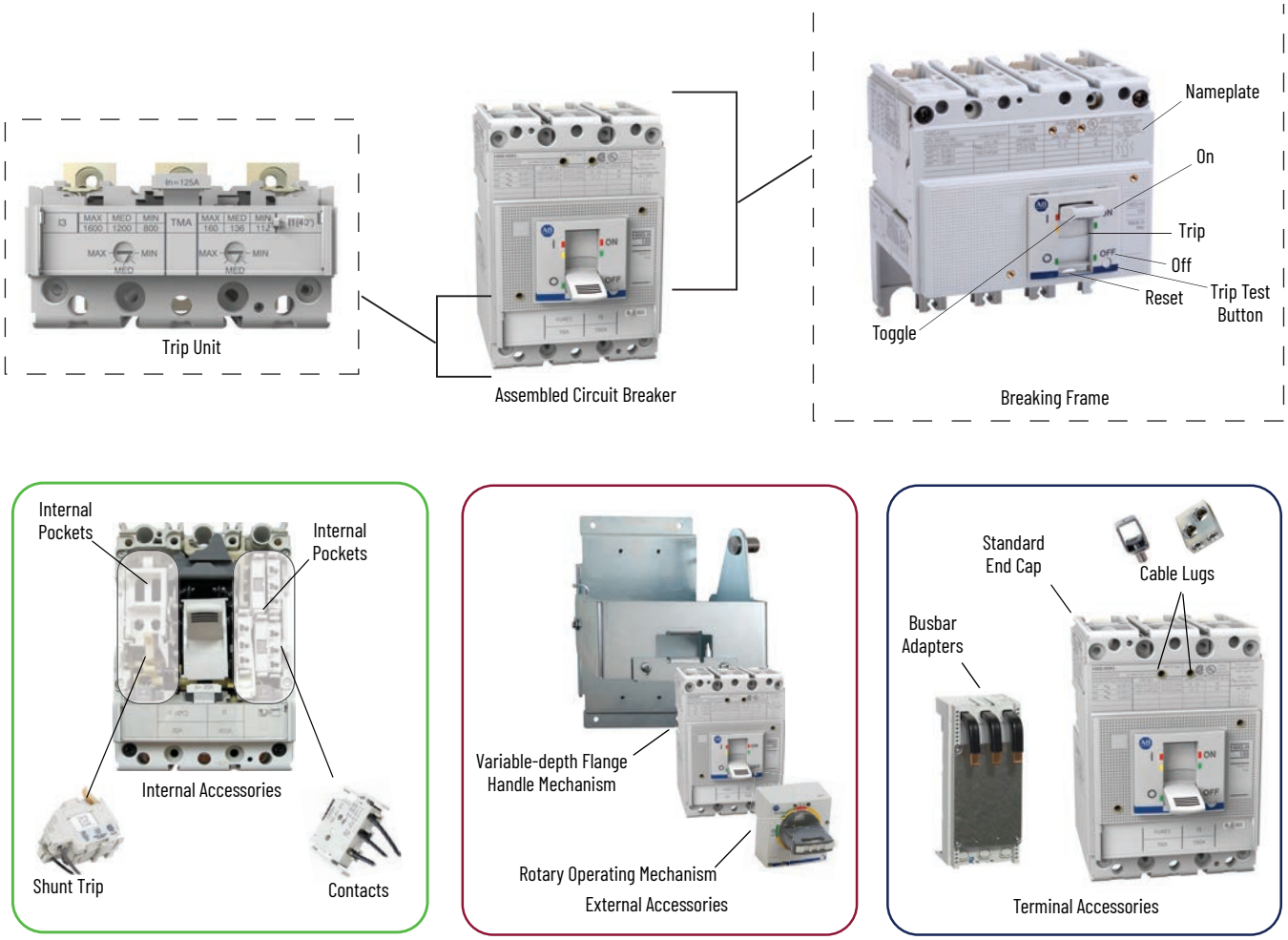
The function of a MCSD is to disconnect the downstream circuit in which it is installed. In the OFF position, the switch ensures sufficient electrical isolation to the circuit by using the same design theory as the MCCBs. Other types of devices that are applied as a disconnecting means may not have these same properties. The MCSD has the same mechanical function of a circuit breaker: both have ON and OFF features that are controlled with a toggle switch. MCSD features the same overall dimensions of an MCCB and can accept the same electrical and mechanical accessories as an MCCB. The MCSD provides local motor installation isolation. When disconnected, the MCSD can isolate a single machine or group of machines. Likewise, MCSDs can provide bus-tie isolation.

MCSDs are not designed to automatically break under short-circuit or overload conditions. Therefore, the upstream circuit from the switch must be protected with a coordinated device that protects against short-circuit currents. Bulletin 140G MCSDs do not offer circuit protection or self-protection.

Anatomy of Bulletin 140G and Bulletin 140G2 Circuit Breakers

Bulletin 140G and Bulletin 140G2 circuit breakers have five main physical components in a full assembly, shown in Figure 3. Each of the four device types we discussed has these five elements, except for the molded case switch, which does not have a trip unit because it does not provide circuit protection in this way. Breaking frames and trip units are both required to create a fully functional assembled circuit breaker, while terminal accessories, internal accessories, and external accessories are optional components that depend on your desired features and the needs of your electrical system.

Figure 3 - Circuit Breaker Anatomy and Terminology



Each of these five components must be selected to fit with each other and the application. All products in the family are broadly arranged by frame size — available as G, H, I, J, K, L, M, N, NS, and R — which has a specific mechanical size and electrical range. Most accessories are compatible with several frame sizes and can be user-installed or factory-installed. Breaking frames and trip units are pre-assembled for frame size G and I.

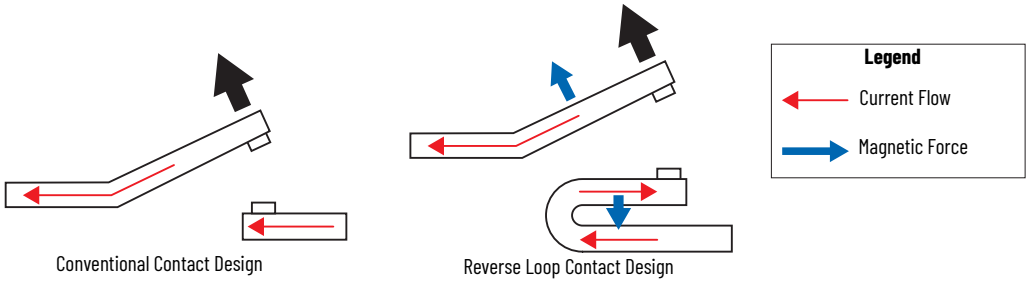
Breaking Frame

The breaking frame makes up the physical majority of the assembled circuit breaker and contains the **switching contacts** and **arc chambers**. These switching contacts are the mechanism that allows the current flow through the circuit breaker to be physically interrupted, either when the circuit breaker is manually powered off or when the circuit protections automatically detect a condition that requires the circuit breaker to open. The switching contacts are mechanically linked so that if one pole experiences an event that causes the circuit breaker to open, all poles open together. The arc chambers surround each switching contact and include arc chutes and splitter plates that conduct the electricity away from the contacts and divide and dissipate an arc when the circuit breaker is opened. An arc forms when electricity flows through the air gap between the contacts as they open. The electricity flow stops when the arc is successfully extinguished. Each breaking frame and trip unit also has venting chutes, which allow exhausting from the arc chambers during a trip under power. Each pole on the circuit breaker is joined together by a **trip bar**, which enables the trip unit to activate the switching contacts.

Depending upon the design of the circuit breaker and intended short-circuit interruption capability, there are differences in the construction of the contact assemblies. Figure 4 shows the most commonly used contact assemblies.

Modern circuit breakers use the reverse loop design because it uses the magnetic forces that are created by current flowing in opposite direction to help open the contacts under short-circuit conditions. The amount of repulsive force that is generated is proportional to the value of the short-circuit current that the circuit breaker experiences. This allows faster interruption time as the short-circuit currents increase.

Figure 4 - Conventional Contact Design Compared to Reverse Loop Contact Design



Each breaking frame size is designed to be able to survive different high current conditions, referred to as **interrupting ratings** (see Interrupting Ratings (Breaking Capacity; I_c or I_{cu}) on page 14). To safely handle these high current levels, sometimes up to 200,000 A, contact material and geometry must change effecting physical size and cost of the frame and trip unit. Each breaking frame size is a balance between the range of operating currents, the ability to handle fault currents common in industrial electrical systems, and the panel space footprint of the device. See Product Overview on page 28 for more information about features and accessories for each of the breaking frame sizes.

The breaking frame size also includes the top terminals for each pole, internal pockets for accessories, the toggle or integral spring operator assembly, informational nameplates, a trip test button, internal pole connections for the trip unit, and mounting holes to install the assembled circuit breaker to a panel. The toggle shows the status of the circuit breaker and can be operated by hand. Figure 3 on page 6 shows these toggle positions:

- The ON position is when the circuit breaker contacts are closed.
- The OFF position is when the circuit breaker contacts are open.
- The TRIP shows when a circuit breaker has been automatically opened by the trip test button or a trip condition.
- The RESET position on the toggle allows the circuit breaker to be closed again after a trip.
- The TRIP TEST button releases a mechanical latch that allows the contact assemblies to open and sets the toggle position to TRIP. On most circuit breakers, this button is on the front face near the toggle.

In frame size NS and R, the high mechanical forces needed to manually open or close the contacts require an integral spring operator assembly to replace the toggle. The spring is charged by a ratcheting handle, activated with buttons on the face of the circuit breaker, and must be recharged after every operation.

In the largest frame sizes — N, NS, and R — a **terminal strip** made of labeled plug-in connections is at the top of the circuit breaker. This replaces the wires in many accessories with a terminal connector that you can adapt to your desired control panel wiring.

You must select breaking frames for operational current range, interrupting capacity, let-through energy needs, energy system configuration for phases and poles, and continuous rating requirements. Frame size R must also be selected for integral door interlock. See Approximate Dimensions on page 249 for mounting information and dimension drawings for circuit breakers and accessory assemblies.

Trip Unit

The trip unit is the second required component of the assembled circuit breaker. It determines how the circuit breaker behaves while automatically protecting a circuit. The trip unit simultaneously monitors for all circuit protections by analyzing the power on each line and calculating when to trip the circuit breaker. Bulletin 140G devices offer several types of protection packages ranging from fixed, mechanical, thermal-magnetic units to heavily adjustable, electronic, multi-protection units. Figure 5 shows these two major trip unit types: the thermal-magnetic trip unit is identified by a simple interface and the electronic trip unit shows various protections and configuration switches.

Figure 5 - Thermal-magnetic and Electronic Trip Unit Interface Comparison

Thermal-magnetic Trip Unit

Electronic DIP Switch Trip Unit

Thermal-magnetic trip units use mechanical assemblies and material properties to determine when the current flow is too high. The thermal portion protects against thermal overcurrent conditions in which the slightly elevated current causes heat buildup in conductor elements due to each component's resistance. This thermal overcurrent detection is achieved by using the different heating rates in a bimetallic heater element similar to those found in overload relays. The current flow is broken as the element heats up and curls away. Once the element has cooled and the contact uncurls back into place, the circuit breaker can be reset. The magnetic portion protects against short-circuit current conditions, which are high-current spikes that have many causes. Magnetic short-circuit detection is achieved by an assembly that uses magnetic forces to activate a lever, which releases the trip bar. This magnetic assembly is different from the switching contacts that are found in the breaking frame but uses the same principles on a smaller scale. Some thermal-magnetic trip units are adjustable to different thresholds by turning settings indicators on the front of the circuit breaker. Thermal-magnetic trip units are used with MCCBs and MCPs (magnetic-only version).

Electronic trip units achieve the same circuit protections as thermal-magnetic units by using electronic sensors to detect current flow, processors to model the associated protection behavior, and solenoids to activate the trip bar and interrupt the current flow. Electronic trip units offer additional protections and wide adjustability of each protection to fully customize the behavior of the circuit breaker to an application.

- **Electronic DIP Units:** Electronic DIP units use small vertical switches (DIP switches) on the face of the circuit breaker to configure threshold, time, and other settings for each protection.
- **Electronic Sense Units:** Electronic sense units use LCD screens on the face of the circuit breaker to configure threshold, time, and other settings for each protection. These also offer wider varieties of protections and measurement data compared to the electronic DIP units.

Electronic trip units are used with MCCBs, MPCBs, MCPs. MPCBs use electronic trip units with a specific variation of the thermal overcurrent protection, which is designed to replace the need for an overload unit. Protection is set based on the motor class and adjusts the current threshold and time response for the common needs of that motor class. Circuit Protections and Device Self-Protections on page 16 discusses individual circuit protections in detail.

Table 2 below and Table 3 on page 9 illustrate the thermal-magnetic and electronic trip units that are available with the 140G family of MCCBs and their adjustment ranges. Each electronic trip unit is tuned to a system's operating current by a rating or by a replaceable **rating plug**. These ratings adjust the electronic trip unit from the frame size's maximum to the desired operating current. For example, the frame size G maximum is 125 A (or 160 A for IEC applications), but can achieve a rating of 10 A by being paired with a frame size G 10 A electronic trip unit. Rated current is covered in more detail on Rated Current (I_n) on page 14.

The electronic trip unit also includes the bottom terminals for each pole, internal pole connections for the frame size, wired connection ports for specific accessories, and mounting holes to install the assembled circuit breaker to a panel.

Electronic trip units must be selected for compatible breaking frame size, protections package with adjustability or specialty function, compatible pole configuration, and rated current. For MPCBs and MCPs, electronic trip units are pre-configured as assembled circuit breakers.

Table 2 - Trip Unit Adjustment Amperage Range Comparison

Protection Type	Amperage [A] by Frame Size							
	G	H	I	J	K	L	N, NS	R
Thermal Magnetic Fixed	15...125 (1)	15...70	60...225	25...70	–	–	–	–
Thermal Magnetic Adjustable	–	56...125 (1)	–	56...250	210...400	350...600 (2)	–	–
Electronic DIP	–	10...125 (1)	–	16...250	120...400	240...600 (2)	480...1200	1000...3000
Electronic Sense	–	15...125 (1)	–	40...250	120...400	120...600 (2) (3)	–	–

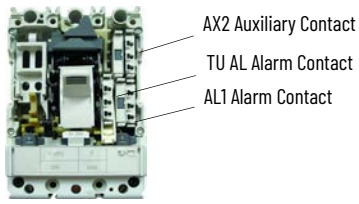
(1) IEC applications can go up to 160 A.
(2) IEC applications can go up to 630 A.
(3) Used with rating plug.

Internal Accessories

Circuit breakers contain internal pockets that are designed to accommodate internal accessories that can add data sharing and extra abilities to the device. These accessories are supplied with connection wires that are routed behind the cover and out the side of the circuit breaker. In frame size N, NS, and R, the terminal strip on the breaking frame and a 3-pin quick connector replaces these connection wires. All frame sizes allow multiple internal accessories to be installed simultaneously.

Signaling contacts are micro-switches that sit on status levers inside the circuit breaker and transmit a signal to a controller or panel light when the lever positions change. Most contacts are used for **auxiliary** (breaker ON or OFF), **alarm** (TRIP for any reason, including accessories), and **trip unit alarm** (TRIP from protection or trip button only) and are offered as multi-switch packages.

Table 3 - Auxiliary, Alarm, or Trip Unit Alarm Contact Change in Response to Device Status

Contact Location	Device Status	Contact Type		
		Auxiliary (AX)	Alarm (AL)	Trip Unit Alarm (TU AL)
	On	✓	–	–
	Trip (test or accessory)	✓	✓	–
	Trip (circuit protection by trip unit)	✓	✓	✓
	Off	–	–	–

Other internal accessories are also used for circuit protections. **Shunt trip** and **undervoltage release** units are activated by controller signals or panel pushbuttons and use solenoids to make contact with the trip bar and cause the circuit breaker to trip. Shunt trip is activated when a signal is sent, and undervoltage release is activated when a steady signal is removed (common for many safety applications). Shunt trip and undervoltage release units are both additionally applicable as circuit protections for undervoltage and overvoltage conditions and are available for voltages ranging from 12V DC to 525V AC. **Shunt Close** units are used with frame size NS and R breakers to remotely close the circuit breaker (to the ON position). **Trip Reset** is used with frame size NS and R breakers to remotely recover from a TRIP state.

Spring charging motors use an electric motor to recharge the integral springs of the frame size NS and R breakers. A common application of accessories for integral spring operation breakers (frame size NS and R devices) uses a combination of accessories to initiate circuit breaker status change and recharge the springs with an electric motor. Several of these components are required for full function: spring charging motor, shunt close, and shunt trip. For systems where a manual reset is not desired when the circuit breaker is tripped for any reason, the trip reset is recommended. Optional accessories for this application include the spring charged contact, ready-to-close contact, trip unit alarm contact, and mechanical operations counter. This system is often referred to as **remote operation** and can be driven either by PLC signals or local push button control.

Mechanical counters are available for frame size NS and R. Mechanical counters record of the number of operation cycles of the circuit breaker when it is installed with the spring charging motor.

Maintenance mode temporarily lowers the instantaneous setting on the circuit breaker's trip curve. This limits the arc flash availability allowing testing or maintenance on the system while the MCCB is energized or set to 'ON'.

You can order Bulletin 140G devices with factory-installed internal accessories. See Internal Accessories on page 99 for more information.

External Accessories

External accessories serve many purposes, including additional circuit protections, a variety of mechanical assemblies to operate the circuit breaker, insulation and guarding components, locking components, mounting adapters, and troubleshooting accessories.

Assembled circuit breakers and breaking frames are supplied by default with the following external and terminal accessories: end caps, back insulators, phase barriers, mounting hardware, and both side and front covers. Replacement Parts on page 115 lists the catalog numbers to order replacements for these components and also lists common replacement parts for flexible cable operators and frame size R factory-installed configurations.

Additional Circuit Protections

Externally installed circuit protections include earth leakage protectors, external neutral sensors, rating plugs, and maintenance mode connections.

- **Earth leakage protectors** attach to the bottom of a circuit breaker and analyze the total current flow across all three lines to check for power leaking out from a fault. They also allow the circuit breaker to protect equipment at a 30 mA level. Earth leakage protectors feature terminals at the bottom to accommodate the full variety of Bulletin 140G terminal accessories.
- **External neutral sensors** allow a 3-pole circuit breaker to analyze a 4th neutral line for the return current flow. See Neutral Pole and Protection on page 15 for more information.
- **Rating Plugs** change the rated current for a device. See Rated Current (I_n) on page 14 for more information on rated current.
- **Maintenance Mode Connectors** enable signaling to operate maintenance mode on enabled devices.

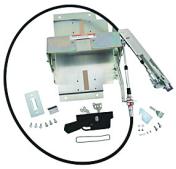
Device Operation Options

Operator assemblies and accessories are commonly used to let personnel actuate the circuit breaker between states without opening an enclosure and being exposed to potentially dangerous power levels. Table 4 compares the available options for device operation.

Table 4 - MCCB Operation Comparison

Operator Type	Photo	Accessory	Accessory Purpose
No Operator		None	• Use toggle on frame size G...N to manually operate device • Can be mounted through enclosure door when installed with escutcheon plate
		None	• Use lever and buttons on frame size NS and R to manually operate device • Can be mounted through enclosure door when installed with escutcheon plate
Rotary Operators		Variable-depth rotary operators (RVM/NVM/RMX)	• Control the device with manual rotary handle that is attached to outside of enclosure door • Handle is connected to device by shaft modified to enclosure depth and rotary mechanism • NFPA options available
		Direct rotary operators (RMB/RMY)	• Control the device with manual rotary handle connected to face of device • Can be mounted through enclosure door when installed with included rotary escutcheon plate
		Through-the-door rotary handle (RTM)	• Control the device with manual rotary handle connected to face of device • Controls the MCCB with the panel door open or closed • No secondary handle required for NFPA 79 compliance

Table 4 - MCCB Operation Comparison (Continued)

Operator Type	Photo	Accessory	Accessory Purpose
Flange-mounted Handle Operators		Flexible cable operator (FCX)	• Control the device with manual vertical flange handle while the device is installed almost anywhere in enclosure
		Bulletin 140G and Bulletin 140G2	• Control the device with manual vertical flange handle while the device is installed directly behind flange of enclosure
Remote Control Operators		Stored energy motor operator (EOP)	• Control the device with Remote Operation signals from push button or PLC in one device on the face of the circuit breaker • Control toggle device with manual lever and buttons • Can be mounted through enclosure door when installed with included motor escutcheon plate
		Spring charging motor (SCM) for Remote operation system	• Enable Remote Operation System on frame size NS and R • See Table 173 on page 101 for details; system requires multiple internal components

Rotary operators change vertical toggle motion into rotary turning of a handle and are available in direct-mounting and variable-depth varieties to accommodate enclosure styles and needs. Some rotary operators are offered with NFPA 79-compliant handles, which have a secondary handle for deliberate operation of the circuit breaker when the enclosure is open.

Flexible cable operators use a flexible cable to transfer the toggle motion to a vertical-travel handle that is mounted outside the enclosure (often on an enclosure flange), allowing you to install the connected circuit breaker anywhere on the panel. All handles are available in a selection of materials and finishes that are designed to withstand a variety of industrial environmental conditions.

Stored energy motor operators are a single device that performs three functions: provides a closing spring similar to frame size NS and R, which uses a lever to charge a spring mechanism and buttons to drive the toggle; provides signal input to electronically control the opening and closing of the circuit breaker, which uses an electric motor to charge the spring mechanism; and provides a padlock to lock the whole device and circuit breaker into the OFF position.

Early-Make and **Early-Break** signal contacts are available for use with direct rotary handles and variable-depth rotary operators to prevent nuisance undervoltage trips while operating the handles or transient voltage damage.

Insulation and Guarding Components

A variety of covers and seals are offered for connection insulation and circuit breaker guarding. We offer **covers**, including front covers, side covers, and standard, high, and low terminal covers, that protect personnel and control wiring from power connections. **Phase barriers** and **terminal covers** also insulate line connections and prevent dangerous arcing conditions between poles of the circuit breaker. **IP30 escutcheon frames** and **IP54 protective covers** are available to protect through-the-door installations. **Sealable screws** are available to prevent tampering with terminal covers.

Locking Components

Locking accessories include **padlock adapters** that allow a circuit breaker to be mechanically fixed in an OFF position, and **door interlocks**, which allow a circuit breaker to trip when an enclosure is opened to protect personnel from an enclosure's power supply.

Mounting Adapters

The Bulletin 140G product line is panel mounted (as opposed to withdrawable styles) and can be installed to a panel using either the four mounting holes in the assembled circuit breaker or mounting adapters. Available mounting adapters include:

- **EZ-plates**, which allow a circuit breaker to be mounted with two 1/4 inch-20 bolts.
  See Mounting Conditions on page 25 for more information.
- **DIN rail adapters**, which allow a circuit breaker to be easily attached to two DIN rail sizes.
  See Mounting Conditions on page 25 for more information.
- **Busbar mounting adapters**, Bulletin 141A, which allow terminal connection and panel mounting in one accessory.
  See Table 211 on page 114 for more information.

Troubleshooting Accessories

You can use special powered accessories to aid in troubleshooting. An **external battery unit** and a **trip test unit** allow electronic trip units to be powered when not in use under load, as well as evaluated for trip conditions, error indicators, and proper accessories installation (for those that would be affected by a circuit breaker trip).

Phase Barriers and Terminal Covers

Phase barriers and terminal covers let you increase the insulation characteristics between the phases at the connections. They are mounted from the front, even with the circuit breaker already installed. Medium and high phase barriers and terminal covers provide additional electrical clearance between each phase when special connections extend past the circuit breaker housing, like extended and spread terminals or ring lug collars on cables.

Terminal Connection Accessories

Terminal connection accessories convert the standard line- and load-side terminals of the circuit breaker to accommodate a variety of cable terminations and busbars. Each circuit breaker comes with an **end cap kit** that includes a bolt and a nut that fixes in place to the circuit breaker's housing. The Bulletin 140G product line includes, as standard, the capability to terminate wiring using customer furnished crimp-on ring lug (ring tongue) or forked lug termination. Using Allen-Bradley terminal lugs in applications that follow UL guidelines for panel short-circuit current rating (SCCR) permits the termination to be rated at the SCCR level of the circuit breaker. This rating may allow a higher SCCR than may be available using a separate power distribution block.

Terminal lugs are available in copper (Cu) and copper-aluminum (CuAl) construction and include saddle-clamp-style lugs, machined block lugs, and multi-terminal lugs. These accessories bolt on to the front terminals on the circuit breaker (requires the end caps) and allow cables up to 750 MCM (thousands of circular mils) to be attached to the circuit breaker. **Multi-terminal lugs** allow up to six wires to be attached to each pole of the circuit breaker.

Most terminal lugs include control tap screws for external voltage or current sensing purposes. For frame size N, NS, and R, **vertical** and **rear terminals** are available, which are designed for busbar systems. For frame size G, H, J, and K, **Bulletin 141A busbar mounting adapters** allow mounting and electrical connection of the circuit breaker to a busbar system.

For conductor sizing information, see Conductor Selection on page 24. Each breaking frame's installation instructions contain details on allowable connections to front terminals; details on terminal lug connections are contained in each terminal accessory's installation instructions. See Additional Resources on page 325 for more information.

Factory-Installed Options

Many components are available as factory-installed options. These options offer a faster installation time and streamlined accessory selection for certain common functions. These options include:

- Assembly of breaking frame and trip unit (for products that are available separately)
- Remote operation via combined use of spring charging motor, shunt trip, shunt close, trip reset, and mechanical counter
- Shunt trip and undervoltage release for controls or protections
- Variety of contact kits, including auxiliary, alarm, and trip unit alarm contacts
- Terminal connections with saddle-clamp style lugs or busbar adapter
- Maintenance mode (MM) module

Properties of a Circuit Breaker

In addition to the five main physical components of an assembled Bulletin 140G MCCB, there are several non-physical properties they share. Each property is a critical function of the circuit breaker, which must be identified and specified to select the right circuit breaker for the application.

Definitions

Term	Description
Threshold Current	The root mean squared (rms) symmetrical prospective at the highest interrupting capacity of the current limiting range, where: • the peak current let-through in each phase is less than the peak of that symmetrical prospective current, and • the I^2t in each phase is less than the I^2t of a 1/2 cycle wave of the symmetrical current
Interrupting Rating	The highest current at rated voltage that a device is intended to interrupt under standard test conditions.

Current Definitions

Throughout this publication, we refer to several types of current. Table 5 explains these types of current and their abbreviations.

Table 5 - Current Definitions

Abbreviation	Current Type	Description
I_n	Rated current	The value of current that characterizes the protection release that is installed on board the circuit breaker and determines, based on the settings available for the release, the protective characteristic of the circuit breaker itself.
I_c	Breaking capacity	The value of current that a circuit breaker is able to interrupt without being destroyed or causing an electric arc with unacceptable duration.
I_{cu}	Ultimate breaking capacity	The maximum short-circuit current that a circuit breaker can break without damage.
I_{cs}	Service breaking capacity	The maximum short-circuit current that a circuit breaker can break three times and still resume normal service. Expressed as a percentage ratio of I_{cu}.
I_{cm}	Rated short-circuit making capacity	The highest instantaneous value of current that the circuit breaker can establish at rated voltage in specified conditions.
I_{cw}	Rated short-time withstand current	The value of the current the equipment can withstand for a specified time without damage occurring
I_p	Peak current	The maximum (or peak) instantaneous current that is allowed to pass during a specific short-circuit event. The value is determined from either a table as shown above or evaluated from an SCCR table based upon the available short-circuit current at a specific voltage.
I_{rms}	Short-circuit current rating	The maximum root means square (rms) prospective (available) current that a device can interrupt. The rating is expressed in Amperes and volts.
I_s	Selectivity limit current	The current co-ordinate of the intersection between the total time-current characteristic of the protective device on the load side and the tripping time-current characteristic of the other protective device. See publication 140G-TD050 for more information about circuit breaker selectivity.
I^2t	Amperes squared seconds	An expression related to the energy that is let through for a specific short circuit event. With respect to circuit breakers, the I^2t [A^2s] is expressed for the current flow between the initiation of the fault current and the clearing of the circuit.

Interrupting Ratings (Breaking Capacity; I_c or I_{cu})

The interrupting rating, or breaking capacity, of a circuit breaker refers to the maximum amount of fault current that a specific circuit breaker can safely interrupt without damage to itself. Fault current is the maximum amount of current a system can send downstream to the circuit breaker during a failure like a short circuit or ground fault, typically measured in kiloamperes (kA). The maximum amount of fault current that is supplied by a system can be calculated at any point in that system. The interrupting rating of the circuit breaker must be greater than or equal to the amount of fault current that can be delivered at the point in the system in which the circuit breaker is applied. Circuit breakers and other circuit interrupting devices can be arranged in an electrical system to effectively step down the fault current to appropriately limit the danger to downstream devices.

Interrupting Rating Nameplate Information

A circuit breaker's interrupting rating always decreases as the voltage increases. For example, a Bulletin 140G frame size J circuit breaker with a high interrupting capacity of 100 kA at 480V can only provide 20 kA capacity at 690V. Interrupting rating is one of the most critical factors in the circuit breaker selection process. The figure at the right shows a closeup of this rating information on a Bulletin 140G circuit breaker. Ratings for UL (which uses the term interrupting rating) are shown on the front nameplate, while ratings for IEC (which uses the term breaking capacity) are shown on a label on the left side of the circuit breaker.

Rated Current (I_n)

Each circuit breaker is tuned to a rated current, which is the expected operating current of the device and the reference point that circuit protections are based on.

The operating current is determined by the needs of the application, and each circuit breaker can be operated at as low as 20% of the rated current of the device. Each protection for circuit current is defined by a threshold in comparison to the rated current, I_n. The protection thresholds have settings as a multiple of the rated current. See Circuit Protections and Device Self-Protections on page 16 for more information.

The breaking frame defines the range the circuit breaker can operate on, and the trip unit defines the specific rated current the circuit breaker will be tuned to within that range. In larger frame sizes — including K, L, N, NS, and R — the rating is instead determined by a rating plug, which is a component that fits into the front of the trip unit and lowers the trip unit's rating to the desired operating current. In these trip units, the rating plug that comes with the unit can be replaced with a lower-value rating plug. To achieve a higher value, you must select a different trip unit with a higher base rated current. You cannot change rating plugs in MCPs.

The rated current of each trip unit is identified by the labeling tab at the top of the trip unit (marked with In = ###A), shown in the figure at right, which shows through a small window on the assembled circuit breaker just below the toggle. On frame size M, N, NS, and R, the rating is shown in text on the front center.


Trip Unit Rated Current Information

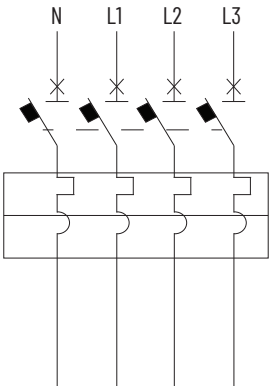
Neutral Pole and Protection

Circuit breakers are available in 3-pole and 4-pole configurations. The 4-pole units come with an integral neutral pole, and many of the 3-pole devices can be applied to a 4-pole system by using an external neutral sensor accessory. Using a 4-pole device has the benefit of the neutral pole isolated within the MCCB housing and utilizes a switching contact with arc chambers to interrupt current flow on the line. Proper selection of a neutral pole solution is dependent on the power supply and electrical system design.

Neutral line protection is the addition of the neutral current sensor data to the other protections enabled on the device. Neutral settings are available as a percentage of the rated current and are used as a threshold modifier for the protections. For example, if a protection is enabled at 1 times (100%) the rated current and neutral is at 50%, then the trip unit will monitor the neutral current sensor for that protection on that pole at 0.5 times (50%) the rated current. This is simultaneously true for all enabled protections, and their protection timings are the same as for the other poles. For 4 pole thermal-magnetic trip units, neutral is offered at 100%, and for electronic trip units neutral can be adjusted from 50...200%. Neutral protection can also be turned off, where the neutral pole is not monitored but will be interrupted as a 4th pole when the circuit breaker is opened for any reason.

For all 4-pole 140G MCCB and MCSs, the neutral is the left outside pole.

Figure 6 - Neutral Pole Configuration



Opening Time

The opening time of the circuit breaker is the time required to fully interrupt the current flow on all poles. This is also referred to as clearing time or break time. The protection threshold and time determine when a trip is triggered by the trip unit. Once the trip is triggered, the opening time includes the activation of the trip bar, the motion of the switching contacts from closed to open, the redirection of the electricity through the arc chutes and splitters, and the extinguishing of the arc. The opening time for all Bulletin 140G devices is 8.3 ms, or half of one cycle at 60 Hz.

During the opening time, the circuit breaker allows energy through the poles while the arc is still active. This energy is measured and documented in two forms: **peak let-through current** and **total let-through energy**. This energy can damage highly sensitive downstream equipment and should be considered when you select a device. Trip and Let-through Curves on page 165 contains information for each frame device's let-through data.

80% and 100% Continuous Rated Circuit Breakers

All Bulletin 140G and Bulletin 140G2 MCCBs are rated for 80% continuous load unless they are marked for 100% loads. The NEC requires that only 100% rated continuous loads be marked special with the load designation. In all general applications, the unmarked circuit breaker is to be applied at no more than 80% continuous load of its rated current (I_n). Typically 100% rated current MCCBs are devices with electronic trip units. Visit rok.auto for specific devices.

At higher rated currents, separate trip units are required to achieve either 80% or 100% continuous rating. For frame size N, NS, and R, the trip unit and frame size must both be selected according to the percent rating required for the end application.

Ingress Protection

The Ingress Protection rating (IP rating) is an international standard (EN/IEC 60529) that is used to rate the degree of protection or sealing effectiveness in electrical enclosures against intrusion of objects, water, dust, or accidental contact.

Table 6 indicates the degrees of protection against intrusion and accidental contact according to IEC 60529.

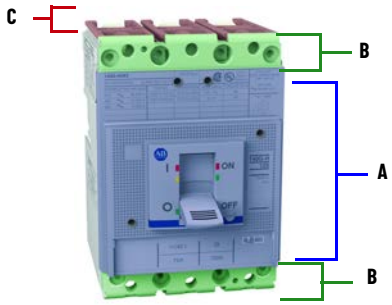


Table 6 - Ingress Protection Rating

Location	Terminal Covers		
	None	High (1)	Low
A	–	–	
B	IP20 (2)	IP40	IP40
C	–	IP40 (3)	IP30 (3)

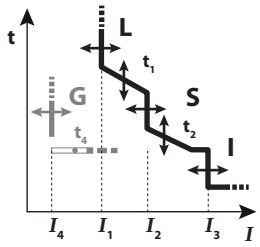
(1) High terminal covers have a height of 60 mm (2.36 in.) and are designated with a suffix "H" in the catalog number (140G-G-TC3**H**).
(2) Frame size G...M only.
(3) After correct installation according to IEC60529.

Circuit Protections and Device Self-Protections

Each circuit breaker's device type or trip unit defines the protections for the circuit. All four device types also contain device self-protections, which are not considered circuit protections. Each of these protections perform together to define each circuit breaker's **trip curve**, which is a time-current chart of the adjustable settings and cumulative effect of the protections on the response of the circuit breaker to excess current conditions.

Figure 7 shows a generic version of a trip curve. Each threshold ($I_{\#}$) and time ($t_{\#}$) adjustment on the protections lets you tune the curve to respond to or ignore specific conditions in the circuit, depending on the application. Each current protection threshold is expressed as a multiple of the nominal current, I_n, unless otherwise noted. The circuit breaker has no response to the left of the curve and when the time and current level of an event aligns with the tuned curve, a device responds within the published tolerance.

Figure 7 - Generic Trip Curve with Long, Short, Instantaneous (LSIG) Protections Parameters



Each trip unit monitors all poles and all protections simultaneously, including a neutral pole if using a 4-pole circuit breaker or external neutral sensor. Table 7 on page 17 compares device types and protections.

Table 7 - Comparison of Protection Types for MCCBs

Protection Type		Thermal-magnetic	Electronic DIP	Electronic EnergySense	Electronic PowerSense	Molded Case Switch	Molded Case Switch Disconnector
Current-based Circuit Protections	Long	✓	✓	✓	✓	–	–
	Short	–	✓	✓	✓	–	–
	Second Short	–	✓	✓	✓	–	–
	Instantaneous	✓	✓	✓	✓	–	–
	Ground	–	Optional	Optional	Optional	–	–
	Neutral	Optional	Optional	Optional	Optional	–	–
	Current Imbalance	–	–	✓	✓	–	–
Alarms	Harmonic Distortion	–	–	✓	✓	–	–
	Current Thresholds	–	–	✓	✓	–	–
Voltage Protection	Phase Sequence	–	–	–	–	–	–
	Undervoltage	–	–	✓	✓	–	–
	Overvoltage	–	–	✓	✓	–	–
	Second Undervoltage	–	–	✓	✓	–	–
	Second Overvoltage	–	–	✓	✓	–	–
	Voltage Imbalance	–	–	✓	✓	–	–
	Residual Overvoltage	–	–	–	–	–	–
Frequency Protection	Underfrequency	–	–	✓	✓	–	–
	Overfrequency	–	–	✓	✓	–	–
	Second Underfrequency	–	–	✓	✓	–	–
	Second Overfrequency	–	–	✓	✓	–	–
Power Protection	Reverse Active Power	–	–	–	✓	–	–
	Power Factor	–	–	–	✓	–	–
Device Self-protection	Instantaneous High Intensity Short-circuit Protection	–	✓	✓	✓	–	–
	Temperature	–	–	✓	✓	–	–
	Hardware Trip	–	–	✓	✓	–	–
	Magnetic Override	✓	✓	✓	✓	✓	–
Maintenance Mode (1)	Second Instantaneous	–	–	✓	✓	–	–

(1) This protection type requires an additional accessory.

Table 8 - Comparison of Protection Types for MCPs and MPCBs

Protection Type		MCP		MPCB	
		Thermal-magnetic	Electronic DIP	Electronic DIP	Electronic MotorSense
Current-based Circuit Protections	Long	–	–	✓	✓
	Locked Rotor Stall	–	–	–	✓
	Locked Rotor Jam	–	–	–	✓
	Short	–	–	–	✓
	Second Short	–	–	–	✓
	Instantaneous	✓	✓	✓	✓
	Ground	–	–	–	Optional
	Undercurrent	–	–	–	✓
	Current Imbalance	–	–	✓	✓
Alarms	Harmonic Distortion	–	–	–	✓
	Current Thresholds	–	–	–	✓

Table 8 - Comparison of Protection Types for MCPs and MPCBs (Continued)

Protection Type		MCP		MPCB	
		Thermal-magnetic	Electronic DIP	Electronic DIP	Electronic MotorSense
Voltage Protection	Phase Sequence	–	–	–	✓
	Undervoltage	–	–	–	✓
	Overvoltage	–	–	–	✓
	Second Undervoltage	–	–	–	✓
	Second Overvoltage	–	–	–	✓
	Voltage Imbalance	–	–	–	✓
Frequency Protection	Underfrequency	–	–	–	✓
	Overfrequency	–	–	–	✓
	Second Underfrequency	–	–	–	✓
	Second Overfrequency	–	–	–	✓
Phase Loss		–	–	–	✓
Power Protection	Reverse Active Power	–	–	–	✓
	Power Factor	–	–	–	✓
Device Self-protection	Instantaneous High Intensity Short-circuit Protection	–	–	–	✓
	Temperature	–	–	–	✓
	Hardware Trip	–	–	–	✓
	Magnetic Override	✓	✓	✓	✓
Maintenance Mode (1)	Second Instantaneous	–	–	–	✓

(1) This protection type requires an additional accessory.

Each protection's segment of the curve features a slope that defines the protection's response, t = k, where the response is a constant trip time and is shown as a right angle on the chart, or t = k/I^2, where the response follows this formula, resulting in a constant let-through energy and creates an angled slope on the chart. Each trip curve for thermal-magnetic devices displays differences in hot trip, where the device has recently experienced a thermal overload condition and is physically still warm from the event, and cold trip, when it has not experienced this condition. Hot trip conditions cause the circuit breaker to trip faster, and electronic devices feature a calculation (referred to as **thermal memory**) to simulate this response and protect a circuit from repeat thermal overload conditions. When a trip is initiated and the circuit breaker is interrupting the circuit, a certain amount of energy is allowed through. These details are documented in peak let-through current and total let-through energy curves. Trip and Let-through Curves on page 165 contains additional details on reading, interpretation, and tolerances for trip curves and let-through curves.

Table 9 below compares circuit protections for current; Table 10 on page 19 lists device self protections.

Table 9 - Current-based Circuit Protection Detail

Protection Name	Function	Parameters and Limits
Long (Thermal) (1) (L)	Long overcurrent condition (current experienced is slightly higher than the nominal current of the system) where thermal rise due to resistance of the system observed in the conductors and connections is undesirable and may cause damage to the insulation and some current-sensitive circuit components. Generally active 125…1000% of nominal current during an overcurrent event.	• Threshold: I_1; adjust 0.4…1.0 x I_n • Time: t_1; adjust 3…144 s • Shape: t = k/I^2; 3 additional IEC profiles for N/NS/R LCD trip unit If S Protection is enabled, I_1 threshold must be less than I_2
Short (S)	Short short-circuit condition (current experienced is moderately higher than the nominal current of the system) where undesirable low short-circuit current faults may occur, but motor inrush currents may need to be allowed through the circuit breaker to avoid nuisance trips. Generally active 125… 10,000% of nominal current during an overcurrent event. Short protection can have a sloped line for t = k/I^2 behavior and a flat line for t = k behavior.	• Threshold: I_2; Off (2), adjust 0.6…10 x I_n • Time: t_2; adjust 0.05…0.8 s • Shape: t = k/I^2; t = k
Instant (Magnetic) (I)	Instantaneous short-circuit condition (current experienced is significantly higher than the nominal current of the system) where high short-circuit current faults can cause damage to downstream equipment. Generally active 500…15,000% of nominal current during an overcurrent event.	• Threshold: I_3; Off (2), adjust 1…15 x I_n • Time: none • Shape: t = k

Table 9 - Current-based Circuit Protection Detail (Continued)

Protection Name	Function	Parameters and Limits
Ground (G)	Ground current condition where ground/earth fault current is detected across the sum of all phases and can cause equipment damage. Generally active 20...100% of nominal current during an overcurrent event.	• Threshold: I_4; Off [2], adjust 0.2...1.0 x I_n • Time: t_4; adjust 0.1...0.8 s • Shape: t = k/I^2; t = k • Limits: – For frame size H and J: disabled at 2 x I_n in favor of I Protection response time – For frame size K, M, N, NS, and R: disabled at 4/6/8x I_n in favor of I Protection response time
Neutral (N)	Neutral protection allows the addition of a 4th pole to the analysis of the L, S, and I protections at the specified percentage of the nominal current. See Neutral Pole and Protection on page 15.	Options: • Thermal-magnetic: Off, 100% I_n • Electronic: Off, adjust 50...200% I_n • Time, Shape, Limits: see other enabled protections and settings
Imbalance (U)	Imbalance of Current condition on the 3 poles of the device, where unbalanced loads or uneven power draw can damage downstream equipment or indicate a fault. Protection fixed at 50% of long protection threshold.	• Options: Off, 50% of I_1 • Time: 2 s • Shape: t = k

(1) MPCBs follow behavior specific to motor class rating (##E) which corresponds to a predetermined trip time. (3E= 3 s, 5E= 5 s, 10E= 10 s, 20E = 20 s, 30E = 30s at 7.2 x I_n)
(2) Off option for protection available on electronic trip units only.

Table 10 - Device Self-protection Detail

Protection Name	Function	Parameters and Limits
Magnetic Override Hardware Trip	High fault current condition where current experienced may cause damage to downstream equipment. Override is below interrupting capacity of breaking frame (maximum value the circuit breaker can withstand) to protect the circuit breaker from damage over time. Ranges from 10...200 kA.	Threshold and time: • MCCB/MCP/MPCB: See override region window in device trip curve • MCS: See magnetic override values that are listed in product selection tables

For information about maintenance mode, see Maintenance Mode on page 26.

Circuit Breaker Applications

Circuit breaker selection and terminology is very specific to the regional governing standards of the end application. Some applications may require derating of the circuit breaker for proper function.

Standards Compliance and Certifications

To provide customers with third-party assurance that Allen-Bradley MCCBs meet industry standards, Bulletin 140G/MG devices comply with various global standards. The Bulletin 140G MCCB and 140MG MCP and MPCBs comply with UL, CSA, and IEC standards and are UL Listed, CSA Certified, and CCC Certified.

MCCBs comply with certification requirements from other agencies. The certification of these products is an ongoing process and additional ratings and certifications are continually being pursued. For specific information about declarations of conformity, certificates, and other certification details, see our product certifications website, rok.auto/certifications, or contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Reverse-fed Circuit Breaker

Due to physical equipment arrangements in panelboards, switchboards, and industrial control panels, it is often desirable to reverse feed a MCCB. Traditionally, the line that feeds the circuit is connected to the top and the load that draws the current is connected to the bottom. Reverse feeding is achieved by trading the line and load connections on the circuit breaker. For this type of application, the circuit breaker must be tested and listed accordingly. All Bulletin 140G circuit breakers can be reverse fed. When reverse feeding these devices, you must properly identify the line and load side terminals.

Figure 8 - Reverse Feed Configuration

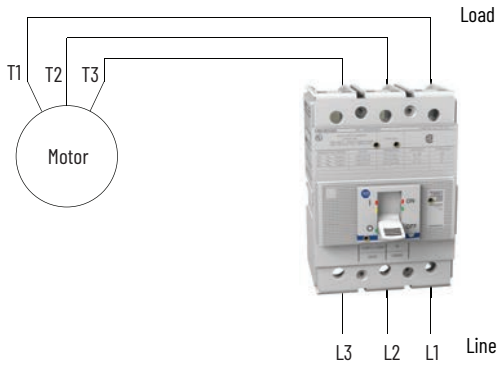


Table 11 - Maximum Voltage for Reverse-fed Circuit Breakers

Frame Size	Maximum Voltage [V AC] (1)	
	UL/CSA	IEC
G	600Y/347	690
H	480	480
I	600Y/347	690
J	600	600
K	600	690
L	600	690
N, NS	600	690
R	600	690

(1) NEC Article 404.7 states "Where these switch or circuit breaker handles are operated vertically rather than rotationally or horizontally, the up position of the handle shall be the (on) position." See applicable codes and standards for specific application requirements.

Applying MCCBs to North American Guidelines

MCCBs are most commonly used as either feeder breakers or as a single circuit breaker where disconnecting, short-circuit, and thermal protection functionality is required. When selecting an MCCB, you must consider the following items:

- application voltage
- available short-circuit current
- amperage of the load or wiring to be protected

IMPORTANT You must consider local code requirements. These requirements can ultimately effect the type and functionality of the MCCB that you select.

MCCBs

- Magnetic and thermal trip currents can be fixed or adjustable
- Must be sized per NEC/CEC rules
- Can be used for motor circuits, but 140MG (MCP) is first choice
- Motor current (thermal rating):
  - ≤ 250% motor full load amperes (FLA)
  - ≤ 300% for motors ≤ 100 A if the circuit trips on start
  - ≤ 400% for motors ≥ 100 A if the circuit breaker trips on start
- Magnetic trip current is generally set at 1000% (10x) of circuit breaker thermal ratings
- Can be UL Listed as part of UL 508/UL 60947-4-1
- Can also be used for motor control circuit transformers; Bulletin 1489 MCBs are a more appropriate choice

MPCBs

MPCBs are relatively new to the North American market. These devices are considered MPCBs outside of North America. Within North America, they are defined as manual Type E self-protecting combination motor controllers.

- Sized at 100% of the motor full-load current (FLA)
- Motor current setting is adjustable (thermal rating)
- IEC and UL/CSA calibration requirements require overload to trip at 120% and 125% FLA
- Motor is able to run into the Service Factor when set at 100% of the motor current
- Magnetic Trip Current setting is adjustable (magnetic rating)
- Adjustable at 1300% (13x) highest motor current setting on circuit breaker
- Higher Magnetic Trip Current settings are available if the circuit breaker trips on start (140M-C2T-...)
- Example of an MPCB using 140M-C2E-C10:
  - Motor Current is adjustable from 6.3...10 A
  - Set at 100% FLA for proper motor protection
  - Magnetic Trip Current is fixed at 130 A; this is where circuit breaker begins to trip in a “short-circuit” condition
- NEC/CEC (Canadian Electrical Code) do not specifically recognize this classification of circuit breaker and, therefore, do not describe how to size them (for example,100% FLA sizing)

MCPs

MCPs are the most popular choice for motor circuits in the North American market. they have been used in combination starters and Motor Control Center unit inserts (buckets) for many years

- Motor current setting (thermal) is not specified by NEC/CEC
- MCPs are magnetic only
- Thermal capability should be ≥ motor FLA and ≤ overload relay setting
- Motor overload protection must be provided separately
- MCPs are UL Recognized
- Must be tested and listed with specific contactors and overloads
- UL Listing is obtained as part of UL 508/UL 60947-4-1
- Magnetic trip current is adjustable
- Adjustability is required by UL 489 standard
- Must be sized per NEC/CEC rules
  - ≤ 800% motor FLA for standard efficiency motors
  - ≤ 1300% motor FLA allowed if motor does not start
  - ≤ 1100% motor FLA for high efficiency motors
  - ≤ 1700% motor FLA allowed if motor does not start
- Provide choice in overload protection

Circuit Breaker Selection when Application Follows United States Guidelines

Selecting a circuit breaker for use in an industrial control panel requires focus on the MCCB for use as a feeder and as a branch circuit protective device.

MCCB Selection for Use as the Main Disconnect or Feeder

A typical industrial control panel is a feeder circuit as defined by the NEC, where a feeder is composed of the wires between the service entrance of the panel or line side of the MCCB and the line side of the branch protective devices.

Motor control is involved in many industrial control applications. The application must then follow Article 430 of the NEC, which states that circuit breakers for feeders having mixed loads should have ratings suitable for carrying the heating loads, plus the capacity required by the motor loads. Examples of mixed loads include heating (lighting and heat appliances) and motors.

For motor loads, NEC Article 430 states that circuit breakers for motor feeders shall have a rating not greater than the sum of the highest circuit breaker rating of any of its branches and the full-load currents of all other motors that are served by the feeder.

Feeder Breaker Thermal Rating Selection Example

This assumes that the circuit breaker selected has a voltage rating equal or greater than the application and that the interrupting rating is equal or greater to the available short-circuit current. The panel contains a main feeder breaker supply with three motor branch circuits.

In our application, the feeder is supplying a 3-motor system at a voltage of 480V.

Motor	Hp	Current Value from Table 430.250 of the NEC
1	10	14 A
2	5	7.6 A
3	5	7.6 A

Calculation of panel wiring includes:

For Single Motors	Per [430.22], size motor branch circuit conductors no smaller than 125% of the motor FLC rating listed in Table 430.147 or 430.148 (Figure 430-4). Size the branch circuit short-circuit and ground-fault protection device per 240.6(A) and 430.52(C)(1) Ex. 1.
For Multiple Motors	Per [430.24], size multiple motor conductors as follows: First, multiply the full-load current rating of the highest-load motor by 1.25. Then, add up the full-load current ratings of all other motors in the group. Add these two numbers. That is your motor load for calculating ampacity. Add any other loads on that conductor, to calculate total conductor ampacity.

The current calculation is:

Motor 1 (14 A x 1.25):	17.5 A
Motor 2:	7.6 A
Motor 3:	7.6 A
Total Load:	**32.7 A**

Because the total load equates to 32.7 A and a commercial circuit breaker is not available for 32.7 A, the NEC lets you use the next largest standard-sized circuit breaker. Therefore, you could select a 35 A MCCB to protect this control panel.

Each motor branch also needs protection.

MCCB Selection for Use as the Branch Short-Circuit Device

You can also use an MCCB as a branch protective device for a motor load. While we show the calculation for applying an MCCB in this manner, the MCP and MPCB are better suited for this application. After the calculation for sizing is completed, it should be apparent that, even though this is technically correct, in some cases, the motor protection and wire protection can be less than ideal.

Per NEC Article 430.52(B), the motor branch circuit short-circuit and ground fault device shall be capable of carrying the starting current of the motor. Further, 430.52(C) indicates that the protective device must have a rating or setting not exceeding the value that is calculated according to the values given in Table 430.52. In the case of an inverse time MCCB, such as the 140G, the calculation for the maximum setting or rating of the protective device is 250% of the motor being protected. Figure 2 on page 4 shows an example of this type of configuration.

Thermal-magnetic Circuit Breaker Branch Selection Example

A MCCB is being used to protect a branch motor circuit with a 10 Hp 460V motor. Using Table 430.250 of the NEC, a value of FLC of 14 A is supplied for this motor.

Calculating the maximum branch circuit protective device rating or setting is: 14 A x 250% = 35 A

Therefore, the maximum size MCCB that could be used in this example is 35 A. This is the maximum rating and therefore smaller devices could be selected for this application. A point to consider is that generally MCCBs have a magnetic trip of approximately 10x the rating of the MCCB. When starting, motors usually exhibit an inrush characteristic of 6...10 times the full load rating of the motor, depending on the type of motor being used. In this case, the circuit breaker trip point is approximately 350 A and the motor starting current of locked rotor current is approximately 140 A if a 10x ratio of running to starting current is assumed. You could select a smaller circuit breaker without concern for nuisance tripping. In that case, there may be more concern about the thermal protection provided by the circuit breaker being based on a 35 A circuit breaker with only a 14 A load. The motor and the wiring may not be adequately protected if larger wire isn't selected or if a motor overload relay is not used.

MCCB Application and Sizing

Bulletin 140G and Bulletin 140G2 MCCBs are traditionally used to protect branch and feeder circuits in industrial control applications. In the role of a feeder circuit breaker, the MCCB provides isolation and short-circuit protection for the panel and thermal protection for the feeder wires. As a branch circuit breaker, an MCCB provides the same protection for the branch wires in the panel. For illustrative purposes, the feeder is shown at the wiring from the load side of the main or feeder MCCB to the line connection of the branch short-circuit protective devices to which the feeder is supplying power.

The following example is a generic interpretation of the US National Electrical Code (NEC), and should be used only as a reference for applying the MCCB. Final authority regarding the sizing and components used is governed by local and/or national electrical standards and the Jurisdiction Having Authority. Consult these standards before installing or designing any electrical system using short-circuit protective devices (SCPDs).

While this discussion is not intended to be a comprehensive guidebook to designing industrial control panels, we present several categories of typical applications where you can apply a feeder SCPD device. A panel in which the:

- circuit breaker feeds only motor loads.
- circuit breaker feeds fixed loads.
- feeder breaker protects mixed loads.

In all cases, the examples that are given here are for reference and you should reference your local electrical code requirements, as they may vary from location to location. You should verify that the circuit breaker selection and installation complies with local codes, regulations, and/or standards.

A feeder is composed of the conductors of a wiring system between the service equipment or the generator switchboard of an isolated plant and the branch circuit overcurrent device.

NEC Article 220 states:	Where a feeder supplies continuous loads or any combination of continuous and noncontinuous loads, the rating of the overcurrent device shall not be less than the noncontinuous load plus 125% of the continuous load. Exception: Where the assembly including the overcurrent devices protecting the feeder(s) are listed for operation at 100% of their rating, neither the ampere rating of the overcurrent device nor the ampacity of the feeder conductors shall be less than the sum of the continuous load plus the noncontinuous load. Only circuit breakers listed for 100% application, and so labeled can be applied under the exception (for example Bulletin 140G frame size N and R that are specifically marked and rated 100%). Breakers without a 100% application listing and label are applied at 80% of rating.
NEC Article 430 states:	Breakers for feeders having mixed loads; such as heating (lighting and heat appliances) and motors, should have ratings suitable for carrying the heating loads plus the capacity that is required by the motor loads...breakers for motor feeders shall have a rating not greater than the sum of the highest breaker rating of any of its branches and the full load currents of all other motors served by the feeder.

A MCCB is rated in root mean square (rms) amperes at a specific ambient temperature. This rms ampere rating is the maximum continuous current it may carry in the ambient temperature for which it is calibrated. To minimize the need for derating, Allen-Bradley thermal-magnetic circuit breakers are calibrated for an ambient temperature of 40 °C (104 °F), which is the average temperature within an enclosure. If the enclosure ambient temperature is known to exceed 40 °C (104 °F), the circuit breaker used should either be specially calibrated for that temperature, or be derated accordingly.

Conductor Selection

UL Listed circuit breakers that are rated 125 A or less shall be marked as being suitable for 60 °C (140 °F), 75 °C (167 °F) only or 60/75 °C (140/167 °F) wire. All Allen-Bradley circuit breakers that are rated 125 A or less are marked for 60 °C (140 °F)/75 °C (167 °F) wire. All UL Listed circuit breakers rated over 125 A are suitable for 75 °C (167 °F) conductors. Conductors rated for higher temperatures may be used, but must not be loaded to carry more current than the 75 °C (167 °F) ampacity of that size conductor for equipment that is marked or rated 75 °C (167 °F), or the 60 °C (140 °F) ampacity of that size conductor for equipment that is marked or rated 60 °C (140 °F). However, the full 90 °C (194 °F) ampacity may be used when applying derating factors, so long as the actual load does not exceed the lower of the derated ampacity or the 75 °C (167 °F) or 60 °C (140 °F) ampacity that applies.

Short Circuit Current Ratings

Short Circuit Current Ratings (SCCR) are tested results for the limit of a circuit breaker to successfully protect downstream equipment from a short circuit condition. Individually, each device's breaking frame indicates the limit as the interrupting rating or breaking capacity. If a device is not capable of protecting on its own, such as an MCP, Rockwell Automation provides UL listed combinations of devices. Visit rok.auto/sccr to use our Global Short-circuit Rating Tool.

Selectivity and Back-up Coordination

For circuit breaker coordination in main and branch circuits, see publication 140G-TD050.

Specialty Operating Conditions

For temperature derating specifications, see Temperature Derating on page 142.

Operation Below 0 °C (32 °F)

Bulletin 140G and Bulletin 140G2 MCCBs may be applied in ambient temperatures (near the MCCB within an enclosure) below 0 °C (32 °F). Applications below 0 °C (32 °F) must consider the possibility of ice forming within or on the MCCB and interfering with the internal or external operating mechanisms. All ratings below 0 °C (32 °F) are based on the absence of freezing water or other elements.

Trip Unit Temperatures

Thermal-magnetic circuit breakers are temperature sensitive. At ambient temperatures below 40 °C (104 °F), circuit breakers may carry more current than their continuous current rating. Nuisance tripping is not a problem under these lower temperature conditions, although consideration should be given to closer protection coordination to compensate for the additional current-carrying capability. In addition, the actual mechanical operation of the circuit breaker could be affected if the ambient temperature is significantly below the 40 °C (104 °F) standard.

Electronic trip units are insensitive to ambient temperatures within a certain temperature range. The temperature range for most electronic trip units is -25 °C...+70 °C (-13 °F...+158 °F). Electronic trip units are not recommended for application temperatures below this range.

Breaking Frame Temperatures

All Allen-Bradley standard circuit breakers are calibrated to a 40 °C (104 °F) ambient temperature. Breaking frames are not recommended at temperatures below -25 °C (-13 °F) because of the risk of critical components freezing.

Operation Above 40 °C (104 °F)

Trip Unit Temperatures

For ambient temperatures above 40 °C (104 °F), thermal-magnetic circuit breakers should carry less current than their continuous current rating. Under this condition, the circuit breaker should be derated for the higher ambient temperature.

Electronic trip units are insensitive to ambient temperatures within a certain temperature range: -25 °C...+70 °C (-13 °F...+158 °F). Allen-Bradley MCCBs are designed to include temperature protective circuits that initiate a tripping operation and provide self-protection, should the internal temperature rise to an unsafe level. At temperatures above 70 °C (158 °F), the circuit breaker should be derated for the higher ambient temperature.

Breaking Frame Temperatures

All Allen-Bradley standard circuit breakers are calibrated to a 40 °C (104 °F) ambient temperature. For any ambient temperature application significantly above or below 40 °C (104 °F), see Temperature Derating on page 142.

Altitude

Up to an altitude of 2000 meters (6561 feet), the low voltage circuit breakers do not undergo any alteration in their rated performances. As the altitude increases, the atmospheric properties are altered in terms of composition, dielectric resistance, cooling capacity, and pressure. Therefore, some performance aspects of the circuit breaker (such as the maximum rated operative voltage and the rated uninterrupted current undergo derating. Use Table 12 to derate as appropriate.

Table 12 - Voltage and Current Rating

Attribute	Rated Employ Voltage U_e [V AC]				Rated Uninterrupted Current I_u [A]			
Altitude [m (ft)]	2000 (6560)	3000 (9840)	4000 (13,120)	5000 (16,400)	2000 (6560)	3000 (9840)	4000 (13,120)	5000 (16,400)
All Frame Sizes	600	540	468	408	100%	98%	93%	90%

Tropicalization (Humidity)

Bulletin 140G, Bulletin 140MG, Bulletin 140G2, and Bulleting 140MG2 circuit breakers are tested in compliance with IEC standards, making these devices suitable for hot-humid conditions defined in IEC 60721-2-1, climatograph 8. Bulletin 140G circuit breakers include the following features to protect against humid conditions:

- Housings and components molded from glass-fiber-reinforced synthetic resins
- Metallic parts treated for anti-corrosion
- Zinc plating protected by a conversion layer (hexavalent-chromium free)
- Electronic circuits protected for anti-condensation

Electromagnetic Compatibility

The electronic trip units and electronic residual current releases for Bulletin 140G, Bulletin 140MG, Bulletin 140G2, and Bulletin 140MG2 circuit breakers are in compliance with EN 60947-2 Appendix B and Appendix F and European Directive No. 2004/108/EC regarding EMC — electromagnetic compatibility.

Mounting Conditions

Unusual Mounting Configurations

Circuit breakers may be mounted in any position — sideways or upside-down — without affecting the tripping characteristics or interrupting rating. However, mounting circuit breakers in a vertical position with the ON position other than UP are in violation of Article 240-81 of the NEC (valid for U.S. applications).

Shock and Vibration

Allen-Bradley MCCBs are shock tested to conform with IEC 60068-2-27, and vibration tested to IEC 60068-2-6.

Table 13 - MCCB Shock and Vibration Test Values

Bulletin No.	Frame Size	Vibration	Shock (peak acceleration)
140G	G	1…13Hz ±1 mm; 13…100 Hz ±0.7 g	15 g, 11 ms
	H		
	I		
	J		
140G2	K	1…13Hz ±1 mm; 13…100 Hz ±0.7 g	15 g, 11 ms
	L		
140G	N/NS	1…13Hz ±1 mm; 13…100 Hz ±0.7 g	12 g, 11 ms
	R	–	

Maintenance Mode

Maintenance Mode (MM) in electronic long, short, instantaneous, ground, and maintenance mode (LSIG-MM) trip units offer an additional set of protection that temporarily lowers the trip curve of the circuit breaker. When it is activated by a control signal, the instantaneous-style response of the circuit breaker is temporarily lowered to limit arc flash availability and allow testing or maintenance on a system while the MCCB is energized or ON. This feature is adjustable on the trip unit, either with DIP switches or through menu selections on an LCD.

Bulletin 140G and 140G2 products with MM can be used to make a NEC 240.87 Arc Energy Reduction compliant solution when you complete the following required steps:

1. Complete an arc flash study on the specific application to determine the available short-circuit current at the site of the MM breaker in the circuit.
2. Perform arc flash and incident arc energy calculations with and without MM protection to ensure reduction in energy by available settings on the specific device in application (Rockwell Automation offers consultants and software for this purpose).
3. Enable and adjust the MM settings to appropriately reduce the energy from the study's findings in the specific application.
4. Install the circuit breaker with a local status indicator to show when MM is active (wiring diagrams are provided for maintenance mode indicators to assist you with the implementation of this functionality).
5. Make available documentation about the installation per requirements in NEC 240.87 (A).

Figure 9 shows a generic version of a trip curve with MM protections enabled. Table 14 on page 27 lists the preset values for MM.
MM connections are achieved using the terminal strip on the device. See publications 140G-IN067 and 140G-IN069 for details.

Figure 9 - Generic Trip Curve with LSIG and Maintenance Mode Protections Parameters

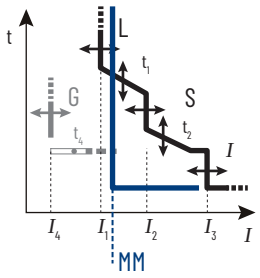


Table 14 - Default Settings for Maintenance Mode: Frame Size K, N, NS, and R

Interface	Parameter	Setting Options	Required Components	
			Input Connection	Output Connection
DIP Switch	Enable	ON or OFF	Cat. No. 140G-K-CC maintenance mode connector (Table 220 on page 116)	Cat. No. 140G-K-CIC MM connector (Table 220 on page 116) or Cat. No. 140G-K-CEAA or 140G-M-CEAA auxiliary contact for MM (Table 168 on page 99)
	Threshold	1.5, 2.5, or 4; t = k instantaneous		
	Time	≤ 30 ms		
LCD	Enable	ON or OFF	• Maintenance Mode Test function within the Test menu • Maintenance mode connections are achieved using the terminal strip on the device. – See publication 140G-IN067 and 140G-IN069 for input, output, and power supply connections to the terminal strip	
	Threshold	1.5…4 in 0.1 increments; t = k instantaneous		
	Time	≤ 30 ms		

Table 15 - Default Settings for Maintenance Mode (MM): 140G2-K and 140G2-L

Protection Type	Parameter	Setting Options	Required Components
EnergySense, PowerSense	Enable	ON or OFF	140G2-K-MM, 140G2-K-CIC (1) 140G2-K-CIM (2)
	Threshold	1.5…10 x I_n t = instantaneous	
	Time	–	

(1) Included with Sense Trip Unit.
(2) Included with factory-assembled MCCBs.

Product Overview

Device Types and Accessories by Frame Size

Attribute	G	H	I	J	K	L	N	NS	R
									
Rated current I_n	125 A (160 A - IEC)	125 A (160 A - IEC)	225 A	250 A	400 A	600 A	1200 A	1200... 1250 A	2000... 3000 A
Number of Poles	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4	3, 4
Dimensions [mm (in.)]									
Width, 3-pole	76.2 (3)	90 (3.54)	105 (4.13)	105 (4.13)	139.5 (5.49)	139.5 (5.49)	210 (8.27)	210 (8.27)	428 (16.85)
Width, 4-pole	101.2 (3.98)	120 (4.72)	140 (5.51)	140 (5.51)	186 (7.32)	186 (7.32)	280 (11.02)	280 (11.02)	554 (21.81)
Depth	70 (2.75)	82.5 (3.25)	70 (2.75)	82.5 (3.25)	103.5 (4.07)	103.5 (4.07)	125 (4.92)	125 (4.92)	231 (9.09)
Height	130 (5.19)	13 (5.19)	150 (5.90)	160 (6.23)	205 (8.07)	205 (8.07)	268 (10.55)	268 (10.55)	382 (15.04)
Interrupting Rating [kA]									
240V	50 65 100	65 100 150 200 200	50 65	65 100 150 200	100 150 200 200	100 200 200 200	65 100 150	65 100 150	125
480V	25 35 65	25 35 65 100 150	25 35	25 35 65 100	50 65 100 150	50 65 100 150	50 65 100	50 65 100	125
600V	–	14 18 25 35 42	–	14 18 25 35	25 35 65 100	25 35 65 100	25 50 65	25 50 65	100
600Y/347V	10 14 25	–	10 10	–	–	–	–	–	–
250V DC - 2 poles in Series	35 42 50	35 50 65 85 85	25 35	35 42 50 100	–	–	–	–	–
500V DC - 3 poles in Series	–	35 50 65 85 85	25 35	–	35 50 70 85	35 50 70 85	–	–	–
500V DC - 4 poles in Series	35 50 50	–	–	–	–	–	–	–	–
600V DC - 3 poles in Series	–	–	–	35 50 65 85	25 35 50 70	25 35 50 70	–	–	–
Breaking Capacity I_{cu} [kA]									
220...240V	65 85 100	65 85 100 150 200	65 85	65 85 100 150	85 100 200 200	70 100 200	85 100 200	85 100 200	130
415V	36 50 70	36 50 70 120 150	36 50	36 50 70 120	50 70 120 150	36 70 100	50 70 120	50 70 120	80
440V	30 36 50	36 50 65 100 150	36 40	36 50 65 100	50 65 100 180	45 50 80	50 65 100	50 65 100	80
690V	6 8 10	10 12 15 18 20	36 50	10 12 15 18	25 40 70 80	20 25 30	30 42 50	30 42 50	40
250V DC	36 50 10	36 50 70 85 100	36 50	36 50 75 85	35 50 70 70	–	–	–	–
500V DC	36 50 70	36 50 70 85 100	36 50	36 50 75 85	–	–	–	–	–
750V DC	–	–	–	–	–	–	–	–	–
Protection Type									
Thermal-magnetic	✓	✓	✓	✓	✓	✓	–	–	–
Electronic LSI, LSIG	–	✓	–	✓	✓	✓	✓	✓	✓
Electronic Sense	–	✓	–	✓	✓	✓	–	–	–
LSIG-MM	–	–	–	✓	✓	✓	✓	✓	✓
MM	–	–	–	–	✓ (1)	✓ (1)	–	✓	–
MCP	✓	✓	✓	✓	✓	✓	✓	–	–
MPCB	–	✓	–	✓	✓	✓	–	–	–
MCS	✓	✓	✓	✓	✓	✓	✓	–	✓
MCSD	–	–	–	–	✓	✓	–	–	–

Device Types and Accessories by Frame Size (Continued)

Attribute	 G	 H	 I	 J	 K	 L	 N	 NS	 R
Internal Accessories									
Auxiliary Contact	✓	✓	✓	✓	✓	✓	✓	✓	✓
Alarm Contact	✓	✓	✓	✓	✓	✓	✓	✓	–
AX/AL Combo	✓	✓	✓	✓	✓	✓	✓	✓	–
Trip unit Contact	–	✓	–	✓	✓	✓	✓	✓	✓
Shunt Trip	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shunt Close	–	–	–	–	–	–	–	✓	✓
UV Relay	✓	✓	✓	✓	✓	✓	✓	✓	✓
Field Installable	✓	✓	✓	✓	✓	✓	✓	✓	✓
External Accessories									
End Cap (bolt-on) Terminals	standard	standard	standard	standard	standard	standard	standard	standard	standard
Terminal Lugs	✓	✓	✓	✓	✓	✓	✓	✓	✓
Multi-cable Terminal Lugs	✓	✓	✓	✓	✓	✓	–	–	–
Extended Terminal	✓	✓	✓	✓	✓	✓	✓	✓	–
Spreader Terminal	✓	✓	✓	✓	✓	✓	✓	✓	✓
Rear Terminal	–	–	–	–	–	–	✓	✓	✓
25 mm Phase Barriers	standard	standard	standard	standard	standard	standard	–	–	–
Extended Phase Barriers	✓	✓	✓	✓	✓	✓	✓	✓	✓
Back Plates	standard	standard	standard	standard	standard	standard	–	–	–
DIN Mounting	✓	✓	✓	✓	–	–	–	–	–
Padlock	✓	✓	✓	✓	✓	✓	✓	✓	✓
Terminal Cover	✓	✓	✓	✓	✓	✓	✓	✓	–
Direct Rotary	✓	✓	✓	✓	✓	✓	✓	–	–
Variable Depth (door)	✓	✓	✓	✓	✓	✓	✓	–	–
Internal NFPA 79 Handle	✓	✓	✓	✓	✓	✓	✓	–	–
Flange Operator	✓	✓	✓	✓	✓	✓	✓	–	–
Flange Cable	✓	✓	✓	✓	✓	✓	✓	–	–
Motor Operator	✓	✓	✓	✓	✓	✓	–	✓	✓
Residual Current	✓	✓	✓	✓	✓	✓	–	–	–
Neutral Current	–	–	–	–	✓	✓	✓	✓	✓
Field Installable	✓	✓	✓	✓	✓	✓	✓	✓	✓

(1) Internal accessory.

Notes:

The Bulletin 140G and Bulletin 140G2 family of Molded Case Circuit Breakers (MCCBs) offers a wide range of features include thermal/magnetic and electronic protection devices, high interrupting/breaking capacities and complete line of factory and field installed accessories. Bulletin 140G and 140G2 MCCBs are ideal for use in line protection of control panels.

MCCBs have the following features:

- 10...3000 A current range
- 3 pole and 4 pole devices
- Space-saving dimensions
- End cap/bolt-on terminals are standard
- Thermal/magnetic protection: 15...800 A
- Electronic protection: 10...3000 A
- Approved for global application: UL, CSA, CCC, and IEC performance interrupting/breaking capacity
- Wide range of mounting options
- Extensive range of factory-installed or field-installed accessories


Frame Size G


Frame Size H


Frame Size I


Frame Size J


Frame Size N and NS


Frame Size R

Bulletin 140G


Frame Size K


Frame Size L

Bulletin 140G2

Standards compliance and certifications for the Bulletin 140G and Bulletin 140G2 family of MCCBs are as follows:

Standards Compliance
IEC 60947-2
UL 489
CSA22.2, No. 5

Certifications	
CE Marked	
CCC	
CSA Certified	
EU WEEE	
HACR Type	
KCC Certified (1)	
China RoHS Compliant	
UL Listed	

(1) Select products only.

Bulletin 140G MCCBs: 125 A, Frame Size G

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks™ software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140 G frame size G MCCBs are only available as assembled circuit breakers. Individual frame and trip unit components are not available.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available lugs.

140G	-	G	6	C	4	-	C70	-		-	SD	-	KA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	Description
140G	MCCB

b	
Frame Size/Rating	
Code	Description
G	125 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
2	25 kA
3	35 kA
6	65 kA

d	
Protection Type	
Code	Description
C	Fixed thermal/fixed magnetic
E	Adjust thermal/fixed magnetic
S	Molded case switch (isolator)

e	
Number of Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code (1)	Description
C⊗	Example: C30 = 30 A
D⊗	Example: D16 = 160 A

g	
Continuous Rated (2)	
Code	Description
Blank	80% rated

h	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) Rated current equals the value of ⊗ multiplied by the first letter of the code. B = 0.1 ⊗, C = 1 ⊗, D = 10 ⊗, and E = 100 ⊗.
(2) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Assembled MCCBs

Table 16 - Interrupting Rating/Breaking Capacity: Thermal-magnetic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA C22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2				Interrupting Code
			220V (1)		415V		440V (1)		690V		250V DC (2 poles in series)		500V DC (3 poles in series)		See Table 17 for Cat. No. selection
240V	480V	600Y/347V	I_c [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
50	25	10	65	75	36	100	36	50	6	75	36	100	36	100	G2
65	35	14	85		50	75	50		8	50	50	100	50	100	G3
100	65	25	100		70	50	65		10	50	70	75	70	75	G6

(1) These ratings have not been tested for the CCC listing.

Table 17 - Thermal-magnetic, Fixed Thermal: Fixed Magnetic

Rated Current I_n [A]	Thermal Trip $I_r = I_n$ (Fixed) [A]	Magnetic Trip I_m [A]	Cat. No. 140G-					
			Interrupting Code G2		Interrupting Code G3		Interrupting Code G6	
			3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
15	15	500	G2C3-C15	G2C4-C15	G3C3-C15	G3C4-C15	G6C3-C15	G6C4-C15
16	16		G2C3-C16	G2C4-C16	G3C3-C16	G3C4-C16	G6C3-C16	G6C4-C16
20	20		G2C3-C20	G2C4-C20	G3C3-C20	G3C4-C20	G6C3-C20	G6C4-C20
25	25		G2C3-C25	G2C4-C25	G3C3-C25	G3C4-C25	G6C3-C25	G6C4-C25
30	30		G2C3-C30	G2C4-C30	G3C3-C30	G3C4-C30	G6C3-C30	G6C4-C30
32	32		G2C3-C32	G2C4-C32	G3C3-C32	G3C4-C32	G6C3-C32	G6C4-C32
35	35		G2C3-C35	G2C4-C35	G3C3-C35	G3C4-C35	G6C3-C35	G6C4-C35
40	40		G2C3-C40	G2C4-C40	G3C3-C40	G3C4-C40	G6C3-C40	G6C4-C40
45	45		G2C3-C45	G2C4-C45	G3C3-C45	G3C4-C45	G6C3-C45	G6C4-C45
50	50		G2C3-C50	G2C4-C50	G3C3-C50	G3C4-C50	G6C3-C50	G6C4-C50
60	60	600	G2C3-C60	G2C4-C60	G3C3-C60	G3C4-C60	G6C3-C60	G6C4-C60
63	63	630	G2C3-C63	G2C4-C63	G3C3-C63	G3C4-C63	G6C3-C63	G6C4-C63
70	70	700	G2C3-C70	G2C4-C70	G3C3-C70	G3C4-C70	G6C3-C70	G6C4-C70
80	80	800	G2C3-C80	G2C4-C80	G3C3-C80	G3C4-C80	G6C3-C80	G6C4-C80
90	90	900	G2C3-C90	G2C4-C90	G3C3-C90	G3C4-C90	G6C3-C90	G6C4-C90
100	100	1000	G2C3-D10	G2C4-D10	G3C3-D10	G3C4-D10	G6C3-D10	G6C4-D10
110	110	1100	G2C3-D11	G2C4-D11	G3C3-D11	G3C4-D11	G6C3-D11	G6C4-D11
125	125	1250	G2C3-D12	G2C4-D12	G3C3-D12	G3C4-D12	G6C3-D12	G6C4-D12
160 (1)	(2)	1600	G2E3-D16	G2E4-D16	G3E3-D16	G3E4-D16	G6E3-D16	G6E4-D16

(1) IEC only.
(2) Adjustable thermal trip with nine possible settings. 112 A minimum, 136 A medium, 160 A maximum.

Bulletin 140G MCCBs: 125 A, Frame Size H

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G frame size H MCCBs are available both as assembled circuit breakers and individual breaking frame and trip unit components that can be ordered for field assembly or factory installation.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available lugs.

140G	-	H	3	C	3	-	C60	-		-	SD	-	AA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	**Description**
140G	MCCB

b	
Frame Size/Rating	
Code	**Description**
H	125 A
HC	125 A, current limiting

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	**Description**
2	25 kA
3	35 kA
6	65 kA
0	100 kA
15	150 kA
T	Trip unit

d	
Protection Type	
Code	**Description**
C	Fixed thermal/fixed magnetic
F	Adjust thermal/adjust magnetic
H	DIP long, short, instant (LSI)
I	DIP long, short instant, ground (LSIG)
L	EnergySense LSIG
M	PowerSense LSIG
X	Breaking frame
S	Molded case switch (isolator)

e	
Number of Poles	
Code	**Description**
3	3 poles
4	4 poles

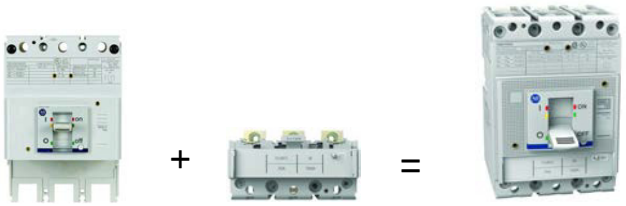
f	
Rated Current	
Code (1)	**Description**
C⊗	Example: C30 = 30 A
D⊗	Example: D16 = 160 A
Blank	Frame only

g	
Continuous Rated (2)	
Code	**Description**
Blank	80% rated

h	
Factory-installed Options	
Code	**Description**
See Factory-installed Options	

(1) Rated current equals the value of ⊗ multiplied by the first letter of the code. B = 0.1 ⊗, C = 1 ⊗, D = 10 ⊗, and E = 100 ⊗.
(2) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Breaking Frames and Trip Units



Frame Trip Unit MCCB

Table 18 - Breaking Frames, 125 A Rated Current

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA] (1)			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)				Cat. No. 140G-	
			220V		415V		440V		690V		250V DC 2 poles in series		500V DC 3 poles in series			
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole	4-pole
65	25	14	65	100	36	100	36	100	10	100	36	100	36	100	H2X3	H2X4
100	35	18	85		50		50		12	100	50		50		H3X3	H3X4
150	65	25	100		70		65		15	100	70		70		H6X3	H6X4
200	100	35	150		120		100		18	75	85		85		H0X3	H0X4
200	150	42	200		150		150		20	75	100		100		H15X3	H15X4
Current-limiting Breaking Frames																
150	65	25	100	100	70	100	65	100	15	100	70	100	70	100	HC6X3	–
200	100	35	150		120		100		18	75	85		85		HC0X3	–

(1) DC rating applies to thermal-magnetic trip unit only.

Table 19 - Trip Units, Thermal-magnetic

Rated Current I_n [A]	Thermal Trip I_r [A]	Magnetic Trip I_m [A]	Protection Type	Cat. No. 140G-	
				3-pole	4-pole
50	50	500	C (Fixed)	HTC3-C50	HTC4-C50
60	60	600		HTC3-C60	HTC4-C60
63	63	630		HTC3-C63	HTC4-C63
70	70	700		HTC3-C70	HTC4-C70
80	56...80 (1)	400...800 (2)	F (Adjustable)	HTF3-C80	HTF4-C80
90	63...90 (1)	450...900 (2)		HTF3-C90	HTF4-C90
100	70...100 (1)	500...1000 (2)		HTF3-D10	HTF4-D10
110	77...110 (1)	550...1100 (2)		HTF3-D11	HTF4-D11
125	87...125 (1)	625...1250 (2)		HTF3-D12	HTF4-D12

(1) Adjustable thermal trip with nine possible settings. The table shows min and max values.
(2) Adjustable magnetic trip with nine possible settings. The table shows min and max values.

Table 20 - Trip Units, Electronic LSI DIP Switch

Rated Current I_n [A]	Protection Type					Cat. No. 140G-	
	L		S		I	3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2=s	I_3 = 1...10 x I_n		
60	24...60	3, 12, 36, 60	60...600	0.05, 0.1, 0.2, 0.4	60...600	HTH3-C60	HTH4-C60
100	40...100		100...1000		100...1000	HTH3-D10	HTH4-D10
125	50...125		125...1250		125...1250	HTH3-D12	HTH4-D12

Table 21 - Trip Units, Electronic LSIG DIP Switch

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s		
60	24...60	3, 12, 36, 60	60...600	0.05, 0.1, 0.2, 0.4	60...600	12...60	0.1, 0.2, 0.4, 0.8	HTI3-C60	HTI4-C60
100	40...100		100...1000		100...1000	20...100		HTI3-D10	HTI4-D10
125	50...125		125...1250		125...1250	25...125		HTI3-D12	HTI4-D12

Table 22 - Trip Units, EnergySense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
40	16...40	3...60	24...4000	0.05...0.4	60...4000	4...40	0.1...1	HTL3-D40	HTL4-D40
60	24...60		36...6000		90...6000	6...60		HTL3-D60	HTL4-D60
100	40...100		60...1000		150...1000	10...100		HTL3-D10	HTL4-D10
125	50...125		75...1250		187...1250	12...125		HTL3-D12	HTL4-D12
160	64...160		96...1600		240...1600	16...160		HTL3-D16 (4)	HTL4-D16 (4)

(1) Adjustable in 1 second increments.
(2) Adjustable in 0.01 second increments.
(3) Adjustable in 0.05 seconds increments.
(4) IEC only.

Table 23 - Trip Units, PowerSense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
40	16...40	3...60	24...4000	0.05...0.4	60...4000	4...40	0.1...1	HTM3-D40	HTM4-D40
60	24...60		36...6000		90...6000	6...60		HTM3-D60	HTM4-D60
100	40...100		60...1000		150...1000	10...100		HTM3-D10	HTM4-D10
125	50...125		75...1250		187...1250	12...125		HTM3-D12	HTM4-D12
160	64...160		96...1600		240...1600	16...160		HTM3-D16 (4)	HTM4-D16 (4)

(1) Adjustable in 1 second increments.
(2) Adjustable in 0.01 second increments.
(3) Adjustable in 0.05 seconds increments.
(4) IEC only.

Assembled MCCBs

Table 24 - Interrupting Rating/Breaking Capacity: Thermal-magnetic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)				Interrupting Code
			220V		415V		440V		690V		250V DC 2 poles in series		500V DC 3 poles in series		See Table 25 and Table 26 for Cat. No. selection
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
65	25	14	65	100	36	100	36	100	10	100	36	100	36	100	H2
100	35	18	85		50		50		12	100	50		50		H3
150	65	25	100		70		65		15	100	70		70		H6 (2)
200	100	35	150		120		100		18	75	85		85		H0 (2)
200	150	42	200		150		150		20	75	100		100		H15

(1) DC Rating applies to thermal-magnetic trip units only.
(2) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example, Cat. No. HC6...

Table 25 - Thermal-magnetic, Fixed and Adjustable: Interrupting Code H2, H3, and H6

Rated Current I_n [A]	Thermal Trip I_r [A]	Magnetic Trip I_m [A]	Cat. No. 140G-					
			Interrupting Code H2		Interrupting Code H3		Interrupting Code H6	
			3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
15	15	400	H2C3-C15	H2C4-C15	H3C3-C15	H3C4-C15	H6C3-C15 (1)	H6C4-C15
16	16		H2C3-C16	H2C4-C16	H3C3-C16	H3C4-C16	H6C3-C16 (1)	H6C4-C16
20	20		H2C3-C20	H2C4-C20	H3C3-C20	H3C4-C20	H6C3-C20 (1)	H6C4-C20
25	25		H2C3-C25	H2C4-C25	H3C3-C25	H3C4-C25	H6C3-C25 (1)	H6C4-C25
30	30		H2C3-C30	H2C4-C30	H3C3-C30	H3C4-C30	H6C3-C30 (1)	H6C4-C30
32	32		H2C3-C32	H2C4-C32	H3C3-C32	H3C4-C32	H6C3-C32 (1)	H6C4-C32
35	35		H2C3-C35	H2C4-C35	H3C3-C35	H3C4-C35	H6C3-C35 (1)	H6C4-C35
40	40		H2C3-C40	H2C4-C40	H3C3-C40	H3C4-C40	H6C3-C40 (1)	H6C4-C40
50	50	500	H2C3-C50	H2C4-C50	H3C3-C50	H3C4-C50	H6C3-C50	H6C4-C50
60	60	600	H2C3-C60	H2C4-C60	H3C3-C60	H3C4-C60	H6C3-C60	H6C4-C60
63	63	630	H2C3-C63	H2C4-C63	H3C3-C63	H3C4-C63	H6C3-C63	H6C4-C63
70	70	700	H2C3-C70	H2C4-C70	H3C3-C70	H3C4-C70	H6C3-C70	H6C4-C70
80	56...80 (2)	400...800 (3)	H2F3-C80	H2F4-C80	H3F3-C80	H3F4-C80	H6F3-C80	H6F4-C80
90	63...90 (2)	450...900 (3)	H2F3-C90	H2F4-C90	H3F3-C90	H3F4-C90	H6F3-C90	H6F4-C90
100	70...100 (2)	500...1000 (3)	H2F3-D10	H2F4-D10	H3F3-D10	H3F4-D10	H6F3-D10	H6F4-D10
110	77...110 (2)	550...1100 (3)	H2F3-D11	H2F4-D11	H3F3-D11	H3F4-D11	H6F3-D11	H6F4-D11
125	87...125 (2)	625...1250 (3)	H2F3-D12	H2F4-D12	H3F3-D12	H3F4-D12	H6F3-D12	H6F4-D12
160	112...160 (2)	800...1600 (3)	H2F3-D16 (4)	H2F4-D16 (4)	H3F3-D16 (4)	H3F4-D16 (4)	H6F3-D16 (4)	H6F4-D16 (4)

(1) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. HC6...
(2) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(3) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.
(4) IEC only.

Table 26 - Thermal-magnetic, Fixed and Adjustable: Interrupting Code H0 and H15

Rated Current I_n [A]	Thermal Trip I_r [A]	Magnetic Trip I_m [A]	Cat. No. 140G-			
			Interrupting Code H0		Interrupting Code H15	
			3-pole	4-pole	3-pole	4-pole
15	15	400	H0C3-C15 (1)	H0C4-C15	H15C3-C15	H15C4-C15
16	16		H0C3-C16 (1)	H0C4-C16	H15C3-C16	H15C4-C16
20	20		H0C3-C20 (1)	H0C4-C20	H15C3-C20	H15C4-C20
25	25		H0C3-C25 (1)	H0C4-C25	H15C3-C25	H15C4-C25
30	30		H0C3-C30 (1)	H0C4-C30	H15C3-C30	H15C4-C30
32	32		H0C3-C32 (1)	H0C4-C32	H15C3-C32	H15C4-C32
35	35		H0C3-C35 (1)	H0C4-C35	H15C3-C35	H15C4-C35
40	40		H0C3-C40 (1)	H0C4-C40	H15C3-C40	H15C4-C40
50	50	500	H0C3-C50	H0C4-C50	H15C3-C50	H15C4-C50
60	60	600	H0C3-C60	H0C4-C60	H15C3-C60	H15C4-C60
63	63	630	H0C3-C63	H0C4-C63	H15C3-C63	H15C4-C63
70	70	700	H0C3-C70	H0C4-C70	H15C3-C70	H15C4-C70
80	56...80 (2)	400...800 (3)	H0F3-C80	H0F4-C80	H15F3-C80	H15F4-C80
90	63...90 (2)	450...900 (3)	H0F3-C90	H0F4-C90	H15F3-C90	H15F4-C90
100	70...100 (2)	500...1000 (3)	H0F3-D10	H0F4-D10	H15F3-D10	H15F4-D10
110	77...110 (2)	550...1100 (3)	H0F3-D11	H0F4-D11	H15F3-D11	H15F4-D11
125	84...120 (2)	625...1250 (3)	H0F3-D12	H0F4-D12	H15F3-D12	H15F4-D12
160	112...160 (2)	800...1600 (3)	H0F3-D16 (4)	H0F4-D16 (4)	H15F3-D16 (4)	H15F4-D16 (4)

(1) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example, Cat. No. HC6...
(2) Adjustable thermal trip with nine possible settings. The table shows min and max values.
(3) Adjustable magnetic trip with nine possible settings. The table shows min and max values.
(4) IEC only.

Table 27 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Interrupting Code
			220V		415V		440V		690V		See Table 28... Table 31 on page 39 for Cat. No. selection
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
65	25	14	65	100	36	100	36	100	10	100	H2
100	35	18	85		50		50		12	100	H3
150	65	25	100		70		65		15	100	H6 (1)
200	100	35	150		120		100		18	100	H0 (1)
200	150	42	200		150		150		20	75	H15

(1) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-HC6...

Table 28 - Electronic LSI: Interrupting Code H2, H3, and H6

Rated Current I_n [A]	Protection Type					Cat. No. 140G-					
	L		S		I	Interrupting Code H2		Interrupting Code H3		Interrupting Code H6	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
25	10...25	3, 12, 36, 60	25...250	0.05, 0.1, 0.2, 0.4	25...250	H2H3-C25	H2H4-C25	H3H3-C25	H3H4-C25	H6H3-C25 (1)	H6H4-C25
60	24...60		60...600		60...600	H2H3-C60	H2H4-C60	H3H3-C60	H3H4-C60	H6H3-C60	H6H4-C60
100	40...100		100...1000		100...1000	H2H3-D10	H2H4-D10	H3H3-D10	H3H4-D10	H6H3-D10	H6H4-D10
125	50...125		125...1250		125...1250	H2H3-D12	H2H4-D12	H3H3-D12	H3H4-D12	H6H3-D12	H6H4-D12
160	64...160		160...1600		160...1600	H2H3-D16 (2)	H2H4-D16 (2)	H3H3-D16 (2)	H3H4-D16 (2)	H6H3-D16 (2)	H6H4-D16 (2)

(1) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-HC6...
(2) IEC only.

Table 29 - Electronic LSI: Interrupting Code H0 and H15

Rated Current I_n [A]	Protection Type					Cat. No. 140G-			
	L		S		I	Interrupting Code H0		Interrupting Code H15	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	4-pole	3-pole	4-pole
25	10...25	3, 12, 36, 60	25...250	0.05, 0.1, 0.2, 0.4	25...250	H0H3-C25 (1)	H0H4-C25	H15H3-C25	H15H4-C25
60	24...60		60...600		60...600	H0H3-C60	H0H4-C60	H15H3-C60	H15H4-C60
100	40...100		100...1000		100...1000	H0H3-D10	H0H4-D10	H15H3-D10	H15H4-D10
125	50...125		125...1250		125...1250	H0H3-D12	H0H4-D12	H15H3-D12	H15H4-D12
160	64...160		160...1600		160...1600	H0H3-D16 (2)	H0H4-D16 (2)	H15H3-D16 (2)	H15H4-D16 (2)

(1) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-HC6...
(2) IEC only.

Table 30 - Electronic LSIG: Interrupting Code H2, H3, and H6

Rated Current I_n [A]	Protection Type							Cat. No. 140G-					
	L		S		I	G		Interrupting Code H2		Interrupting Code H3		Interrupting Code H6	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 =1 ... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
25	10...25	3, 12, 36, 60	25...250	0.05, 0.1, 0.2, 0.4	25...250	5...25	0.1, 0.2, 0.4, 0.8	H2I3-C25	H2I4-C25	H3I3-C25	H3I4-C25	H6I3-C25 (1)	H6I4-C25
60	24...60		60...600		60...600	12...60		H2I3-C60	H2I4-C60	H3I3-C60	H3I4-C60	H6I3-C60	H6I4-C60
100	40...100		100...1000		100...1000	20...100		H2I3-D10	H2I4-D10	H3I3-D10	H3I4-D10	H6I3-D10	H6I4-D10
125	50...125		125...1250		125...1250	25...125		H2I3-D12	H2I4-D12	H3I3-D12	H3I4-D12	H6I3-D12	H6I4-D12
160	64...160		160...1600		160...1600	32...160		H2I3-D16 (2)	H2I4-D16 (2)	H3I3-D16 (2)	H3I4-D16 (2)	H6I3-D16 (2)	H6I4-D16 (2)

(1) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-HC6...
(2) IEC only.

Table 31 - Electronic LSIG: Interrupting Code H0 and H15

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code H0		Interrupting Code H15	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
25	10...25	3, 12, 36, 60	25...250	0.05, 0.1, 0.2, 0.4	25...250	5...25	0.1, 0.2, 0.4, 0.8	H0I3-C25 (1)	H0I4-C25	H15I3-C25	H15I4-C25
60	24...60		60...600		60...600	12...60		H0I3-C60	H0I4-C60	H15I3-C60	H15I4-C60
100	40...100		100...1000		100...1000	20...100		H0I3-D10	H0I4-D10	H15I3-D10	H15I4-D10
125	50...125		125...1250		125...1250	25...125		H0I3-D12	H0I4-D12	H15I3-D12	H15I4-D12
160	64...160		160...1600		160...1600	32...160		H0I3-D16 (2)	H0I4-D16 (2)	H15I3-D16 (2)	H15I4-D16 (2)

(1) Add a "C" after the "H" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-HC6...
(2) IEC only.

Table 32 - Electronic EnergySense LSIG: Interrupting Code H2, H3, and H6

Rated Current I_n [A]	Protection Type							Cat. No. 140G-					
	L		S		I	G		Interrupting Code H2		Interrupting Code H3		Interrupting Code H6	
	I_1 = 0.4... 1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2... 1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
40	16...40	3...60	40...4000	0.05...0.4	40...4000	8...40	0.1...1	H2L3-D40	H2L4-D40	H3L3-D40	H3L4-D40	H6L3-D40	H6L4-D40
60	24...60		60...6000		60...6000	12...60		H2L3-D60	H2L4-D60	H3L3-D60	H3L4-D60	H6L3-D60	H6L4-D60
100	40...100		100...1000		100...1000	20...100		H2L3-D10	H2L4-D10	H3L3-D10	H3L4-D10	H6L3-D10	H6L4-D10
125	50...125		125...1250		125...1250	25...125		H2L3-D12	H2L4-D12	H3L3-D12	H3L4-D12	H6L3-D12	H6L4-D12
160	64...160		160...1600		160...1600	32...160		H2L3-D16 (4)	H2L4-D16 (4)	H3L3-D16 (4)	H3L4-D16 (4)	H6L3-D16 (4)	H6L4-D16 (4)

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.
(4) IEC only.

Table 33 - Electronic EnergySense LSIG: Interrupting Code H0 and H15

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code H0		Interrupting Code H15	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole
40	16...40	3...60	40...4000	0.05...0.4	40...4000	8...40	0.1...1	H0L3-D40	H0L4-D40	H15L3-D40	H15L4-D40
60	24...60		60...6000		60...6000	12...60		H0L3-D60	H0L4-D60	H15L3-D60	H15L4-D60
100	40...100		100...1000		100...1000	20...100		H0L3-D10	H0L4-D10	H15L3-D10	H15L4-D10
125	50...125		125...1250		125...1250	25...125		H0L3-D12	H0L4-D12	H15L3-D12	H15L4-D12
160	64...160		160...1600		160...1600	32...160		H0L3-D16 (4)	H0L4-D16 (4)	H15L3-D16 (4)	H15L4-D16 (4)

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.
(4) IEC only.

Table 34 - Electronic PowerSense LSIG: Interrupting Code H2, H3, and H6

Rated Current I_n [A]	Protection Type							Cat. No. 140G-					
	L		S		I	G		Interrupting Code H2		Interrupting Code H3		Interrupting Code H6	
	I_1 = 0.4... 1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2... 1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
40	16...40	3...60	40...4000	0.05...0.4	40...4000	8...40	0.1...1	H2M3-D40	H2M4-D40	H3M3-D40	H3M4-D40	H6M3-D40	H6M4-D40
60	24...60		60...6000		60...6000	12...60		H2M3-D60	H2M4-D60	H3M3-D60	H3M4-D60	H6M3-D60	H6M4-D60
100	40...100		100...1000		100...1000	20...100		H2M3-D10	H2M4-D10	H3M3-D10	H3M4-D10	H6M3-D10	H6M4-D10
125	50...125		125...1250		125...1250	25...125		H2M3-D12	H2M4-D12	H3M3-D12	H3M4-D12	H6M3-D12	H6M4-D12
160	64...160		160...1600		160...1600	32...160		H2M3-D16 (4)	H2M4-D16 (4)	H3M3-D16 (4)	H3M4-D16 (4)	H6M3-D16 (4)	H6M4-D16 (4)

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.
(4) IEC only.

Table 35 - Electronic PowerSense LSIG: Interrupting Code H0 and H15

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code H0		Interrupting Code H15	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole
40	16...40	3...60	40...4000	0.05...0.4	40...4000	8...40	0.1...1	H0M3-D40	H0M4-D40	H15M3-D40	H15M4-D40
60	24...60		60...6000		60...6000	12...60		H0M3-D60	H0M4-D60	H15M3-D60	H15M4-D60
100	40...100		100...1000		100...1000	20...100		H0M3-D10	H0M4-D10	H15M3-D10	H15M4-D10
125	50...125		125...1250		125...1250	25...125		H0M3-D12	H0M4-D12	H15M3-D12	H15M4-D12
160	64...160		160...1600		160...1600	32...160		H0M3-D16 (4)	H0M4-D16 (4)	H15M3-D16 (4)	H15M4-D16 (4)

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.
(4) IEC only.

Bulletin 140G MCCBs: 225 A, Frame Size I

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G frame size I MCCBs are only available as assembled circuit breakers. Individual frame and trip unit components are not available.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available lugs.

140G	-	I	3	C	3	-	C60	-		-	SA	-	KA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	Description
140G	MCCB

b	
Frame Size/Rating	
Code	Description
I	225 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
2	25 kA
3	35 kA

d	
Protection Type	
Code	Description
C	Fixed thermal/fixed magnetic
S	Molded case switch (Isolator)

e	
Number of Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code (1)	Description
C⊗	Example: C30 = 30 A
D⊗	Example: D16 = 160 A

g	
Continuous Rated (2)	
Code	Description
Blank	80% rated

h	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) Rated current equals the value of ⊗ multiplied by the first letter of the code. B = 0.1 ⊗, C = 1 ⊗, D = 10 ⊗, and E = 100 ⊗.
(2) For more information about 80% and 100% ratings, see page 15.

Assembled MCCBs

Table 36 - Interrupting Rating/Breaking Capacity: Thermal-magnetic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA] (1)			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs}%								Breaking Capacity (DC), IEC 60947-2				Interrupting Code (2)
			220V		415V		440V		690V		250V DC 2 Poles in a Series		500V DC 3-pole in a Series		
240V	480V	600Y/347V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
50	25	10	50	75	36	75	25	75	5	50	36	100	36	100	I2
65	35	10	85	50	50	50	40	50	6	50	50	75	50	75	I3

(1) For DC Ratings, see Table 251 on page 127.
(2) See Table 37 on page 42 for Cat. No. selection.

Table 37 - Thermal-magnetic: Fixed

Rated Current I_n [A]	Thermal Trip $I_r = I_n$ (Fixed) [A]	Magnetic Trip I_m [A]	Cat. No. 140G-			
			Interrupting Code I2		Interrupting Code I3	
			3-pole	4-pole	3-pole	4-pole
60	60	600	I2C3-C60	I2C4-C60	I3C3-C60	I3C4-C60
63	63	630	I2C3-C63	I2C4-C63	I3C3-C63	I3C4-C63
70	70	700	I2C3-C70	I2C4-C70	I3C3-C70	I3C4-C70
80	80	800	I2C3-C80	I2C4-C80	I3C3-C80	I3C4-C80
90	90	900	I2C3-C90	I2C4-C90	I3C3-C90	I3C4-C90
100	100	1000	I2C3-D10	I2C4-D10	I3C3-D10	I3C4-D10
110	110	1100	I2C3-D11	I2C4-D11	I3C3-D11	I3C4-D11
125	125	1250	I2C3-D12	I2C4-D12	I3C3-D12	I3C4-D12
150	150	1500	I2C3-D15	I2C4-D15	I3C3-D15	I3C4-D15
160	160	1600	I2C3-D16	I2C4-D16	I3C3-D16	I3C4-D16
175	175	1750	I2C3-D17	I2C4-D17	I3C3-D17	I3C4-D17
200	200	2000	I2C3-D20	I2C4-D20	I3C3-D20	I3C4-D20
225	225	2250	I2C3-D22	I2C4-D22	I3C3-D22	I3C4-D22

Bulletin 140G MCCBs: 250 A, Frame Size J

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G frame size J MCCBs are available both as assembled circuit breakers and individual breaking frame and trip unit components that can be ordered for field assembly or factory installation.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G	-	J	3	C	3	-	C60	-		-	SD	-	AA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	Description
140G	MCCB

b	
Frame Size/Rating	
Code	Description
J	250 A
JC	250 A, current limiting

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
2	25 kA
3	35 kA
6	65 kA
0	100 kA
15 (2)	150 kA
T	Trip unit

d	
Protection Type	
Code	Description
C	Fixed thermal/fixed magnetic
F	Adjust thermal/adjust magnetic
H	DIP long, short, instant (LSI)
I	DIP long, short, instant, ground (LSIG)
L	EnergySense LSIG
M	PowerSense LSIG
X	Breaking frame
S	Molded case switch (isolator)

e	
Number of Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code (1)	Description
C⊗	Example: C30 = 30 A
D⊗	Example: D16 = 160 A
Blank	Frame only

g	
Continuous Rated (3)	
Code	Description
Blank	80% rated

h	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) Rated current equals the value of ⊗ multiplied by the first letter of the code. B = 0.1 ⊗, C = 1 ⊗, D = 10 ⊗, and E = 100 ⊗.
(2) 150 kA only available up to In = 160 A.
(3) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Breaking Frames and Trip Units

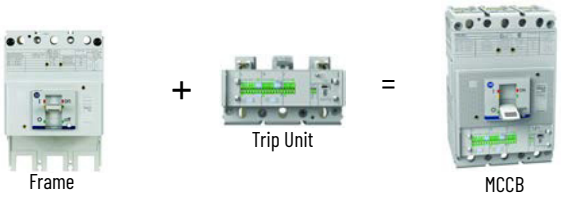


Table 38 - Breaking Frames, 250 A Rated Current

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs}%								Breaking Capacity (DC), IEC 60947-2 (1)				Cat. No. 140G-	
			220V		415V		440V		690V		250V DC 2 Poles in Series		500V DC 3-pole in Series			
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole	4-pole
65	25	14	65	100	36	100	36	100	10	100	36	100	36	100	J2X3	J2X4
100	35	18	85		50		50		12		50		50		J3X3	J3X4
150	65	25	100		70		65		15		70		70		J6X3	J6X4
200	100	35	150		120		100		20		85		85		J0X3	J0X4
Current-limiting Breaking Frames																
150	65	25	100	100	70	100	65	100	15	100	70	100	70	100	JC6X3	–
200	100	35	150		120		100		20		85		85		JC0X3	–

(1) DC rating applies to thermal-magnetic trip unit only.

Table 39 - Trip Units, Thermal-magnetic

Rated Current I_n [A]	Thermal Trip I_r [A]	Magnetic Trip I_m [A]	Protection Type	Cat. No. 140G-	
				3-pole	4-pole
25	25	400	C (Fixed)	JTC3-C25	JTC4-C25
30	30	400		JTC3-C30	JTC4-C30
32	32	400		JTC3-C32	JTC4-C32
35	35	400		JTC3-C35	JTC4-C35
40	40	400		JTC3-C40	JTC4-C40
50	50	500		JTC3-C50	JTC4-C50
60	60	600		JTC3-C60	JTC4-C60
63	63	630		JTC3-C63	JTC4-C63
70	70	700		JTC3-C70	JTC4-C70
80	56...80 (1)	400...800 (2)	F (Adjustable)	JTF3-C80	JTF4-C80
90	63...90 (1)	450...900 (2)		JTF3-C90	JTF4-C90
100	70...100 (1)	500...1000 (2)		JTF3-D10	JTF4-D10
110	77...110 (1)	550...1100 (2)		JTF3-D11	JTF4-D11
125	87.5...125 (1)	625...1250 (2)		JTF3-D12	JTF4-D12
150	105...150 (1)	750...1500 (2)		JTF3-D15	JTF4-D15
160	112...160 (1)	800...1600 (2)		JTF3-D16	JTF4-D16
175	122.5...175 (1)	875...1750 (2)		JTF3-D17	JTF4-D17
200	140...200 (1)	1000...2000 (2)		JTF3-D20	JTF4-D20
225	157.5...225 (1)	1125...2250 (2)		JTF3-D22	JTF4-D22
250	175...250 (1)	1250...2500 (2)		JTF3-D25	JTF4-D25

(1) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(2) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 40 - Trip Units, Electronic DIP LSI

Rated Current I_n [A]	Protection Type					Cat. No. 140G-	
	L		S		I	3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n		
40	16...40	3, 12, 36, 60	40...400	0.05, 0.1, 0.2, 0.4	40...400	JTH3-C40	JTH4-C40
60	24...60		60...600		60...600	JTH3-C60	JTH4-C60
100	40...100		100...1000		100...1000	JTH3-D10	JTH4-D10
150	60...150		150...1500		150...1500	JTH3-D15	JTH4-D15
250	100...250		250...2500		250...2500	JTH3-D25	JTH4-D25

Table 41 - Trip Units, Electronic DIP LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s		
40	16...40	3, 12, 36, 60	40...400	0.05, 0.1, 0.2, 0.4	40...400	8...40	0.1, 0.2, 0.4, 0.8	JTI3-C40	JTI4-C40
60	24...60		60...600		60...600	12...60		JTI3-C60	JTI4-C60
100	40...100		100...1000		100...1000	20...100		JTI3-D10	JTI4-D10
150	60...150		150...1500		150...1500	30...150		JTI3-D15	JTI4-D15
250	100...250		250...2500		250...2500	50...250		JTI3-D25	JTI4-D25

Table 42 - Trip Units, EnergySense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 =0.6...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
100	40...100	3...60	60...1000	0.05...0.4	150...1000	10...100	0.1...1	JTL3-D10	JTL4-D10
150	60...150		90...1500		225...1500	15...150		JTL3-D15	JTL4-D15
250	100...250		150...2500		375...2500	25...250		JTL3-D25	JTL4-D25

(1) Adjustable in 1 second increments.
(2) Adjustable in 0.01 second increments.
(3) Adjustable in 0.05 seconds increments.

Table 43 - Trip Units, PowerSense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 =0.6...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
100	40...100	3...60	60...1000	0.05...0.4	150...1000	10...100	0.1...1	JTM3-D10	JTM4-D10
150	60...150		90...1500		225...1500	15...150		JTM3-D15	JTM4-D15
250	100...250		150...2500		375...2500	25...250		JTM3-D25	JTM4-D25

(1) Adjustable in 1 second increments.
(2) Adjustable in 0.01 second increments.
(3) Adjustable in 0.05 seconds increments.

Assembled MCCBs

Table 44 - Interrupting Rating/Breaking Capacity: Thermal-magnetic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)				Interrupting Code (2) See Table 45 and Table 46 on page 47 for Cat. No. selection
			220V		415V		440V		690V		250V DC 2 Poles in Series		500V DC 3-pole in Series		
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
65	25	14	65	100	36	100	36	100	10	100	36	100	36	100	J2
100	35	18	85		50		50		12		50		50		J3
150	65	25	100		70		65		15		70		70		J6
200	100	35	150		120		100		20		85		85		J0

(1) DC rating applies to thermal-magnetic trip unit only.
(2) Add a "C" after the "J" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-JC6...

Table 45 - Thermal-magnetic, Fixed and Adjustable

Rated Current I_n [A]	Thermal Trip I_r [A]	Magnetic Trip I_m [A]	Cat. No. 140G-			
			Interrupting Code J2		Interrupting Code J3	
			3-pole	4-pole	3-pole	4-pole
25	25	400	J2C3-C25	J2C4-C25	J3C3-C25	J3C4-C25
30	30		J2C3-C30	J2C4-C30	J3C3-C30	J3C4-C30
32	32		J2C3-C32	J2C4-C32	J3C3-C32	J3C4-C32
35	35		J2C3-C35	J2C4-C35	J3C3-C35	J3C4-C35
40	40		J2C3-C40	J2C4-C40	J3C3-C40	J3C4-C40
50	50	500	J2C3-C50	J2C4-C50	J3C3-C50	J3C4-C50
60	60	600	J2C3-C60	J2C4-C60	J3C3-C60	J3C4-C60
63	63	630	J2C3-C63	J2C4-C63	J3C3-C63	J3C4-C63
70	70	700	J2C3-C70	J2C4-C70	J3C3-C70	J3C4-C70
80	56...80 (1)	400...800 (2)	J2F3-C80	J2F4-C80	J3F3-C80	J3F4-C80
90	63...90 (1)	450...900 (2)	J2F3-C90	J2F4-C90	J3F3-C90	J3F4-C90
100	70...100	500...1000	J2F3-D10	J2F4-D10	J3F3-D10	J3F4-D10
110	77...110	550...1100	J2F3-D11	J2F4-D11	J3F3-D11	J3F4-D11
125	87.5...125	625...1250	J2F3-D12	J2F4-D12	J3F3-D12	J3F4-D12
150	105...150	750...1500	J2F3-D15	J2F4-D15	J3F3-D15	J3F4-D15
160	112...160	800...1600	J2F3-D16	J2F4-D16	J3F3-D16	J3F4-D16
175	122.5...175	875...1750	J2F3-D17	J2F4-D17	J3F3-D17	J3F4-D17
200	140...200	1000...2000	J2F3-D20	J2F4-D20	J3F3-D20	J3F4-D20
225	157.5...225	1125...2250	J2F3-D22	J2F4-D22	J3F3-D22	J3F4-D22
250	175...250	1250...2500	J2F3-D25	J2F4-D25	J3F3-D25	J3F4-D25

(1) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(2) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 46 - Thermal-magnetic, Fixed and Adjustable

Rated Current I_n [A]	Thermal Trip I_r [A]	Magnetic Trip I_m [A]	Cat. No. 140G- (1)			
			Interrupting Code J6		Interrupting Code J0	
			3-pole	4-pole	3-pole	4-pole
25	25	400	J6C3-C25	J6C4-C25	J0C3-C25	J0C4-C25
30	30		J6C3-C30	J6C4-C30	J0C3-C30	J0C4-C30
32	32		J6C3-C32	J6C4-C32	J0C3-C32	J0C4-C32
35	35		J6C3-C35	J6C4-C35	J0C3-C35	J0C4-C35
40	40		J6C3-C40	J6C4-C40	J0C3-C40	J0C4-C40
50	50	500	J6C3-C50	J6C4-C50	J0C3-C50	J0C4-C50
60	60	600	J6C3-C60	J6C4-C60	J0C3-C60	J0C4-C60
63	63	630	J6C3-C63	J6C4-C63	J0C3-C63	J0C4-C63
70	70	700	J6C3-C70	J6C4-C70	J0C3-C70	J0C4-C70
80	56...80 (2)	400...800 (3)	J6F3-C80	J6F4-C80	J0F3-C80	J0F4-C80
90	63...90 (2)	450...900 (3)	J6F3-C90	J6F4-C90	J0F3-C90	J0F4-C90
100	70...100 (2)	500...1000 (3)	J6F3-D10	J6F4-D10	J0F3-D10	J0F4-D10
110	77...110 (2)	550...1100 (3)	J6F3-D11	J6F4-D11	J0F3-D11	J0F4-D11
125	87.5...125 (2)	625...1250 (3)	J6F3-D12	J6F4-D12	J0F3-D12	J0F4-D12
150	105...150 (2)	750...1500 (3)	J6F3-D15	J6F4-D15	J0F3-D15	J0F4-D15
160	112...160 (2)	800...1600 (3)	J6F3-D16	J6F4-D16	J0F3-D16	J0F4-D16
175	122.5...175 (2)	875...1750 (3)	J6F3-D17	J6F4-D17	J0F3-D17	J0F4-D17
200	140...200 (2)	1000...2000 (3)	J6F3-D20	J6F4-D20	J0F3-D20	J0F4-D20
225	157.5...225 (2)	1125...2250 (3)	J6F3-D22	J6F4-D22	J0F3-D22	J0F4-D22
250	175...250 (2)	1250...2500 (3)	J6F3-D25	J6F4-D25	J0F3-D25	J0F4-D25

(1) Add a "C" after the "J" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-JC6F3-D25
(2) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(3) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 47 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA C22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Interrupting Code (1)
			220V		415V		440V		690V		
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	See Table 48... Table 51 on page 48 for Cat. No. selection.
65	25	14	65	100	36	100	36	100	10	100	J2
100	35	18	85		50		50		12		J3
150	65	25	100		70		65		15		J6
200	100	35	150		120		100		20		J0

(1) Add a "C" after the "J" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-JC6...

Table 48 - Electronic LSI: Interrupting Code J2 and J3

Rated Current I_n [A]	Protection Type					Cat. No. 140G-			
	L		S		I	Interrupting Code J2		Interrupting Code J3	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	4-pole	3-pole	4-pole
40	16...40	3, 12, 36, 60	40...400	0.05, 0.1, 0.2, 0.4	40...400	J2H3-C40	J2H4-C40	J3H3-C40	J3H4-C40
60	24...60		60...600		60...600	J2H3-C60	J2H4-C60	J3H3-C60	J3H4-C60
100	40...100		100...1000		100...1000	J2H3-D10	J2H4-D10	J3H3-D10	J3H4-D10
150	60...150		150...1500		150...1500	J2H3-D15	J2H4-D15	J3H3-D15	J3H4-D15
250	100...250		250...2500		250...2500	J2H3-D25	J2H4-D25	J3H3-D25	J3H4-D25

Table 49 - Electronic LSI: Interrupting Code J0 and J6

Rated Current I_n [A]	Protection Type					Cat. No. 140G- (1)			
	L		S		I	Interrupting Code J0		Interrupting Code J6	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	4-pole	3-pole	4-pole
40	16...40	3, 12, 36, 60	40...400	0.05, 0.1, 0.2, 0.4	40...400	J0H3-C40	J0H4-C40	J6H3-C40	J6H4-C40
60	24...60		60...600		60...600	J0H3-C60	J0H4-C60	J6H3-C60	J6H4-C60
100	40...100		100...1000		100...1000	J0H3-D10	J0H4-D10	J6H3-D10	J6H4-D10
150	60...150		150...1500		150...1500	J0H3-D15	J0H4-D15	J6H3-D15	J6H4-D15
250	100...250		250...2500		250...2500	J0H3-D25	J0H4-D25	J6H3-D25	J6H4-D25

(1) Add a "C" after the "J" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-JC6H3-D25

Table 50 - Electronic LSIG: Interrupting Code J2 and J3

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code J2		Interrupting Code J3	
	I_1 = 0.4... 1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
40	16...40	3, 12, 36, 60	40...400	0.05, 0.1, 0.2, 0.4	40...400	8...40	0.1, 0.2, 0.4, 0.8	J2I3-C40	J2I4-C40	J3I3-C40	J3I4-C40
60	24...60		60...600		60...600	12...60		J2I3-C60	J2I4-C60	J3I3-C60	J3I4-C60
100	40...100		100...1000		100...1000	20...100		J2I3-D10	J2I4-D10	J3I3-D10	J3I4-D10
150	60...150		150...1500		150...1500	30...150		J2I3-D15	J2I4-D15	J3I3-D15	J3I4-D15
250	100...250		250...2500		250...2500	50...250		J2I3-D25	J2I4-D25	J3I3-D25	J3I4-D25

Table 51 - Electronic LSIG: Interrupting Code J0 and J6

Rated Current I_n [A]	Protection Type							Cat. No. 140G- (1)			
	L		S		I	G		Interrupting Code J0		Interrupting Code J6	
	I_1 = 0.4... 1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
40	16...40	3, 12, 36, 60	40...400	0.05, 0.1, 0.2, 0.4	40...400	8...40	0.1, 0.2, 0.4, 0.8	J0I3-C40	J0I4-C40	J6I3-C40	J6I4-C40
60	24...60		60...600		60...600	12...60		J0I3-C60	J0I4-C60	J6I3-C60	J6I4-C60
100	40...100		100...1000		100...1000	20...100		J0I3-D10	J0I4-D10	J6I3-D10	J6I4-D10
150	60...150		150...1500		150...1500	30...150		J0I3-D15	J0I4-D15	J6I3-D15	J6I4-D15
250	100...250		250...2500		250...2500	50...250		J0I3-D25	J0I4-D25	J6I3-D25	J6I4-D25

(1) Add a "C" after the "J" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-JC6I3-D25.

Table 52 - Electronic EnergySense LSIG: Interrupting Code J2 and J3

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code J2		Interrupting Code J3	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole
100	40...100	3...60	100...1000	0.05...0.4	100...1000	20...100	0.1...1	J2L3-D10	J2L4-D10	J3L3-D10	J3L4-D10
150	60...150		150...1500		150...1500	30...150		J2L3-D15	J2L4-D15	J3L3-D15	J3L4-D15
250	100...250		250...2500		250...2500	50...250		J2L3-D25	J2L4-D25	J3L3-D25	J3L4-D25

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.

Table 53 - Electronic EnergySense LSIG: Interrupting Code J6 and J0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code J6		Interrupting Code J0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole
100	40...100	3...60	100...1000	0.05...0.4	100...1000	20...100	0.1...1	J6L3-D10	J6L4-D10	J0L3-D10	J0L4-D10
150	60...150		150...1500		150...1500	30...150		J6L3-D15	J6L4-D15	J0L3-D15	J0L4-D15
250	100...250		250...2500		250...2500	50...250		J6L3-D25	J6L4-D25	J0L3-D25	J0L4-D25

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.

Table 54 - Electronic PowerSense LSIG: Interrupting Code J2 and J3

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code J2		Interrupting Code J3	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole
100	40...100	3...60	100...1000	0.05...0.4	100...1000	20...100	0.1...1	J2M3-D10	J2M4-D10	J3M3-D10	J3M4-D10
150	60...150		150...1500		150...1500	30...150		J2M3-D15	J2M4-D15	J3M3-D15	J3M4-D15
250	100...250		250...2500		250...2500	50...250		J2M3-D25	J2M4-D25	J3M3-D25	J3M4-D25

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.

Table 55 - Electronic PowerSense LSIG: Interrupting Code J6 and J0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code J6		Interrupting Code J0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 1... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole
100	40...100	3...60	100...1000	0.05...0.4	100...1000	20...100	0.1...1	J6M3-D10	J6M4-D10	J0M3-D10	J0M4-D10
150	60...150		150...1500		150...1500	30...150		J6M3-D15	J6M4-D15	J0M3-D15	J0M4-D15
250	100...250		250...2500		250...2500	50...250		J6M3-D25	J6M4-D25	J0M3-D25	J0M4-D25

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.

Bulletin 140G2 MCCBs: 400 A, Frame Size K

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G2 frame size K MCCBs are available both as assembled circuit breakers and individual breaking frame and trip unit components that can be ordered for field assembly or factory installation.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G2	-	K	T	L	3	-	D40	-		-	SD	-	AA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	Description
140G2	MCCB

b	
Frame Size/Rating	
Code	Description
K	400 A
KC	400 A, Current Limiting
LC	600 A, Current Limiting

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
5	50 kA
6	65 kA
0	100 kA
T	Trip unit

d	
Protection Type	
Code	Description
F	Adjust thermal/adjust magnetic
H	DIP long, short, instant (LSI)
I	DIP long, short, instant, ground (LSIG)
L	EnergySense LSIG
M	PowerSense LSIG
S	Molded case switch (isolator)
X	Breaking frame

e	
Number of Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code	Description
D30	300 A
D40	400 A
Blank	Frame only

g	
Continuous Rated (1)	
Code	Description
Blank	80% Rated
Z1	100% Rated

h	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Breaking Frames and Trip Units

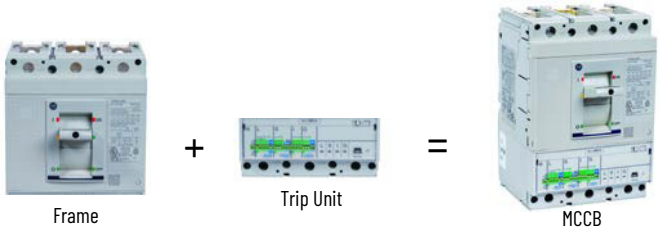


Table 56 - Breaking Frames, 400 A Rated Current

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)		Cat. No. 140G2-	
			2 poles in series	3 poles in series	220V		415V		440V		690V		500V DC (2 poles in series)			
240V	480V	600V	500V DC (1)	600V DC (1)	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole	4-pole
100	50	25	35	25	85	100	50	100	50	100	25	K5: 100 K6: 100 (2) K0 = 100 (3)	35	100	K5X3	K5X4
150	65	35	50	35	100		70		65		40		50		K6X3	K6X4
200	100	65	70	50	150		120		100		70		70		K0X3	K0X4
Current-limiting Breaking Frames																
150	65	35	50	35	100	100	70	100	65	100	40	100	50	100	KC6X3	–
200	100	65	65	50	200		120		100		70		70		KC0X3	–

(1) DC rating applies to thermal-magnetic trip unit only.
(2) Above 75: I_n = 500 A.
(3) Above 50: I_n = 500 A.

Table 57 - Breaking Frames, 400 A Rated Current, 100% Rated (1)

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (2)		Cat. No. 140G2-
			2 poles in series	3 poles in series	220V		415V		440V		690V		500V DC (2 poles in series)		
240V	480V	600V	500V DC (1)	600V DC (1)	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole
100	50	25	35	25	85	100	50	100	50	100	25	–	35	100	K5X3-Z1
150	65	35	50	35	100	100	70	100	65	100	40	–	50	100	K6X3-Z1
200	100	65	70	50	150		120		100		70	K5: 100 K6: 100 (3) K0 = 100 (4)	70		K0X3-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) DC rating applies to thermal-magnetic trip unit only.
(3) Above 75: I_n = 500 A.
(4) Above 50: I_n = 500 A.

Table 58 - Trip Units, Thermal-magnetic

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G2-	
				3-pole	4-pole
300	210...300	1500...3000	F (Adjustable Thermal/Adjustable Magnetic)	KTF3-D30	KTF4-D30
400	280...400	2000...4000		KTF3-D40	KTF4-D40

(1) Adjustable thermal trip with nine possible settings. The table shows min and max values.
(2) Adjustable magnetic trip with nine possible settings. The table shows min and max values.

Table 59 - Trip Units, Electronic DIP LSI

Rated Current I_n [A]	Protection Type					Cat. No. 140G2-	
	L		S		I	3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n		
300	120...300	3, 12, 36, 48	300...3000	0.05, 0.1, 0.2, 0.4	300...3000	KTH3-D30	KTH4-D30
400	160...400		400...4000		400...4000	KTH3-D40	KTH4-D40

Table 60 - Trip Units, Electronic DIP LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s		
300	120...300	3, 12, 36, 48	300...3000	0.05, 0.1, 0.2, 0.4	300...3000	60...300	0.1, 0.2, 0.4, 0.8	KTI3-D30	KTI4-D30
400	160...400		400...4000		400...4000	80...400		KTI3-D40	KTI4-D40

Table 61 - Trip Units, EnergySense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 = 1...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
300	120...300	3...48	180...3000	0.05...0.5	450...3000	30...300	0.1...1	KTL3-D30	KTL4-D30
400	160...400		240...4000		600...4000	40...400		KTL3-D40	KTL4-D40

(1) Adjustable in 1 second increments
(2) Adjustable in 0.01 second increments
(3) Adjustable in 0.05 seconds increments

Table 62 - Trip Units, PowerSense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 = 1...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
300	120...300	3...48	180...3000	0.05...0.5	450...3000	30...300	0.1...1	KTM3-D30	KTM4-D30
400	160...400		240...4000		600...4000	40...400		KTM3-D40	KTM4-D40

(1) Adjustable in 1 second increments.
(2) Adjustable in 0.01 second increments.
(3) Adjustable in 0.05 seconds increments.

Assembled MCCBs

Table 63 - Interrupting Rating/Breaking Capacity: Thermal-magnetic Circuit Breakers

Interrupting Rating (50/60 Hz) UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)		Interrupting Code (2) (3)
240V	480V	600V	2 poles in series	3 poles in series	220V		415V		440V		690V		500V DC 2 poles in series		
			500V DC	600V DC	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
100	50	25	35	25	85	100	50	100	50	100	25	100	35	100	K5
150	65	35	50	35	100		70		65		40		50		K6
200	100	65	70	50	150		120		100		70		70		K0

(1) DC rating applies to thermal-magnetic trip unit only.
(2) See Table 64 and Table 65 on page 53 for Cat. No. selection.
(3) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC6...

Table 64 - Thermal-magnetic, Adjustable: Interrupting Code K5, K6, and K0

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G2-		Cat. No. 140G2- (3)		Cat. No. 140G2- (4)	
				Interrupting Code K5		Interrupting Code K6		Interrupting Code K0	
				3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
300	210...300	1500...3000	F (Adjustable Thermal/Adjustable Magnetic)	K5F3-D30	K3F4-D30	K6F3-D30	K6F4-D30	K0F3-D30	K0F4-D30
400	280...400	2000...4000		K5F3-D40	K3F4-D40	K6F3-D40	K6F4-D40	K0F3-D40	K0F4-D40

(1) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(2) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.
(3) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC6F3-D30.
(4) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC0F3-D30.

Table 65 - Thermal-magnetic, Adjustable, 100% Rated (1)

Rated Current I_n [A]	Thermal Trip I_r [A] (2)	Magnetic Trip I_m [A] (3)	Protection Type	Cat. No. 140G2-		
				Interrupting Code K3	Interrupting Code K6	Interrupting Code K0
				3-pole	3-pole	3-pole
300	210...300	1500...3000	F (Adjustable Thermal/Adjustable Magnetic)	K5F3-D30-Z1	K6F3-D30-Z1	K0F3-D30-Z1
400	280...400	2000...4000		K5F3-D40-Z1	K6F3-D40-Z1	K0F3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable thermal trip with nine possible settings. The table shows min and max values.
(3) Adjustable magnetic trip with nine possible settings. The table shows min and max values.

Table 66 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz) UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz),IEC 60947-2 I_{cu} [kA]/I_{cs} %								Interrupting Code (1) (2)
			220V		415V		440V		690V		
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
100	35	25	85	100	50	100	50	100	25	100	K5
150	65	35	100		70		65		40		K6
200	100	65	200		120		100		70		K0

(1) See Table 67...Table 70 on page 53 for Cat. No. selection.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC6...

Table 67 - Electronic LSI: Interrupting Code K3, K6, and K0

Rated Current I_n [A]	Protection Type					Cat. No. 140G2-		Cat. No. 140G2- (1)		Cat. No. 140G2- (2)	
	L		S		I	Interrupting Code K3		Interrupting Code K6		Interrupting Code K0	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	K5H3-D30	K5H4-D30	K6H3-D30	K6H4-D30	K0H3-D30	K0H4-D30
400	160...400		400...4000		400...4000	K5H3-D40	K5H4-D40	K6H3-D40	K6H4-D40	K0H3-D40	K0H4-D40

(1) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC6H3-D30.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC0H3-D30.

Table 68 - Electronic LSI, 100% Rated (1): Interrupting Code K6 and K0

Rated Current I_n [A]	Thermal Trip I_r [A] (2)	Magnetic Trip I_m [A] (3)	Protection Type	Cat. No. 140G2-	
				Interrupting Code K6	Interrupting Code K0
				3-pole	3-pole
300	210...300	1500...3000	F (Adjustable Thermal/Adjustable Magnetic)	K6H3-D30-Z1	K0H3-D30-Z1
400	280...400	2000...4000		K6H3-D40-Z1	K0H3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(3) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 69 - Electronic LSIG: Interrupting Code K3, K6, and K0

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-		Cat. No. 140G2- (1)		Cat. No. 140G2- (2)	
	L		S		I	G		Interrupting Code K3		Interrupting Code K6		Interrupting Code K0	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	K5I3-D30	K5I4-D30	K6I3-D30	K6I4-D30	K0I3-D30	K0I4-D30
400	160...400		400...4000		400...4000	80...400		K5I3-D40	K5I4-D40	K6I3-D40	K6I4-D40	K0I3-D40	K0I4-D40

(1) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC6I3-D30.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC0I3-D30.

Table 70 - Electronic LSIG, 100% Rated (1): Interrupting Code K3, K6, and K0

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-		
	L		S		I	G		Interrupting Code K3	Interrupting Code K6	Interrupting Code K0
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	3-pole	3-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	K5I3-D30-Z1	K6I3-D30-Z1	K0I3-D30-Z1
400	160...400		400...4000		400...4000	80...400		K5I3-D40-Z1	K6I3-D40-Z1	K0I3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Table 71 - Electronic EnergySense: Interrupting Code K5, K6, and K0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-					
	L		S		I	G		Interrupting Code K5		Interrupting Code K6		Interrupting Code K0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5... 10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
300	120...300	3...48	180...3000	0.05...0.5	450...3000	30...300	0.1...1	K5L3-D30	K5L4-D30	K6L3-D30	K6L4-D30	K0L3-D30	K0L4-D30
400	160...400		240...4000		600...4000	40...400		K5L3-D40	K5L4-D40	K6L3-D40	K6L4-D40	K0L3-D40	K0L4-D40

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.

Table 72 - Electronic EnergySense 100% Rated (1): Interrupting Code K5, K6, and K0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-		
	L		S		I	G		Interrupting Code K5	Interrupting Code K6	Interrupting Code K0
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (2)	I_2= 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n (3)	I_3 = 1.5... 10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (4)	3-pole	3-pole	3-pole
300	120...300	3...48	180...3000	0.05...0.5	450...3000	30...300	0.1...1	K5L3-D30-Z1	K6L3-D30-Z1	K0L3-D30-Z1
400	160...400		240...4000		600...4000	40...400		K5L3-D40-Z1	K6L3-D40-Z1	K0L3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable in increments of 1 second.
(3) Adjustable in increments of 0.01 seconds.
(4) Adjustable in increments of 0.05 seconds.

Table 73 - Electronic PowerSense: Interrupting Code K5, K6, and K0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-					
	L		S		I	G		Interrupting Code K5		Interrupting Code K6		Interrupting Code K0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5... 10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
300	120...300	3...48	180...3000	0.05...0.5	450...3000	30...300	0.1...1	K5M3-D30	K5M4-D30	K6M3-D30	K6M4-D30	K0M3-D30	K0M4-D30
400	160...400		240...4000		600...4000	40...400		K5M3-D40	K5M4-D40	K6M3-D40	K6M4-D40	K0M3-D40	K0M4-D40

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.

Table 74 - Electronic PowerSense 100% Rated (1): Interrupting Code K5, K6, and K0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-		
	L		S		I	G		Interrupting Code K5	Interrupting Code K6	Interrupting Code K0
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (2)	I_2= 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n (3)	I_3 = 1.5... 10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (4)	3-pole	3-pole	3-pole
300	120...300	3...48	180...3000	0.05...0.5	450...3000	30...300	0.1...1	K5M3-D30-Z1	K6M3-D30-Z1	K0M3-D30-Z1
400	160...400		240...4000		600...4000	40...400		K5M3-D40-Z1	K6M3-D40-Z1	K0M3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable in increments of 1 second.
(3) Adjustable in increments of 0.01 seconds.
(4) Adjustable in increments of 0.05 seconds.

Bulletin 140G MCCBs: 400 A, Frame Size K

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G frame size K MCCBs are available both as assembled circuit breakers and individual breaking frame and trip unit components that can be ordered for field assembly or factory installation.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G	-	K	T	L	3	-	D40	-		-	SD	-	AA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	**Description**
140G	MCCB

b	
Frame Size/Rating	
Code	**Description**
K	400 A
KC	400 A, current limiting

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	**Description**
3	35 kA
6	65 kA
0	100 kA
T	Trip unit

d	
Protection Type	
Code	**Description**
F	Adjust thermal/adjust magnetic
H	DIP long, short, instant (LSI)
I	DIP long, short, instant, ground (LSIG)
K	DIP LSIG-MM
S	Molded case switch (isolator)
X	Breaking frame

e	
Number of Poles	
Code	**Description**
3	3 poles
4	4 poles

f	
Rated Current	
Code	**Description**
D30	300 A
D40	400 A
Blank	Frame only

g	
Continuous Rated (1)	
Code	**Description**
Blank	80% Rated
Z1	100% Rated

h	
Factory-installed Options	
Code	**Description**
See Factory-installed Options	

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Breaking Frames and Trip Units

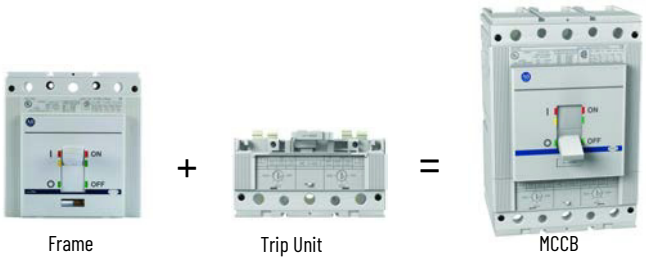


Table 75 - Breaking Frames, 400 A Rated Current

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)		Cat. No. 140G-	
			2 poles in series	3 poles in series	220V		415V		440V		690V		2 poles in series 500V DC			
240V	480V	600V	500V DC (1)	600V DC (1)	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole	4-pole
100	35	25	35	25	85	100	50	100	40	100	25	100	36	100	K3X3	K3X4
150	65	35	50	35	100		70		65		40		50		K6X3	K6X4
200	100	65	65	50	200		120		100		70		70		K0X3	K0X4
200	150	100	100	65	200		200		180		80		100		K15X3	K15X4
Current-limiting Breaking Frames																
150	65	35	50	35	100	100	70	100	65	100	40	100	50	100	KC6X3	–
200	100	65	65	50	200		120		100		70		70		KC0X3	–

(1) DC rating applies to thermal-magnetic trip unit only.

Table 76 - Breaking Frames, 400 A Rated Current, 100% Rated (1)

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (2)		Cat. No. 140G-
			2 poles in series	3 poles in series	220V		415V		440V		690V		2 poles in series 500V DC		
240V	480V	600V	500V DC (1)	600V DC (1)	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	3-pole
100	35	25	35	25	85	100	50	100	40	100	25	100	36	100	K3X3-Z1
Current-limiting Breaking Frames															
150	65	35	50	35	100	100	70	100	65	100	40	100	50	100	KC6X3-Z1
200	100	65	65	50	200		120		100		70		70		KC0X3-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) DC rating applies to thermal-magnetic trip unit only.

Table 77 - Trip Units, Thermal-magnetic

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G-	
				3-pole	4-pole
300	210…300	1500…3000	F (Adjustable Thermal/Adjustable Magnetic)	KTF3-D30	KTF4-D30
400	280…400	2000…4000		KTF3-D40	KTF4-D40

(1) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(2) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 78 - Trip Units, Electronic LSI

Rated Current I_n [A]	Protection Type						Cat. No. 140G-	
	L		S		I		3-pole	4-pole
	I_1 = 0.4…1 x I_n	t_1 = s	I_2 = 1…10 x I_n	t_2 = s	I_3 = 1…10 x I_n			
300	120…300	3, 6, 9, 18	300…3000	0.05, 0.1, 0.25, 0.5	300…3000		KTH3-D30	KTH4-D30
400	160…400		400…4000		400…4000		KTH3-D40	KTH4-D40

Table 79 - Trip Units, Electronic LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at $I > I_4$		
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	KTI3-D30	KTI4-D30
400	160...400		400...4000		400...4000	80...400		KTI3-D40	KTI4-D40

Table 80 - Trip Units, Electronic LSIG-MM (1)

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at $I > I_4$		
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	KTK3-D30	KTK4-D30
400	160...400		400...4000		400...4000	80...400		KTK3-D40	KTK4-D40

(1) See Maintenance Mode on page 26 for a list of the preset values for maintenance mode (MM).

Assembled MCCBs

Table 81 - Interrupting Rating/Breaking Capacity: Thermal-magnetic Circuit Breakers

Interrupting Rating (50/60 Hz) UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)		Interrupting Code (2) (3)
240V	480V	600V	2 poles in series	3 poles in series	220V		415V		440V		690V		2 poles in series 500V DC		
			500V DC	600V DC	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
100	35	25	35	25	85	100	50	100	40	100	25	100	36	100	K3
150	65	35	50	35	100		70		65		40		50		K6
200	100	65	65	50	150		120		100		70		70		K0
200	150	100	100	65	200		200		180		80		100		K15

(1) DC rating applies to thermal-magnetic trip unit only.
(2) See Table 82 and Table 83 for Cat. No. selection.
(3) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC6...

Table 82 - Thermal-magnetic, Adjustable: Interrupting Code K3, K6, K0, and K15

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G-		Cat. No. 140G- (3)		Cat. No. 140G- (4)		Cat. No. 140G-	
				Interrupting Code K3		Interrupting Code K6		Interrupting Code K0		Interrupting Code K15	
				3-pole	4-pole	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
300	210...300	1500...3000	F (Adjustable Thermal/Adjustable Magnetic)	K3F3-D30	K3F4-D30	K6F3-D30	K6F4-D30	K0F3-D30	K0F4-D30	K15F3-D30	K15F4-D30
400	280...400	2000...4000		K3F3-D40	K3F4-D40	K6F3-D40	K6F4-D40	K0F3-D40	K0F4-D40	K15F3-D40	K15F4-D40

(1) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(2) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.
(3) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example, Cat. No. 140G-KC6F3-D30.
(4) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC0F3-D30.

Table 83 - Thermal-magnetic, Adjustable, 100% Rated (1): Interrupting Code K3, K6, and K0

Rated Current I_n [A]	Thermal Trip I_r [A] (2)	Magnetic Trip I_m [A] (3)	Protection Type	Cat. No. 140G-		
				Interrupting Code K3	Interrupting Code K6	Interrupting Code K0
				3-pole	3-pole	3-pole
300	210...300	1500...3000	F (Adjustable Thermal/Adjustable Magnetic)	K3F3-D30-Z1	K6F3-D30-Z1	K0F3-D30-Z1
400	280...400	2000...4000		K3F3-D40-Z1	K6F3-D40-Z1	K0F3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(3) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 84 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz) UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Interrupting Code (1) (2)
			220V		415V		440V		690V		
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
100	50	25	85	100	50	100	40	100	25	100	K3
150	65	35	100		70		65		40		K6
200	100	65	150		120		100		70		K0
200	150	100	200		200		180		80		K15

(1) See Table 67 on page 53...Table 70 on page 53 for Cat. No. selection.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC6...

Table 85 - Electronic LSI: Interrupting Code K3, K6, K0, and K15

Rated Current I_n [A]	Protection Type					Cat. No. 140G-		Cat. No. 140G- (1)		Cat. No. 140G- (2)		Cat. No. 140G-	
	L		S		I	Interrupting Code K3		Interrupting Code K6		Interrupting Code K0		Interrupting Code K15	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	K3H3-D30	K3H4-D30	K6H3-D30	K6H4-D30	K0H3-D30	K0H4-D30	K15H3-D30	K15H4-D30
400	160...400		400...4000		400...4000	K3H3-D40	K3H4-D40	K6H3-D40	K6H4-D40	K0H3-D40	K0H4-D40	K15H3-D40	K15H4-D40

(1) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC6H3-D30.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC0H3-D30.

Table 86 - Electronic LSI, 100% Rated (1): Interrupting Code K6 and K0

Rated Current I_n [A]	Thermal Trip I_r [A] (2)	Magnetic Trip I_m [A] (3)	Protection Type	Cat. No. 140G-	
				Interrupting Code K6	Interrupting Code K0
				3-pole	3-pole
300	210...300	1500...3000	F (Adjustable Thermal/Adjustable Magnetic)	K6H3-D30-Z1	K0H3-D30-Z1
400	280...400	2000...4000		K6H3-D40-Z1	K0H3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(3) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 87 - Electronic LSIG: Interrupting Code K3 and K6

Rated Current I_n [A]	Protection Type							Cat. No. 140G-		Cat. No. 140G- (1)	
	L		S		I	G		Interrupting Code K3		Interrupting Code K6	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	K3I3-D30	K3I4-D30	K6I3-D30	K6I4-D30
400	160...400		400...4000		400...4000	80...400		K3I3-D40	K3I4-D40	K6I3-D40	K6I4-D40

(1) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC6I3-D30.

Table 88 - Electronic LSIG: Interrupting Code K0 and K15

Rated Current I_n [A]	Protection Type							Cat. No. 140G- (1)		Cat. No. 140G-	
	L		S		I	G		Interrupting Code K0		Interrupting Code K15	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	K0I3-D30	K0I4-D30	K15I3-D30	K15I4-D30
400	160...400		400...4000		400...4000	80...400		K0I3-D40	K0I4-D40	K15I3-D40	K15I4-D40

(1) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC0I3-D30.

Table 89 - Electronic LSIG, 100% Rated (1): Interrupting Code K3, K6, and K0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-		
	L		S		I	G		Interrupting Code K3	Interrupting Code K6	Interrupting Code K0
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	3-pole	3-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	K3I3-D30-Z1	K6I3-D30-Z1	K0I3-D30-Z1
400	160...400		400...4000		400...4000	80...400		K3I3-D40-Z1	K6I3-D40-Z1	K0I3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Table 90 - Electronic LSIG-MM [1]: Interrupting Code K3 and K6

Rated Current I_n [A]	Protection Type								Cat. No. 140G- [2]		Cat. No. 140G-	
	L		S		I	G		MM	Interrupting Code K3		Interrupting Code K6	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5... 4 x I_n	3-pole	4-pole	3-pole	4-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	450...1200	K3K3-D30	K3K4-D30	K6K3-D30	K6K4-D30
400	160...400		400...4000		400...4000	80...400		600...1600	K3K3-D40	K3K4-D40	K6K3-D40	K6K4-D40

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC6I3-D30.

Table 91 - Electronic LSIG-MM [1]: Interrupting Code K0

Rated Current I_n [A]	Protection Type								Cat. No. 140G- [2]	
	L		S		I	G		MM	Interrupting Code K0	
	I_1 = 0.4... 1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5... 4 x I_n	3-pole	4-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	450...1200	K0K3-D30	K0K4-D30
400	160...400		400...4000		400...4000	80...400		600...1600	K0K3-D40	K0K4-D40

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G-KC6I3-D30.

Table 92 - Electronic LSIG-MM, 100% Rated [1] [2]: Interrupting Code K3, K6, and K0

Rated Current I_n [A]	Protection Type								Cat. No. 140G-		
	L		S		I	G		MM	Interrupting Code K3	Interrupting Code K6	Interrupting Code K0
	I_1 = 0.4... 1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2... 1 x I_n	t_4 = s	I_5 =1.5... 4 x I_n	3-pole	3-pole	3-pole
300	120...300	3, 6, 9, 18	300...3000	0.05, 0.1, 0.25, 0.5	300...3000	60...300	0.1, 0.2, 0.4, 0.8	450...1200	K3K3-D30-Z1	K6K3-D30-Z1	K0K3-D30-Z1
400	160...400		400...4000		400...4000	80...400		600...1600	K3K3-D40-Z1	K6K3-D40-Z1	K0K3-D40-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.

Bulletin 140G2 MCCBs: 600 A, Frame Size L

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G2 frame size L MCCBs are available both as assembled circuit breakers and individual breaking frame and trip unit components that can be ordered for field assembly or factory installation.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G2	-	L	T	L	3	-	D60	-		-	SD	-	AA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	Description
140G2	MCCB

b	
Frame Size/Rating	
Code	Description
L	600 A
LC	600 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
5	50 kA
6	65 kA
0	100 kA
T	Trip unit

d	
Protection Type	
Code	Description
F	Adjust thermal/adjust magnetic
H	DIP long, short, instant (LSI)
I	DIP long, short, instant, ground (LSIG)
L	EnergySense LSIG
M	PowerSense LSIG
S	Molded case switch (isolator)
X	Breaking frame

e	
Number of Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code	Description
D50	500 A
D60	600 A
Blank	Frame only

g	
Continuous Rated (1)	
Code	Description
Blank	80% Rated
Z1	100% Rated

h	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Breaking Frames and Trip Units

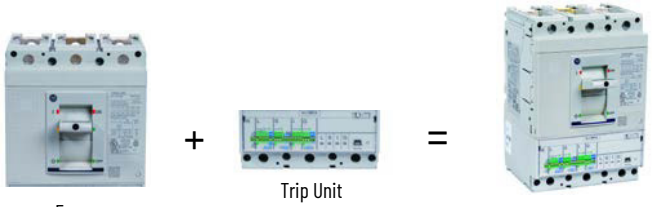


Table 93 - Breaking Frames: 600 A Rated Current

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)		Cat. No. 140G2-	
			2 poles in series	3 poles in series	220V		415V		440V		690V		2 poles in series 500V DC			
240V	480V	600V	500V DC (1)	600V DC (1)	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole	4-pole
100	35	25	35	25	85	100	50	100	40	100	25	100	36	100	L5X3	L5X4
150	65	35	50	35	100		70		65		40		50		L6X3	L6X4
200	100	65	65	50	200		120		100		70		70		L0X3	L0X4
Current-limiting Breaking Frames																
150	65	35	50	35	100	100	70	100	65	100	40	100	50	100	LC6X3	–
200	100	65	65	50	200		120		100		70		70		LC0X3	–

(1) DC rating applies to thermal-magnetic trip unit only.

Table 94 - Breaking Frames, 600 A Rated Current, 100% Rated (1)

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (2)		Cat. No. 140G2-
			2 poles in series	3 poles in series	220V		415V		440V		690V		2 poles in series 500V DC		
240V	480V	600V	500V DC (1)	600V DC (1)	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	I_{cu} [kA]	I_{cs} [% I_{cu}]	3-pole
100	35	25	35	25	85	100	50	100	40	100	25	100	36	100	L5X3-Z1
Current-limiting Breaking Frames															
150	65	35	50	35	100	100	70	100	65	100	40	100	50	100	LC6X3-Z1
200	100	65	65	50	200		120		100		70		70		LC0X3-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) DC rating applies to thermal-magnetic trip unit only.

Table 95 - Trip Units: Thermal-magnetic

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G2-	
				3-pole	4-pole
500	350...500	2500...5000	F (Adjustable Thermal/Adjustable Magnetic)	LTF3-D50	LTF4-D50
600	420...600	3000...6000		LTF3-D60	LTF4-D60

(1) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(2) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 96 - Trip Units: Electronic DIP LSI

Rated Current I_n [A]	Protection Type					Cat. No. 140G2-	
	L		S		I	3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n		
600	240...600	3, 12, 36, 48	600...6000	0.05, 0.1, 0.2, 0.4	600...6000	LTH3-D60	LTH4-D60

Table 97 - Trip Units: Electronic DIP LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s		
600	240...600	3, 12, 36, 48	600...6000	0.05, 0.1, 0.2, 0.4	600...6000	120...600	0.1, 0.2, 0.4, 0.8	LTI3-D60	LTI4-D60

Table 98 - Trip Units: EnergySense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 = 0.6...10 x I_n	t_2 = [t_s]at10 x I_n (2)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
500	200...500	3...48	300...5000	0.05...0.5	750...5000	50...500	0.1...1	LTL3-D50	LTL4-D50
600	240...600		360...6000		900...6000	60...600		LTL3-D60	LTL4-D60

(1) Adjustable in 1 second increments.
(2) Adjustable in 0.01 second increments.
(3) Adjustable in 0.05 seconds increments.

Table 99 - Trip Units: PowerSense LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4 = [t_s] at I > I_4 (3)		
500	200...500	3...48	300...5000	0.05...0.5	750...5000	50...500	0.1...1	LTM3-D50	LTM4-D50
600	240...600		360...6000		900...6000	60...600		LTM3-D60	LTM4-D60

(1) Adjustable in 1 second increments.
(2) Adjustable in 0.01 second increments.
(3) Adjustable in 0.05 seconds increments.

Assembled MCCBs

Table 100 - Interrupting Rating/Breaking Capacity: Thermal-magnetic Circuit Breakers

Interrupting Rating (50/60 Hz) UL 489/CSA 22.2, No. 5 [kA]					Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %								Breaking Capacity (DC), IEC 60947-2 (1)		Interrupting Code (2) (3)
240V	480V	600V	2 poles in series	3 poles in series	220V		415V		440V		690V		500V DC 2 poles in series		
			500V DC	600V DC	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
100	50	25	35	25	85	100	50	100	50	100	25	100	35	100	L5
150	65	35	50	35	100		70		65		40		50		L6
200	100	65	70	50	150		120		100		70		70		L0

(1) DC rating applies to thermal-magnetic trip unit only.
(2) See Table 101 and Table 102 on page 63 for Cat. No. selection.
(3) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC6...

Table 101 - Thermal-magnetic, Adjustable: Interrupting Code L5, L6 and L0

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G2- (3)					
				Interrupting Code L5		Interrupting Code L6		Interrupting Code L0	
				3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
500	350...500	2500...5000	F (Adjustable Thermal/Adjustable Magnetic)	L5F3-D50	L5F4-D50	L6F3-D50	L6F4-D50	L0F3-D50	L0F4-D50
630	441...630	3150...6300		–	–	L6F3-D63 (4)	L6F4-D63 (4)	–	–

(1) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(2) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.
(3) Add a "C" after the "L" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-LC6F3-D30.
(4) IEC only.

Table 102 - Thermal-magnetic, Adjustable: 100% Rated (1)

Rated Current I_n [A]	Thermal Trip I_r [A] (2)	Magnetic Trip I_m [A] (3)	Protection Type	Cat. No. 140G2-		
				3-pole		
				Interrupting Code L5	Interrupting Code L6	Interrupting Code L0
500	350...500	2500...5000	F (Adjustable Thermal/ Adjustable Magnetic)	L5F3-D50-Z1	L6F3-D50-Z1	L0F3-D50-Z1
600	420...600	3000...6000		L5F3-D60-Z1	L6F3-D60-Z1	L0F3-D60-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable thermal trip with nine possible settings. The table shows minimum and maximum values.
(3) Adjustable magnetic trip with nine possible settings. The table shows minimum and maximum values.

Table 103 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz) UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz),IEC 60947-2 I_{cu} [kA]/I_{cs} %								Interrupting Code (1) (2)
			220V		415V		440V		690V		
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
100	35	25	85	100	50	100	50	100	25	100	L5
150	65	35	100		70		65		40		L6
200	100	65	200		120		100		70		L0

(1) See Table 67...Table 70 on page 53 for Cat. No. selection.
(2) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-KC6...

Table 104 - Electronic LSI: Interrupting Code L5, L6, and L0

Rated Current I_n [A]	Protection Type					Cat. No. 140G2- (1)					
	L		S		I	Interrupting Code L5		Interrupting Code L6		Interrupting Code L0	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
600	240...600	3, 12, 36, 48	600...6000	0.05, 0.1, 0.25, 0.4	600...6000	L5H3-D60	L5H4-D60	L6H3-D60	L6H4-D60	L0H3-D60	L0H4-D60

(1) Add a "C" after the "K" in the interrupting code to select 3-pole current-limiting devices. Example: Cat. No. 140G2-LC6H3-D30

Table 105 - Electronic LSI, 100% Rated (1): Interrupting Code L6 and L0

Rated Current I_n [A]	Protection Type					Cat. No. 140G2-	
	L		S		I	Interrupting Code L6	Interrupting Code L0
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	3-pole	3-pole
600	240...600	3, 12, 36, 48	600...6000	0.05, 0.1, 0.25, 0.4	600...6000	L6H3-D60-Z1	L0H3-D60-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Table 106 - Electronic LSIG: Interrupting Code L5, L6, and L0

Rated Current I_n [A]	Protection Type							Cat. No. 140G2- (1)					
	L		S		I	G		Interrupting Code L5		Interrupting Code L6		Interrupting Code L0	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
600	240...600	3, 12, 36, 48	600...6000	0.05, 0.1, 0.25, 0.4	600...6000	120...600	0.1, 0.2, 0.4, 0.8	L5I3-D60	L5I4-D60	L6I3-D60	L6I4-D60	L0I3-D60	L0I4-D60
630	252...630		630...6300		630...6300	126...630		—	—	L6I3-D63 (2)	L6I4-D63 (2)	—	—

(1) Add a "C" after the "L" in the interrupting code to select 3-pole current-limiting devices. Example, Cat. No. 140G2-LC6I3-D30
(2) IEC only.

Table 107 - Electronic LSIG, 100% Rated (1): Interrupting Code L5, L6, and L0

Rated Current I_n [A]	Protection Type							Cat. No. 140G2-		
	L		S		I	G		Interrupting Code L5	Interrupting Code L6	Interrupting Code L0
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1... 10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole		
600	240...600	3, 12, 36, 48	600...6000	0.05, 0.1, 0.25, 0.4	600...6000	120...600	0.1, 0.2, 0.4, 0.8	L5I3-D60-Z1	L6I3-D60-Z1	L0I3-D60-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Table 108 - Electronic EnergySense: Interrupting Code L5, L6, and L0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-					
	L		S		I	G		Interrupting Code L5		Interrupting Code L6		Interrupting Code L0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5... 10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
500	200...500	3...48	300...5000	0.05...0.5	750...5000	50...500	0.1...1	L5L3-D50	L5L4-D50	L6L3-D50	L6L4-D50	L0L3-D50	L0L4-D50
600	240...600		360...6000		900...6000	60...600		L5L3-D60	L5L4-D60	L6L3-D60	L6L4-D60	L0L3-D60	L0L4-D60
630	252...630		378...6300		945...6300	63...630		–	–	L6L3-D63 (4)	L6L4-D63 (4)	–	–

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.
(4) IEC only.

Table 109 - Electronic EnergySense 100% Rated (1): Interrupting Code L5, L6, and L0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-		
	L		S		I	G		Interrupting Code L5	Interrupting Code L6	Interrupting Code L0
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (2)	I_2= 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n (3)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (4)	3-pole	3-pole	3-pole
500	200...500	3...48	300...5000	0.05...0.5	750...5000	50...500	0.1...1	L5L3-D50-Z1	L6L3-D50-Z1	L0L3-D50-Z1
600	240...600		360...6000		900...6000	60...600		L5L3-D60-Z1	L6L3-D60-Z1	L0L3-D60-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable in increments of 1 second.
(3) Adjustable in increments of 0.01 seconds.
(4) Adjustable in increments of 0.05 seconds.

Table 110 - Electronic PowerSense: Interrupting Code L5, L6, and L0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-					
	L		S		I	G		Interrupting Code L5		Interrupting Code L6		Interrupting Code L0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (1)	I_2= 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n (2)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (3)	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
500	200...500	3...48	300...5000	0.05...0.5	750...5000	50...500	0.1...1	L5M3-D50	L5M4-D50	L6M3-D50	L0M4-D50	L0M3-D50	L0M4-D50
600	240...600		360...6000		900...6000	60...600		L5M3-D60	L5M4-D60	L6M3-D60	L0M4-D60	L0M3-D60	L0M4-D60
630	252...630		378...6300		945...6300	63...630		–	–	L6M3-D63 (4)	L6M4-D63 (4)	–	–

(1) Adjustable in increments of 1 second.
(2) Adjustable in increments of 0.01 seconds.
(3) Adjustable in increments of 0.05 seconds.
(4) IEC only.

Table 111 - Electronic PowerSense 100% Rated (1): Interrupting Code L5, L6, and L0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-		
	L		S		I	G		Interrupting Code L5	Interrupting Code L6	Interrupting Code L0
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1 (2)	I_2= 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n (3)	I_3 = 1.5...10 x I_n	I_4 = 0.1...1 x I_n	t_4= [t_s] at I x I_4 (4)	3-pole	3-pole	3-pole
500	200...500	3...48	300...5000	0.05...0.5	750...5000	50...500	0.1...1	L5M3-D50-Z1	L6M3-D50-Z1	L0M3-D50-Z1
600	240...600		360...6000		900...6000	60...600		L5M3-D60-Z1	L6M3-D60-Z1	L0M3-D60-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable in increments of 1 second.
(3) Adjustable in increments of 0.01 seconds.
(4) Adjustable in increments of 0.05 seconds.

Bulletin 140G MCCBs: 800 A, Frame Size M

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G frame size M MCCBs are available both as assembled circuit breakers and individual breaking frame and trip unit components that can be ordered for field assembly or factory installation.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G	-	M	6	K	3	-	D60	-	Z1	-	SD	-	AA
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	**Description**
140G	MCCB

b	
Frame Size/Rating	
Code	**Description**
M	800 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	**Description**
5	50 kA
6	65 kA
0	100 kA
T	Trip unit

d	
Protection Type	
Code	**Description**
F	Adjust thermal/adjust magnetic
H	DIP long, short, instant (LSI)
I	DIP long, short, instant, ground (LSIG)
K	DIP LSIG-MM
X	Breaking frame
S	Molded case switch (isolator)

e	
Number of Poles	
Code	**Description**
3	3 poles
4	4 poles

f	
Rated Current	
Code	**Description**
D60	600 A
D63	630 A
D80	800 A
Blank	Frame only

g	
Continuous Rated (1)	
Code	**Description**
Blank	80% Rated
Z1	100% Rated

h	
Factory-installed Options	
Code	**Description**
See Factory-installed Options	

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Breaking Frames and Trip Units

Frame | Trip Unit | MCCB

Table 112 - Breaking Frames: 800 A Rated Current

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]				Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %						Breaking Capacity (DC), IEC 60947-2 (1)		Cat. No. 140G-	
240V	480V	600V	3 poles in series	220V		415V		690V		3 poles in series 750V DC			
			600V DC (1)	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole	4-pole
100	50	25	20	85	100	50	100	22	75	16	75	M5X3	M5X4
200	65	35	35	100	100	70	100	25		36		M6X3	M6X4
200	100	42	50	200	75	100	75	30		50		M0X3	M0X4

(1) DC rating applies to thermal-magnetic trip unit only.

Table 113 - Breaking Frames: 800 A Rated Current, 100% Rated (1)

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5[kA]				Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %						Breaking Capacity (DC), IEC 60947-2 (2)		Cat. No. 140G-
240V	480V	600V	3 poles in series	220V		415V		690V		750V DC (3 poles in series)		
			600V DC (1)	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	3-pole
100	50	25	20	85	100	50	100	22	75	16	75	M5X3-Z1
200	65	35	35	100	100	70	100	25		36		M6X3-Z1
200	100	42	50	200	75	100	75	30		50		M0X3-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) DC rating applies to thermal-magnetic trip unit only.

Table 114 - Trip Units: Thermal-magnetic

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G-	
				3-pole	4-pole
600	420...600	3000...6000	F (Adjustable Thermal/ Adjustable Magnetic)	MTF3-D60	MTF3-D60
800	560...800	4000...8000		MTF3-D80	MTF4-D80

(1) Adjustable thermal trip with five possible settings. The table shows min and max values.
(2) Adjustable magnetic trip with five possible settings. The table shows min and max values.

Table 115 - Trip Units: Electronic LSI

Rated Current I_n [A]	Protection Type					Cat. No. 140G-	
	L		S		I	3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n		
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	MTH3-D60	MTH4-D60
800	320...800		480...8000		1200...8400	MTH3-D80	MTH4-D80

Table 116 - Trip Units: Electronic LSIG

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s		
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	120...600	0.1, 0.2, 0.4, 0.8	MTI3-D60	MTI4-D60
800	320...800		480...8000		1200...8400	160...800		MTI3-D80	MTI4-D80

Table 117 - Electronic LSIG-MM (1)

Rated Current I_n [A]	Protection Type								Cat. No. 140G-	
	L		S		I	G		MM	3-pole	4-pole
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = 1...10 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5...4 x I_n		
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	120...600	0.1, 0.2, 0.4, 0.8	900...2400	MTK3-D60	MTK4-D60
800	320...800		480...8000		1200...8400	160...800		1200...3200	MTK3-D80	MTK4-D80

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.

Assembled MCCBs

Table 118 - Interrupting Rating/Breaking Capacity: Thermal-magnetic and Electronic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]				Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %						Breaking Capacity (DC), IEC 60947-2 (1)		Interrupting Code (2)
240V	480V	600V	3 poles in series	220V		415V		690V		3 poles in series 750V DC		
			600V DC (1)	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	
100	50	25	20	85	100	50	100	22	75	16	75	M5
200	65	35	35	100	100	70	100	25		36		M6
200	100	42	50	200	75	100	75	30		50		M0

(1) DC ratings applicable to thermal magnetic trip unit only.
(2) See Table 119...Table 128 on page 69 for Cat. No. selection.

Table 119 - Thermal-magnetic: Interrupting Code M5, M6, and M0

Rated Current I_n [A]	Thermal Trip I_r [A] (1)	Magnetic Trip I_m [A] (2)	Protection Type	Cat. No. 140G-					
				Interrupting Code M5		Interrupting Code M6		Interrupting Code M0	
				3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
600	420...600	3000...6000	F (Adjustable Thermal/ Adjustable Magnetic)	M5F3-D60	M5F4-D60	M6F3-D60	M6F4-D60	M0F3-D60	M0F4-D60
630(3)	441...630	3150...6300		M5F3-D63	M5F4-D63	M6F3-D63	M6F4-D63	M0F3-D63	M0F4-D63
800	560...800	4000...8000		M5F3-D80	M5F4-D80	M6F3-D80	M6F4-D80	M0F3-D80	M0F4-D80

(1) Adjustable thermal trip with five possible settings. The table shows min and max values.
(2) Adjustable magnetic trip with five possible settings. The table shows min and max values.
(3) IEC only.

Table 120 - Thermal-magnetic 100% Rated (1): Interrupting Code M5, M6, and M0

Rated Current I_n [A]	Thermal Trip I_r [A] (2)	Magnetic Trip I_m [A] (3)	Protection Type	Cat. No. 140G		
				Interrupting Code M5	Interrupting Code M6	Interrupting Code M0
				3-pole	3-pole	3-pole
600	420...600	3000...6000	F (Adjustable Thermal/Adjustable Magnetic)	M5F3-D60-Z1	M6F3-D60-Z1	M0F3-D60-Z1
800	560...800	4000...8000		M5F3-D80-Z1	M6F3-D80-Z1	M0F3-D80-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Adjustable thermal trip with five possible settings. The table shows min and max values.
(3) Adjustable magnetic trip with five possible settings. The table shows min and max values.

Table 121 - Electronic LSI: Interrupting Code M5 and M6

Rated Current I_n [A]	Protection Type					Cat. No. 140G-			
	L		S		I	Interrupting Code M5		Interrupting Code M6	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = (1)	3-pole	4-pole	3-pole	4-pole
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	M5H3-D60	M5H4-D60	M6H3-D60	M6H4-D60
630 (2)	252...630	3, 6, 12, 18	378...6300		945...7560	M5H3-D63	M5H4-D63	M6H3-D63	M6H4-D63
800	320...800	3, 6, 9, 18	480...8000		1200...8400	M5H3-D80	M5H4-D80	M6H3-D80	M6H4-D80

(1) 600 A, 630 A I_3max =12 I_n; 800 A I_3 max = 10.5 I_n
(2) IEC only.

Table 122 - Electronic LSI: Interrupting Code M0

Rated Current I_n [A]	Protection Type					Cat. No. 140G-	
	L		S		I	Interrupting Code M0	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = (1)	3-pole	4-pole
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	M0H3-D60	M0H4-D60
630 (2)	252...630	3, 6, 12, 18	378...6300		945...7560	M0H3-D63	M0H4-D63
800	320...800	3, 6, 9, 18	480...8000		1200...8400	M0H3-D80	M0H4-D80

(1) 600 A, 630 A I_3max =12 I_n; 800 A I_3 max = 10.5 I_n
(2) IEC only.

Table 123 - Electronic LSI, 100% Rated [1]: Interrupting Code M5, M6, and M0

Rated Current I_n [A]	Protection Type					Cat. No. 140G-		
	L		S		I	Interrupting Code M5	Interrupting Code M6	Interrupting Code M0
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = [2]	3-pole	3-pole	4-pole
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	M5H3-D60-Z1	M6H3-D60-Z1	M0H3-D60-Z1
800	320...800	3, 6, 9, 18	480...8000		1200...8400	M5H3-D80-Z1	M6H3-D80-Z1	M0H3-D80-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) 600 A, 630 A I_3 max =12 I_n; 800 A I_3 max = 10.5 I_n

Table 124 - Electronic LSIG: Interrupting Code M5 and M6

Rated Current I_n [A]	Protection Type							Cat. No. 140G-			
	L		S		I	G		Interrupting Code M5		Interrupting Code M6	
	I_1 = 0.4... 1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = [1]	I_4 = 0.2... 1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	120...600	0.1, 0.2, 0.4, 0.8	M5I3-D60	M5I4-D60	M6I3-D60	M6I4-D60
630 [2]	252...630	3, 6, 12, 18	378...6300		945...7560	126...630		M5I3-D63	M5I4-D63	M6I3-D63	M6I4-D63
800	320...800	3, 6, 9, 18	480...8000		1200...8400	160...800		M5I3-D80	M5I4-D80	M6I3-D80	M6I4-D80

(1) 600 A, 630 A I_3 max =12 I_n; 800 A I_3 max = 10.5 I_n
(2) IEC only.

Table 125 - Electronic LSIG: Interrupting Code M0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-	
	L		S		I	G		Interrupting Code M0	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = [1]	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	120...600	0.1, 0.2, 0.4, 0.8	M0I3-D60	M0I4-D60
630 [2]	252...630	3, 6, 12, 18	378...6300		945...7560	126...630		M0I3-D63	M0I4-D63
800	320...800	3, 6, 9, 18	480...8000		1200...8400	160...800		M0I3-D80	M0I4-D80

(1) 600 A, 630 A I_3 max =12 I_n; 800 A I_3 max = 10.5 I_n
(2) IEC only.

Table 126 - Electronic LSIG, 100% Rated [1]: Interrupting Code M5, M6, and M0

Rated Current I_n [A]	Protection Type							Cat. No. 140G-		
	L		S		I	G		Interrupting Code M5	Interrupting Code M6	Interrupting Code M0
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1... 10 x I_n	t_2 = s	I_3 = [2]	I_4 = 0.2... 1 x I_n	t_4 = s	3-pole	3-pole	3-pole
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	120...600	0.1, 0.2, 0.4, 0.8	M5I3-D60-Z1	M6I3-D60-Z1	M0I3-D60-Z1
800	320...800	3, 6, 9, 18	480...8000		1200...8400	160...800		M5I3-D80-Z1	M6I3-D80-Z1	M0I3-D80-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) 600 A, 630 A I_3max =12 I_n; 800 A I_3 max = 10.5 I_n

Table 127 - Electronic LSIG-MM [1]: Interrupting Code M5 and M6

Rated Current I_n [A]	Protection Type								Cat. No. 140G-			
	L		S		I	G		MM	Interrupting Code M5		Interrupting Code M6	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = [2]	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5...4 x I_n	3-pole	4-pole	3-pole	4-pole
600	240... 600	3, 6, 12, 18	360... 6000	0.05, 0.1, 0.25, 0.5	900... 7200	120... 600	0.1, 0.2, 0.4, 0.8	900... 2400	M5K3-D60	M5K4-D60	M6K3-D60	M6K4-D60
630 [3]	252... 630	3, 6, 12, 18	378... 6300		945... 7560	126... 630		945... 2520	M5K3-D63	M5K4-D63	M6K3-D63	M6K4-D63
800	320... 800	3, 6, 9, 18	480... 8000		1200... 8400	160... 800		1200... 3200	M5K3-D80	M5K4-D80	M6K3-D80	M6K4-D80

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(2) 600 A, 630 A I_3max =12 I_n; 800 A I_3 max = 10.5 I_n
(3) IEC only.

Table 128 - Electronic LSIG-MM [1]: Interrupting Code M0

Rated Current I_n [A]	Protection Type								Cat. No. 140G-	
	L		S		I	G		MM	Interrupting Code M0	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = [2]	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5...4 x I_n	3-pole	4-pole
600	240...600	3, 6, 12, 18	360...6000	0.05, 0.1, 0.25, 0.5	900...7200	120...600	0.1, 0.2, 0.4, 0.8	900... 2400	M0K3-D60	M0K4-D60
630 [3]	252...630	3, 6, 12, 18	378...6300		945...7560	126...630		945... 2520	M0K3-D63	M0K4-D63
800	320...800	3, 6, 9, 18	480...8000		1200...8400	160...800		1200... 3200	M0K3-D80	M0K4-D80

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(2) 600 A, 630 A I_3max =12 I_n; 800 A I_3 max = 10.5 I_n
(3) IEC only.

Table 129 - Electronic LSIG-MM, 100% Rated [1] [2]: Interrupting Code M5, M6, and M0

Rated Current I_n [A]	Protection Type								Cat. No. 140G-		
	L		S		I	G		MM	Interrupting Code M5	Interrupting Code M6	Interrupting Code M0
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 1...10 x I_n	t_2 = s	I_3 = [3]	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5...4 x I_n	3-pole	3-pole	3-pole
600	240... 600	3, 6, 12, 18	360... 6000	0.05, 0.1, 0.25, 0.5	900... 7200	120... 600	0.1, 0.2, 0.4, 0.8	900... 2400	M5K3-D60-Z1	M6K3-D60-Z1	M0K3-D60-Z1
800	320... 800	3, 6, 9, 18	480... 8000		1200... 8400	160... 800		1200... 3200	M5K3-D80-Z1	M6K3-D80-Z1	M0K3-D80-Z1

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(2) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(3) 600 A, 630 A I_3max =12 I_n; 800 A I_3 max = 10.5 I_n

Bulletin 140G MCCBs: 1200 A, Frame Size N

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Frame size N MCCBs are available as assembled circuit breakers. Individual trip unit components can be ordered for field assembly or as replacement parts.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available lugs.

140G	-	N	5	H	3	-	E12	-		-	SD	-	AB
a		b	c	d	e		f		g		h		h

a	
Bulletin Number	
Code	Description
140G	MCCB

b	
Frame Size/Rating	
Code	Description
N	1200 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
5	50 kA
6	65 kA
0	100 kA
T	Trip unit

d	
Protection Type	
Code	Description
H	DIP long, short, instant (LSI)
I	DIP long, short, instant, ground (LSIG)
K	DIP LSIG-MM
S	Molded case switch (isolator)

e	
Number of Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code	Description
E12	1200 A trip unit with 1200 A rating plug

g	
Continuous Rated (1)	
Code	Description
Blank	80% Rated
Z1	100% Rated

h	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Assembled MCCBs

Table 130 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA 22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %										Interrupting Code (1)
240V	480V	600V	220V		415V		440V		500V		690V		
			I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	
65	50	25	85	100	50	100	50	100	40	100	30	100	N5
100	65	50	100		70		65		50	100	42	75	N6
150	100	65	200		120		100		85	75	50	75	N0

(1) See Table 131 on page 71 through Table 142 on page 72 for Cat. No. selection

Table 131 - Electronic LSI: Interrupting Code N5 and N6

Rated Current I_n [A]	Protection Type (1)					Cat. No. 140G-			
	L		S		I	Interrupting Code N5		Interrupting Code N6	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5... 12 x I_n	3-pole	4-pole	3-pole	4-pole
1200	480...1200	3,6,12,18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...14400	N5H3-E12	N5H4-E12	N6H3-E12	N6H4-E12

(1) Listed I_1, I_2, and I_3 values are based on a 1200 A rating plug value.

Table 132 - Electronic LSI: Interrupting Code N0

Rated Current I_n [A]	Protection Type (1)					Cat. No. 140G-	
	L		S		I	Interrupting Code N0	
	I_1 = 0.4...1 x I_n	t_1=[t_s] at 6 x I_1	I_2=0.6... 10 x I_n	t_2=[t_s] at 10 x I_n	I_3=1.5... 12 x I_n	3-pole	4-pole
1200	480...1200	3,6,12,18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF,1800...14400	N0H3-E12	N0H4-E12

(1) Listed I_1, I_2, and I_3 values are based on a 1200 A rating plug value.

Table 133 - Electronic LSIG: Interrupting Code N5 and N6

Rated Current I_n [A]	Protection Type (1)							Interrupting Code N5		Interrupting Code N6	
	L		S		I	G		Cat. No. 140G-		Cat. No.	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6... 10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5... 12 x I_n	I_4 = 0.2... 1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
1200	480...1200	3, 6, 12, 18	OFF, 720... 12000	0.1, 0.25, 0.5, 0.8	OFF, 1800... 18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	N5I3-E12	N5I4-E12	N6I3-E12	N6I4-E12

(1) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A rating plug value.

Table 134 - Electronic LSIG: Interrupting Code N0

Rated Current I_n [A]	Protection Type (1)							Cat. No. 140G-	
	L		S		I	G		Interrupting Code N0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...12 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole
1200	480... 1200	3, 6, 12, 18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240...1200	0.1, 0.2, 0.4,0.8	N0I3-E12	N0I4-E12

(1) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A rating plug value.

Table 135 - Electronic LSIG-MM (1): Interrupting Code N5 and N6

Rated Current I_n [A] (1)	Protection Type (2)							Cat. No. 140G-			
	L		S		I	G		Interrupting Code N5		Interrupting Code N6	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...12 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
1200	480...1200	3, 12, 24, 36, 48 72, 108, 144	OFF, 720... 12000	0.1, 0.25, 0.5, 0.8	OFF, 1800... 18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	N5K3-E12	N5K4-E12	N6K3-E12	N6K4-E12

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode. and information about maintenance mode adjustment.
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A rating plug value.

Table 136 - Electronic LSIG-MM (1): Interrupting Code N0

Rated Current I_n [A] (1)	Protection Type(2)								Cat. No. 140G-	
	L		S		I	G		MM	Interrupting Code N0	
	I_1 = 0.4... 1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5... 12 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5...4 x I_n	3-pole	4-pole
1200	480...1200	3, 12, 24, 36, 48, 72, 108, 144	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	1.5...4, 0.1 step	N0K3-E12	N0K4-E12

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode. and information about maintenance mode adjustment.
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.

Table 137 - Electronic LSI, 100% Rated (1): Interrupting Code N5 and N6

Rated Current I_n [A]	Protection Type (2)					Cat. No. 140G-			
	L		S		I	Interrupting Code N5		Interrupting Code N6	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...12 x I_n	3-pole	4-pole	3-pole	4-pole
1200	480...1200	3, 6, 12, 18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800... 14400	N5H3-E12-Z1	N5H4-E12-Z1	N6H3-E12-Z1	N6H4-E12-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.

Table 138 - Electronic LSI, 100% Rated [1]: Interrupting Code N0

Rated Current I_n [A]	Protection Type [2]					Cat. No. 140G-	
	L		S		I	Interrupting Code N0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...12 x I_n	3-pole	4-pole
1200	480...1200	3, 6, 12, 18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800... 14400	N0H3-E12-Z1	N0H4-E12-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.

Table 139 - Electronic LSIG (Long, Short, Instantaneous, Ground Fault), 100% Rated [1]: Interrupting Code N5 and N6

Rated Current I_n [A]	Protection Type [2]							Cat. No. 140G-			
	L		S		I	G		Interrupting Code N5		Interrupting Code N6	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 1...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
1200	480...1200	3, 6, 12, 18	OFF, 720... 12000	0.1, 0.25, 0.5, 0.8	OFF, 1800... 18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	N5I3-E12-Z1	N5I4-E12-Z1	N6I3-E12-Z1	N6I4-E12-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.

Table 140 - Electronic LSIG — 100% Rated [1]: Interrupting Code N0

Rated Current I_n [A]	Protection Type [2]							Cat. No. 140G-	
	L		S		I	G		Interrupting Code N0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 1...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole
1200	480...1200	3, 6, 12, 18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	N0I3-E12-Z1	N0I4-E12-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.

Table 141 - Electronic LSIG-MM — 100% Rated [1] [2]: Interrupting Code N5 and N6

Rated Current I_n [A]	Protection Type [3]							Cat. No. 140G-			
	L		S		I	G		Interrupting Code N5		Interrupting Code N6	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 1...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
1200	480... 1200	3, 12, 24, 36, 48, 72, 108, 144	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240... 1200	0.1, 0.2, 0.4, 0.8	N5K3-E12-Z1	N5K4-E12-Z1	N6K3-E12-Z1	N6K4-E12-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(3) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.

Table 142 - Electronic LSIG-MM, 100% Rated [1] [2]: Interrupting Code N0

Rated Current I_n [A]	Protection Type [3]							Cat. No. 140G-	
	L		S		I	G		Interrupting Code N0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 1...10 x I_n	t_2 = [t_s] at 10 x I_n	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole
1200	480...1200	3, 12, 24, 36, 48, 72, 108,144	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	N0K3-E12-Z1	N0K4-E12-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) See Maintenance Mode on page 26 for a list of the preset values for maintenance mode (MM).
(3) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.

Table 143 - Trip Units: Electronic LSI, LSIG, LSIG-MM

Rated Current I_n [A]	Protection Type	Cat. No. 140G- [1]
1200	H (LSI)	NTH-E12
1200	I (LSIG)	NTI-E12
1200	K (LSIG-MM)	NTK-E12

(1) Supplied installed with each MCCB. The Cat. Nos. listed are replacement parts.

Bulletin 140G MCCBs: 1200 A, Frame Size NS

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Frame size NS MCCBs are available as assembled circuit breakers. Individual trip unit components can be ordered for field assembly or as replacement parts.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G	-	NS	5	H	3	-	E12	-		-	MJ	-	RK	-	SD	-	SD
a		b	c	d	e		f		g		h		i		j		k

a	
Bulletin Number	
Code	Description
140G	MCCB

b	
Frame Size/Rating	
Code	Description
NS	1200 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
5	50 kA
6	65 kA
0	100 kA
T	Trip unit

d	
Protection Type	
Code	Description
H	DIP long, short, instant (LSI)
I	DIP long, short, instant, ground (LSIG)
K	DIP LSIG-D-MM
S	Molded case switch (isolator)

e	
Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code	Description
E12	1200 A trip unit with 1200 A rating plug

g	
Continuous Rated (1)	
Code	Description
Blank	80% Rated

h, i	
Remote MCCB Operation	
Code	Description
See Table 166 on page 98	

j, k	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Assembled MCCBs

Table 144 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA C22.2, No. 5[kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %										Interrupting Code (1)
240V	480V	600V	220V		415V		440V		500V		690V		
			I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	I_{cu} [kA]	I_{cs}[%I_{cu}]	
65	50	25	85	100	50	100	50	100	40	100	30	100	NS5
100	65	50	100		70		65		50	100	42	75	NS6
150	100	65	200		120		100		85	75	50	75	NS0

(1) See Table 145 on page 74 through Table 149 on page 74 for Cat. No. selection.

Table 145 - Electronic LSI: Interrupting Code NS5 and NS6

Rated Current I_n [A]	Protection Type (1)					Cat. No. 140G-					
	L		S		I	Interrupting Code NS5		Interrupting Code NS6		Interrupting Code NS0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 6 x I_1	I_2 = 0.6...10 x I_n	t_2 = s	I_3 = 1.5...12 x I_n	3-pole	4-pole	3-pole	4-pole	3-pole	4-pole
1200 (2)	480...1200	3, 6, 12, 18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...14,400	NS5H3-E12	NS5H4-E12	NS6H3-E12	NS6H4-E12	NS0H3-E12	NS0H4-E12

(1) Listed I_1, I_2, and I_3 values are based on a 1200 A Rating plug value.
(2) Rated current = 1200 A for UL Ratings.

Table 146 - Electronic LSIG: Interrupting Code NS5 and NS6

Rated Current I_n [A]	Protection Type (1)							Cat. No. 140G-			
	L		S		I	G		Interrupting Code NS5		Interrupting Code NS6	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2= 0.6...10 x I_n	t_2 = [t_s] at 10 x I_1	I_3 = 1.5...15 x I_n	I_4 = 0.2... 1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
1200 (2)	480...1200	3, 6, 12, 18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	NS5I3-E12	NS5I4-E12	NS5I4-E12	NS6I4-E12

(1) Listed I_1, I_2, and I_3 values are based on a 1200 A Rating plug value.
(2) Rated current = 1200 A for UL Ratings.

Table 147 - Electronic LSIG: Interrupting Code NS0

Rated Current I_n [A]	Protection Type (1)							Cat. No. 140G-	
	L		S		I	G		Interrupting Code NS0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_1	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole
1200 (2)	480...1200	3, 6, 12, 18	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	NS0I3-E12	NS0I4-E12

(1) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.
(2) Rated current = 1200 A for UL Ratings; 1250 A for IEC.

Table 148 - Electronic LSIG-MM (Long, Short, Instantaneous, Ground Fault - Maintenance Mode) (1): Interrupting Code NS5 and NS6

Rated Current I_n [A]	Protection Type (2)							Cat. No. 140G-			
	L		S		I	G		Interrupting Code NS5		Interrupting Code NS6	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_1	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole	3-pole	4-pole
1200 (3)	480... 1200	3, 12, 24, 36, 48, 72, 108, 144	OFF, 720... 12000	0.1, 0.25, 0.5, 0.8	OFF, 1800... 18000	OFF, 240... 1200	0.1, 0.2, 0.4, 0.8	NS5K3-E12	NS5K4-E12	NS6K3-E12	NS6K4-E12

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.
(3) Rated current = 1200 A for UL Ratings.

Table 149 - Electronic LSIG-MM (1): Interrupting Code NS0

Rated Current I_n [A]	Protection Type (2)								Cat. No. 140G-	
	L		S		I	G		MM	Interrupting Code NS0	
	I_1 = 0.4...1 x I_n	t_1 = [t_s] at 3 x I_1	I_2 = 0.6...10 x I_n	t_2 = [t_s] at 10 x I_1	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5...4 x I_n	3-pole	4-pole
1200 (3)	480...1200	3, 12, 24, 36, 48, 72, 108, 144	OFF, 720...12000	0.1, 0.25, 0.5, 0.8	OFF, 1800...18000	OFF, 240...1200	0.1, 0.2, 0.4, 0.8	1.5...4, 0.1 step	NS0K3-E12	NS0K4-E12

(1) See Maintenance Mode on page 26 for a list of the preset values for Maintenance Mode.
(2) Listed I_1, I_2, I_3, and I_4 values are based on a 1200 A Rating plug value.
(3) Rated current = 1200 A for UL Ratings; 1250 A for IEC.

Table 150 - Trip Units: Electronic LSI, LSIG, LSIG-MM (1)

Rated Current I_n [A]	Protection Type	Cat. No. 140G-
1200	H (LSI)	NTH-E12
1200	I (LSIG)	NTI-E12
1200	K (LSIG-MM)	NTK-E12

(1) Supplied installed with each MCCB. The Cat. Nos. listed are replacement parts.

Bulletin 140G MCCBs: 2500...3000 A, Frame Size R

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCCB. ProposalWorks software is available from rok.auto/systemtools.

Bulletin 140G frame size R MCCBs are available as assembled circuit breakers. Individual trip unit components can be ordered for field assembly or as replacement parts.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available lugs.

140G	-	R	12	K	3	-	E25	-	Z1	-	W1	-	MD	-	RD	-	SB
a		b	c	d	e		f		g		h		i		j		k

a	
Bulletin Number	
Code	Description
140G	MCCB

b	
Frame Size/Rating	
Code	Description
R	2500...3000 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
12	125 kA
T	Trip Unit

d	
Protection Type	
Code	Description
K	DIP LSIG-MM
S	Molded case switch (isolator)

e	
Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code	Description
E20	2000 A trip unit with 2000 A rating plug
E25	2500 A trip unit with 2500 A rating plug
E30	3000 A trip unit with 3000 A rating plug

g	
Continuous Rated (1)	
Code	Description
Blank	80% Rated
Z1	100% Rated

h	
Door Interlock	
Code	Description
Blank	With door interlock
W1	Without door interlock

i, j	
Remote MCCB Operation	
Code	Description
See Table 166 on page 98	

k
Factory-installed Options
Code / Description
See Factory-installed Options

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.

Assembled MCCBs

Table 151 - Interrupting Rating/Breaking Capacity: Electronic Circuit Breakers

Interrupting Rating (50/60 Hz), UL 489/CSA C22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2 I_{cu} [kA]/I_{cs} %										Interrupting Code (1)
			220V		415V		440V		500V		690V		
240V	480V	600V	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	
125	125	100	130	75	80	75	80	75	40	100	40	100	R12

(1) See Table 152 on page 76 and Table 153 on page 76 for Cat. No. selection.

Table 152 - Electronic LSIG-MM, 80% Rated [1] [2]: Interrupting Code R12

Rated Current I_n [A]	Protection Type [3]							Cat. No. 140G-	
	L		S		I	G		Interrupting Code R12	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 0.6...10 x I_n	t_2 = s	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	3-pole	4-pole
2000	800...2000	3, 6, 12, 18	OFF, 1200...20000	0.1, 0.25, 0.5, 0.8	OFF, 3000...30000	OFF, 400...2000	0.1, 0.2, 0.4, 0.8	R12K3-E20	R12K4-E20
2500 [3]	1000...2500		OFF, 1500...25000		OFF, 3750...37500	OFF, 500...2500		R12K3-E25	R12K4-E25
3000	1200...3000		OFF, 1800...30000		OFF, 4500...36000 [4]	OFF, 600...3000		R12K3-E30	R12K4-E30

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) See Maintenance Mode on page 26 for a list of the preset values for maintenance mode (MM).
(3) Listed I_1, I_2, I_3, and I_4 values are based on the default rating plug value.
(4) For 3000 A trip units, I_3 maximum is 12 x I_n.

Table 153 - Electronic LSIG-MM, 100% Rated [1] [2]: Interrupting Code R12

Rated Current I_n [A]	Protection Type [3]								Cat. No. 140G-	
	L		S		I	G		MM	Interrupting Code R12	
	I_1 = 0.4...1 x I_n	t_1 = s	I_2 = 0.6...10 x I_n	t_2 = s	I_3 = 1.5...15 x I_n	I_4 = 0.2...1 x I_n	t_4 = s	I_5 = 1.5...4 x I_n	3-pole	4-pole
2000	800...2000	3, 6, 12, 18	OFF... 20000	0.1, 0.25, 0.5, 0.8	OFF, 3000...30000	OFF, 400...2000	0.1, 0.2, 0.4, 0.8	1.5...4, 0.1 step	R12K3-E20-Z1	R12K4-E20-Z1
2500	1000...2500		OFF, 1500...25000		OFF, 3750...37500	OFF, 500...2500			R12K3-E25-Z1	R12K4-E25-Z1
3000	1200...3000		OFF, 1800...30000		OFF, 4500...36000 [4]	OFF, 600...3000			R12K3-E30-Z1	R12K4-E30-Z1

(1) For more information about 80% and 100% ratings, see 80% and 100% Continuous Rated Circuit Breakers on page 15.
(2) See Maintenance Mode on page 26 for a list of the preset values for maintenance mode (MM).
(3) Listed I_1, I_2, I_3, and I_4 values are based on the default rating plug value.
(4) For 3000 A trip units, I_3 maximum is 12 x I_n.

Table 154 - Trip Units, Electronic LSI, LSIG, LSIG-MM [1]

	Rated Current I_n [A]	Protection Type	Cat. No. 140G-
	2000, 2500, 3000	K (LSIG-MM)	RTK-E30

(1) Supplied installed with each MCCB. The Cat. Nos. listed are replacement parts.

The Bulletin 140MG Motor Circuit Protectors (MCPs) provide short-circuit protection for individual motor loads. Factory-installed internal accessories make installation and wiring easy.

MCPs may provide the following protective and control functions:

- Disconnect for motor branch circuit
- Branch circuit, short-circuit protection (magnetic protection)
- Switching (manual)

Features include:

- Current range 0.16...1200 A
- End cap/bolt-on terminals are standard
- Visible trip indication
- High current limiting
- High switching capacity
- UL Listed/Recognized for motor loads
  - Short-circuit protection — magnetic trip
  - Overload protection must be provided separately

Standards compliance and certifications for the Bulletin 140MG family of MCPs are as follows:

In North America, electrical codes require that an individual motor branch circuit be protected by a UL/CSA Listed fuse, circuit breaker or self-protected combination motor controller.

Bulletin 140MG frame size G...N MCPs are UL/CSA Recognized as circuit breakers. These MCPs are UL/CSA Recognized, rather than UL/CSA Listed, because they only provide short-circuit protection and not thermal overload protection for the motor.

Standards Compliance	Certifications
IEC 60947-2	CE Marked
UL 489	CSA Certified (File No. LR1234)
CSA22.2, No. 5	UR Recognized (File No. E224135)
	CCC

Bulletin 140MG MCPs: 125 A, Frame Size G and 150 A, Frame Sizes I

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCP. ProposalWorks software is available from rok.auto/systemtools.

All MCPs are only available as assembled circuit breakers. Individual frame and trip unit components are not available.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140MG	-	I	8	P	-	C70	-	SD	-	KA
a		b	c	d		e		f		f

a	
Bulletin Number	
Code	Description
140MG	MCP

b	
Frame Size/Rating	
Code	Description
G	125 A
I	150 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
8	High break (1)

d	
Protection Type	
Code	Description
P	Adjustable magnetic only (less than 13 x I_n)

e	
Rated Current	
Code	Description
B	Example: B30 = 3 A
C	Example: C30 = 30 A
D	Example: D12 = 120 A

e	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) The interrupting rating for MCPs is dependent upon the controller used. Please see the Global Short-circuit Rating Tool, rok.auto/sccr.

Bulletin 140MG MCPs: 125 A, Frame Size H and 250 A, Frame Size J

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCP. ProposalWorks software is available from rok.auto/systemtools.

All MCPs are only available as assembled circuit breakers. Individual frame and trip unit components are not available.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140MG	-	J	8	P	-	D15	-	SD	-	AA
a		b	c	d		e		f		f

a	
Bulletin Number	
Code	Description
140MG	MCP

b	
Frame Size/Rating	
Code	Description
H	125 A
J	250 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
8	High break (1)

d	
Protection Type	
Code	Description
P	Adjustable magnetic only (less than 13 x I_n)

e	
Rated Current	
Code	Description
B	Example: B30 = 3 A
C	Example: C30 = 30 A
D	Example: D20 = 200 A

e	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) The interrupting rating for MCPs is dependent upon the controller used. Please see the Global Short-circuit Rating Tool, rok.auto/sccr.

Bulletin 140MG2 MCPs: 400 A, Frame Size K and 600 A, Frame Sizes L

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCP. ProposalWorks software is available from rok.auto/systemtools.

All MCPs are only available as assembled circuit breakers. Individual frame and trip unit components are not available.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140MG2	-	K	8	P	-	D40	-	SD	-	AA
a		b	c	d		e		f		f

a	
Bulletin Number	
Code	**Description**
140MG2	MCP

b	
Frame Size/Rating	
Code	**Description**
K	400 A
L	600 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	**Description**
8	High break (2)

d	
Protection Type	
Code	**Description**
P	Adjustable magnetic only (less than 13 x I_n)

e	
Rated Current (1)	
Code	**Description**
D30	Example: 300 A
D40	Example: 400 A
D60	Example: 600 A
Blank	Frame only

e	
Factory-installed Options	
Code	**Description**
See Factory-installed Options	

(1) MCPs that have electronic trip units come with a rating plug installed that matches the trip unit rating. Different value rating plugs are not compatible with these devices.
(2) The interrupting rating for MCPs is dependent upon the controller used. Please see the Global Short-circuit Rating Tool, rok.auto/sccr.

Bulletin 140MG MCPs: 400 A, Frame Size K and 800 A, Frame Size M

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCP. ProposalWorks software is available from rok.auto/systemtools.

All MCPs are only available as assembled circuit breakers. Individual frame and trip unit components are not available.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140MG	-	M	8	P	-	D40	-	SD	-	AA
a		b	c	d		e		f		f

a	
Bulletin Number	
Code	**Description**
140MG	MCP

b	
Frame Size/Rating	
Code	**Description**
K	400 A
M	800 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	**Description**
8	High break (2)

d	
Protection Type	
Code	**Description**
P	Adjustable magnetic only (less than 13 x I_n)

e	
Rated Current (1)	
Code	**Description**
D30	Example: 300 A
D40	Example: 400 A
D60	Example: 600 A
D80	Example: 800 A
Blank	Frame only

e	
Factory-installed Options	
Code	**Description**
See Factory-installed Options	

(1) MCPs that have electronic trip units come with a rating plug installed that matches the trip unit rating. Different value rating plugs are not compatible with these devices.
(2) The interrupting rating for MCPs is dependent upon the controller used. Please see the Global Short-circuit Rating Tool, rok.auto/sccr.

Bulletin 140MG MCPs: 1200 A, Frame Size N

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCP. ProposalWorks software is available from rok.auto/systemtools.

All MCPs are only available as assembled circuit breakers. Individual frame and trip unit components are not available.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140MG	-	N	8	P	-	E12	-	SD	-	AB
a		b	c	d		e		f		f

a	
Bulletin Number	
Code	Description
140MG	MCP

b	
Frame Size/Rating	
Code	Description
N	1200 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
8	High break (2)

d	
Protection Type	
Code	Description
P	Adjustable magnetic only (less than 13 x I_n)

e	
Rated Current (1)	
Code	Description
E12	1200 A

e	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) MCPs that have electronic trip units come with a rating plug installed that matches the trip unit rating. Different value rating plugs are not compatible with these devices.
(2) The interrupting rating for MCPs is dependent upon the controller used. Please see the Global Short-circuit Rating Tool, rok.auto/sccr.

Motor Ratings

Use Table 155 and Table 156 to find the motor full-load amperes (FLA) for your application. Then use that value in Table 157 and Table 158 to select the MCP. The values are extracted from the standards for the given relationship between rated operational current and the operational kilowatt/horsepower (kW/Hp) rating. Actual selection should be based on the motor nameplate rating and performance for the specific motor.

Table 155 - kW to FLA for AC Induction Motors

Rated Operational Power [kW] (1)	Guide Values of Rated Operational Currents [A]			
	230V	400V	500V	690V
0.06	0.35	0.20	0.16	0.12
0.09	0.52	0.30	0.24	0.17
0.12	0.70	0.44	0.32	0.23
0.18	1.0	0.60	0.48	0.35
0.25	1.5	0.85	0.68	0.49
0.37	1.9	1.10	0.88	0.64
0.55	2.6	1.5	1.2	0.87
0.75	3.3	1.9	1.5	1.1
1.1	4.7	2.7	2.2	1.6
1.5	6.3	3.6	2.9	2.1
2.2	8.5	4.9	3.9	2.8
3.0	11.3	6.5	5.2	3.8
4	15	8.5	6.8	4.9
5.5	20	11.5	9.2	6.7
7.5	27	15.5	12.4	8.9
11	38	22.0	17.6	12.8
15	51	29	23	17
18.5	61	35	28	21
22	72	41	33	24
30	96	55	44	32
37	115	66	53	39
45	140	80	64	47
55	169	97	78	57
75	230	132	106	77
90	278	160	128	93
110	340	195	156	113
132	400	230	184	134
150	–	–	–	–

Rated Operational Power [kW] (1)	Guide Values of Rated Operational Currents [A]			
	230V	400V	500V	690V
160	487	280	224	162
185	–	–	–	–
200	609	350	280	203
220	–	–	–	–
250	748	430	344	250
280	–	–	–	–
300	–	–	–	–
315	940	540	432	313
335	–	–	–	–
355	1061	610	488	354
375	–	–	–	–
400	1200	690	552	400
425	–	–	–	–
450	–	–	–	–
475	–	–	–	–
500	1478	850	680	493
530	–	–	–	–
560	1652	950	760	551
600	–	–	–	–
630	1844	1060	848	615
670	–	–	–	–
710	2070	1190	952	690
750	–	–	–	–
800	2340	1346	1076	780
850	–	–	–	–
900	2640	1518	1214	880
950	–	–	–	–
1000	2910	1673	1339	970

(1) Preferred rated values according to IEC 60072-1 (primary series).

Table 156 - Hp to FLA for AC Induction Motors

Rated Operational Power [Hp] (1)	Guide Values of Rated Operational Currents [A]						
	110... 120V	200V	208V	220... 240V	380... 415V	440... 480V	550... 600V
1/2	4.4	2.5	2.4	2.2	1.3	1.1	0.9
3/4	6.4	3.7	3.5	3.2	1.8	1.6	1.3
1	8.4	4.8	4.6	4.2	2.3	2.1	1.7
1-1/2	12.0	6.9	6.6	6.0	3.3	3.0	2.4
2	13.6	7.8	7.5	6.8	4.3	3.4	2.7
3	19.2	11.0	10.6	9.6	6.1	4.8	3.9
5	30.4	17.5	16.7	15.2	9.7	7.6	6.1
7-1/2	44.0	25.3	24.2	22.0	14.0	11.0	9.0
10	56.0	32.2	30.8	28.0	18.0	14.0	11.0
15	84	48.3	46.2	42.0	27.0	21.0	17.0
20	108	62.1	59.4	54.0	34.0	27.0	22.0
25	136	78.2	74.8	68	44	34	27
30	160	92	88	80	51	40	32
40	208	120	114	104	66	52	41
50	260	150	143	130	83	65	52
60	–	177	169	154	103	77	62
75		221	211	192	128	96	77
100		285	273	248	165	124	99
125		359	343	312	208	156	125
150		414	396	360	240	180	144
200		552	528	480	320	240	192
250	–	–	–	604	403	302	242
300				722	482	361	289
350				828	560	414	336
400				954	636	477	382
450				1030	–	515	412
500				1180	786	590	472

(1) Hp and current values according to UL 508 (60 Hz).

Table 157 - Adjustable Thermal-magnetic: Frame Size G...J

Frame Size	Rated Operational Current I_e [A]	Magnetic Trip Current [A]									Cat. No. [1]
		Cam Setting									
		A	B	C	D	E	F	G	H	I	
G	3	12	15	17	20	23	25	28	30	33	140MG-G8P-B30
	7	28	34	40	46	53	59	65	71	77	140MG-G8P-B70
	15	45	60	75	90	105	120	135	150	165	140MG-G8P-C15
	30	90	120	150	180	210	240	270	300	330	140MG-G8P-C30
	50	150	200	250	300	350	400	450	500	550	140MG-G8P-C50
	70	210	280	350	420	490	560	630	700	770	140MG-G8P-C70
	80	240	320	400	480	560	640	720	800	880	140MG-G8P-C80
	100	300	400	500	600	700	800	900	1000	1100	140MG-G8P-D10
	125	375	500	625	750	875	1000	1125	1250	1375	140MG-G8P-D12
H	3	12	15	17	20	23	25	28	30	33	140MG-H8P-B30
	7	28	34	40	46	53	59	65	71	77	140MG-H8P-B70
	15	45	60	75	90	105	120	135	150	165	140MG-H8P-C15
	30	90	120	150	180	210	240	270	300	330	140MG-H8P-C30
	50	150	200	250	300	350	400	450	500	550	140MG-H8P-C50
	70	210	280	350	420	490	560	630	700	770	140MG-H8P-C70
	80	240	320	400	480	560	640	720	800	880	140MG-H8P-C80
	100	300	400	500	600	700	800	900	1000	1100	140MG-H8P-D10
	125	625	703	781	859	938	1016	1094	1172	1250	140MG-H8P-D12
I	100	600	675	750	825	900	975	1050	1125	1200	140MG-I8P-D10
	110	660	743	825	908	990	1073	1150	1238	1320	140MG-I8P-D11
	125	750	844	938	1031	1125	1219	1313	1406	1500	140MG-I8P-D12
	150	900	1013	1125	1238	1350	1463	1575	1688	1800	140MG-I8P-D15
J	150	750	844	938	1031	1125	1219	1313	1406	1500	140MG-J8P-D15
	175	875	984	1094	1203	1313	1422	1531	1641	1750	140MG-J8P-D17
	200	1000	1125	1250	1375	1500	1625	1750	1875	2000	140MG-J8P-D20
	225	1125	1266	1406	1547	1688	1828	1969	2109	2250	140MG-J8P-D22
	250	1250	1406	1563	1719	1875	2031	2188	2344	2500	140MG-J8P-D25

Table 158 - Electronic DIP Switch: Frame Size K, M, and N

Frame Size	Rated Operational Current I_e [A]	Magnetic Trip Current [A]	Cat. No. [1]
		I_3 (adjustable) [A]	
K	300	300...3000	140MG2-K8P-D30
	400	400...4000	140MG2-K8P-D40
L	500	500...5000	140MG2-L8P-D50
	600	600...6000	140MG2-L8P-D60
M	600	600...6000	140MG-M8P-D60
	800	800...8000	140MG-M8P-D80
N	1200	1200...12000 [2]	140MG-N8P-E12

(1) The interrupting rating for MCPs is dependent upon the controller used. See the global short-circuit ratings tables at rok.auto/sccr, or contact your local Rockwell Automation sales office or Allen-Bradley distributor.
(2) I_3 is adjustable between 1...10x motor FLA.

Notes:

The Bulletin 140MG and Bulletin 140MG2 family of Motor Protection Circuit Breakers (MPCBs) have the following features:

- 10...500 A current range
- UL Listed for motor loads
- Adjustment features
  - Rated motor current adjustable from 0.4...1 x I_n
  - Overload production [L] Class 3E, 5E, 10E, and 20E
  - Unbalance L1, L2, L3 detection [U] adjustable either ON or OFF, alarm at 10% unbalance, trip at 50% unbalance, T = 2 seconds
  - Short-circuit protection [I], electronic magnetic trip adjustable from 6...13 x I_n
- LED visible warnings and trip indication
- Manual settings using DIP switches
- End cap/bolt-on terminals are standard

Cat. No. 140MG-H...

Cat. No. 140MG-J...

Standards compliance and certifications for the Bulletin 140MG and Bulletin 140MG2 family of MPCBs are as follows:

Standards Compliance	Certifications
IEC 60947-2	CE Marked
UL 489	CCC
CSA22.2, No. 5	CSA Certified (File No. LR1234)
UL 60947-4-1A	UL Listed
	HACR Type E197878

Bulletin 140MG and 140MG2 MPCBs

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MPCB. ProposalWorks software is available from rok.auto/systemtools.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140MG	-	J	8	E	-	D15	-	SD	-	AA
a		b	c	d		e		f		f

a	
Bulletin Number	
Code	Description
140MG	MPCB
140MG2	

b	
Frame Size/Rating	
Code	Description
H	100 A
J	150 A
K (1)	400 A
L (1)	600 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
8	High break

d	
Protection Type	
Code	Description
E	DIP LIU
N	MotorSense LRIU

e	
Rated Current	
Code	Description
C	Example: C25 = 25 A
D	Example: D15 = 150 A

F	
Factory-installed Internal Options	
Code	Description
See Factory-installed Options	

(1) For Frame Size/Rating Code 'K' or 'L', the catalog number prefix '140MG2' must be used.

Table 159 - Interrupting Rating/Breaking Capacity

Interrupting Rating (50/60 Hz), UL 489/CSA C22.2, No. 5 [kA]			Breaking Capacity (50/60 Hz), IEC 60947-2							
240V	480V	600V	220V (1)		415V		440V (1)		690V	
			I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]	I_{cu} [kA]	I_{cs} [%I_{cu}]
150	65	25	100	100	70	100	65	100	15	100

(1) These ratings have not been tested for the CCC listing.

Table 160 - Ratings

Frame Size	Type	Rated Motor Current, Maximum I_n [A]	L (Motor FLC)		U	I	Cat. No. (1)
			I_1 = 0.4...1 x I_n	Trip Class	50% of I_1	I_n = Instantaneous	
H	Electronic DIP	25	10...25	3E, 5E, 10E, 20E (approximately 2...20 s)	ON or OFF	Adjustable from 6...13 x I_n	140MG-H8E-C25
		60	24...60				140MG-H8E-C60
		100	40...100				140MG-H8E-D10
	Electronic MotorSense	40	16...40			Adjustable from 1.5...10 x I_n	140MG-H8N-C40
		60	24...60				140MG-H8N-C60
		100	40...100				140MG-H8N-D10

Table 160 - Ratings (Continued)

Frame Size	Type	Rated Motor Current, Maximum I_n [A]	L (Motor FLC)		U	I	Cat. No. (1)
			I_1 = 0.4...1 x I_n	Trip Class	50% of I_1	I_n = Instantaneous	
J	Electronic DIP	40	16...40	3E, 5E, 10E, 20E (approximately 2...20 s)	ON or OFF	Adjustable from 6...13 x I_n	140MG-J8E-C40
		60	24...60				140MG-J8E-C60
		100	40...100				140MG-J8E-D10
		150	60...150				140MG-J8E-D15
	Electronic MotorSense	100	40...100			Adjustable from 1.5...10 x I_n	140MG-J8N-D10
		150	60...150				140MG-J8N-D15
		200	80...200				140MG-J8N-D20
K	Electronic DIP	300	120...300	3E, 5E, 10E, 20E, 30E (approximately 2...30 s)	ON or OFF	Adjustable from 6...13 x I_n	140MG2-K8E-D30
		400	160...400				140MG2-K8E-D40
	Electronic MotorSense	250	100...250			Adjustable from 1.5...10 x I_n	140MG2-K8N-D25
		300	120...300				140MG2-K8N-D30
		400	160...400				140MG2-K8N-D40
L	Electronic DIP	500	200...500	3E, 5E, 10E, 20E, 30E (approximately 2...30 s)	ON or OFF	Adjustable from 6...13 x I_n	140MG2-L8E-D50
	Electronic MotorSense					Adjustable from 1.5...10 x I_n	140MG2-L8N-D50

(1) Select the MPCB based on the motor FLC.

Notes:

The Bulletin 140G and Bulletin 140G2 family of Molded Case Switches (MCSs) have the following features:

- 125...2500 A current range
- 3-pole and 4-pole devices
- End cap/bolt-on terminals are standard
- These switches are like a MCCB, but they are not supplied with thermal overload protection
- Self protecting, supplied with instantaneous magnetic trip override
- Suitable for use as motor branch circuit and motor disconnect
- Must be protected on the supply side of the switch against short circuits that use a fuse or circuit breaker at or below the listed maximum rated current of the protective device

Standards compliance and certifications for the Bulletin 140G and Bulletin 140G2 family of MCSs are as follows:

Standards Compliance	Certifications
IEC 60947-1, -2	CE Marked
UL 489	UL Listed
CSA22.2, No. 5	CSA Certified (File No. LR 1234)
HACR (1)	HACR Type E118548

(1) Standards compliance for frame size G, H, I, and J only.

Bulletin 140G and 140G2 MCS: Frame Size G...N, and R

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCS. ProposalWorks software is available from rok.auto/systemtools.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G	-	H	6	S	3	-	D12	-	SD	-	AA
a		b	c	d	e		f		g		g

a	
Bulletin Number	
Code	Description
140G	MCS
140G2	

b	
Frame Size/Rating	
Code	Description
G	125 A
H	125 A
I	225 A
J	250 A
K (1)	400 A
L (1)	600 A
M	800 A
N	1200 A
R	2500...3000 A

c	
Interrupting Rating/Breaking Capacity (based on I_c at 480V)	
Code	Description
3	35 kA
6	65 kA
0	100 kA
12	125 kA
15	150 kA

d	
Protection Type	
Code	Description
S	Molded case switch (isolator)

e	
Number of Poles	
Code	Description
3	3 poles
4	4 poles

f	
Rated Current	
Code (2)	Description
D⊗	Example: D30 = 300 A
E⊗	Example: E12 = 1200 A

g	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) For Frame Size/Rating Code 'K' or 'L', the catalog number prefix '140G2' must be used.
(2) Rated current equals the value of ⊗ multiplied by the first letter of the code. B = 0.1 ⊗, C = 1 ⊗, D = 10 ⊗, and E = 100 ⊗.

Table 161 - Interrupting Rating/Breaking Capacity

Required Upstream Fuse or Breaker up to Maximum Rated Current [A]	AC Interrupting Rating (50/60 Hz), UL 489/CSA C22.2, No. 5 [kA]				Breaking Capacity (DC), IEC 60947-3			Interrupting Code (1)
	240V	480V	600Y/347V	600V	250V 2 Poles in Series	500V 3-pole in Series	600V 3-pole in Series	
125	100	65	25	–	50	–	–	G6
125	150	65	–	25	65	65	–	H6
225	65	35	10	–	35	35	–	I3
250	200	100	–	35	50	–	65	J0
400	150	65	–	35	70	–	–	K6
600	150	65	–	35	70	–	–	L6
800	200	65	–	35	–	–	35	M6
2000	100	65	–	50	–	–	–	N6
2500	125	125	–	100	–	–	–	R12

(1) See Table 162 for Cat. No. selection.

Table 162 - Ratings

UL 489, CSA C22.2, No. 5				IEC 60947-3							Cat. No.	
Withstand Current I_s [A]	Magnetic Override I_{cw} [1] [A]	Rated Voltage [V]		Rated Service Voltage U_e [V]			Rated Service Current		Rated Insulation Voltage	Rated Impulse Withstand	3-pole	4-pole
							AC23	DC23				
		AC (50/60 Hz)	DC	AC (50/60 Hz)	DC	Poles in Series	I_e [A]	I_e [A]	U_i [V]	U_{imp} [kV]		
125	1500	600Y/347	500	690	500	4 [2]	125	125	800	8	140G-G6S3-D12	140G-G6S4-D12
125	1500	600	500			3	125	125	1000		140G-H6S3-D12	140G-H6S4-D12
225	2700	600Y/347	500			3	200	200	800		140G-I3S3-D22	140G-I3S4-D22
250	3000	600	600			2	200	200	1000		140G-J0S3-D25	140G-J0S4-D25
400	8000	600	600	690	750	3	400	400	1000	8	140G2-K6S3-D40	–
600	8000						630	630			140G2-L6S3-D60	–
800	10000						800	-			140G-M6S3-D80	140G-M6S4-D80
2000	20000	600	–	690	750	3	1200	–	1000	8	140G-N6S3-E12	140G-N6S4-E12
2500	40000						2500			12	140G-R12S3-E25	140G-R12S4-E25

(1) Does not provide overcurrent protection; may open above this current value.
(2) 50V DC with 3 poles in series.

Notes:

A Molded Case Switch Disconnector (MCSD) functions like a Molded Case Circuit Breaker (MCCB), but is not supplied with thermal overload protection.

The Bulletin 140G and Bulletin 140G2 family of MCSDs have the following features:

- 125...630 A current range
- 3-pole and 4-pole devices
- End cap/bolt-on terminals are standard
- Suitable for use as motor branch circuit and motor disconnect
- Must be protected on the supply side of the switch against short circuits that use a fuse or circuit breaker at or below the listed maximum rated current of the protective device

Standards compliance and certifications for the Bulletin 140G and Bulletin 140G2 family of MCSDs are as follows:

Standards Compliance	Certifications
IEC 60947-3	CE Marked

Bulletin 140G and 140G2 MCSD: Frame Size G, J, K, and L

Catalog Number Explanation

Examples that are given in this section are not intended to be used for product selection. Not all combinations generate a valid catalog number. Use ProposalWorks software to configure the MCSD. ProposalWorks software is available from rok.auto/systemtools.

Terminal lugs are not supplied and can be ordered separately. See Table 207 on page 112 for available terminal lugs.

140G	-	J	X	D	3	-	D12	-	SD	-	AA
a		b	c	d	e		f		g		g

a	
Bulletin Number	
Code	Description
140G	MCSD
140G2	

b	
Frame Size/Rating	
Code	Description
G	125 A
J	250 A
K (1)	400 A
L (1)	600 A

c	
Interrupting Rating/Breaking Capacity (based on I_C at 480V)	
Code	Description
X	No rated breaking capacity

d	
Protection Type	
Code	Description
D	Switch disconnector (isolator)

e	
Number of Poles	
Code	Description
3	3-Pole
4	4-Pole

f	
Rated Current	
Code (2)	Description
D⊗	Example: D30 = 300 A
E⊗	Example: E12 = 1200 A

g	
Factory-installed Options	
Code	Description
See Factory-installed Options	

(1) For Frame Size/Rating Code 'K' or 'L', the catalog number prefix '140G2' must be used.
(2) Rated current equals the value of ⊗ multiplied by the first letter of the code. B = 0.1 ⊗, C = 1 ⊗, D = 10 ⊗, and E = 100 ⊗.

Table 163 - Ratings

Frame Size	IEC 60947-3							Cat. No.	
	Rated Service Voltage U_e [V]			Rated Service Current		Rated Insulation Voltage	Rated Impulse Withstand	3-Pole	4-Pole
				AC23	DC23				
	AC (50/60 Hz)	DC	Poles in series (1)	I_e [A]	I_e [A]	U_i [V]	U_{imp} [kV]		
G	690	500	4	125	125	800	8	140G-GXD3-D16	140G-GXD4-D16
J			2					140G-JXD3-D25	140G-JXD4-D25
K		750	2	400	400	1000	8	140G2-KXD3-D40	140G2-KXD4-D40
L				630	630			140G2-LXD3-D63	140G2-LXD4-D63

(1) 50V DC with 3 poles in series.

Factory-assembled components are compatible with all device types — MCCBs, MCPs, MPCBs, MCSs, and MCSDs — and offer faster installation time and streamlined accessory selection for certain common functions. These factory-installed options include:

- Assembly of breaking frame and trip unit (for products that are available separately)
- Remote operation via combined use of spring charging motor, shunt trip, shunt close, trip reset, and mechanical counter
- Shunt trip and undervoltage release for controls or protections
- Variety of contact kits including auxiliary, alarm, and trip unit alarm contacts
- Terminal connections with saddle clamp-style lugs or busbar adapter

See Accessories on page 99 for complete descriptions of available options.

Table 164 - Factory-installed Options: 140G Frame Size G...R

Description	Voltage Rating	Frame Size	Code
Shunt Trip and Undervoltage Release Units: Left-side Mounting, Maximum 1			
Shunt Trip	12V DC	G, H, I, J, K, M	SR
	24...30V AC/DC	G, H, I, J, K, M, N, NS (2), R (2)	SJ
	48...60V AC/DC		SKY
	110...127V AC; 110...125V DC		SD
	220...240V AC; 220...250V DC		SA
	380...440V AC		SB
	480...525V AC	G, H, I, J, K, M	SC
Undervoltage Release	24...30V AC/DC	G, H, I, J, K, M, N, NS, R	UJ
	48V AC/DC	G, H, I, J, K, M	UK
	60V AC/DC	N, NS, R	UY
	110...127V AC; 110...125V DC	G, H, I, J, K, M, N, NS, R	UD
	220...240V AC; 220...250V DC		UA
	380...440V AC		UB
	480...525V AC		UC
No Selection		G, H, I, J, K, M, N, NS, R	Blank
Auxiliary and Alarm Contacts: Right-side Mounting, Maximum 1			
1 Auxiliary, 1 Alarm Contact	24V DC	G, H, I, J, N, NS	AJ
3 Auxiliary, 1 Alarm Contact		H, I, J, K, M	CJ
1 Trip Unit Alarm Contact		H, J	DJ
1 Auxiliary Contact		G, I, J	KJ
2 Auxiliary Contacts		N, NS	FJ
1 Auxiliary Contact	250V AC	G, H, I, J	KA
1 Auxiliary, 1 Alarm Contact		G, H, I, J, K, M	AA
2 Auxiliary, 1 Alarm Contact		G, H, I, J	BA
3 Auxiliary, 1 Alarm Contact		H, I, J, K, M	CA
1 Trip Unit Alarm Contact		H, J, N, R	DA
1 Auxiliary, 1 Alarm Contact	400V AC	H, J, K, M, N, NS	AB
2 Auxiliary Contacts			FB
No Selection		G, H, I, J, K, M, N, R	Blank

Table 165 - Factory-installed Options: 140G2 Frame Size K, L

Description	Voltage Rating	Frame Size	Code
Shunt Trip and Undervoltage Release Units: Left-side Mounting, Maximum 1			
Shunt Trip	12V DC	K, L	SR
	24...60V AC/DC		SJY
	110...240V AC/110...250V DC		SDA
	380...440V AC		SB
	480...525V AC		SC
Undervoltage Release	24...30V AC/DC	K, L	UJ
	48...60V AC/DC		UKY
	110...127V AC; 110...125V DC		UD
	220...240V AC; 220...250V DC		UA
	380...440V AC		UB
	480...525V AC		UC
No Selection		K, L	Blank
Auxiliary and Alarm Contacts: Right-side Mounting, Maximum 1			
1 Auxiliary, 1 Alarm Contact	24V DC	K, L	AJ
3 Auxiliary, 1 Alarm Contact			CJ
1 Trip Unit Alarm Contact			DJ
1 Auxiliary, 1 Alarm Contact	250V AC	K, L	AA
2 Auxiliary, 1 Alarm Contact			BA
3 Auxiliary, 1 Alarm Contact			CA
1 Trip Unit Alarm Contact			DA
No Selection		K, L	Blank

Table 166 - Options for Remote MCCB Operation (1)

Description	Voltage Rating	Frame Size	Code
Spring Charge Motor	24…30V AC/DC	NS, R	MJ
	48…60V AC/DC		MKY
	110…130V AC/DC		MD
	220…250V AC/DC		MA
	380…415V AC	NS	MB
No Selection		NS, R	Blank
Shunt Trip and Shunt Close	24V AC/DC	NS, R	RJ
	48V AC/DC		RK
	110…120V AC/DC		RD
	220…240V AC/DC		RA
	380…400V AC		RB
No Selection		NS, R	Blank

(1) Select up to one option from spring charge motor, one option from shunt trip and shunt close units for spring charge motor, and one additional undervoltage release from Table 168 on page 99. An additional shunt trip is not available for factory installation, but can be field installed.

Table 167 - Mounting Options: Busbar Adapters

Description		Frame Size	Code
Top Feed (Branch) Connection	Supplied with factory-installed line-side and load-side lugs	G, H, J (1)	MT
Bottom Feed (Main) Connection			MB
Universal (Top or Bottom) Connection	Supplied unassembled (2)	K, M	MU

(1) Frame size J is not included with terminal lugs.
(2) Terminal lugs are not required or included. If your application requires terminal lugs, see Table 207 on page 112 for compatible options.
Terminal lugs must be installed on the side of the unit that is not connected to the adapter.

- Photos in this section are representative. Appearance of actual accessory may differ from the photo shown.
- Frame size K and L are exclusive to accessories with Cat. No. 140G2.

Internal Accessories

Table 168 - Auxiliary/Trip Unit Contacts

Description		Rated Voltage	Contact Type	Number of Contacts			Diagram	Frame Size [1]	Cat. No. [2]
				Auxiliary	Alarm	Trip Unit Alarm			
	• Indicates ON/OFF status of the MCCB • Form C-style switches for internal MCCB wiring snap-fit into internal pockets of the device • For Frame Size G,...K, and M: Supplied with 1 m (39 in.) pig tail wiring, with each terminal wire labeled • For Frame Size N and NS: Terminated with a 3-pin quick connector (Cat. No. 140G-N-CIC) • For Frame Size R: Wired internal to the circuit breaker and can be terminated at the terminal strip • Designation: AX1/AX2/AX3/AX4 • See Table 3 on page 9 for contact function description	250V AC	Auxiliary	1	–	–	Figure 10	G, H, I, J	140G-G-EA1A [3]
			Auxiliary or alarm	1 or 1	1 or 1	–	Figure 10 or Figure 11	G, H, I, J	140G-G-EA1AU [4]
			Trip unit alarm	–	–	1	Figure 12	H, J, K, L	140G-H-EA1TA [3]
			Auxiliary, alarm, and trip unit alarm combination	1	1	–	Figure 13	G, H, I, J, K, L	140G-G-EA1R1A [3]
				2	1	–	Figure 14	G, H, I, J, K, L	140G-G-EA2R1A [3]
				3	1	–	Figure 15	H, I, J, K, L	140G-H-EA3R1A [3]
				3	2	–	Figure 16	H, I, J	140G-H-EA3R2A [3]
				2	2	1	Figure 17	H, J	140G-H-EA2R2TA [3]
			Trip unit alarm	–	–	1	Figure 22	N, NS	140G-N-EA1TA
								R	140G-R-EA1TA
		24V DC, PLC [2]	Auxiliary	1	–	–	Figure 10	G, H, I, J	140G-G-EA1J
				2	–	–	Figure 20	N, NS	140G-N-EA2J
			Trip unit alarm	–	–	1	Figure 12	H, J, K, L	140G-H-EA1TJ
			Auxiliary and alarm combination	1	1	–	Figure 13	G, H, I, J, K, L	140G-G-EA1R1J
				3	1	–	Figure 15	H, I, J, K, L	140G-H-EA3R1J
				1	1	–	Figure 19	N, NS	140G-N-EA1R1J
		400V AC [2]	Auxiliary	2	–	–	Figure 18	H, J	140G-H-EA2B
							Figure 20	N, NS	140G-N-EA2B
			Auxiliary and alarm combination	1	1	–	Figure 13	H, J	140G-H-EA1R1B
							Figure 19	N, NS	140G-N-EA1R1B
	• Indicates ON/OFF status of the MCCB • Form C-style switches for internal MCCB wiring • Terminated with a 3-pin quick connector • Designation: AX1/AX2/AX3/AX4)	250V AC, 24V DC	Auxiliary or trip unit alarm	3 for 250V AC 1 for 24V DC	–	–	Figure 21	R	140G-R-EA3A1JM

(1) Frame size K and L are for Bulletin 140G2 products.
(2) See Table 306 on page 149 for additional specifications, including AC and DC ratings.
(3) UL 489, CCC rated.
(4) This contact is supplied with unmarked wires. The contact can function as either an auxiliary or alarm contact, depending on connection method.

Table 169 - Shunt Trips

Description	Rated Voltage	Diagram (1)	Frame Size	Cat. No.
 • Allows remote tripping of the MCCB by applying control voltage to the shunt trip coil • For Frame Size G…K, and M: Supplied with 1 m (39 in.) pig tail wiring, with each terminal wire labeled • For Frame Size N, NS, and R: Wired internal to the circuit breaker • For Frame Size N and NS: Terminated with a Cat. No. 140G-N-CIC 3-pin quick connector • For Frame Size K and M: Cat. No. 140G-K-CC2 available for second shunt install **IMPORTANT:** The second shunt configuration is not compatible with Undervoltage Release (UVR) and is only available on 4-pole devices. • Standard Compliance: UL 489	12V DC	Figure 29	G, H, I, J	140G-G-SNR
	24…30V AC/DC			140G-G-SNJ
	48…60V AC/DC			140G-G-SNKY
	110…127V AC 110…125V DC			140G-G-SND
	220…240V AC; 220…250V DC			140G-G-SNA
	380…440V AC			140G-G-SNB
	480…525V AC			140G-G-SNC
	12V DC	Figure 29	K, L	140G2-K-SNR
	24…60V AC/DC			140G2-K-SNJ
	110…240V AC; 110…250V DC			140G2-K-SND
	380…440V AC			140G2-K-SNB
	480…525V AC			140G2-K-SNC
 • Allows remote tripping of the MCCB by applying control voltage to the shunt trip coil • For Frame Size N, -NS, and R: Wired internal to the circuit breaker • For Frame Size N and NS: Terminated with a (Cat. No. 140G-N-CIC) 3-pin quick connector) • Standard Compliance: UL 489	24V AC/DC	Figure 30	N, NS	140G-N-SNJ
	48V AC/DC			140G-N-SNKY
	110…120V AC/DC			140G-N-SND
	220…240V AC/DC			140G-N-SNA
	380…400V AC			140G-N-SNB
	24V DC	Figure 30	R	140G-R-SNJ
	48V AC/DC			140G-R-SNKY
	110…120V AC/DC			140G-R-SND
	220…240V AC/DC			140G-R-SNA
	380…400V AC			140G-R-SNB

(1) For frame size N and NS: Terminals C1 and C2 are designated C11 and C12.

Table 170 - Undervoltage Release Units

Description	Rated Voltage	Diagram	Frame Size	Cat. No.
	24…30V AC/DC	Figure 33	G, H, I, J	140G-G-UVJ
	48V AC/DC			140G-G-UVKY
	60V AC/DC			140G-G-UVY
	110…127V AC/110…125V DC			140G-G-UVD
	220…240V AC/220…250V DC			140G-G-UVA
	380…440 V AC	Figure 35		140G-G-UVB
	480…525 V AC			140G-G-UVC
 • Undervoltage release unit – Opens the MCCB when supply voltage drops between 35…70% of the UV voltage rating – Trip rating from 0.7…0.35. – The MCCB can be reset when the supply voltage > 85% of the relay rating – When the UV is de-energized, MCCB main contacts cannot close – For Frame Size G…K and M: Supplied with 1 m (39 in.) pig tail wiring, with each terminal wire labeled – For Frame Size N, NS, and R: Wired internal to the circuit breaker – For Frame Size N and NS: Terminated with a (140G-N-CIC) 3-pin quick connector – R Resistor is supplied with the MCCB when reset is required – Standard Compliance: UL 489SIDE	24…30V AC/DC	Figure 33	K, L	140G2-K-UVJ
	48…60V AC/DC			140G2-K-UVKY
	110…127V AC, 110-125V DC			140G2-K-UVD
	220…240V AC/220…250V DC			140G2-K-UVA
	380…440V AC			140G2-K-UVB
	480…525V AC			140G2-K-UVC
	24V AC/DC	Figure 33	N, NS	140G-N-UVJ
	60V AC/DC			140G-N-UVKY
	110…120V AC/DC			140G-N-UVD
	220…240V AC/DC			140G-N-UVA
	380…400V AC			140G-N-UVB
	415…440V AC			140G-N-UVC
	24V AC/DC	Figure 33	R	140G-R-UVJ
	60V AC/DC			140G-R-UVKY
	110…120V AC/DC			140G-R-UVD
	220…240V AC/DC			140G-R-UVA
	380…400V AC			140G-R-UVB
	415…440V AC			140G-R-UVC

Table 171 - Shunt Close Units

Description		Rated Voltage	Diagram	Frame Size	Cat. No.
	• Shunt close units – Allows remote closing of the MCCB when the spring motor is charged – Wired internal to the circuit breaker – For Frame Size NS: Terminated with a 3-pin quick connector (Cat. No. 140G-N-CIC) – Standard Compliance: UL 489	24V AC/DC	Figure 32	NS	140G-NS-SNCJ
		48V AC/DC			140G-NS-SNCKY
		110...120V AC/DC			140G-NS-SNCD
		220...240V AC/DC			140G-NS-SNCA
		380...400V AC			140G-NS-SNCB
		24V AC/DC	Figure 32	R	140G-R-SNCJ
		48V AC/DC			140G-R-SNCKY
		110...120V AC/DC			140G-R-SNCD
		220...240V AC/DC			140G-R-SNCA
		380...400V AC			140G-R-SNCB

Table 172 - Trip Reset

Description		Rated Voltage	Diagram	Frame Size	Cat. No.
	• Trip reset – Allows remote reset of MCCB following an overcurrent trip – Wired internal to the circuit breaker – For Frame Size NS: Terminated with a 3-pin quick connector (Cat. No 140G-N-CIC)	Form C, 24...30V AC/DC, PLC	Figure 28	NS	140G-NS-RRJ
		Form C, 110...130V AC/DC			140G-NS-RRD
		Form C, 200...230V AC/DC			140G-NS-RRA
		Form C, 24...30V AC/DC		R	140G-R-RRJ
		Form C, 110...130V AC/DC			140G-R-RRD
		Form C, 200...240V AC/DC			140G-R-RRA

Table 173 - Spring Charging Motor for Remote Operation System

Description		Rated Voltage	Diagram	Frame Size	Cat. No.
	• Electric motor to recharge closing springs – Compatible with mechanical counter to measure operations completed with device (optional) – Remote Operation System also requires Shunt Trip (SNT) and Shunt Close (SNC); Trip Reset (RR) is recommended – For Frame Size NS and R: Wired internal to the circuit breaker – For Frame Size NS: Terminated with a 3-pin quick connector, Cat. No. 140G-N-CIC – For Frame Size R: Includes springs charged auxiliary contact feature	24...30V AC/DC	Figure 49	NS	140G-NS-SCMJ
		48...60V AC/DC			140G-NS-SCMKY
		100...130V AC/DC			140G-NS-SCMD
		220...250V AC/DC			140G-NS-SCMA
		380...415V AC			140G-NS-SCMB
		220...250V AC/DC		R	140G-R-SCMA
		110...130V AC/DC			140G-R-SCMD
		24...30V DC			140G-R-SCMJ
		48...60V AC/DC			140G-R-SCMKY

Table 174 - Signal Contacts for Remote Operation System

Description			Diagram	Frame Size	Cat. No.
	• Ready-to-Close (RTC) auxiliary contact – Recommended but not required for remote operation – Signals that the circuit breaker is ready to accept closing (ON) command if: - the circuit breaker is open (OFF) - the spring charging motor has fully charged the integral breaker springs - a shunt trip is de-energized (no signal to TRIP) - an undervoltage release is energized (no signal to TRIP) the trip bar activation mechanism is energized – Wired internal to the circuit breaker – Terminated with a 3-pin quick connector (Cat. No. 140G-N-CIC)	Form C, 24V PLC	Figure 26	NS	140G-NS-RTCJ
		Form C, 250V			140G-NS-RTCA
	• Springs charged auxiliary contact – Signals that the spring charging motor has completely charged the integral breaker springs – Recommended but not required for remote operation	Form C, 24V PLC	Figure 49	NS	140G-NS-SCJ
		Form C, 250V			140G-NS-SCA
	• Trip unit alarm contact – Signals when system has tripped, a fault needs to be evaluated, and system needs to be reset		Figure 22	—	See Table 168 on page 99

External Accessories

Table 175 - Mechanical Counter for Remote Operation System

Description		Frame Size	Cat. No.
	• Indicates number of times the MCCB has been toggled from ON to OFF when it is installed with the spring charging motor • Operation count is visible through the front cover of the circuit breaker • Recommended but not required for remote operation	NS	140G-N-MOC
		R	140G-R-MOC

Table 176 - Earth Leakage Protector (Residual Current Release Module) — IEC Only

Description			Diagram	Frame Size	Cat. No.	
					3-Pole	4-Pole
	• Compliant with IEC 60947-2 annex B, IEC 61000 for protection against unwarranted tripping • Features: – Alarm and trip indication – Test function – Protection against 30 mA (0.03 A) of earth (ground) fault currents	• Installs surrounding the circuit breaker 0.03 A with 0 second override • Current adjustment: 0.5…10 A • Time adjustment: 0.0…3 seconds	Figure 36	G	140G-G-ELP1603	140G-G-ELP1604
				H	—	140G-H-ELP1604
				I	140G-I-ELP2503	140G-I-ELP2504
				J	—	140G-J-EP2504
		• Installs surrounding the circuit breaker 0.03…30 A with 0 second override • Current adjustment: 0.5…10 A • Time adjustment: 0.6…5	Figure 37	K,	—	140G2-K-ELP (1)
				L (2)		

(1) For frame size K and L with ELP: Not compliant with 60947-2 Annex B or 61000.
(2) For frame size L with an earth leakage protector (ELP): The rated operating current only goes up to 550A.

Table 177 - External Neutral Current Sensors (NCT)

Description		Rated Current	Diagram	Frame Size	Cat. No.
	• Provides data to trip unit for external neutral current line in system (see Neutral Pole and Protection on page 15) • Measures current on neutral line not connected to the circuit breaker **NOTE:** Not compatible with MCP (Bulletin 140MG-K8P, 140MG-M8P, 140MG-N8P) or Frame Size N and NS. • DIP LSI trip unit (Cat. No 140G-N_H_, Cat. No. 140G-NS_H_) • For Frame Size K, L, N, and NS: Supplied with 1 m (39 in.) pig tail wiring, with each terminal wire labeled UL 489 • For Frame Size H and J: Not supplied with pig tail wiring; order Cat. No. 140G-H-CIC2 separately	60 A	Figure 40	H	140G-H-NCTC60(1) (1)
		100 A		H	140G-H-NCTD10 (1)
		250 A		J	140G-J-NCTD25 (1)
		300 A		K, L	140G2-K-NCTD30
		400 A		K, L	140G2-K-NCTD40
		600 A		K, L	140G2-K-NCTD60L (1)
		600 A		L	140G2-L-NCTD60
		400…1600 A		N, NS	140G-N-NCTE16
		1000…3200 A		R	140G-R-NCTE30

(1) External neutral for Sense Trip Units.

Table 178 - Rating Plugs (RP) for I_n (1)

Description	Rated Current I_n [A]	Frame Size	Cat. No.
 • Supplied as standard on all Frame Size N, NS, and R Matching the trip unit's maximum rated current • Change rated current value I_n on compatible electronic trip units • Protections are automatically adjusted to new rated current value • Plugs acceptable 20…100% of frame rating • Plugs above frame rating are not compatible	300	K, L	140G2-KRP-D30
	400	K, L	140G2-KRP-D40
	500	L	140G2-LRP-D50
	400	N, NS	140G-NRP-D40
	600		140G-NRP-D60
	800		140G-NRP-D80
	1000		140G-NRP-E10
	1200 (2)		140G-NRP-E12
	1250 (IEC only)		140G-NRP-E125
	600	R	140G-NRP-D60
	800		140G-NRP-D80
	1000		140G-NRP-E10
	1200		140G-NRP-E12
	1600		140G-RRP-E16
	2000 (2)		140G-RRP-E20
	2500 (2)		140G-RRP-E25
	3000 (2)		140G-RRP-E30

(1) Rating plugs should only be used for EnergySense, MotorSense, and PowerSense trip units on the 140G2-K/L Frames.
(2) A 1200 A rating plug is supplied installed for all MCCB frame size N. A 2000 A, 2500 A, or 3000 A rating plug is supplied installed from the factory for all MCCB frame size R.

Table 179 - Maintenance Mode Connectors

Description	Diagram	Frame Size	Cat. No.
 • Maintenance mode trip unit module (only for sense trip units) • Connects signal input and output to LSIG sense trip units to activate and validate maintenance mode (see Maintenance Mode on page 26) • Installs to internal connector port on Trip Unit • Supplied with 1 m (39 in.) pig tail wiring with each terminal wire labeled and panel mount terminal for required 24V DC power supply	Figure 41	K, L	140G2-K-MM

Table 180 - Rotary Variable Depth Operator (RVM/NVM) Kits with External Handle

Description	Handle Color	Shaft Length [mm (in.)]	Frame Size	Cat. No.
 • Allows actuation and status indication of circuit breaker states: On, Off, Trip, and Reset • Requires deliberate action to operate the handle and turn breaker on when enclosure door is open • Internal handle must be pulled out before it can be turned, otherwise the handle retracts back onto the shaft and does not turn • IP40 protection against intrusion and accidental contact on the face of the device under IEC 60529 (see Table 6 on page 16) • Circuit breaker can be mounted anywhere on the panel; operator is installed to the face of the circuit breaker • Kit contains: – External handle which installs to the outside of the enclosure door For Frame Size G...J: Use Bulletin 140U P-style handle For Frame Size K, M, and N: Use Bulletin 140U medium style handle – Operating shaft – MCCB-mounted operating mechanism (RMX) – See Table 241 on page 122 to select as components **TIP:** See Table 195 on page 108 for Early-Make and Early-Break Contact options • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	Black	305 (12)	G, I	140G-G-RVM12B
	Red/yellow			140G-G-RVM12R
	Black	533 (21)		140G-G-RVM21B
	Red/yellow			140G-G-RVM21R
	Black	305 (12)	H, J	140G-H-RVM12B
	Red/yellow			140G-H-RVM12R
	Black	533 (21)		140G-H-RVM21B
	Red/yellow			140G-H-RVM21R
	Black	305 (12)	K, L	140G2-K-RVM12B
	Red/yellow			140G2-K-RVM12R
	Black	559 (22)		140G2-K-RVM21B
	Red/yellow			140G2-K-RVM21R
	Black	305 (12)	N	140G-N-RVM12B
	Red/yellow			140G-N-RVM12R
	Black	559 (22)		140G-N-RVM21B
	Red/yellow	559 (22)		140G-N-RVM21R

Table 181 - External Power Cables

Description	Frame Size	Cat. No.
Trip unit connections to a 24V DC power supply	• Auxiliary power to trip unit	H, J	140G-H-CIC
	• Auxiliary power to trip unit • Connection cable for external neutral current sensor		140G-H-CIC2

Table 182 - Rotary Variable Depth Operator (RVM/NVM) Kits with Internal NFPA 79 Operating Handle

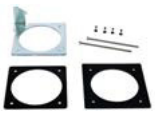
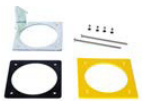
Description	Handle Color	Shaft Length [mm (in.)]	Frame Size	Cat. No.
 • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Requires deliberate action to operate handle and turn the circuit breaker on when the enclosure door is open • The internal handle must be pulled out before it can be turned, otherwise the handle retracts back onto the shaft and does not turn • IP40 protection against intrusion and accidental contact on the face of the device under IEC 60529 (see Table 6 on page 16) • Circuit breaker can be mounted anywhere on the panel; operator is installed to face of the circuit breaker • Kit contains: – external handle which installs to the outside of the enclosure door For Frame Sizes G...J: Use Bulletin 140U P-style handle For Frame Sizes K, M, and N: Use Bulletin 140U medium style handle – NFPA handle with operating shaft – MCCB-mounted operating mechanism (RMX) – support bracket – see Table 241 on page 122 to select as individual components **TIP:** See Table 195 on page 108 for Early-Make and Early-Break Contact options • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	Black	305 (12)	G, I	140G-G-NVM12B
	Red/yellow			140G-G-NVM12R
	Black	533 (21)		140G-G-NVM21B
	Red/yellow			140G-G-NVM21R
	Black	305 (12)	H, J	140G-H-NVM12B
	Red/yellow			140G-H-NVM12R
	Black	533 (21)		140G-H-NVM21B
	Red/yellow			140G-H-NVM21R
	Black	305 (12)	K, L	140G2-K-NVM12B
	Red/yellow			140G2-K-NVM12R
	Black	559 (22)		140G2-K-NVM21B
	Red/yellow			140G2-K-NVM21R
	Black	305 (12)	N	140G-N-NVM12B
	Red/yellow			140G-N-NVM12R
	Black	559 (22)		140G-N-NVM21B
	Red/yellow	559 (22)		140G-N-NVM21R

Table 183 - Direct Rotary Operators (RMB/RMY)

Description	Handle Color	Frame Size	Cat. No.
 • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Mount with direct handle operation of the MCCB • Lockable in OFF position (three padlocks maximum) • Circuit breaker can be mounted anywhere on the panel; operator is installed to face of the circuit breaker • Handle can protrude through the door when used with provided escutcheon plate (1) **TIP:** See Table 195 on page 108 for Early-Make and Early-Break Contact options • Direct rotary operators achieve IP40 protection against intrusion and accidental contact on the face of the device under IEC 60529; see Table 6 on page 16 for Ingress Protection details • Standards Compliance: UL 489	Black	G, I	140G-G-RMB
	Red/yellow		140G-G-RMY
	Black	H, J	140G-H-RMB
	Red/yellow		140G-H-RMY
	Black	K, L	140G2-K-RMB
	Red/yellow		140G2-K-RMY
	Black	N	140G-N-RMB
	Red/yellow		140G-N-RMY

(1) Escutcheon plates are not included with -K frame sizes.

Table 184 - Through-the-door Rotary Handle (RTM) Operators

Description	Handle Color	Frame Size	Cat. No.
  • Through-the-door Rotary Handle (RTM) Operator • Controls the MCCB with the panel door open or closed • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Lock out/tag out capability • No secondary handle required for NFPA 79 compliance • Eliminates cutting and aligning of extension shafts compared to other rotary operators • IP54/NEMA Type 13 ingress rating • Circuit breaker can be mounted anywhere on the panel; handle is installed to the face of the circuit breaker • Handle protrudes through the enclosure door • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	Black	G	140G-G-RTMB (1)
	Red/yellow		140G-G-RTMR (1)
	Black	H	140G-H-RTMB (1)
	Red/yellow		140G-H-RTMR (1)
   • Line-side and load-side terminal covers for through-the-door operators, package quantity of 2	—	G	140G-G-TC3T
	—	H	140G-H-TC3T
  • Replacement hardware kits • For use with through-the-door rotary operators • Kit contains: – Interior door bezel – Exterior door bezel – Door gasket – M4 x 100 mounting screws, quantity of 2 – M4 x 12 mounting screws, quantity of 4	Black	G, H	140G-NRTM-HDW-B
	Red/yellow		140G-NRTM-HDW-R

(1) Mounting Bracket does not come with part.

Table 185 - Flexible Cable Operator (FC_/FM_) Kits: Frame Size G...I

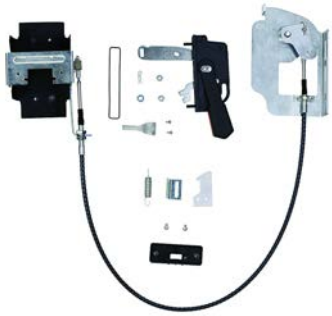
Description		Handle Type	Cable Length [m (ft)]	Frame Size	Cat. No.
	• For 3-pole devices only • For use with NEMA-style flange enclosures • Allows actuation and status indication of circuit breaker states: On, Off, Trip, and Reset • Can be mounted anywhere on the panel; operator is installed to surround breaker • Pre-assembled kit includes: handle, bail mechanism, cable, and assembly hardware • Flexible cable transmits handle motion to actuator at the circuit breaker **IMPORTANT:** Only use properly sized cable based on application. Excess cable length may cause operation issues. The sum of all direction changes must not exceed 270 degrees. • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	Non-metallic handle Type 1/3/3R/12/4/4X	0.91 (3)	G	140G-G-FCXB03
			1.3 (4.3)		140G-G-FCXB04
			1.9 (6.2)		140G-G-FCXB06
			3 (9.8)		140G-G-FCXB10
		Painted metal handle Type 1/3/3R/12/4/4X	0.91 (3)		140G-G-FMXB03
			1.3 (4.3)		140G-G-FMXB04
			1.9 (6.2)		140G-G-FMXB06
			3 (9.8)		140G-G-FMXB10
		Stainless handle, chrome-plated steel base Type 4/4X	0.91 (3)		140G-G-FCSB03
			1.3 (4.3)		140G-G-FCSB04
			1.9 (6.2)		140G-G-FCSB06
			3 (9.8)		140G-G-FCSB10
		Non-metallic handle Type 1/3/3R/12/4/4X	0.91 (3)	H	140G-H-FCXB03
			1.3 (4.3)		140G-H-FCXB04
			1.9 (6.2)		140G-H-FCXB06
			3 (9.8)		140G-H-FCXB10
		Painted metal handle Type 1/3/3R/12/4/4X	0.91 (3)		140G-H-FMXB03
			1.3 (4.3)		140G-H-FMXB04
			1.9 (6.2)		140G-H-FMXB06
			3 (9.8)		140G-H-FMXB10
		Stainless handle, chrome-plated steel base Type 4/4X	0.91 (3)		140G-H-FCSB03
			1.3 (4.3)		140G-H-FCSB04
			1.9 (6.2)		140G-H-FCSB06
			3 (9.8)		140G-H-FCSB10
		Non-metallic handle Type 1/3/3R/12/4/4X	0.91 (3)	I	140G-I-FCXB03
			1.3 (4.3)		140G-I-FCXB04
			1.9 (6.2)		140G-I-FCXB06
			3 (9.8)		140G-I-FCXB10
		Painted metal handle Type 1/3/3R/12/4/4X	0.91 (3)		140G-I-FMXB03
			1.3 (4.3)		140G-I-FMXB04
			1.9 (6.2)		140G-I-FMXB06
			3 (9.8)		140G-I-FMXB10
		Stainless handle, chrome-plated steel base Type 4/4X	0.91 (3)		140G-I-FCSB03
			1.3 (4.3)		140G-I-FCSB04
			1.9 (6.2)		140G-I-FCSB06
			3 (9.8)		140G-I-FCSB10

Table 186 - Flexible Cable Operator (FC_/FM_) Kits: Frame Sizes J, K, and L

Description		Handle Type	Cable Length [m (ft)]	Frame Size	Cat. No.
	• For 3-pole devices only • For use with NEMA-style flange enclosures • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Can be mounted anywhere on the panel; operator is installed to surround circuit breaker • Flexible cable transmits handle motion to actuator at the circuit breaker **IMPORTANT:** Only use properly sized cable based on application. Excess cable length may cause operation issues. The sum of all direction changes must not exceed 270 degrees. • Pre-assembled kit includes: handle, bail mechanism, cable, and assembly hardware • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	Non-metallic handle Type 1/3/3R/12/4/4X	0.91 (3)	J	140G-J-FCXB03
			1.3 (4.3)		140G-J-FCXB04
			1.9 (6.2)		140G-J-FCXB06
			3 (9.8)		140G-J-FCXB10
		Painted metal handle Type 1/3/3R/12/4/4X	0.91 (3)		140G-J-FMXB03
			1.3 (4.3)		140G-J-FMXB04
			1.9 (6.2)		140G-J-FMXB06
			3 (9.8)		140G-J-FMXB10
		Stainless handle, chrome-plated steel base Type 4/4X	0.91 (3)		140G-J-FCSB03
			1.3 (4.3)		140G-J-FCSB04
			1.9 (6.2)		140G-J-FCSB06
			3 (9.8)		140G-J-FCSB10
		Non-metallic handle Type 1/3/3R/12/4/4X	3 (9.8)	K, L	140G2-K-FCX03
			4 (13)		140G2-K-FCX04
			6 (19.7		140G2-K-FCX06
			10 (32.8)		140G2-K-FCX10
		Painted metal handle Type 1/3/3R/12/4/4X	3 (9.8)		140G2-K-FMX03
			4 (13)		140G2-K-FMX04
			6 (19.7)		140G2-K-FMX06
			10 (32.8)		140G2-K-FMX10
		Stainless handle, chrome-plated steel base Type 1/3/3R/12/4/4X	3 (9.8)		140G2-K-FCS03
			4 (13)		140G2-K-FCS04
			6 (19.7		140G2-K-FCS06
			10 (32.8)		140G2-K-FCS10

Table 187 - Flexible Cable Operator (FC_/FM_) Kits and Left-hand Brackets

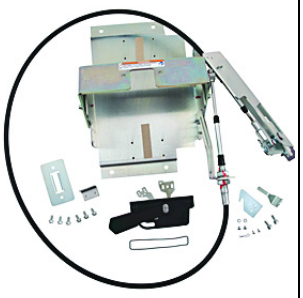
Description		Handle Type	Cable Length [m (ft)]	Frame Size	Cat. No.
	• Flexible cable operator kit • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • For use with NEMA-style flange enclosures. • Pre-assembled kit includes: handle, MCCB operator, cable, and necessary hardware • Circuit breaker can be mounted anywhere on the panel; operator is installed to surround the circuit breaker • Flexible cable transmits handle motion to actuator at the circuit breaker **IMPORTANT:** Only use properly sized cable based on application. Excess cable length may cause operation issues. The sum of all direction changes must not exceed 270 degrees Replacement hardware is listed on Table 248 on page 124 • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	Non-metallic handle Type 1/3/12/4/4X	1.3 (4.3)	N	140G-N-FCX04
			1.9 (6.2)		140G-N-FCX06
			3 (9.8)		140G-N-FCX10
	• Left-hand flange-mount bracket • Relocates cable to left side • Ideal for enclosures less than 38.1 cm (15 in) deep	–	–	N	140G-BNL

Table 188 - Variable Depth Flange-Mounted Circuit Breaker Operator Kit

Description	Frame Size	Handle Type	Cat. No.
• Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset **IMPORTANT:** The circuit breaker must be installed directly behind flange handle cutout. • Operator is installed to surround circuit breaker • Replacement hardware is listed in Replacement Parts on page 115 • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	G, H, I, J	Non-metallic handle Type 1/3/3R/12/4/4X	140G-G-VDP
		Painted metal handle Type 1/3/3R/12/4/4X	140G-G-VDM
		Stainless handle, chrome-plated steel base Type 1/3/3R/12/4/4X	140G-G-VDS
	K, L	Non-metallic handle Type 1/3/3R/12/4/4X	140G2-K-VDP
		Painted metal handle Type 1/3/3R/12/4/4X	140G2-K-VDM
		Stainless handle, chrome-plated steel base Type 1/3/3R/12/4/4X	140G2-K-VDS

Table 189 - Variable Depth Flange-mounted Circuit Breaker Operating Mechanism

Description		Compatible 3-Pole Circuit Breaker (1)		Cat. No.
		[A]	Frame Size	
	• Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Circuit breaker must be installed directly behind flange handle cutout • Operator is installed to surround circuit breaker • Complete mechanism consists of: – Operating mechanism and operating handle (Table 191) – Connecting Rod (Table 190) – Insulation Kit (if required) (Table 193 on page 108) – Auxiliary contacts (if required) (Table 192 on page 107) **IMPORTANT:** The mechanism must be combined with a connecting rod, operating handle, and a circuit breaker (supplied by customer) to obtain a functional device. Frame Sizes G, H, I, and J require an insulation kit (Table 193 on page 108) • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	800, 1200	N	1494V-M72

(1) Circuit breakers are customer supplied.

Table 190 - Connecting Rods for Circuit Breaker Operating Mechanism

Description	Enclosure Working Depth [mm (in.)]		Circuit Breaker Frame Size	Cat. No.
	241 (9.5) minimum	584 (23) maximum	800 A, 1200 A	1494V-RB4

Table 191 - Operating Handles for Circuit Breaker Operating Mechanism

Description	Handle Type	Handle Material	Circuit Breaker Frame Size	Cat. No.
	Type 1, 3R, 4, 12	Painted Metal	800 A, 1200 A	1494F-M2
	Type 4, 4X	Stainless with chrome-plated steel handle base		1494F-S2

Table 192 - Auxiliary Contacts for Circuit Breaker Operating Mechanism

Description		Contact Type	Cat. No.
	• Auxiliary contact kit for circuit breakers • For use with 125...1200 A Bulletin 140G circuit breakers • Includes contacts and adapter	1 N.O.	1495-N85
		1 N.C.	1495-N86

Table 193 - Insulation Kit for Circuit Breaker Operating Mechanism

Description		For Use With	Cat No.
	Insulation kit for circuit breaker operating mechanism	140G-G, 140MG-G, 140G-H, 140MG-H, 140G-I, 140MG-I, 140G-J, 140MG-J	1495-N87

Table 194 - Stored Energy Motor Operators (EOP)

Description			Voltage	Diagram	Frame Size	Cat. No.
	• Remotely opens, closes, and resets the MCCB • Circuit breaker can be mounted anywhere on the panel; operator is installed to face of the circuit breaker Manual: Uses a lever to charge a spring mechanism, which actuates the toggle at the press of a button Automatic: Uses signaling control for remote opening and closing of the circuit breaker by driving an electric motor to charge the manual springs • Includes integral padlock for OFF position and 1 m (3.28 ft) wiring terminated in socket-plug connectors • Standards Compliance: UL 489	Includes: • Auto/manual selector • Test feature • Special tool for local operation of the MCCB	24V DC	Figure 45	G, I	140G-G-EOPJ
			48...60V DC			140G-G-EOPKY
			110...125V AC/DC			140G-G-EOPD
			220...250V AC/DC			140G-G-EOPA
			380...440V AC			140G-G-EOPB
			480...525V AC			140G-G-EOPC
		Uses a stored energy motor for local control of the motor without the use of special tools Includes: • Auto/manual/lock selection • Lever to recharge the motor • Open/close push button operation	24V DC	Figure 47	H, J	140G-H-EOPJ
			48...60V DC			140G-H-EOPKY
			24V DC		K, L	140G2-K-EOPJ
			48...60V DC			140G2-K-EOPKY
			110...125V AC/DC			140G2-K-EOPD
			220...250V AC/DC			140G2-K-EOPA
			380V AC			140G2-K-EOPB

Motor-operated circuit breakers are used in applications where switching is done infrequently and are not suitable to replace contactors for switching applications.

Table 195 - Early-Make and Early-Break Signal Contacts (EAM/EAB) for Auxiliary Contact Handle Mechanism

Description			For Use With (1)	Diagram	Frame Size	Cat. No.
	• Auxiliary Contact for Early Make Handle, package quantity of 2 • Typically used with an undervoltage release • Contacts close before the MCCB main contacts • Supplies power to the undervoltage release, which helps prevent nuisance tripping of the relay • Supplied with 1 m (39 in) pig-tail wiring (each terminal wire is marked)	Open 400V	140G-G-RMB, -RMY, RMX 140G-H-RMB, -RMY, RMX	Figure 23, Figure 24	G, H, I, J	140G-G-EAM1B
		Close 250V	140G2-K-RMB, -RMX, RMY		K, L	140G2-K-EAM2A
	• Auxiliary Contact for Early Break Handle, package quantity of 2 • Removes system voltage from electronics that could be damaged by transient voltage caused by the opening of the MCCB main contacts • Supplied with 1 m (39 in) pig-tail wiring (each terminal wire is marked)	Close 400V	140G-G-RMB, -RMY, RMX 140G-H-RMB, -RMY, RMX	Figure 25	G, H, I, J	140G-G-EAB1B

(1) Mounted inside rotary mechanism or direct handle. Not compatible with other handles.

Table 196 - Phase Barriers

Description		Frame Size	Length [mm (in.)]	Cat. No.	
				3-Pole Package Quantity: 4	4-Pole Package Quantity: 6
	• Provides additional clearance when special connections that extend beyond the frame of the MCCB are used • Insulation between phases at terminal connections using individual flexible barriers • Extended length options for extended and spread terminal applications • Front mounted, even with the circuit breaker and terminal connections already installed • For Frame Sizes G...K: Supplied with 25 mm (1 in.) barriers as standard	G, I	25 (1)	140G-G-PB3M	140G-G-PB4M
			100 (4)	140G-G-PB3L	140G-G-PB4L
			200 (8)	140G-G-PB3H	140G-G-PB4H
		H, J	25 (1)	140G-H-PB3M	140G-H-PB4M
			100 (4)	140G-H-PB3L	140G-H-PB4L
			200 (8)	140G-H-PB3H	140G-H-PB4H
		K, L	25 (1)	140G2-K-PB3M	140G2-K-PB4M
			100 (4)	140G2-K-PB3L	140G2-K-PB4L
			200 (8)	140G2-K-PB3H	140G2-K-PB4H
		R	100 (4)	140G-R-PB3L (1)	140G-R-PB4L (2)
			200 (8)	140G-R-PB3H (1)	140G-R-PB4H (2)

(1) Package quantity of 2 supplied for the line side only.
(2) Package quantity of 3 supplied for the line side only.

Table 197 - Terminal Covers

Description			Frame Size	Height [mm (in.)]	Cat. No.	
					3-Pole	4-Pole
	• Helps prevent accidental contact with live parts • Front mounted, even with the circuit breaker and terminal connections already installed • Provides phase-to-phase insulation using a molded plastic cover • Pre-punched to simplify installation • Supplied as standard with the selection of multiple cable terminal lugs (see Table 198) • Not for use with spreader terminals.	High covers, Package quantity: 2 IP40 protection against intrusion and accidental contact at terminals under IEC 60529 (see Table 6 on page 16)	G	50 (2)	140G-G-TC3H	140G-G-TC4H
			H		140G-H-TC3H	140G-H-TC4H
			I	60 (2.40)	140G-I-TC3H	140G-I-TC4H
			J		140G-J-TC3H	140G-J-TC4H
			K, L		140G2-K-TC3H	140G2-K-TC4H
			N, NS	70 (2.75)	140G-N-TC3H	140G-N-TC4H
		Low covers Package quantity: 2 IP30 protection at terminals	G	At terminal (no extended height)	140G-G-TC3L	140G-G-TC4L
			H		140G-H-TC3L	140G-H-TC4L
			I		140G-I-TC3L	140G-I-TC4L
			J		140G-J-TC3L	140G-J-TC4L
			N, NS		140G-N-TC3L	140G-N-TC4L
–		Terminal covers with back shield	K, L	–	140G2-K-TBP3	140G2-K-TBP4
–		Spreader terminal cover		–	140G2-K-TC3S	140G2-K-TC4S

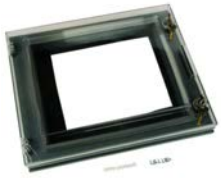
Table 198 - Terminal Cover Seal Kit: Sealable Screws (TS)

Description		Frame Size	Cat. No.
	• Tamper seals for terminal cover mounting screws • Provides protection against tampering with installed terminal cover • Supplied with two screws and two seals **TIP:** One kit is sufficient for one terminal cover. • Sealing wire and lead are customer supplied • Package quantity of 2, one required for line cover and one required for load cover	G, H, I, J	140G-G-TS

Table 199 - IP30 Escutcheon Frames

Description	For Use With	Frame Size	Cat. No.
 • Finish frame with marking provision window • For flush mounted (to door) MCCB applications	3-pole devices	G	140G-G-EP3
	4-pole devices		140G-G-EP4
	3-pole devices	H	140G-H-EP3
	4-pole devices		140G-H-EP4
	3-pole devices	I	140G-I-EP3
	4-pole devices		140G-I-EP4
	3-pole devices	J	140G-J-EP3
	4-pole devices		140G-J-EP4
	3- and 4-pole devices	K, L	140G2-K-EP
		N	140G-N-EP
		NS	
		R	140G-R-EP

Table 200 - IP54 Protective Covers

Description	Frame Size	Cat. No.
 • Transparent plastic cover that is flush mounted to the enclosure door • Mounted on hinges and provided with a keyed lock	N, NS	140G-N-BC12
	R	140G-R-BC12

Padlock Adapters

Table 201 - Padlock Handle Block

Description	Frame Size	Cat. No.
 • Allows padlocking of the device into the OFF position • Features: – Padlocking hasp – Lock-OFF only – Metal construction	G, I	140G-G-PL
	H, J	140G-H-PL
	N	140G-N-PL
	NS	140G-NS-PL
	R	140G-R-PL
	K, L	140G2-K-PL

Table 202 - Door Interlock (SINT)

Description	Frame Size	Cat. No.
 Direct mechanical lock to door • Trips the circuit breaker when enclosure door is opened unless deliberately defeated using defeater feature • Mechanically links the trip bar in the circuit breaker to the enclosure door's position; when door is opened, breaker is tripped • Installs on the right side of frame • Not compatible with circuit breakers that have a toggle mechanism • Includes defeater mechanism for deliberate operation by qualified personnel while the circuit breaker is ON	NS	140G-N-SINT
	R	140G-R-SINT

Table 203 - EZ-Plate Mounting Adapters (Optional)

Description	Frame Size	Cat. No.
 • Converts a circuit breaker from standard panel mounting screws to 6.4 mm (1/4 in.) sheet metal screws • Eliminates precision drilling and tapping for MCCB mounting screws • Kit includes plate with mounting fasteners • Works with both MCCBs and bail operators	G, H	140G-G-EZ
	I, J	140G-J-EZ
	K, L	140G2-EZ

Table 204 - DIN Rail Adapters (DRA)

Description		Number of Poles	Frame Size	Cat. No.
	• Converts a circuit breaker from standard panel mounting screws to snap onto DIN rail • Compatible with IEC/EN 60715 - 35 × 7.5 and IEC/EN 60715 - 35 × 15 top hat rail • Adapts to 35 mm DIN Rail	3-pole	G	140G-G-DRA
		4-pole		140G-G-DRA4
		3-pole	H	140G-H-DRA
		4-pole		140G-H-DRA4
		3-pole	I	140G-I-DRA
		4-pole		140G-I-DRA4
		3-pole	J	140G-J-DRA
		4-pole		140G-J-DRA4

Table 205 - Mounting Adapter Plates for Bulletin 140U MCCBs

Description		Frame Size	Cat. No.
	• Converts 140U mounting holes to 140G mounting pattern to install replacement MCCB	G, H	140G-G-PRA
		J	140G-J-PRA

Table 206 - Troubleshooting Accessories

Description		Frame Size	Cat. No.
	Trip test battery • Supplies temporary battery power for settings changes and troubleshooting • Compatible with EnergySense and PowerSense units	H, J, K, L, M (LSI, LSIG, MM), N/NS (LSI)	140G-ELTT
	Battery unit • Used to interrogate the last trip of the MCCB when supplemental control power is not present or is lost • For use with LSIG and LSIG-MM circuit breakers • Compatible with EnergySense and PowerSense units	N, NS, R	140G-ELBU

Terminal Accessories

Bulletin 140G Terminal lugs are compatible with solid and stranded cable of stranding class AA, A, B, and C. Flexible fine-stranded cable found in stranding class D, G, H, DLO, I, K, and M (example: welding cable) is not compatible because of the clamping contact necessary within the lug. Applications that require flexible cable may use a UL Listed crimp lug with the integral terminal and end cap of the circuit breaker instead of a machined lug.

Table 207 - Terminal Lugs (TLA/TLC/MTL) (1)

Description		Conductor Type	Number of Conductors	Wire Size		Frame Size	Cat. No.	
				[mm²]	[AWG]		Package Quantity: 3	Package Quantity: 4
	• Converts standard circuit breaker terminals to accommodate desired size of line and load wiring • Screws are supplied for voltage tap • Multi-terminal Lugs (MTL): available with 6 connections of smaller-diameter wire for ease of installation • Standards Compliance: UL 489, CSA C22.2 No. 5	Al or Cu wire	1	4…70	10…2/0	G	140G-G-TLA13 (7)	140G-G-TLA14 (7)
		Cu wire	1	2.5…70	14…1/0	G	140G-G-TLC13 (2)	140G-G-TLC14 (2)
				1.5…70	14…1/0	G	140G-G-TLC13A (3)	140G-G-TLC14A (3)
		Multiple cables Cu wire	6	2.5…35	14…2	G	140G-G-MTL63 (4)	140G-G-MTL64 (4) (5)
		Al or Cu wire	1	4…70	10…2/0	H	140G-H-TLA13 (6) (7)	140G-H-TLA14 (6) (7)
		Cu wire	1	1…95	14…1/0	H	140G-H-TLC13	140G-H-TLC14
		Multiple cables Cu wire	6	2.5…35	14…2	H	140G-H-MTL63 (4) (5)	140G-H-MTL64 (4) (5)
		Al or Cu wire	1	2.5…50	14…1/0	I	140G-I-TLA13	140G-I-TLA14
			1	35…150	4…300 MCM	I	140G-I-TLA1A3	140G-I-TLA1A4
		Cu wire	1	6…185	10…250 MCM	I	140G-I-TLC13	140G-I-TLC14
		Multiple cables Cu wire	6	2.5…35	12…2	I	140G-I-MTL63 (4) (5)	140G-I-MTL64 (4) (5)
		Al or Cu wire	1	2.5…50	14…1/0	J	140G-J-TLA13	140G-J-TLA14
			1	35…150	4…300 MCM	J	140G-J-TLA1A3	140G-J-TLA1A4
		Cu wire	1	6…185	10…250 MCM	J	140G-J-TLC13	140G-J-TLC14
			1	120…185	250…350 MCM	J	140G-J-TLC1A3	140G-J-TLC1A4
		Multiple cables Cu wire	6	2.5…35	12…2	J	140G-J-MTL63 (4) (5)	140G-J-MTL64 (4) (5)
		Al or Cu wire	1	95…185	3/0 AWG…350 MCM	J	140G-J-TLA1B3	140G-J-TLA1B4
	• Converts standard circuit breaker terminals to accommodate desired size of line and load wiring • Screws are not supplied for voltage tap • Multi-terminal Lugs (MTL): available with 6 connections of smaller-diameter wire for ease of installation • Standards Compliance: UL 489, CSA C22.2 No. 5	Al or Cu wire	1	120…240	1x4/0…500 MCM	K	140G2-K-TLA13	140G2-K-TLA14
		Cu wire	1	120…240	1x2/250…500 MCM	K	140G2-K-TLC13	140G2-K-TLC14
			1	16…185	1x6…350 MCM	K	140G2-K-TLA1B3	140G2-K-TLA1B4
		Multiple cables Cu wire	2	95…120	2x2/0…250 MCM	K, L	140G2-K-TLC23	140G2-K-TLC24
			2	95…240	2x2/0…500 MCM	K, L	140G2-K-TLA2A3	140G2-K-TLA2A4
			6	16…50	6x6…1/0	K, L	140G2-K-MTL63	140G2-K-MTL64
		Al or Cu wire	4	120…240	4/0…500 MCM	N, NS	140G-N-TLA43 (5)	140G-N-TLA44 (5)
		Cu wire	4	120…240	4/0…500 MCM	N, NS	140G-N-TLC43 (5)	140G-N-TLC44 (5)
		Al or Cu wire	3	–	500…750 MCM	N, NS	140G-N-TLA33 (7)	140G-N-TLA34 (7)
			6	50…400	1/0…750 MCM	R	140G-R-TLA63	–
		Cu wire	6	50…400	1/0…750 MCM	R	140G-R-TLC63	–

(1) For applications that follow the UL guidelines for panel SCCR: Use of multiple wire termination on the load size lets the termination be rated at the SCCR level of the circuit breaker, which may allow a higher SCCR than may be available using a separate power distribution block.
(2) MCCB only.
(3) MCP only.
(4) Multiple cable lugs for use with load side connectors only.
(5) Includes the high terminal cover.
(6) For use with devices I_n = 50 A and greater.
(7) Screws are supplied for voltage tap.

Table 208 - Extended Terminals (EXT)

Description		Supplied With	Frame Size	Cat. No.	
				3-Pole Package Quantity: 3	4-Pole Package Quantity: 4
	• Extended terminals (EXT) for busbar or ring type connection (crimp lugs) • See Table 312 on page 153 and Table 313 on page 154 for circuit breaker terminal connection limits • See Table 314 on page 154 for extended spreader terminal limits • Standards Compliance: UL 489, CSA C22.2 No. 5	100 mm (4 in.) phase barrier (Cat. No. 140G-G-PB_L)	G	140G-G-EXT3	140G-G-EXT4
		Extended back plate 100 mm (4 in.) phase barrier (Cat. No. 140G-H-PB_L) High terminal cover (Cat. No. 140G-H-TC_H or 140G-J-TC_H)	H	140G-H-EXT3	140G-H-EXT4
		100 mm (4 in.) phase barrier (Cat. No. 140G-G-PB_L)	I	140G-I-EXT3	140G-I-EXT4
		Extended back plate 100 mm (4 in.) phase barrier (Cat. No. 140G-H-PB_L) High terminal cover (Cat. No. 140G-H-TC_H or 140G-J-TC_H)	J	140G-J-EXT3	140G-J-EXT4
		Back shield 100 mm (4 in.) phase barrier (Cat. No. 140G2-K-PB_L)	K, L	140G2-K-EXT3	140G2-K-EXT4
			N	140G-N-EXT3 (1)	140G-N-EXT4 (1)
			NS		

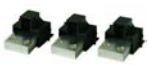
(1) IEC only.

Table 209 - Spreader Terminals (EXS) for Busbar or Ring Type Connection

Description			Supplied With	Frame Size	Cat. No.	
					3-Pole Package Quantity: 3	4-Pole Package Quantity: 4
	• Spreader terminals for busbar or ring type connection (crimp lugs) • Converts standard circuit breaker terminals to extended and spread position for busbar or ring-type connection • See Table 312 on page 153 and Table 313 on page 154 for circuit breaker terminal connection limits • See Table 314 on page 154 for extended spreader terminal limits • Standards Compliance: UL 489, CSA C22.2 No. 5		200 mm (8 in.) phase barrier (Cat. No. 140G-H-PB_H)	G	140G-G-EXS3	140G-G-EXS4
				I	140G-I-EXS3	140G-I-EXS4
			Extended back plate, 200 mm (8 in.) phase barrier (Cat. No. 140G-H-PB_H) High terminal cover (Cat. No. 140G-H-TC_H or Cat. No. 140G-J-TC_H)	H	140G-H-EXS3	140G-H-EXS4
				J	140G-J-EXS3	140G-J-EXS4
			Extended back plate 200 mm (8 in.) phase barrier (Cat. No. 140G-K-PB_H)	K, L	140G2-K-EXS3	140G2-K-EXS4
				N	—	140G-N-EXS4 (1)
				NS		
			Terminals only	R	140G-R-EXS3 (1)	140G-R-EXS4 (1)
	• Spreader terminals for busbar or ring type connection • Converts standard circuit breaker terminals to extended and spread position for busbar or ring-type connection • See Table 312 on page 153 and Table 313 on page 154 for circuit breaker terminal connection limits • See Table 314 on page 154 for extended spreader terminal limits	Top spreader	Terminals only	M	140G-M-EXSLI3 (1)	—
			Extended back plate 200 mm (8 in.) phase barrier (Cat. No. 140G-K-PB_H)	N	140G-N-EXSLI3 (1)	—
				NS		
		Bottom spreader	Extended back plate 200 mm (8 in.) phase barrier (Cat. No. 140G-K-PB_H)	N	140G-N-EXSLO3 (1)	—
				NS		

(1) IEC only.

Table 210 - Rear Terminals (TLH/TLV) — IEC Only

Description			Frame Size	Cat. No.	
				3-Pole Package Quantity: 3	4-Pole Package Quantity: 4
	• Convert standard breaker terminals to attach to a vertical or a horizontal busbar	Rear flat horizontal terminals	N, NS	140G-N-TLH3	140G-N-TLH4
		Rear flat vertical terminals	N, NS	140G-N-TLV3	140G-N-TLV4
			R (1)	140G-R-TLV3	140G-R-TLV4

(1) 2000 A (80/100%) and 2500 A (80%) MCCBs only.

Table 211 - Bulletin 141A Busbar Mounting Adapters [1]

Description				Thermal Current I_{th} [A]	Width [mm (in.)]	Frame Size	Cat. No.
	• Convert standard breaker terminals to attach to horizontal busbar • Configurations include: – Top feed (branch applications) – Bottom feed (main applications) – Universal • Adapters clamp or plug directly on to the busbar • For 5 mm or 10 mm thick busbar • Requires terminal lugs for adapter connection	Busbar mounting adapter with flexible connection **NOTE:** Lugs are not included. See Table 212 on page 114	Top feed	125	90 (3.54)	G, H	141A-GHT [2]
			Bottom feed				141A-GHB [2]
		Busbar mounting adapter with flexible connection [3]	Top feed	250	105 (4.13)	J	141A-GJT
			Bottom feed				141A-GJB
			Top or bottom feed	400	140 (5.51)	K	141A-GKU

(1) For factory-installed mounting options, see Table 167 on page 98.
(2) Lugs are required.
(3) Lugs are not required or included. If your application requires terminal lugs, see Table 207 on page 112 for compatible options. Lugs must be installed on the side of the unit that is not connected to the adapter.

Table 212 - Compatible Terminal Lugs for Busbar Adapter Mounting

Description		Wire Size	For Use With	Frame Size	Cat. No.
	• Copper (Cu) wire, two required per busbar adapter • Package quantity of 3' • For use with Cat. No. 141A-GHT or Cat. No. 141A-GHB **IMPORTANT:** Only required for Bulletin 140G Frame Size G and H.	(1) 14...1/0 AWG or 2.5...70 mm^2	MCCB only	G	140G-G-TLC13
		(1) 14...1/0 AWG or 1.5...70 mm^2	MCP only		140G-G-TLC13A
		(1) 14...1/0 AWG or 2.5...95 mm^2	All	H	140G-H-TLC13

Replacement Parts

Photos in this section are representative. Appearance of actual product may differ from the photo shown.

- All 140G MCCBs are furnished with end caps mounted on the circuit breaker as standard. Replacement end cap kits are available.
- Many customers prefer to use a "crimp-on" ring lug (ring tongue terminal) or forked terminal as the wire termination method to the MCCB. Others prefer wire connection to a terminal lug. We offer a broad selection of terminal lugs to meet specific application requirements.

Internal Replacement Parts

Table 213 - Replacement Auxiliary and Alarm Contacts (AX/AL/TUAL)

Description		Rated Voltage	Contact Type	Number of Contacts			Diagram	Frame Size	Cat. No. (1)
				Auxiliary	Alarm	Trip Unit Alarm			
	• Auxiliary/Trip Unit Contact – Indicates ON/OFF status of the MCCB – Form C-style switches for internal MCCB wiring snap-fit into internal pockets of the device For Frame Size G...K and M: Supplied with 1 m (39 in.) pig tail wiring, with each terminal wire labeled – For Frame Size N and NS: Terminated with a 3-pin quick connector (140G-N-CIC) – Frame Size R is wired internal to the circuit breaker and can be terminated at the terminal strip – Designation: AX1/AX2/AX3/AX4) – See Table 3 on page 9 for contact function description	250V AC	Auxiliary, alarm, and trip unit alarm combination	1	1	–	Figure	K, M	140G-K-EA1R1A (2)
				3	1	–	Figure 15		140G-K-EA3R1A
		24V DC, PLC (2)	Auxiliary and alarm combination	3	1	–	Figure 15		140G-K-EA3R1J
		400V AC (2)	Auxiliary	2	–	–	Figure 18		140G-H-EA2B
			Auxiliary and alarm combination	1	1	–	Figure		140G-K-EA1R1B
	• Auxiliary Contact for Maintenance Mode (MM) • For LSIG-MM devices only	24V DC	Auxiliary and alarm combination	1	1	–	Figure	K	140G-K-CEAA
								M	140G-M-CEAA

(1) See page 149 for additional specifications, including AC and DC ratings.
(2) UL 489, CCC rating.

Table 214 - Replacement Shunt Trips

Description		Voltage	Diagram (1)	Frame Size	Cat. No.
	• Allows for remote tripping of the MCCB by applying control voltage to the shunt trip coil For Frame Size G...K and M: Supplied with 1 m (39 in.) pig tail wiring, with each terminal wire labeled • Cat. No. 140G-K-CC2 available for 2nd shunt install • 2nd shunt configuration is not compatible with Undervoltage Release (UVR) • 2nd shunt application only available on 4-pole devices • Standard Compliance: UL 489	12V DC	Figure 29	K, M (2)	140G-K-SNR
		24...30V AC/DC			140G-K-SNJ
		48...60V AC/DC			140G-K-SNKY
		110...127V AC/110...125V DC			140G-K-SND
		220...240V AC/220...250V DC			140G-K-SNA
		380...440V AC			140G-K-SNB
		480...525V AC			140G-K-SNC

(1) For -N and -NS frame sizes, terminals C1 and C2 are designated C11 and C12.
(2) 4-pole devices require Cat. No. 140G-K-CC2 connector. See Table 234 on page 120.

Table 215 - Replacement Undervoltage Release Units

Description		Voltage	Diagram	Frame Size	Cat. No.
	• Opens the MCCB when supply voltage drops between 35...70% of the UV voltage rating • The MCCB can be reset when the supply voltage > 85% of the relay rating • When the UV is de-energized, the MCCB main contacts cannot close • Trip rating from 0.7...0.35 • Supplied with 1 m (39 in) pig tail wiring, with each terminal wire labeled • R Resistor is supplied with the MCCB when reset is required • Standard Compliance: UL 489SIDE	24...30V AC/DC	Figure 33	K, M	140G-K-UVJ
		48V AC/DC			140G-K-UVKY
		60V AC/DC			140G-K-UVY
		110...127V AC/110...125V DC			140G-K-UVD
		220...240V AC/220...250V DC			140G-K-UVA
		380...440 V AC			140G-K-UVB
		480...525 V AC			140G-K-UVC

Table 216 - Replacement Internal Terminal Block for Trip Units for -N and -NS Frame Sizes

Description		Frame Size	Cat. No.
	• Replacement internal terminal block • Supplied as standard Frame Size N and NS	N	140G-N-CBP
		NS	140G-NS-CBP

External Replacement Parts

Table 217 - Replacement Earth Leakage Protector (ELP) (Residual Current Release Module) — IEC Only

Description		Diagram	Frame Size	Cat No.	
				3-Pole	4-Pole
	• Protection against 30 mA (0.03 A) of earth (ground) fault currents • Compliant with IEC 60947-2 annex B, IEC 61000 for protection against unwarranted tripping • Installs surrounding the circuit breaker 0.03 A with 0.0 s override • Features: – Alarm and trip indication – Test function – Current adjustment: 0.5...10 A – Time adjustment: 0.0...3 s	Figure 37	K	—	140G-K-ELP

Table 218 - Replacement External Neutral Current Sensors (NCT)

Description		Rated Current	Diagram	Frame Size	Cat. No.
	• Provides data to trip unit for external neutral current line in system (see Table on page 15) • Measures current on neutral line not connected to the circuit breaker • Supplied with 1 m (39 in.) pig tail wiring, with each terminal wire labeled UL 489 • Not compatible with the following: – MCP (Cat. No. 140MG-K8P, 140MG-M8P, 140MG-N8P) – Frame Size N or NS DIP LSI trip unit (Cat. No. 140G-N_H_, 140G-NS_H_)	300 A	Figure 39	K (1)	140G-K-NCTD30
		400 A		K (1)	140G-K-NCTD40
		600 A		M (1)	140G-M-NCTD60
		800 A		M (1)	140G-M-NCTD80

(1) Order with connector (Cat. No. 140G-K-CC).

Table 219 - Replacement Rating Plugs (RP) for I_n

Description		Rated Current I_n	Frame Size	Cat. No.
	• Supplied as standard on Frame Size N, NS, and R frame sizes matching the trip unit's maximum rated current • Plugs above frame rating are not compatible • See Table 178 on page 102 for additional rating plugs at lower values	600	L	140G2-LRP-D60
		630		140G2-LRP-D63
		1200 A	N, NS	140G-NRP-E12
		2000 A	R	140G-RRP-E20
		2500 A		140G-RRP-E25
		3000 A		140G-RRP-E30

Table 220 - Replacement Maintenance Mode Connectors

Description		Connections To	Diagram	Frame Size	Cat. No.
	• Connects signal input and output to LSIG-MM trip units to activate and validate maintenance mode (MM) (see Maintenance Mode on page 26) **NOTE:** Both Cat. No. 140G-K-CC and Cat. No. 140G-K-CIC must be used for maintenance mode. • Installs to connector ports at the back of Frame Size K and M circuit breakers • Not required for Frame Size N, NS, or R • Supplied with 1 m (39 in) pig tail wiring with each terminal wire labeled and panel mount terminal	External neutral connection and MM control input	Figure	K, M	140G-K-CC
		24V DC power supply and MM output for indication			140G-K-CIC

Table 221 - Replacement Rotary Variable Depth Operator (RVM/NVM) Kit with External Handle

Description	Frame Size	Handle Color	Shaft Length [mm (in.)]	Cat. No.
 • MCCB-mounted operating mechanism (RMX) • Allows actuation and status indication of circuit breaker states: On, Off, Trip, and Reset • Requires deliberate action to operate handle and turn the circuit breaker ON when enclosure door is open **NOTE:** The internal handle must be pulled out before it can be turned, otherwise the handle retracts back onto the shaft and does not turn.	K	Black	305 (12)	140G-K-RVM12B
 • IP40 protection against intrusion and accidental contact on the face of the device under IEC 60529 (see Table 7 on page 17) • Circuit breaker can be mounted anywhere on the panel; operator is installed to the face of the circuit breaker • Kit contains: External handle and operating shaft • See Table 241 on page 122 to select as components. See Table 195 on page 108 for Early-Make and Early-Break Contact options • Handle installs to the outside of the enclosure door – For Frame Size G...J: Use Bulletin 140U P-style handle – For Frame Size K, M, and N: Use Bulletin 140U medium style handle • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2		Red/yellow		140G-K-RVM12R
	K	Black	559 (22)	140G-K-RVM21B
		Red/yellow		140G-K-RVM21R
	M	Black	305 (12)	140G-M-RVM12B
		Red/yellow		140G-M-RVM12R
		Black	559 (22)	140G-M-RVM21B
		Red/yellow		140G-M-RVM21R

Table 222 - Replacement Rotary Variable Depth Operator (RVM/NVM) Kits with Internal NFPA 79 Operating Handle

Description	Frame Size	Handle Color	Shaft Length [mm (in.)]	Cat. No.
 • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Requires deliberate action to operate handle and turn the circuit breaker ON when enclosure door is open. • The internal handle must be pulled out before it can be turned, otherwise the handle retracts back onto the shaft and does not turn • IP40 protection against intrusion and accidental contact on the face of the device under IEC 60529. See Table 7 on page 17 • Circuit breaker can be mounted anywhere on the panel; operator is installed to the face of the circuit breaker	K	Black	305 (12)	140G-K-NVM12B
		Red/yellow		140G-K-NVM12R
		Black	559 (22)	140G-K-NVM21B
		Red/yellow		140G-K-NVM21R
 • Handle installs to the outside of the enclosure door – For Frame Size G...J: Use a Bulletin 140U P-style handle – For Frame Size K, M, and N: Use a Bulletin 140U medium style handle • Kit contains: – External handle – NFPA handle with operating shaft – MCCB-mounted operating mechanism (RMX) – Support bracket • See Table 241 on page 122 to select as individual components. See Table 195 on page 108 for Early-Make and Early-Break Contact options • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	M	Black	305 (12)	140G-M-NVM12B
		Red/yellow		140G-M-NVM12R
		Black	559 (22)	140G-M-NVM21B
		Red/yellow		140G-M-NVM21R

Table 223 - Replacement Direct Rotary Operators (RMB/RMY)

Description		Frame Size	Handle Color	Cat. No.
	• Mount with direct handle operation of the MCCB • Lockable in OFF position (three padlocks maximum) • Circuit breaker can be mounted anywhere on the panel; operator is installed to the face of the circuit breaker • Handle can protrude through the door when used with provided escutcheon plate (1) • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset **TIP:** See Table 195 on page 108 for Early-Make and Early-Break Contact options • Direct Rotary Operators achieve IP40 protection against intrusion and accidental contact on the face of the device under IEC 60529.; see Table 7 on page 17 for Ingress Protection details • Standards Compliance: UL 489	K	Black	140G-K-RMB
			Red/yellow	140G-K-RMY
		M	Black	140G-M-RMB
			Red/yellow	140G-M-RMY

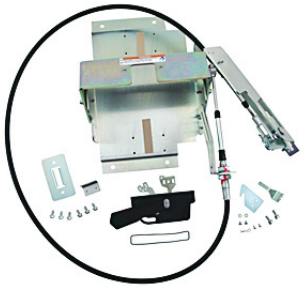
(1) Escutcheon plates are not included with -K frame sizes.

Table 224 - Replacement Flange-mounted Cable Operator (FC_/FM_) Kit: 3-pole Devices Only

Description		Frame Size	Handle Type	Cable Length [m (ft)]	Cat. No.
	• For use with NEMA-style flange enclosures • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Circuit breaker can be mounted anywhere on the panel; operator is installed to the surround circuit breaker • Pre-assembled components include: handle, bail mechanism, cable, and assembly hardware • Flexible cable transmits handle motion to actuator at the circuit breaker **IMPORTANT:** Only use a properly sized cable based on application. Excess cable length may cause operation issues. The sum of all direction changes must not exceed 270 degrees. • Standards Compliance: UL 489, CSA C22.2	K	Non-metallic handle Type 1/3/3R/12/4/4X	0.91 (3)	140G-K-FCXB03
				1.3 (4.27)	140G-K-FCXB04
				1.9 (6.23)	140G-K-FCXB06
				3 (9.84)	140G-K-FCXB10
			Painted metal handle Type 1/3/3R/12/4/4X	0.91 (3)	140G-K-FMXB03
				1.3 (4.27)	140G-K-FMXB04
				1.9 (6.23)	140G-K-FMXB06
				3 (9.84)	140G-K-FMXB10
			Stainless handle (1) Type 4/4X	0.91 (3)	140G-K-FCSB03
				1.3 (4.27)	140G-K-FCSB04
				1.9 (6.23)	140G-K-FCSB06
				3 (9.84)	140G-K-FCSB10

(1) Stainless handles have a chrome-plated steel handle base.

Table 225 - Replacement Flexible Cable Operator (FC_/FM_) Kits for -M Frame Sizes and Left-hand Brackets

Description		Frame Size	Handle Type	Cable Length [m (ft)]	Cat. No.
	• For use with NEMA-style flange enclosures • Includes: handle, MCCB operator, cable, and necessary hardware • Pre-assembled for ease of installation • Circuit breaker can be mounted anywhere on the panel; operator is installed to surround circuit breaker • Flexible cable transmits handle motion to actuator at the circuit breaker **IMPORTANT:** Only use a properly sized cable based on application. Excess cable length may cause operation issues. The sum of all direction changes must not exceed 270°. • Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Replacement hardware is listed on Table 248 on page 124 • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	M	Non-metallic handle Type 1/3/12/4/4X	1.3 (4.27)	140G-M-FCX04
				1.9 (6.23)	140G-M-FCX06
				3 (9.84)	140G-M-FCX10
			Stainless handle (1) Type 4/4X	1.3 (4.27)	140G-M-FCS04
				1.9 (6.23)	140G-M-FCS06
				3 (9.84)	140G-M-FCS10
			Painted metal handle Type 1/12	1.3 (4.27)	140G-M-FMX04
				1.9 (6.23)	140G-M-FMX06
				3 (9.84)	140G-M-FMX10
	• Left-hand flange-mount bracket • Relocates cable to left side • Ideal for enclosures less than 38.1 cm (15 in) deep	M	–	–	140G-BML

(1) Stainless handles have a chrome-plated steel handle base.

Table 226 - Replacement Variable Depth Flange-mounted Circuit Breaker Operating Mechanism

Description		Compatible 3-Pole Circuit Breaker (1)		Cat. No.
		[A]	Frame Size	
	• Allows actuation and status indication of the circuit breaker states: On, Off, Trip, and Reset • Circuit breaker must be installed directly behind the flange handle cutout • Operator is installed to surround circuit breaker • Complete mechanism consists of: – Operating mechanism (Table 189 on page 107) and handle – Connecting rod (Table 190 on page 107) – Insulation kit (if required) (Table 193 on page 108) – Auxiliary contacts (if required) (Table 192 on page 107) • Standards Compliance: UL 489, CSA C22.2 No. 5, CSA C22.2 No. 94.2	400 A	K	1494V-M71
		800 A, 1200 A	M	1494V-M72

(1) Circuit breakers are customer supplied.

Table 227 - Replacement Operating Handle for Circuit Breaker Operating Mechanism

Description		Handle Type	Circuit Breaker [A]	Cat. No.
	Non-metallic handle	Type 1, 3R, 4, 4X, 12	125, 150, 250, 400	1494U-HP1
	Painted metal handle	Type 1, 3R, 4, 12	125, 150, 250, 400	1494U-HM1
	Stainless handle, chrome-plated steel base	Type 4, 4X	125, 150, 250, 400	1494U-HS1

Table 228 - Replacement Stored Energy Motor Operators (EOP)

Description		Voltage	Diagram	Frame Size	Cat. No.
	• Remotely opens, closes, and resets the MCCB • Uses a stored energy motor for local control of the motor without the use of special tools • Includes: – Auto/manual/lock selection – Lever to recharge the motor – Open/close push button operation • Circuit breaker can be mounted anywhere on the panel; operator is installed to the face of the circuit breaker Manual: Uses a lever to charge a spring mechanism, which actuates the toggle at the press of a button Automatic: Uses signaling control for remote opening and closing of the circuit breaker by driving an electric motor to charge the manual springs • Includes integral padlock for OFF position and 1 m (39 in.) wiring terminated in socket-plug connectors • Standards Compliance: UL 489	24V DC	Figure 46	K	140G-K-EOPJ
		48...60V DC			140G-K-EOPKY
		110...125V AC/DC			140G-K-EOPD
		220...250V AC/DC			140G-K-EOPA
		380V AC			140G-K-EOPB
		24V DC	Figure 46	M	140G-M-EOPJ
		48...60V DC			140G-M-EOPKY
		110...125V AC/DC			140G-M-EOPD
		220...250V AC/DC			140G-M-EOPA
		380V AC			140G-M-EOPB

Table 229 - Replacement Early-Make and Early-Break Signal Contacts (EAM/EAB) for Auxiliary Contact Handle Mechanism

Description		Voltage	For Use With (1)	Diagram	Frame Size	Cat. No.
	• Package quantity of 2 • Typically used with an undervoltage release • Contacts close before the MCCB main contacts • Supplies power to the undervoltage release, which helps prevent nuisance tripping of the relay • Supplied with 1 m (3.28 ft) pig-tail wiring (each terminal wire is marked)	Close 250V	140G-K-RMB, 140G-K-RMY, 140G-KRMX	Figure 23	K	140G-K-EAM1A
			140G-M-RMB, -RMY, RMX	Figure 23	M	140G-M-EAM1A

(1) Mounted inside rotary mechanism or direct handle. Not compatible with other handles.

Table 230 - Replacement Phase Barriers

Description	Frame Size	Length [mm (in.)]	Cat. No. 3-Pole Package Qty. of 4	Cat. No. 4-Pole Package Qty. of 6
 • Provides additional clearance when special connections that extend beyond the frame of the MCCB are used • Insulation between phases at terminal connections using individual flexible barriers • Extended length options for extended and spread terminal applications • Front mounted, even with the circuit breaker and terminal connections already installed • For Frame Sizes G...K: Supplied with 25 mm (1 in.) barriers as standard	K	25 (1)	140G2-K-PB3M	140G2-K-PB4M
		100 (4)	140G-K-PB3L	140G-K-PB4L
		200 (8)	140G-K-PB3H	140G-K-PB4H
	M	100 (4)	140G-M-PB3L	140G-M-PB4L

Table 231 - Replacement Terminal Covers

Description		Frame Size	Height [mm (in.)]	Cat. No. 3-Pole	Cat. No. 4-Pole
 **IMPORTANT:** Not for use with spreader terminals • Helps prevent accidental contact with live parts • Front mounted, even with the circuit breaker and terminal connections already installed • Provides phase-to-phase insulation using a molded plastic cover • Pre-punched to simplify installation • Supplied as standard with the selection of multiple cable terminal lugs (see Table 198 on page 109)	High covers Quantity of 2 IP40 protection against intrusion and accidental contact at terminals under IEC 60529 (see Table 7 on page 17)	K, L	60 (2.4)	140G-K-TC3H	140G-K-TC4H
		M		140G-M-TC3H	140G-M-TC4H
	Low covers Quantity of 2 IP30 protection at terminals	K	At terminal (no extended height)	140G-K-TC3L	140G-K-TC4L
		M		140G-M-TC3L	140G-M-TC4L

Table 232 - Replacement Terminal Cover Seal Kit

Description	Frame Size	Cat. No.
 • Tamper seals for terminal cover mounting screws • Provides protection against tampering with installed terminal cover • Kit is sufficient for one terminal cover and includes: – 2 screws — one screw is required for line cover and one screw is required for load cover – 2 seals **TIP:** Sealing wire and lead are customer supplied	K, L	140G-K-TS
	M, N, NS	140G-M-TS

Table 233 - Replacement IP30 Escutcheon Frames

Description	For Use With	Frame Size	Cat. No.
 • Replacement finish frame with marking provision window • For flush mounted (to door) MCCB applications	Motor operator	G, I	140G-G-EPM3
	Direct rotary operator	G, H, I, J	140G-G-EPR3
	Motor operator	H, J	140G-H-EPM3
	3-pole and 4-pole devices	K, L	140G-K-EP
	Residual current	K, L	140G2-K-EPRC
	Motor operator	K, L	140G2-K-EPM3
	3-pole and 4-pole devices	M	140G-M-EP

Table 234 - Replacement Shunt Trip Connector for 4-Pole Devices

Description	Frame Size	Cat. No.
 • Connector to mount shunt trip in third pole pocket for a 4-pole MCCB • For 4-pole devices only	K	140G-K-CC2
	M	

Table 235 - Spreader Terminals (EXS) for Busbar or Ring Type Connection

Description			Supplied With	Frame Size	Cat. No.	
					3-Pole Package Quantity: 3	4-Pole Package Quantity: 4
	• Spreader terminals for busbar or ring type connection (crimp lugs) • Converts standard circuit breaker terminals to extended and spread position for busbar or ring-type connection • See Table 312 on page 153 and Table 313 on page 154 for circuit breaker terminal connection limits • See Table 314 on page 154 for extended spreader terminal limits • Standards Compliance: UL 489, CSA C22.2 No. 5		Terminals only	K	140G-K-EXS3	140G-K-EXS4
				M	–	140G-M-EXS4 (1)
	• Spreader terminals for busbar or ring type connection • Converts standard circuit breaker terminals to extended and spread position for busbar or ring-type connection • See Table 312 on page 153 and Table 313 on page 154 for circuit breaker terminal connection limits • See Table 314 on page 154 for extended spreader terminal limits	Top spreader	Terminals only	M	140G-M-EXSLI3 (1)	–
		Bottom spreader	Terminals only		140G-M-EXSLO3 (1)	–

Table 236 - Replacement Trip Unit (TU) Modules

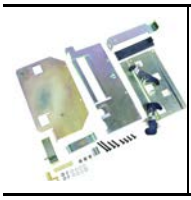
Description	Diagram	Frame Size	Cat. No.
• Relays toggle position to Sense TU • Required for Sense TU	Figure 43	H, J	140G-H-CIM2
	Figure 44	K, L	140G2-K-CIM2
• TU connections to 24V DC power supply • Auxiliary power to trip unit	Figure 44	K, L	140G2-K-CIC

Replacement Padlock Adapters

Table 237 - Replacement Padlock Adapters

Description			Frame Size	Cat. No.
	Padlockable handle block	• Allows padlocking of the device into the OFF position • Features a padlocking hasp, lock-OFF only, and metal construction	K	140G-K-TPA
	Padlocking flange	• Allows padlocking of the device into the OFF position • Supplied with toggle extension and escutcheon; lock-OFF only	M	140G-M-TPA

Table 238 - Replacement Door Interlock (SINT) (1)

Description			Frame Size	Cat. No.
	Direct mechanical lock to door **IMPORTANT:** Not compatible with circuit breakers that have a toggle mechanism	• Trips the circuit breaker when enclosure door is opened unless deliberately defeated using defeater feature • Mechanically links the trip bar in the circuit breaker to the enclosure door's position when the door is opened the circuit breaker is tripped • Installs on the right side • Includes defeater mechanism for deliberate operation by qualified personnel while the circuit breaker is ON	NS	140G-N-SINT
			R	140G-R-SINT

(1) Supplied as standard on all MCCB -R frame sizes, unless the catalog code contains "-W1" (without door interlock).

Replacement Terminal Accessories

Table 239 - Replacement Terminal Lugs (TLA/TLC/MTL)

Description		Conductor Type	Number of Conductors	Wire Size [mm²]	Wire Size [AWG]	Frame Size	Cat. No. 3-Pole Package Quantity: 3	Cat. No. 4-Pole Package Quantity: 4
	• Converts standard circuit breaker terminals to accommodate desired size of line and load wiring • Multi-terminal Lugs (MTL) • Available with 6 connections of smaller-diameter wire for ease of installation • Standards Compliance: UL 489, CSA C22.2 No. 5	Al or Cu wire	1	120...240	250...500 MCM	K	140G-K-TLA13	140G-K-TLA14
			2	95...120	2/0...250 MCM		140G-K-TLA23	140G-K-TLA24
			2	95...240	3/0...500 MCM		140G-K-TLA2A3	–
		Cu wire	1	120...240	250...500 MCM		140G-K-TLC13	140G-K-TLC14
			2	95...120	2/0...250 MCM		140G-K-TLC23	140G-K-TLC24
		Multiple cables, Cu wire	6	16...50	6...1/0		140G-K-MTL63	140G-K-MTL64
		Al or Cu wire	2	120...240	250...500 MCM	M	140G-M-TLA23	140G-M-TLA24
			3	70...185	2/0...400 MCM		140G-M-TLA33	140G-M-TLA3
		Cu wire	2	85...185	3/0...350 MCM		140G-M-TLC23	140G-M-TLC24
			3	70...185	2/0...350 MCM		140G-M-TLC33	140G-M-TLC34
		Al or Cu wire	2	...	500...750 MCM		140G-M-TLA2A3 (1)	–

(1) Screws are supplied for voltage tap.

Table 240 - Replacement Extended Terminals

Description		Supplied With	Frame Size	Cat. No. 3-Pole Package Quantity: 3	Cat. No. 4-Pole Package Quantity: 4
	• Extended terminals (EXT) for busbar or ring type connection (crimp lugs) • See Table 312 and Table 313 for circuit breaker terminal connection limits **TIP:** See Table 314 for extended spreader terminal limits. • Standards Compliance: UL 489, CSA C22.2 No. 5	Extended back plate 100 mm (4 in.) phase barrier (Cat. No. 140G-K-PB_L)	K	140G-K-EXT3 (1)	140G-K-EXT4 (1)
		Terminals only	M	140G-M-EXT3 (1)	140G-M-EXT4 (1)

(1) IEC only.

Table 241 - Replacement Variable-depth Rotary Operator Kit (RVM/NVM) Components (1)

Description				Frame Size	Cat. No.
	• Operating handle – Accepts 3 padlocks – For Frame Size G,...J: P-style handle – For Frame Size K, M, and N: Medium handles – Rated 3/3R/4/4X/12	Handle Color	Black/gray	G, H, I, J	140U-PB
			Red/yellow		140U-PY
			Black/gray	K, M, N	140U-HM4
			Red/yellow		140U-HM4E
	• Extension shaft	Shaft Length [mm (in.)]	305 (12)	G, H, I, J	194R-S1
			533 (21)		194R-S2
			305 (12)	K, M, N	194R-R7
			559 (22)		194R-R8
	• NFPA 79 internal operating handle with shaft – Internal handle permits operation of the molded case circuit breaker when the door is open in compliance with NFPA 79	Shaft Length [mm (in.)]	305 (12)	G, H, I, J	140G-N1
			533 (21)		140G-N2
			305 (12)	K, M, N	140G-N7
			559 (22)		140G-N8
	• Rotary variable depth operating mechanism – Direct molded case circuit breaker mount – Shaft is secured with set screw or cotter pin – For Frame Size G,...J: Use 194R-S1 or 194R-S2 shafts (Cat. No. 140G-N1 or Cat. No. 140G-N2 NFPA) For Frame sizes K, M, and N: Use 194R-R7 or 194R-R8 shafts (Cat. No. 140G-R7 or Cat. No. 140G-R8 NFPA)			G, I	140G-G-RMX
				H, J	140G-H-RMX
				K, L	140G2-K-RMX
				M	140G-M-RMX
				N	140G-N-RMX
	• Support bracket – Supplied as standard with NFPA variable depth operator kits			G, H, I, J	140G-G-OSB
				K, L	140G2-K-OSB
				M	140G-M-OSB
				N	140G-N-OSB

(1) Supplied as standard on all variable-depth operator kits.

Table 242 - Replacement End Cap (ECM) Kit

Description		Frame Size	Cat. No.	
			3-Pole Package Qty: 3	4-Pole Package Qty: 4
	• Provides direct connections to device terminals for ring type or bolt-on terminals without using terminal lugs (see Table 313 on page 154) • Provides connections for all terminal accessories • Kit includes: – end caps with captive nut: supplied as standard for Frame Size G...K, M, N, and NS – terminal bolts – washers • Standards Compliance: UL 489, CSA C22.2 No. 5	G	140G-G-ECM	140G-G-ECM4
		G (MCP)	140MG-G-ECM	–
		H	140G-H-ECM	140G-H-ECM4
		I	140G-I-ECM	140G-I-ECM4
		J	140G-J-ECM	140G-J-ECM4
		K	140G-K-ECM	140G-K-ECM4
		K, L	140G2-K-ECM	140G2-K-ECM4
		M	140G-M-ECM	140G-M-ECM4
		N	140G-N-ECM	140G-N-ECM4

Table 243 - Replacement Front and Side Covers

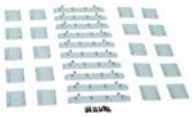
Description		Frame Size	Cat. No.	
			3-Pole	4-Pole
	• Side covers, package quantity of 10 – Supplied as standard with each device	H, J	140G-H-SC1	140G-H-SC1
	• Front and side covers, package quantity of 10 – Supplied as standard with each device – Front cover (carter) provides IP40 finger protection on the line and load side terminal – Side covers guide accessory signal wires along side of device toward panel	G	140G-G-SC3	140G-G-SC4
		H	140G-H-SC3	140G-H-SC4
		I	140G-I-SC3	140G-I-SC4
		J	140G-J-SC3	140G-J-SC4
		K, L	140G2-K-SC1	

Table 244 - Replacement Backplate (BP)

Description		Frame Size	Cat. No.	
			3-Pole	4-Pole
	• Insulators, package quantity of 10 – Supplied as standard – Insulates back of device and terminals against shorts to mounting panel – Required for all applications with a U_e > 440V – Replaced by insulation barrier in some operator kits	G	140G-G-BP3	140G-G-BP4
		H	140G-H-BP3	140G-H-BP4
		I	140G-I-BP3	140G-I-BP4
		J	140G-J-BP3	140G-J-BP4
		K	140G-K-BP3	140G-K-BP4
		M	140G-M-BP3	140G-M-BP4

Table 245 - Replacement Mounting Hardware (MH)

Description		For Use With	Package Quantity	Frame Size	Cat. No.
	• Replacement mounting hardware – Metric threads for mounting device to panel – Supplied as standard with each circuit breaker	3-pole devices	2	G, I	140G-G-MH3
		4-pole devices	3		140G-G-MH4
		3-pole and 4-pole devices	4	H, J	140G-H-MH4
				K	140G-K-MH4
				K, L	140G2-K-MH4
				M	140G-M-MH4
				N, NS	140G-N-MH4

Table 246 - Replacement Trip Units

Description		Frame Size	Rated Current	Trip Unit Type	Cat. No.
	• Replacement trip unit – Supplied as standard – Compatible with 3- pole and 4-pole devices	N, NS	1200 A	H – DIP LSI	140G-NTH-E12
				I – DIP LSI	140G-NTI-E12
				K – LCD LSIG-MM	140G-NTK-E12
		R	3000 A	K – LCD LSIG-MM	140G-RTK-E30

Table 247 - Replacement Terminal Strip Connectors

Description		Frame Size	Cat. No.
	• Terminal strip connector – Allows control wiring (solid or stranded), 22...14 AWG, 8 mm (0.31 in.) strip length – Supplied as standard with each accessory with wire terminations – 3-pin quick connector for customer termination at terminal strip; press fit into terminal strip slots – Installs to terminal strip on all -N and -NS frame sizes	N, NS	140G-N-CIC

Table 248 - Replacement Parts for Flex Cable Operators and Bulletin 1494V Variable-Depth Flange Operators

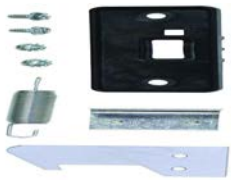
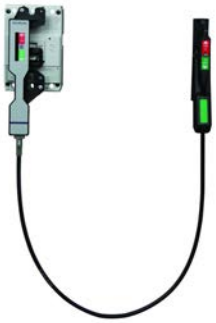
Description				Frame Size	Cat. No.
	Flange handle with mounting hardware	Handle type:	Non-metallic	G, H, I, K, M	140G-P1
			Stainless, chrome-plated steel		140G-S1
			Painted metal		140G-M1
			Long non-metallic	N	140G-P2
	• Mounting hardware for flange handle • Includes: – bail, – handle, – mounting nuts, – door interlock and fasteners, – hitch pin, – washer, and – seal	For use with:	Cat. No. 140G-_-FCX_	G, H, I, J, K	140G-FH3
					140G-S1B
					140G-M1B
					140GP1B
			Cat. No. 140G-_-FCX_	M, N	140G-FH3
			Cat. No. 140G-_-FCXB_	G, H, I, J, K	140G-FH1B
	• Actuator mounting hardware • Includes: – cotter pin and – fasteners			G, I	140G-BH1
				H, J	140G-BH2
				K	140G-BH3
	• Metal bail toggle plate • Includes: – bail plate, – spring, – door hook, – hitch pin, – washers, and – fasteners			G, H, I, J	140G-BH1B
				K	140G-BH2B
				M, N	140G-BH3B
	• Defeater bracket extender			G, H, I, J, K, M, N	1494V-H12
	• Long door catch • For doors with depth > 25.4 mm (1 in.)			G, H, I, J, K, M, N, NS	140G-HK1B

Table 248 - Replacement Parts for Flex Cable Operators and Bulletin 1494V Variable-Depth Flange Operators (Continued)

Description		Frame Size	Cat. No.
–	• Replacement hardware	G, H, I, J,	140G2-VH1
		K, L	140G2-VH2
			140G2-BH2
–	• Spare insulator	K, L	140G2-K-VBP
		N	140G2-N-VBP
–	• Spare insulator (busbar)	K, L	140G2-K-BBP

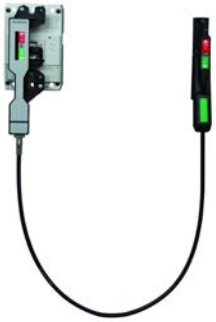
Flange Cable Operators

Table 249 - Flange Cable Operators: Frame Sizes G, H, and I with Plastic Bail Mechanisms

Description		Frame Size	Handle Type	Cable Length [mm (in.)]	Cat. No.
	• Flange cable operator – For use with NEMA-style flange enclosures – Includes handle, MCCB operator, cable, and necessary hardware – Pre-assembled for ease of installation – Replacement hardware is listed on Table 248 on page 124	G	Non-metallic handle Type 1/3/12/4/4X	0.91 (3)	140G-G-FCX03
				1.3 (4.27)	140G-G-FCX04
				1.9 (6.23)	140G-G-FCX06
				3 (9.84)	140G-G-FCX10
			Stainless handle (1) Type 4/4X	0.91 (3)	140G-G-FCS03
				1.3 (4.27)	140G-G-FCS04
				1.9 (6.23)	140G-G-FCS06
				3 (9.84)	140G-G-FCS10
			Painted metal handle Type 1/12	0.91 (3)	140G-G-FMX03
				1.3 (4.27)	140G-G-FMX04
				1.9 (6.23)	140G-G-FMX06
				3 (9.84)	140G-G-FMX10
		H	Non-metallic handle Type 1/3/12/4/4X	0.91 (3)	140G-H-FCX03
				1.3 (4.27)	140G-H-FCX04
				1.9 (6.23)	140G-H-FCX06
				3 (9.84)	140G-H-FCX10
			Stainless handle (1) Type 4/4X	0.91 (3)	140G-H-FCS03
				1.3 (4.27)	140G-H-FCS04
				1.9 (6.23)	140G-H-FCS06
				3 (9.84)	140G-H-FCS10
			Painted metal handle Type 1/12	0.91 (3)	140G-H-FMX03
				1.3 (4.27)	140G-H-FMX04
				1.9 (6.23)	140G-H-FMX06
				3 (9.84)	140G-H-FMX10
	• Flange cable operator – For use with NEMA-style flange enclosures – Includes handle, CCB operator, cable, and necessary hardware – Pre-assembled for ease of installation – Replacement hardware is listed on Table 248 on page 124	I	Non-metallic handle Type 1/3/12/4/4X	0.91 (3)	140G-I-FCX03
				1.3 (4.27)	140G-I-FCX04
				1.9 (6.23)	140G-I-FCX06
				3 (9.84)	140G-I-FCX10
			Stainless handle (1) Type 4/4X	0.91 (3)	140G-I-FCS03
				1.3 (4.27)	140G-I-FCS04
				1.9 (6.23)	140G-I-FCS06
				3 (9.84)	140G-I-FCS10
			Painted metal handle Type 1/12	0.91 (3)	140G-I-FMX03
				1.3 (4.27)	140G-I-FMX04
				1.9 (6.23)	140G-I-FMX06
				3 (9.84)	140G-I-FMX10

(1) Stainless handles have a chrome-plated steel handle base.

Table 250 - Flange Cable Operators with Plastic Bail Mechanisms

Description		Frame Size	Handle Type	Cable Length [mm (in.)]	Cat. No.
	• For use with NEMA-style flange enclosures – Pre-assembled to include: handle, MCCB operator, cable, and necessary hardware – Replacement hardware is listed on Table 248 on page 124	J	Non-metallic handle Type 1/3/12/4/4X	0.91 (3)	140G-J-FCX03
				1.3 (4.27)	140G-J-FCX04
				1.9 (6.23)	140G-J-FCX06
				3 (9.84)	140G-J-FCX10
			Stainless handle (1) Type 4/4X	0.91 (3)	140G-J-FCS03
				1.3 (4.27)	140G-J-FCS04
				1.9 (6.23)	140G-J-FCS06
				3 (9.84)	140G-J-FCS10
			Painted metal handle Type 1/12	0.91 (3)	140G-J-FMX03
				1.3 (4.27)	140G-J-FMX04
				1.9 (6.23)	140G-J-FMX06
				3 (9.84)	140G-J-FMX10
		K	Non-metallic handle Type 1/3/12/4/4X	0.91 (3)	140G-K-FCX03
				1.3 (4.27)	140G-K-FCX04
				1.9 (6.23)	140G-K-FCX06
				3 (9.84)	140G-K-FCX10
			Stainless handle (1) Type 4/4X	0.91 (3)	140G-K-FCS03
				1.3 (4.27)	140G-K-FCS04
				1.9 (6.23)	140G-K-FCS06
				3 (9.84)	140G-K-FCS10
			Painted metal handle Type 1/12	0.91 (3)	140G-K-FMX03
				1.3 (4.27)	140G-K-FMX04
				1.9 (6.23)	140G-K-FMX06
				3 (9.84)	140G-K-FMX10

(1) Stainless handles have a chrome-plated steel handle base.

MCCBs

Bulletin 140G MCCB: Frame Size G, H and I

Table 251 - Performance Characteristics

Attribute			G			H					I	
Maximum rated current		[A]	125 / 160 (IEC version with a 160 A I_{cu} rating)			125 / 160 (IEC version with a 160 A I_{cu} rating)					225	
Rated insulation voltage, U_i, IEC		[V]	800			1000					800	
Rated impulse withstand voltage, U_{imp} / overvoltage category		[kV]	8 / III			8 / III					8 / III	
NEMA, UL, CSA Ratings												
Interrupting Rating Code (1)			**G2**	**G3**	**G6**	**H2**	**H3**	**H6**	**H0**	**H15**	**I2**	**I3**
240V AC, 50/60 Hz		[kA]	50	65	100	65	100	150	200	200	50	65
480V AC, 50/60 Hz		[kA]	25	35	65	25	35	65	100	150	25	35
600Y/347V AC, 50/60 Hz		[kA]	10	14	25	–	–	–	–	–	10	10
600V AC, 50/60 Hz		[kA]	–	–	–	14	18	25	35	42	25	35
Rated ultimate short-circuit breaking capacity, I_{cu}	220...230V AC, 50/60 Hz	[kA]	65	85	100	65	85	100	150	200	50	85
	380V AC, 50/60 Hz	[kA]	36	50	70	36	50	70	120	150	30	50
	400...415V AC, 50/60 Hz	[kA]	36	50	70	36	50	70	120	150	36	50
	440V AC, 50/60 Hz	[kA]	36	50	65	36	50	65	100	150	25	40
	500V AC, 50/60 Hz	[kA]	30	36	50	30	35	50	60	70	20	30
	525V AC, 50/60 Hz	[kA]	22	35	35	20	25	30	36	50	13	20
	690V AC, 50/60 Hz	[kA]	6	8	10	10	12	15	18	20	5	6
	250V DC- 2 poles in series, thermal-mag trip units only	[kA]	36	50	70	36	50	70	85	100	36	50
	500V DC- 3 poles in series, thermal-mag trip units only	[kA]	36 4 p in series	50 4 p in series	70 4 p in series							
Rated service short-circuit breaking capacity I_{cs}	220...230V AC, 50/60 Hz	% I_{cu}	75% (50)	75%	75%	100%					75%	50%
	380V AC, 50/60 Hz	% I_{cu}	100%	100%	75%	100%					75%	50% (27)
	400...415V AC, 50/60 Hz	% I_{cu}	100%	100%	50% (2)							
	440V AC, 50/60 Hz	% I_{cu}	50%	50%	50%	100%					75%	50%
	500V AC, 50/60 Hz	% I_{cu}	50%	50%	50%							
	525V AC, 50/60 Hz	% I_{cu}	50%	50%	50%							
	690V AC, 50/60 Hz	% I_{cu}	75%	50%	50% (2)	100%	100%	100%	100%	75%	50%	50%
	250V DC, 2 poles in series, thermal-mag trip units only	% I_{cu}	100%	100%	75% (2)	100%					100%	75%
	500V DC, 3 poles in series, thermal-mag trip units only	% I_{cu}										
Rated short-time withstand rating (3) I_{cw}	Per IEC 60947-4-2, Utilization Category: Class B		– (Class A)			– (Class A)					– (Class A)	

(1) Explanation of Interrupting Code. Example: code G2, G = -G frame; 2 = 25 kAat480V. See product selection for complete ratings.
(2) I_{cs} Ratings for 15, 16, and 20 A frame size G: See Table 252.
(3) Short-time withstand ratings are only valid for frames when they are assembled to a trip unit with Short protection (S) and at a frame size used to ride through short-time short circuit events in an application with selectivity. See publication 140G-TD050 for coordination data.

Table 252 - Rated Service Short-circuit Breaking Capacity (I_{cs}) Ratings for Frame Size G: 15, 16, and 20 A

Attribute	400...415V AC	690V AC	250V DC	500V DC
I_{cs}	100%	75%	100%	100%

Table 253 - Mechanical and Environment Ratings

Attribute		Bulletin 140G		
		G	H	I
Mechanical life	Number of operations	25000	25000	25000
	Operations/hour	240	240	240
Electrical life at 415V (AC)	Number of operations	8000	8000	8000
	Operations/hour	120	120	120
Wire temperature rating (1)	°C (°F)	Cu; 75 (167)	Cu; 75 (167)	Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104)	40 (104)
Operating temperature		-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)
Storage temperature		-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)
Pollution degree		3	3	3
Dimensions width x depth x height [mm (in.)]	3-pole	76.2 x 70 x 130 (3 x 2.75 x 5.12)	90 x 82.5 x 130 (3.5 x 3.2 x 5.12)	105 x 70 x 150 (4 x 2.75 x 5.9)
	4-pole	101.6 x 70 x 130 (4 x 2.75 x 5.12)	120 x 82.5 x 130 (4.7 x 3.2 x 5.12)	140 x 70 x 150 (5.5 x 2.75 x 5.9)
Weight, approximate [lb (kg)]	3-pole	2.42 (1.1)	2.65 (1.2)	3.75 (1.7)
	4-pole	3.08 (1.4)	3.53 (1.6)	5.73 (2.1)

(1) Wire temperature rating is determined by testing the circuit breaker under full load current with the conductors sized for 75 °C (167 °F).

Bulletin 140G MCCB Frame Size J and Bulletin 140G2 MCCB Frame Size K and L

Table 254 - Performance Characteristics

Attribute			Bulletin 140G	Bulletin 140G2	
			J	K	L
Maximum rated current		[A]	250	400	600
Rated insulation voltage, U_i, IEC		[V]	1000	1000	1000
Rated impulse withstand voltage, U_{imp} / overvoltage category		[kV]	8 / III	8 / III	8 / III
NEMA, UL, CSA Ratings					
Interrupting Rating Code (1)			**J2**	**J3**	**J6**	**J0**	**K5**	**K6**	**K0**	**L5**	**L6**	**L0**
240V AC, 50/60 Hz		[kA]	65	100	150	200	100	150	200	100	150	200
480V AC, 50/60 Hz			25	35	65	100	50	65	100	50	65	100
600V AC, 50/60 Hz			14	18	25	35	25	35	65	25	35	65
500V DC- 2 poles in series (2)			–				35	50	70	35	50	70
600V DC - 3 poles in series (2)			35	50	65	75	25	35	50	25	35	50
IEC 60947-2 Ratings												
Interrupting Rating Code (3)			**J2**	**J3**	**J6**	**J0**	**K5**	**K6**	**K0**	**L5**	**L6**	**L0**
Rated ultimate short-circuit breaking capacity I_{cu}	220...230V AC, 50/60 Hz	[kA]	65	85	100	150	85	100	150	85	100	200
	380V AC, 50/60 Hz (AC)		36	50	70	120	50	70	120	50	70	120
	400...415V AC, 50/60 Hz		36	50	70	120	50	70	120	50	70	120
	440V AC, 50/60 Hz		36	50	65	100	50	65	100	50	65	100
	500V AC, 50/60 Hz		30	36	50	60	30	50	85	35	50	85
	525V AC, 50/60 Hz		20	25	45	50	30	50	85	30	50	85
	690V AC, 50/60 Hz		10	12	15	20	25	40	70	25	40	70
	250V DC, 2 poles in series (2)		36	50	70	85	35	50	70	35	50	70
	500V DC, 2 poles in series (2)		36	50	70	85	35	50	70	35	50	70
	500V DC, 3 poles in series (2)		36	50	70	85	–			–		
	750V DC, 3 poles in series (2)		–				–			–		
Rated service short-circuit breaking capacity I_{cs}	220...230V AC, 50/60 Hz	% I_{cu}	100%				100%			100%		
	380V AC, 50/60 Hz											
	400...415V AC, 50/60 Hz											
	440V AC, 50/60 Hz											
	500V AC, 50/60 Hz											
	525V AC, 50/60 Hz											
	690V AC, 50/60 Hz									100%	100% (4)	100% (5)
	250V DC, 2 poles in series	% I_{cu}	100%				100%			100%		
	500V DC, 2 poles in series											
	500V DC, 3 poles in series						–			–		
	750V DC, 3 poles in series		–				–			–		
Rated short-time withstand rating (6) I_{cw}	Per IEC 60947-4-2 Utilization Category: Class B		– Class A				5 kA at 0.5 s			I_u 600A: 5kA; I_u 630A: 6kA		

(1) Explanation of Interrupting Code. Example: code G2, G = -G Frame Size; 2 = 25 kA at 480V. See product selection for complete ratings.
(2) DC rating is applicable for thermal-magnetic trip units only.
(3) Explanation of Interrupting Code. Example: code G2, G = -G Frame Size; 2 = 25 kA at 480V. See product selection for complete ratings.
(4) I_{cs} = 75% I_n > 500 A
(5) I_{cs} = 50% I_n > 500 A
(6) Short-time withstand ratings are only valid for frames when they are assembled to a trip unit with Short protection (S) and at a frame size used to ride through short-time short circuit events in an application with selectivity. See publication 140G-TD050.

Table 255 - Mechanical and Environment Ratings

Attribute		Bulletin 140G	Bulletin 140G2	
		J	K	L
Mechanical life	Number of operations	25000	20000 (1)	20000 (1)
	Operations/hour	240	120	120
Electrical life at 415V (AC)	Number of operations	8000	7000 (400 A) 5000 (630 A)	7000 (600 A) 5000 (630 A)
	Operations/hour	120	60	60
Wire temperature rating (2)	[°C (°F)]	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104 °F)	40 (104)
Operating temperature		-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)
Storage temperature		-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)
Pollution degree		3	3	3
Dimensions: width x depth x height [mm (in.)]	3-pole	105 x 90.5 x 160 (4.1 x 3.6 x 6.3)	139.5 x 103.5 x 205 (5.49 x 4.07 x 8.07)	139.5 x 103.5 x 205 (5.49 x 4.07 x 8.07)
	4-pole	140 x 90.5 x 160 (5.5 x 3.6 x 6.3)	186 x 103.5 x 205 (7.32 x 4.07 x 8.07)	186 x 103.5 x 205 (7.32 x 4.07 x 8.07)
Weight [lb (kg)]	3-pole	5.51 (2.5)	7.17 (3.25)	7.17 (3.25)
	4-pole	7.72 (3.5)	9.15 (4.15)	9.15 (4.15)

(1) Tested with Bulletin 140G2 variable depth and direct-mount rotary handle.
(2) Wire temperature rating is determined by testing the circuit breaker under full load current with the conductors sized for 75 °C (167 °F).

Bulletin 140G MCCB: Frame Size N, NS, and R

Table 256 - Performance Characteristics

Attribute		N and NS	R
Maximum rated current	[A]	1200	2000/2500/3000
Rated Insulation voltage U_i, IEC	[V]	1000	1000
Rated impulse withstand voltage U_{imp}/overvoltage category	[kV]	8 / III	12 / III

NEMA, UL, and CSA Ratings

Interrupting Rating Code (1)		N5	N6	N0	R12
240V AC, 50/60 Hz	[kA]	65	100	150	125
480V AC, 50/60 Hz		50	65	100	125
600V AC, 50/60 Hz		25	50	65	100

IEC 60947-2 Ratings

Interrupting Rating Code (1)			N5	N6	N0	R12
Rated ultimate short-circuit breaking capacity, I_{cu}	220...230V AC, 50/60 Hz	[kA]	85	100	200	130
	380V AC, 50/60 Hz		50	70	120	80
	400...415V AC, 50/60 Hz		50	70	120	80
	440V AC, 50/60 Hz		50	65	100	80
	500V AC, 50/60 Hz		40	50	85	40
	525V AC, 50/60 Hz		30	50	65	–
	690V AC, 50/60 Hz		30	42	50	40
Rated service short-circuit breaking capacity I_{cs}	220...230V AC, 50/60 Hz	[% I_{cu}]	100%	100%	100%	100%
	380V AC, 50/60 Hz (AC)		100%	100%	100%	–
	400...415V AC, 50/60 Hz		100%	100%	100%	100%
	440V AC, 50/60 Hz		100%	100%	100%	100%
	500V AC, 50/60 Hz		100%	100%	75%	100%
	525V AC, 50/60 Hz		75% (30 kA)	50% (31.5 kA)	50% (37.5 kA)	–
	690V AC, 50/60 Hz		100%	75%	75%	100%
Rated short-time withstand rating (2) I_{cw}	Per IEC 60947-4-2, Utilization Category: Class B		150kA at 1 s			40kA at 1 s

(1) Explanation of Interrupting Code. Example: code G2, G = -G Frame Size; 2 = 25 kA at 480V. See product selection for complete ratings.
(2) Short-time withstand ratings are only valid for frames when they are assembled to a trip unit with Short protection (S) and at a frame size used to ride through short-time short circuit events in an application with selectivity. See publication 140G-TD050 for coordination data.

Table 257 - Mechanical and Environment Ratings

Attributes		N	NS	R
Mechanical life	Number of operations	10,000	10,000	15,000
	Operations/hour	60	60	60
Electrical life at 415V (AC)	Number of operations	2000	2000	4500 (2000 A), 4000 (2500 A), 3000 (3200 A)
	Operations/hour	60	60	20
Wire temperature rating	[°C (°F)]	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104)	40 (104)
Operating temperature		-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)
Storage temperature		-40...+80 (-13...+176)	-40...+80 (-13...+176)	-40...+80 (-13...+176)
Pollution degree		3	3	3
Dimensions width x depth x height [mm (in.)]	3-pole	210 x 154 x 268 (8.3 x 6 x 10.5)	210 x 178 x 268 (8.3 x 7 x 10.5)	427 x 282 x 382 (16.8 x 11.1 x 15)
	4-pole	280 x 154 x 268 (11 x 6 x 10.5)	280 x 178 x 268 (11 x 7 x 10.5)	553 x 282 x 382 (21.7 x 11.1 x 15)
Weight, approximate [lb (kg)]	3-pole	21.39 (9.7)	24.25 (11)	175 (79)
	4-pole	27.56 (12.5)	30.86 (14)	–

MCSs

Bulletin 140G MCS: Frame Size G, H, and I

Table 258 - Performance Characteristics

Attribute			G	H	I
Maximum rated current		[A]	125 /160 IEC version with a 160 A I_{cu} rating	125 /160 IEC version with a 160 A I_{cu} rating	225
Rated insulation voltage, U_i, IEC		[V]	800	1000	800
Rated impulse withstand voltage, U_{imp}/overvoltage category		[kV]	8 / III	8 / III	8 / III
NEMA, UL, CSA Ratings					
	Interrupting Rating Code (1)		**G6**	**H6**	**I3**
	240V AC, 50/60 Hz	[kA]	100	150	65
	480V AC, 50/60 Hz		65	65	35
	600Y/347V AC, 50/60 Hz		25	–	10
	600V AC, 50/60 Hz		–	25	35
	500V DC, 2 poles in series (2)		–	–	–
	600V DC, 3 poles in series (2)				
IEC 60947-2 Ratings					
	Interrupting Rating Code (1)		**G6**	**H6**	**I3**
Rated ultimate short-circuit breaking capacity I_{cu}	220...230V AC, 50/60 Hz	[kA]	100	100	85
	380V AC, 50/60 Hz		70	70	50
	400...415V AC, 50/60 Hz				
	440V AC, 50/60 Hz		65	65	40
	500V AC, 50/60 Hz		50	50	30
	525V AC, 50/60 Hz		35	30	20
	690V AC, 50/60 Hz		10	15	6
	250V DC, 2 poles in series (2)	[kA]	70	70	50
	500V DC, 2 poles in series (2)		–	–	–
	500V DC, 3 poles in series (2)		70 4 poles in series	70	50
	750V DC, 3 poles in series (2)		–	–	–
Rated service short-circuit breaking capacity I_{cs}	220...230V AC, 50/60 Hz	% I_{cu}	75%	100%	50%
	380V AC, 50/60 Hz		75%		50% (27)
	400...415V AC, 50/60 Hz		50%(3)		50% (27)
	440V AC, 50/60 Hz		50%		50%
	500V AC, 50/60 Hz		50%		50%
	525V AC, 50/60 Hz		50%		50%
	690V AC, 50/60 Hz		50% (2)	100%	50%
	250V DC, 2 poles in series (2)	% I_{cu}	75% (2)	100%	75%
	500V DC, 2 poles in series (2)		–	–	–
	500V DC, 3 poles in series (2)		75% (2)	100%	75%
	750V DC, 3 poles in series (2)		–	–	–
Rated short-time withstand rating (4) (I_{cw})	Per IEC 60947-4-2, Utilization Category: Class B		– (Class A)	– (Class A)	– (Class A)

(1) Explanation of Interrupting Code. Example: code G2, G = -G frame size; 2 = 25 kA at 480V. See Product Selection: Molded Case Switches on page 91 for complete ratings.
(2) DC rating is applicable for thermal-magnetic trip units only.
(3) I_{cs} Ratings for 15, 16, and 20 A frame size G: See Table 252 on page 127.
(4) Short-time withstand ratings are only valid for frames when they are assembled to a trip unit with short protection (S) and at a frame size used to ride through short-time short circuit events in an application with selectivity. See publication 140G-TD050 for coordination data.

Table 259 - Rated Service Short-circuit Breaking Capacity (I_{cs}) Ratings for Frame Size G: 15, 16, and 20 A

Attribute	400...415V AC	690V AC	250V DC	500V DC
I_{cs}	100%	75%	100%	100%

Table 260 - Mechanical and Environment Ratings

Attribute		G	H	I
Mechanical life	Number of operations	25000	25000	25000
	Operations/hour	240	240	240
Electrical life at 415V (AC)	Number of operations	8000	8000	8000
	Operations/hour	120	120	120
Wire temperature rating [(1)]	[°C (°F)]	Cu; 75 (167)	Cu; 75 (167)	Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104)	40 (104)
Operating temperature		-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)
Storage temperature		-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)
Pollution degree		3	3	3
Dimensions width x depth x height [mm (in.)]	3-pole	76.2 x 70 x 130 (3 x 2.75 x 5.12)	90 x 82.5 x 130 (3.5 x 3.2 x 5.12)	105 x 70 x 150 (4 x 2.75 x 5.9)
	4-pole	101.6 x 70 x 130 (4 x 2.75 x 5.12)	120 x 82.5 x 130 (4.7 x 3.2 x 5.12)	140 x 70 x 150 (5.5 x 2.75 x 5.9)
Weight, approximate [lb (kg)]	3-pole	2.42 (1.1)	2.65 (1.2)	3.75 (1.7)
	4-pole	3.08 (1.4)	3.53 (1.6)	5.73 (2.1)

(1) Wire temperature rating is determined by testing the circuit breaker under full load current with the conductors sized for 75 °C (167 °F).

Bulletin 140G MCS Frame Size J, N, R and Bulletin 140G2 MCS Frame Size K, L

Table 261 - Performance Characteristics

Attribute			Bulletin 140G			Bulletin 140G2	
			J	N	R	K	L
Maximum rated current		[A]	250	1200	2000 2500/3000	400	600
Rated insulation voltage, U_i, IEC		[V]	1000	1000	1000	1000	1000
Rated impulse withstand voltage, U_{imp}/overvoltage category		[kV]	8 / III	8 / III	12 / III	8 / III	8 / III
NEMA, UL, CSA Ratings							
	Interrupting Rating Code (1)		**J0**	**N6**	**R12**	**K6**	**L6**
	240V AC, 50/60 Hz	[kA]	200	100	125	150	150
	480V AC, 50/60 Hz		100	65	125	65	65
	600Y/347V AC, 50/60 Hz		–	–	–	–	–
	600V AC, 50/60 Hz		35	50	100	35	35
	500V DC, 2 poles in series (2)		–	–	–	50	50
	600V DC, 3 poles in series (2)					35	35
IEC 60947-2 Ratings							
	Interrupting Rating Code (3)		**J0**	**N6**	**R12**	**K6**	**L6**
Rated ultimate short-circuit breaking capacity I_{cu}	220...230V AC, 50/60 Hz	[kA]	150	100	130	100	100
	380V AC, 50/60 Hz		120	70	80	70	70
	400...415V AC, 50/60 Hz						
	440V AC, 50/60 Hz		100	65	80	65	65
	500V AC, 50/60 Hz		60	50	40	50	50
	525V AC, 50/60 Hz		50	50	–	50	50
	690V AC, 50/60 Hz		20	42	40	40	40
	250V DC, 2 poles in series (2)	[kA]	85	–	–	50	50
	500V DC, 2 poles in series (2)						
	500V DC, 3 poles in series (2)		85	–	–	–	–
	750V DC, 3 poles in series (2)		–				
Rated service short-circuit breaking capacity I_{cs}	220...230V AC, 50/60 Hz	% I_{cu}	100%	100%	100%	100%	100%
	380V AC, 50/60 Hz			100%	–		
	400...415V AC, 50/60 Hz			100%	100%		
	440V AC, 50/60 Hz			100%	100%		
	500V AC, 50/60 Hz			100%	100%		
	525V AC, 50/60 Hz			50% (31.5 kA)	–		
	690V AC, 50/60 Hz			75%	100%		
	250V DC, 2 poles in series (2)	% I_{cu}	100%	–	–	100%	100%
	500V DC, 2 poles in series (2)						
	500V DC, 3 poles in series (2)					–	–
	750V DC, 3 poles in series (2)		–	–	–	–	–
Rated short-time withstand rating (4) I_{cw}	Per IEC 60947-4-2, Utilization Category: Class B		– (Class A)	15 kA at 1 s	40 kA at 1 s	5 kA at 1 s	I_u 600A: 5kA; I_u 630A: 6kA

(1) Explanation of Interrupting Code. Example: code G2, G = -G frame size; 2 = 25 kA at 480V. See Product Selection: Molded Case Switches on page 91 for complete ratings.
(2) DC rating is applicable for thermal-magnetic trip units only.
(3) Explanation of Interrupting Code. Example: code G2, G = -G frame size; 2 = 25 kA at 480V. See Product Selection: Molded Case Switches on page 91 for complete ratings.
(4) Short-time withstand ratings are only valid for frames when they are assembled to a trip unit with short protection (S) and at a frame size used to ride through short-time short circuit events in an application with selectivity. See publication 140G-TD050 for coordination data.

Table 262 - Mechanical and Environment Ratings

Attribute		Bulletin 140G			Bulletin 140G2	
		N	NS	R	K	L
Mechanical life	Number of operations	10,000	10,000	–	20,000 (1)	20,000 (1)
	Operations/hour	60	60		120	120
Electrical life at 415V (AC)	Number of operations	2000	2000		7000 (400 A)	7000 (600 A)/ 5000 (630 A)
	Operations/hour	60	60		60	60
Wire temperature rating (2)	[°C (°F)]	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104)	40 (104)	40 (104)	40 (104)
Operating temperature		-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)
Storage temperature		-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)
Pollution degree		3	3	3	3	3
Dimensions: width x depth x height [mm (in.)]	3-pole	210 x 154 x 268 (8.3 x 6 x 10.5	210 x 178 x 268 (8.3 x 7 x 10.5)	427 x 282 x 382 (16.8 x 11.1 x 15)	139.5 x 103.5 x 205 (5.49 x 4.07 x 8.07)	139.5 x 103.5 x 205 (5.49 x 4.07 x 8.07)
	4-pole	280 x 154 x 268 (11 x 6 x 10.5)	280 x 178 x 268 (11 x 7 x 10.5)	553 x 282 x 382 (21.7 x 11.1 x 15)	186 x 103.5 x 205 (7.32 x 4.07 x 8.07)	186 x 103.5 x 205 (7.32 x 4.07 x 8.07)
Weight, approximate [lb (kg)]	3-pole	21.39 (9.7)	24.25 (11)	175 (79)	7.17 (3.25)	7.17 (3.25)
	4-pole	27.56 (12.5)	30.86 (14)	–	9.15 (4.15)	9.15 (4.15)

(1) Tested with Bulletin 140G2 variable-depth and direct-mount rotary handle.
(2) Wire temperature rating is determined by testing the circuit breaker under full load current with the conductors sized for 75 °C (167 °F).

MCSDs

Table 263 - Mechanical and Environment Ratings

Attribute		Bulletin 140G		Bulletin 140G2	
		G	J	K	L
Maximum rated current	[A]	160	250	400	630
Rated service voltage, U_e	(AC) 50...60 Hz [V]	690	690	690	690
	(DC)	500	500	750	750
Rated insulation voltage U_i, IEC	[V]	800	800	1000	1000
Rated impulse withstand voltage U_{imp}	[kV]	8	8	8	8
Rated making capacity in short-circuit, I_{cm}	Minimum: Isolation switch only [kA]	2.8	5.3	7.65	12.3
	Maximum: MCCB on supply side [kA]	154	330	440	440
Rated short-time withstand current for 1 s, I_{cw}	[kA]	2	3.6	5	7.6

Table 264 - Coordination Table

Attribute		Bulletin 140G														Bulletin 140G2					
		G			H					I		J				K			L		
																K5	K6	K0	L5	L6	L0
Supply side	I_{cu} at 415V AC	G2	G3	G6	H2	H3	H6	H0	H15	I2	I3	J2	J3	J6	J0	–			–		
Load side	G	36	50	70	36	50	70	70	70	–		–				–			–		
	J	–			–					36	50	36	50	70	120	–			–		
	K	–			–					–		–				50	70	120	–		
	L	–			–					–		–				–			50	70	120

Bulletin 140G MCCB: Current-limiting

Table 265 - Performance Characteristics

Attribute			Bulletin 140G				Bulletin 140G2			
			HC		JC		KC		LC	
Maximum rated current		[A]	125/160 (IEC version with a 160 A I_{cu} rating)		250		400		600	
Rated insulation voltage, U_i, IEC		[V]	1000		1000		1000		1000	
Rated impulse withstand voltage, U_{imp}		[kV]	8		8		8		8	
NEMA, UL, CSA Ratings										
Interrupting Rating Code (1)			**H6**	**H0**	**J6**	**J0**	**K6**	**K0**	**L6**	**L0**
240V AC, 50/60 Hz		[kA]	150	200	150	200	150	200	150	200
480V AC, 50/60 Hz			65	100	65	100	65	100	65	100
600V AC, 50/60 Hz			25	35	25	35	35	65	35	65
500V DC, 2 poles in series (2)			–	–	–	–	50	70	50	70
600V DC, 3 poles in series (2)			–	–	65	75	35	50	35	50
IEC 60947-2 Ratings										
Interrupting Rating Code (1)			**H6**	**H0**	**J6**	**J0**	**K6**	**K0**	**L6**	**L0**
Rated ultimate short-circuit breaking apacity, I_{cu}	220...230V AC, 50/60 Hz	[kA]	100	150	100	150	100	150	100	150
	380V AC, 50/60 Hz (AC)		70	120	70	120	70	120	70	120
	400...415V AC, 50/60 Hz		70	120	70	120	70	120	70	120
	440V AC, 50/60 Hz		65	100	65	100	65	100	65	100
	500V AC, 50/60 Hz		50	60	50	60	50	85	50	85
	525V AC, 50/60 Hz		30	36	45	50	40	85	50	85
	690V AC, 50/60 Hz		15	18	15	20	40	70	40	70
	250V DC, 2 poles in series (2)		70	85	70	85	70	70	50	70
	500V DC, 2 poles in series (2)		–	–	70	85	50	70	50	70
	500V DC, 3 poles in series (2)		70	85	70	85	–	–	–	–
	750V DC, 3 poles in series (2)		–	–	–	–	–	–	–	–
Rated service short-circuit breaking capacity I_{cs}	220...230V AC, 50/60 Hz	% I_{cu}	100%	100%	100%		100%		100%	
	380V AC, 50/60 Hz									
	400...415V AC, 50/60 Hz									
	440V AC, 50/60 Hz									
	500V AC, 50/60 Hz									
	525V AC, 50/60 Hz									
	690V AC, 50/60 Hz		100%	75%	100%		100%		100% (3) (4)	
	250V DC, 2 poles in series (2)		100%	100%	100%		100%		100%	
	500V DC, 2 poles in series (2)		–	–			100%			
	500V DC, 3 poles in series (2)		100%	100%			–		–	
	750V DC, 3 poles in series (2)		–	–	–		100%			

(1) Explanation of interrupting code. Example: Code HC6, HC = Current-limiting H Frame; 6= 65 kAat480V. See Product Selection: Molded Case Circuit Breakers on page 31 for complete ratings.
(2) DC rating is applicable for thermal-magnetic trip units only.
(3) I_{cs} = 75% I_n > 500 A
(4) I_{cs} = 50% I_n > 500 A

Table 266 - Mechanical and Environment Ratings

Attribute		Bulletin 140G		Bulletin 140G2	
		H	J	K	L
Mechanical life	Number of operations	25,000	25,000	20,000 (1)	20,000 (1)
	Operations/hour	240	240	120	120
Electrical life at 415V (AC)	Number of operations	8000	8000	7000 (400 A)	7000 (600 A) 5000 (630 A)
	Operations/hour	120	120	60	60
Wire temperature rating (2)	[°C (°F)]	Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104)	40 (104)	40 (104)
Operating temperature		-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)
Storage temperature		-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)	-40...+80 (-40...+176)
Pollution degree		3	3	3	3
Dimensions: width x depth x height [mm (in.)]	3-pole	90 x 82.5 x 130 (3.5 x 3.2 x 5)	105 x 82.5 x 160 (4.1 x 3.2 x 6.3)	139.5 x 103.5 x 205 (5.49 x 4.07 x 8.07)	139.5 x 103.5 x 205 (5.49 x 4.07 x 8.07)
	4-pole		–	186 x 103.5 x 205 (7.32 x 4.07 x 8.07)	186 x 103.5 x 205 (7.32 x 4.07 x 8.07)
Weight, approximate [lb (kg)]	3-pole	2.65 (1.2)	5.51 (2.5)	7.17 (3.25)	7.17 (3.25)
	4-pole	–	–	9.15 (4.15)	9.15 (4.15)

(1) Tested with Bulletin 140G2 cable, variable-depth handle, and direct-mount rotary handle.
(2) Wire temperature rating is determined by testing the circuit breaker under full load current with the conductors sized for 75 °C (167 °F).

Let-through Current

See Trip and Let-through Curves on page 165 for let-through energy curves.

Table 267 - Let-through Current: Bulletin 140G -HC6, -HC0, -JC6, -JC0, -KC6, and -KC0

Frame Size	Rated Current I_n [A]	Rated Voltage [V AC]	Threshold Current			Intermediate Point			Interrupting Rating		
			I_{rms} [kA]	I_p [kA]	I^2t [x10^3]	I_{rms} [kA]	I_p [kA]	I^2t [x10^3]	I_{rms} [kA]	I_p [kA]	I^2t [x10^3]
HC6	up to 125 A	480	6	10	266	30	19	480	65	23.2	512
		600	6	10	301	14	14.1	472	25	18	655
HC0	up to 125 A	480	6	10	266	50	21	486	100	31.1	704
		600	6	10	301	22	18	655	35	20	650
JC6	up to 250 A	480	10	14.4	499	42	26.4	853	65	30	980
		600	10	13.7	582	18	91.1	791	25	22.3	990
JC0	up to 250 A	480	10	14.4	499	50	26.4	853	100	44.5	1142
		600	10	13.7	582	30	24.2	1058	50	30.4	1162
KC6	up to 400 A	480	10	20	1.4	65	43.9	2.8	100	47.3	3
		600	10	21	1.5	30	36	2.6	65	44	3
KC0	up to 400 A	480	10	20	1.4	30	35	2.4	65	43.9	2.8
		600	10	21	1.5	22	31	2.2	35	38	2.8

Table 268 - Let-through Current: Bulletin 140G2 -KC and -LC

Frame Size	Rated Voltage [V AC]	I_{rms} [kA]	I_p [kA]	I^2t [x10^3]
KC and LC	480	25	33.4	2.8
		30	36.37	3.04
		40	41.88	3.46
		50	46.92	3.89
		65	51.06	4.32
		80	57.72	4.74
		100	62.2	4.9

Frame Size	Rated Voltage [V AC]	I_{rms} [kA]	I_p [kA]	I^2t [x10^3]
KC and LC	600	18	25.5	2.7
		20	26.864	2.8118
		25	31	3.0853
		30	33.286	3.3388
		40	39.148	3.7858
		50	44.45	4.1528
		65	51.2	4.6
		80	56.18	4.73
		100	62.2	4.9

MCPs

Bulletin 140G Frame Size G...J

Table 269 - Performance Characteristics

Attribute			Bulletin 140G			
			G	H	I	J
Frame device		[A]	125	125	225	250
Poles			3	3	3	3
Instantaneous trip settings		[A]	3...125	3...125	100...150	150...250
Rated insulation overvoltage, U_i IEC		[V]	800	1000	800	1000
Rated impulse withstand voltage, U_{imp}		[kV]	8	8	8	8
NEMA, UL, CSA Ratings — UL 489 Instantaneous Trip Circuit Breaker (Magnetic Only) Maximum SCCR Combination Controller Rating (1)						
	480V AC	[kA]	65	65	35	65
	600Y/347V AC		25	–	10	–
	600V AC		–	25	–	25
IEC 60947-2 GB14048.2 Ratings						
Rated ultimate short-circuit breaking capacity, I_{cu} (2)	220...230V AC	[kA]	65 (3)	65 (3)	85	100
	380V AC		36 (3)	36 (3)	50	70
	400...415V AC		36 (3)	36 (3)	50	70
	440V AC		36 (3)	36 (3)	40	65
	500V AC		30 (3)	30 (3)	30	50
	525V AC		22 (3)	20 (3)	20	45
	690V AC		6 (3)	10 (3)	6	15
	250V DC, 2 poles in series	[kA]	–	–	50	70
	500V DC, 3 poles in series					
Rated service short-circuit breaking capacity I_{cs} (2)	220...230V AC	% I_{cu}	75% (3)	100% (3)	50%	100%
	380V AC		100% (3)		50% (27)	
	400...415V AC		100% (3)		50% (27)	
	440V AC		50% (3)		50% (27)	
	500V AC		50% (3)		50%	
	525V AC		50% (3)		50%	
	690V AC		75% (3)		50%	
	250V DC, 2 poles in series	% I_{cu}	–	–	75%	100%
	500V DC, 3 poles in series					

(1) The short-circuit value is based on a combination of MCP, contactor and overload relay as a UL60497-4-1 Type D Combination Motor Controller. See our Global SCCR Tool, rok.auto/sccr.
(2) These ratings represent the standalone values for the MCP. For Type 2 coordination values (per IEC60947-4), see Table 274 on page 140. See our Global SCCR Tool, rok.auto/sccr.
(3) See I_{cu} / I_{cs} Ratings for Bulletin 140G-G and 140G-H Frame Sizes: 3...7 A, Table 270.

Table 270 - I_{cu} / I_{cs} Ratings for Bulletin 140G-G and 140G-H: 3...7 A

Rating	230V	415V	440V	500V...525V	690V	250V DC	500V DC (-H Frame Only
I_{cu}	5	5	3	3	3	5	5
I_{cs} (% I_{cu})	100	100	100	100	100	100	100

Table 271 - Mechanical and Environment Ratings

Attribute			Bulletin 140G			
			G	H	I	J
Mechanical life	Number of operations		25000	25000	25000	25000
	Operations/hour		240	240	240	240
Electrical life at 415V (AC)	Number of operations		8000	8000	8000	8000
	Operations/hour		120	120	120	120
Wire temperature rating (1)		[°C (°F)]	Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)
Ambient temperature without derating			40 (104)	40 (104)	40 (104)	40 (104)
Operating temperature			-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)

Table 271 - Mechanical and Environment Ratings (Continued)

Attribute		Bulletin 140G			
		G	H	I	J
Storage temperature	[°C (°F)]	-40...+70 (-40...+158)	-40...+70 (-40...+158)	-40...+70 (-40...+158)	-40...+70 (-40...+158)
Dimensions: width x depth x height	[mm (in.)]	76.2 x 70 x 130 (3 x 2.76 x 5.12)	90 x 82.5 x 130 (3.54 x 3.25 x 5.12)	105 x 70 x 150 (4.13 x 2.76 x 5.9)	105 x 82.5 x 160 (4.13 x 3.25 x 6.3)
Weight, approximate	[lb (kg)]	2.4 (1.1)	2.6 (1.2)	3.7 (1.7)	5.5 (2.5)

(1) Wire temperature rating is determined by testing the circuit breaker under full-load current with the conductors sized for 40 °C (104 °F).

Bulletin 140G Frame Size N, Bulletin 140G2 Frame Size K and L

Table 272 - Performance Characteristics

Attribute			Bulletin 140G	Bulletin 140G2	
			N	K	L
Frame device		[A]	1200	400	600
Poles			3	3	3
Rated current		[A]	1200 (1)	300 and 400	500 and 600
Rated insulation voltage, U_i IEC		[V]	1000	1000	1000
Rated impulse withstand voltage, U_{imp}		[kV]	8	8	8
NEMA, UL, CSA Ratings — UL 489 Instantaneous Trip Circuit Breaker (Magnetic Only) Maximum SCCR Combination Controller Rating (2)					
	240V AC, 50/60 Hz	[kA]	–	150	150
	480V AC		–	65	65
	600V AC		–	35	35
	600Y/347V AC		–	–	–
	500V DC, 2 poles in series		–	50	50
	600V DC, 3 poles in series		–	35	35
IEC 60947-2 GB14048.2 Ratings					
Rated ultimate short-circuit breaking capacity, I_{cu}	220...230V AC, 50/60 Hz	[kA]	100	100	100
	380V AC, 50/60 Hz (AC)		70	70	70
	400...415V AC, 50/60 Hz		70	70	70
	440V AC, 50/60 Hz		65	65	65
	500V AC, 50/60 Hz		50	50	50
	525V AC, 50/60 Hz		42	50	50
	690V AC, 50/60 Hz		42	40	40
	250V DC, 2 poles in series (3)		–	50	50
	500V DC, 2 poles in series (3)		–	50	50
	500V DC, 3 poles in series (3)		–	–	–
	750V DC, 3 poles in series (3)		–	–	–
Rated service short-circuit breaking capacity I_{cs}	220...230V AC, 50/60 Hz	% I_{cu}	100%	100%	100%
	380V AC, 50/60 Hz (AC)				
	400...415V AC, 50/60 Hz				
	440V AC, 50/60 Hz				
	500V AC, 50/60 Hz			600%	100%
	525V AC, 50/60 Hz		75%	100%	100%
	690V AC, 50/60 Hz		75%		100% (3)
	250V DC, 2 poles in series (3)		–		100%
	500V DC, 3 poles in series (3)		–		100%

(1) Adjustable between 1...10x motor FLA.
(2) The short-circuit value is based on combined MCP, motor contactor, and overload relay as a UL60497-4-1 Type D Combination Motor Controller. See the Global Short-circuit Rating Tool, rok.auto/sccr.
(3) I_{cs} = 75%, I_n > 500 A

Table 273 - Mechanical and Environment Ratings

Attribute		Bulletin 140G	Bulletin 140G2	
		N	K	L
Mechanical life	Number of operations	10000	20000 (1)	20000 (1)
	Operations/hour	60	120	120
Electrical life at 415V (AC)	Number of operations	2000	7000 (400 A)	7000 (600…630 A)
	Operations/hour	60	60	60
Wire temperature rating (2)	[°C (°F)]	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104)	40 (104)
Operating temperature		-25…+70 (-13…+158)	-25…+70 (-13…+158)	-25…+70 (-13…+158)
Storage temperature		-40…+70 (-40…+158)	-40…+80 (-40…+176)	-40…+80 (-40…+176)
Dimensions: width x depth x height	[mm (in.)]	210 x 154 x 268 (8.27 x 6.06 x 10.55)	186 x 103.5 x 205 (7.32 x 4.07 x 8.07)	140 x 116 x 205 (5.49 x 4.58 x 8.1)
Weight, approximate	[lb (kg)]	21.4 (9.7)	7.17 (3.25)	7.17 (3.25)

(1) Tested with a 140G2 variable depth and direct mount rotary handle.
(2) Wire temperature rating is determined by testing the circuit breaker under full-load current with the conductors sized for 40 °C (104 °F).

Type D Combination Ratings

The short-circuit value is based on a combination of MCP, motor contactor, and overload relay, rated as a UL 60947-4-1 Type D Combination Motor Controller. Values in Table 274 are for Type 2 coordination with Allen-Bradley contactors and overload relays.

Combination motor controller components:

- Circuit breaker: Bulletin 140MG MCP frame size G, H, and J and Bulletin 140MG2 frame size K and L
- Contactor: Bulletin 100-C, 100S-C, 100-D, 100S-D
- Overload relay: Bulletin 193/592 E1 Plus™, E3™, E3 Plus™, E300™

Table 274 - Type D Combination Ratings per IEC 60947-2/GB 14048.2

Attribute			Bulletin 140G			Bulletin 140G2	
			G	H	J	K	L
Rated ultimate short-circuit breaking capacity, I_{cu}	220…230V AC, 50/60 Hz	[kA]	100	100	100	100	100
	380V AC, 50/60 Hz AC		100	100	100	70	70
	400…415V AC, 50/60 Hz		100	100	100	70	70
	440V AC, 50/60 Hz		65	65	65	65	65
	500V AC, 50/60 Hz		50	50	50	50	50
	525V AC, 50/60 Hz		50	50	50	50	50
	690V AC, 50/60 Hz		–	50	50	40	40
	250V DC, 2 poles in series (1)	[kA]	–	–	–	50	50
	500V DC, 2 poles in series						
	500V DC, 3 poles in series		–	–	–	–	–
	750V DC, 3 poles in series						
Rated service short-circuit breaking capacity I_{cs}	220…230V AC	% I_{cu}	100%	100%	100%	100%	100%
	380V AC, 50/60 Hz AC						
	400…415V AC, 50/60 Hz						
	440V AC, 50/60 Hz						
	500V AC, 50/60 Hz						
	525V AC, 50/60 Hz						
	690V AC, 50/60 Hz						100% (2)
	250V DC, 2 poles in series (1)	% I_{cu}	–	–	–	100%	100%
	500V DC, 2 poles in series						
	500V DC, 3 poles in series						–
	750V DC, 3 poles in series						

(1) DC rating is applicable for thermal-magnetic trip units only.
(2) I_{cs} = 75% I_n > 500 A

MPCBs

Bulletin 140MG and Bulletin 140MG2 MPCB

Table 275 - Performance Characteristics

Attribute			Bulletin 140MG		Bulletin 140MG2	
			H	J	K	L
Maximum rated current		[A]	100	150	400	600
Rated insulation voltage, U_i, IEC		[V]	1000	1000	1000	1000
Rated impulse withstand voltage, U_{imp}		[kV]	8	8	8	8
NEMA, UL, CSA Ratings						
Interrupting Rating Code (1)			**H8**	**J8**	**K8**	**L8**
240V AC, 50/60 Hz		[kA]	150	150	150	150
480V AC, 50/60 Hz			65	65	65	65
600V AC, 50/60 Hz			25	25	35	35
500V, 2 poles in series			–	–	–	–
600V, 3 poles in series			–	–	–	–
IEC 60947-2 Ratings						
Interrupting Rating Code (1)			**H8**	**J8**	**K8**	**L8**
Rated ultimate short-circuit breaking capacity I_{cu}	220...230V AC, 50/60 Hz	[kA]	100	100	100	100
	380V AC, 50/60 Hz		70	70	70	70
	400...415V AC, 50/60 Hz		70	70	70	70
	440V AC, 50/60 Hz		65	65	65	65
	525V AC, 50/60 Hz		15	45	50	50
	550V AC, 50/60 Hz		15	45	50	50
	690V AC, 50/60 Hz		15	15	40	40
	250V DC, 2 poles in series (2)		70	70	–	–
	500V DC, 2 poles in series (2)					
	500V DC, 3 poles in series (2)		–	–	–	–
	750V DC, 3 poles in series (2)					
Rated service short-circuit breaking capacity I_c	220...230V AC, 50/60 Hz	% I_{cu}	100%	100%	100%	100%
	380V AC, 50/60 Hz AC					
	400...415V AC, 50/60 Hz					
	440V AC, 50/60 Hz					
	500V AC, 50/60 Hz					
	525V AC, 50/60 Hz					
	690V AC, 50/60 Hz		100%	100%	100%	100% (2)
	250V DC, 2 poles in series (2)	% I_{cu}	100%	100%	–	–
	500V DC, 2 poles in series (2)					
	500V DC, 3 poles in series (2)					
	750V DC, 3 poles in series (2)					

(1) Explanation of Interrupting Code. Example: code H8, H= -H Frame Size; 8= 65 kA at 480V. See product selection for complete ratings.
(2) I_{cs} = 75% I_n > 500A

Table 276 - Mechanical and Environment Ratings

Attribute		Bulletin 140MG		Bulletin 140MG2	
		H	J	K	L
Mechanical life	Number of operations	25,000	25,000	20,000 (1)	20,000 (1)
	Operations/hour	240	240	120	120
Electrical life at 415V (AC)	Number of operations	8000	8000	7000 (400 A)	7000 (600 A)/5000 (630 A)
	Operations/hour	120	120	60	60
Wire temperature rating (2)	[°C (°F)]	Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)	Al or Cu; 75 (167)
Ambient temperature without derating		40 (104)	40 (104)	40 (104)	40 (104)
Operational temperature		-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)	-25...+70 (-13...+158)
Storage temperature		-40...+70 (-40...+158)	-40...+70 (-40...+158)	-40...+80 (-40...+176)	-40...+80 (-40...+176)
Dimensions, Width x Depth x Height	[mm (in.)]	90 x 82.5 x 130 (3.54 x 3.25 x 5.12)	105 x 82.5 x 160 (4.13 x 3.25 x 6.3)	140 x 116 x 205 (5.49 x 4.58 x 8.1)	140 x 116 x 205 (5.49 x 4.58 x 8.1)
Weight, Approximate	[lb (in.)]	2.6 (1.2)	5.5 (2.5)	7.17 (3.25)	7.17 (3.25)

(1) Tested with Bulletin 140G2 cable, variable-depth handle, and direct-mount rotary handle.
(2) Wire temperature rating is determined by testing the circuit breaker under full load current with the conductors sized for 75 °C (167 °F).

Temperature Derating

Bulletin 140G-G:
Thermal-magnetic Circuit Breakers

Frame size G thermal-magnetic circuit breakers are calibrated at 40 °C (104 °F). For applications at other temperatures, the thermal trip varies as shown in Table 277.

Table 277 - Maximum Thermal Trip Rating

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
15	15	14	13	12
16	16	15	14	13
20	20	19	18	16
25	25	23	22	20
30	30	28	26	24
32	32	30	28	26
40	40	38	35	33
45	45	42	40	37
50	50	47	44	41
60	60	56	52	49
63	63	59	55	51
70	70	66	61	57
80	80	75	70	65
90	90	85	79	73
100	100	94	88	81
110	110	103	96	90
125	125	117	109	102
160 (1)	160 (1)	150 (1)	140 (1)	130 (1)

(1) IEC only.

Bulletin 140G Frame Size G:
MCSs and MCPs

MCSs and MCPs do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. Table 278 shows the maximum current to help prevent terminal overheating.

Table 278 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings	3	3	3	3
	7	7	7	7
	15	15	15	15
	30	30	30	30
	50	50	50	50
	70	70	70	70
	80	80	79	79
	100	93	84	79
	125 (1)	112	97	79
IEC Ratings	3	3	3	3
	7	7	7	7
	15	15	15	15
	30	30	30	30
	50	50	50	50
	70	70	70	70
	80	80	80	80
	100	100	100	100
	125	125	125	125
	160 (1)	160 (1)	125 (1)	136 (1)

(1) MCS rated current.

Bulletin 140G-H: Thermal-magnetic Circuit Breakers

Frame size H thermal-magnetic circuit breakers are calibrated at 40 °C (104 °F). For applications at other temperatures, the thermal trip varies as shown in Table 279.

Table 279 - Maximum Thermal Trip Rating

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
15	15	14	13	12
16	16	15	14	13
20	20	19	17	16
25	25	23	22	20
30	30	28	26	24
32	32	30	28	26
40	40	37	35	32
50	50	47	43	40
60	60	56	52	49
63	63	59	55	51
70	70	66	61	57
80	80	75	70	65
90	90	86	78	73
100	100	93	87	81
110	110	103	96	89
125	125	117	109	101
160 (1)	160 (1)	150 (1)	139 (1)	129 (1)

(1) IEC only.

Bulletin 140G-H: Electronic Trip Circuit Breakers, MCSs, MCPs

Electronic trip circuit breakers do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. The same considerations are appropriate for MCSs and MCPs. Table 280 shows the maximum current to help prevent terminal overheating.

Table 280 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings	3	3	3	3
	7	7	7	7
	15	15	15	15
	30	30	30	30
	50	50	50	50
	70	70	70	70
	80	80	79	79
	100	93	84	79
	125 (1)	112 (1)	97 (1)	79 (1)
IEC Ratings	3	3	3	3
	7	7	7	7
	15	15	15	15
	30	30	30	30
	50	50	50	50
	70	70	70	70
	80	80	80	80
	100	100	100	100
	125	125	125	125

(1) MCS rated current.

Bulletin 140G Frame Size I: Thermal-magnetic Circuit Breakers

Frame size I thermal-magnetic circuit breakers are calibrated at 40 °C (104 °F). For applications at other temperatures, the thermal trip varies as shown in Table 281.

Table 281 - Maximum Thermal Trip Rating

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
60	60	56	52	49
63	63	59	55	51
70	70	66	60	56
80	80	75	69	64
90	90	84	78	72
100	100	93	87	80
110	110	102	95	88
125	125	116	108	100
150	150	140	130	121
160	160	149	139	129
200	200	186	173	161
225	225	210	196	181

Bulletin 140G-I: MCSs and MCPs

MCSs and MCPs do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. Table 282 shows the maximum current to help prevent terminal overheating.

Table 282 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings	100	100	100	100
	110	110	110	110
	125	125	125	125
	150	148	153	142
	200	181	161	142
	225 (1)	199 (1)	175 (1)	142 (1)
IEC Ratings	100	100	100	100
	110	110	110	110
	125	125	125	125
	150	150	150	150
	200	200	200	200
	225 (1)	225 (1)	214 (1)	204 (1)

(1) MCS rated current.

Bulletin 140G Frame Size J: Thermal-magnetic Circuit Breakers

Frame size J thermal-magnetic circuit breakers are calibrated at 40 °C (104 °F). For applications at other temperatures, the thermal trip varies as shown in Table 283.

Table 283 - Maximum Thermal Trip Rating

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
25	25	23	21	19
30	30	25	23	20
32	32	27	24	21
35	35	32	30	26
40	40	37	34	30
50	50	46	42	39
60	60	56	51	45
63	63	58	53	48
70	70	65	58	51
80	80	74	66	58
90	90	86	77	68
100	100	95	85	75
110	110	101	92	84
125	125	115	105	95
160	160	150	137	140
175	175	166	153	142
200	200	190	175	160
225	225	208	190	170
250	250	240	230	220

Bulletin 140G-J: Electronic Trip Circuit Breakers, MCSs, MCPs

Electronic trip circuit breakers do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. The same considerations are appropriate for MCSs and MCPs. Table 284 shows the maximum current to help prevent terminal overheating.

Table 284 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings	150	150	150	150
	175	175	164	158
	200	200	172	158
	225	225	180	158
	250 (1)	250 (1)	222 (1)	158 (1)
IEC Ratings	150	150	150	150
	175	175	175	175
	200	200	200	200
	225	225	221	213
	250 (1)	250 (1)	238 (1)	213 (1)

(1) MCS rated current.

Bulletin 140G2 Frame Size K: Thermal-magnetic Circuit Breakers

Frame size K thermal-magnetic circuit breakers are calibrated at 40 °C (104 °F). For applications at other temperatures, the thermal trip varies as shown in Table 285.

Table 285 - Maximum Thermal Trip Rating

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
300	300	286	267	235
320	320	295	275	250
400	400	380	350	320

Bulletin 140G2-K: Electronic Trip Circuit Breakers, MCSs, MCPs

Electronic trip circuit breakers do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. The same considerations are appropriate for MCSs and MCPs. Table 286 shows the maximum current to help prevent terminal overheating.

Table 286 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings	300	264	228	189
	400 (1)	352 (1)	304 (1)	252 (1)
IEC Ratings	320	320	320	320
	400 (1)	400 (1)	400 (1)	352 (1)

(1) MCS rated current.

Bulletin 140G2 Frame Size L: Thermal-magnetic Circuit Breakers

Frame size L thermal-magnetic circuit breakers are calibrated at 40 °C (104 °F). For applications at other temperatures, the thermal trip varies as shown in Table 287.

Table 287 - Maximum Thermal Trip Rating

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
500	500	470	435	400
600	600	572	534	500
630 (IEC only)	630	605	580	550

Bulletin 140G2-L: Electronic Trip Circuit Breakers, MCSs, MCPs

Electronic trip circuit breakers do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. The same considerations are appropriate for MCSs and MCPs.

Table 288 shows the maximum current to help prevent terminal overheating.

Table 288 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings				
500	500	470	435	400
600	600	572	500	500
630 (IEC only)	630	605	580	550

Bulletin 140G-N/NS: Electronic Trip Circuit Breakers, MCSs, MCPs

Electronic trip circuit breakers do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. The same considerations are appropriate for MCSs and MCPs. Table 289 shows the maximum current to help prevent terminal overheating.

Table 289 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings	1200 (1)	1056 (1)	815 (1)	756 (1)
IEC Ratings	1250 (1)	1250 (1)	1118 (1)	980 (1)

(1) MCS rated current.

Bulletin 140G-R: Electronic Trip Circuit Breakers and MCSs

Electronic trip circuit breakers do not undergo tripping variations based on ambient temperature. Even though ambient temperature does not affect the tripping characteristic, for temperatures exceeding 40 °C (104 °F), it is advisable to reduce the maximum current to help prevent terminal overheating. The same considerations are appropriate for MCSs, except instead of a current adjustment, Table 290 should be used to reflect the maximum current at the specific temperature.

Table 290 shows the maximum adjustment at which the threshold I_1 of the overcurrent protection (L) must be set according to the ambient temperature.

Table 290 - Maximum Operating Current I_n above 40 °C (104 °F)

Rated Current I_n [A]	Ambient Temperature [°C (°F)]			
	40 (104)	50 (122)	60 (140)	70 (158)
North American (UL) Ratings	2000	1760	1520	1260
	2500 (1)	2200 (1)	1900 (1)	1575 (1)
	3000	2640	2280	1890
IEC Ratings	2000	2000	1826	1633
	2500 (1)	2500 (1)	2283 (1)	2042 (1)

(1) MCS rated current.

Watt Loss

Table 291 - Circuit Breakers: Bulletin 140G-G

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Thermal-magnetic	15	4.0	5.3
		16	4.5	6.0
		20	5.4	7.2
		25	6.0	8.0
		30	5.5	7.4
		32	6.3	8.4
		35	6.0	8.0
		40	7.8	10.4
		45	9.0	12.0
		50	11.1	14.8
		60	11.7	15.6
		63	12.9	17.2
		70	11.0	14.7
		80	14.4	19.2
		90	17.0	22.7
		100	21.0	28.0
		110	24.9	33.1
		125	32.1	42.8
		160 (1)	45.0	60.0
	Molded Case Switch	25	1.2	1.6
		50	4.9	6.6
		75	11.1	14.8
		100	19.8	26.4
		125	30.9	41.2

(1) IEC only.

Table 292 - Circuit Breakers: Bulletin 140G-H

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Thermal-magnetic	15	3.4	4.6
		16	3.9	5.2
		20	4.8	6.4
		25	5.4	7.2
		30	6.9	9.1
		32	7.8	10.4
		35	8.5	11.3
		40	11.1	14.8
		50	12.3	16.4
		60	13.3	17.4
		63	14.4	19.2
		70	13.3	17.8
		80	17.4	23.2
		90	19.7	26.2
		100	24.3	32.4
		110	26.5	35.3
		125	34.2	45.6
		160 (1)	48.5	64.6
	Electronic	10	0.3	0.4
		25	2.4	3.2
		60	4.5	6.0
		100	12.6	16.8
		125	19.8	26.4
	MCS	25	0.8	1.1
		50	3.2	4.2
		75	7.1	9.5
		100	12.7	16.9
		125	19.8	26.4

(1) IEC only.

Table 293 - Circuit Breakers: Bulletin 140G-I

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Thermal-magnetic	60	11.7	15.6
		63	12.9	17.2
		70	11.0	14.7
		80	14.4	19.2
		90	13.6	18.1
		100	16.8	22.4
		110	17.4	23.2
		125	19.8	26.4
		150	20.8	27.8
		160	23.7	31.6
		175	30.3	40.4
		200	39.6	52.8
		225	43.2	57.6
	MCS	25	0.5	0.7
		50	2.1	2.8
		75	4.8	6.4
		100	8.5	11.4
		125	13.3	17.8
		150	19.2	25.6
		175	26.1	34.8
		200	34.1	45.5
		225	43.2	57.6

Table 294 - Circuit Breakers: Bulletin 140G-J

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Thermal-magnetic	25	8.1	10.7
		30	11.6	15.5
		32	13.2	17.6
		35	13.2	17.6
		40	13.5	18.0
		50	14.1	18.8
		60	14.4	19.2
		63	15.9	21.2
		70	16.2	21.6
		80	16.5	22.0
		90	18.0	24.0
		100	18.6	24.8
		110	20.1	26.8
		125	22.2	29.6
		150	23.5	31.3
		160	26.7	35.6
		175	27.3	36.4
		200	35.7	47.6
		225	39.9	53.1
		250	49.2	65.6
	Electronic	40	1.8	2.4
		60	3.8	5.1
		63	4.2	5.6
		100	10.5	14.0
		150	23.5	31.4
		225	53.0	70.6
		250	65.4	87.2
	MCS	25	0.7	0.9
		50	2.6	3.5
		75	5.9	7.8
		100	10.5	14.0
		125	16.4	21.8
		150	23.5	31.4
		175	32.0	42.7
		200	41.9	55.8
		225	53.0	70.6
		250	65.4	87.2

Table 295 - Circuit Breakers: Bulletin 140G-N and 140G-NS

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Electronic	1200	252	336
	MCS	1200	252	336

Table 296 - Circuit Breakers: Bulletin 140G-R

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Electronic	2000	138	184
		2500	219	292
		3000	351	468
	MCS	2000	138	184
		2500	219	292
		3000	351	468

Table 297 - Circuit Breakers: Bulletin 140G2-K

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Thermal-magnetic	300	46.2	61.6
		400	72.3	96.4
	Electronic and MCS	300	32.4	43.2
		400	57	76

Table 298 - Circuit Breakers: Bulletin 140G2-L

	Type	Rated Current I_n [A]	Watt Loss	
			3-pole	4-pole
	Thermal-magnetic	500	100.5	134
		600	138	184
	Electronic and MCS	500	–	–
		600	129	172

Table 299 - MCPs: Bulletin 140MG-G

	Rated Current I_n [A]	Watt Loss
	3	4.2
	7	9.9
	15	3.3
	30	6.9
	50	9.3
	70	15.9
	80	15.9
	100	19.8
	125	30.9

Table 300 - MCPs: Bulletin 140MG-H

	Rated Current I_n [A]	Watt Loss
	3	11.1
	7	27.9
	15	19.2
	30	11.4
	50	15
	70	16.5
	80	20.4
	100	24.3
	125	42

Table 301 - MCP: Bulletin 140MG-I

	Rated Current I_n [A]	Watt Loss
	100	13.5
	110	9.9
	125	12.3
	150	19.5

Table 302 - MCP: Bulletin 140MG-J

	Rated Current I_n [A]	Watt Loss
	150	23.4
	175	27.3
	200	35.7
	225	39.9
	250	49.2

Table 303 - MCP: Bulletin 140MG-N

	Rated Current I_n [A]	Watt Loss
	1200	252

Table 304 - MCP and MPCB: Bulletin 140MG2-K

	Type	Rated Current I_n [A]	Watt Loss
	Electronic	250 (1)	24
		300	32.4
		400	57

(1) MPCB only.

Table 305 - MCP and MPCB: Bulletin 140MG2-L

	Type	Rated Current I_n [A]	Watt Loss
			3-Pole
	Electronic	250 (1)	24
		300	32.4
		400	57

(1) MPCB only.

Accessory Specifications

Table 306 - Auxiliary Contacts

Cat. No.	Factory-installed Modification Order Code	Electrical Operating Ratings (Nominal Values)							
		Description	Electrical Specifications (1)						
			Rated Voltage U_e [V]	Wire Size		Wire Length [m (in.)]	IEC Rating		UL Rating
				AWG	mm^2		Rated Operational Current (AC)	Rated Operational Current (DC)	
140G-G-EA1R1A	-AA	1 Aux — N.O./N.C.; 1 AL — N.O./N.C.	250	18	0.5	1 (39)	6 A at 250 V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum: 0.03 A DC)	5 A at 125V AC; 3 A at 250V AC
140G-H-EA1R1B	-AB	1 Aux — N.O./N.C.; 1 AL — N.O./N.C.	400	20	1	1 (39)	12 A at 250V AC; 3 A at 400V AC	0.5 A at 125V DC; 0.3 A at 250V DC	10 A at 125V AC; 10 A at 250V AC
140G-N-EA1R1B									12 A at 125V AC; 12 A at 250V AC
140G-G-EA1R1J	-AJ	1 Aux — N.O./N.C.; 1 AL — N.O./N.C.	24	18	0.5	1 (39)	—	Maximum: 0.1 A at 24V DC Minimum: 0.01 A at 5V DC	Yes
140G-N-EA1R1J									
140G-G-EA2R1A	-BA	2 Aux — N.O./N.C.; 1 AL — N.O./N.C.	250	18	0.5	1 (39)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Min: 0.03 A DC)	5 A at 125V AC; 3 A at 250V AC
140G-H-EA3R1A	-CA	3 Aux - N.O./N.C.; 1 AL - N.O./N.C.	250	18	0.5	1 (39)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum: 0.03 A DC)	5 A at 125V AC; 3 A at 250V AC
140G-H-EA3R1J	-CJ	3 Aux — N.O./N.C.; 1 AL — N.O./N.C.	24	18	0.5	1 (39)	—	Maximum: 0.1 A at 24V DC Minimum: 0.01 A at 5V DC	Yes
140G-H-EA1TA	-DA	1 TU AL — N.O./N.C. (Thermal)	250	18	0.5	1 (39)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum: 0.03 A DC)	5 A at 125V AC; 3 A at 250V AC
140G-H-EA1TJ	-DJ	1 TU AL — N.O./N.C. (Thermal)	24	18	0.5	1 (39)	—	Maximum: 0.1 A at 24V DC Minimum: 0.01 A at 5V DC	Yes
140G-H-EA2B	-FB	2 Aux — N.O./N.C.	400	20	1	1 (39)	12 A at 250V AC; 3 A at 400V AC	0.5 A at 125V DC; 0.3 A at 250V DC	12 A at 125V AC; 12 A at 250V AC
140G-G-EA1A	-KA	1 Aux — N.O./N.C.	250	18	0.5	1 (39)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum: 0.03 A DC)	5 A at 125V AC; 3 A at 250V AC
140G-G-EA1AU	-TA	1 Aux — N.O./N.C. or 1 AL — N.O./N.C.	250	20	0.5	1 (39)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum: 0.03 A DC)	—
140G-G-EA1J	—	1 Aux — N.O./N.C. or 1 AL — N.O./N.C.	24	18	0.5	1 (39)	—	Maximum: 0.1 A at 24V DC Minimum: 0.01 A at 5V DC	Yes
140G-H-EA2R2TA	—	2 Aux — N.O./N.C.; 2 AL — N.O./N.C. (Thermal)	250	18	0.5	1 (39)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum: 0.03 A DC)	5 A at 125V AC; 3 A at 250V AC
140G-H-EA3R2A		3 Aux — N.O./N.C.; 2 AL — N.O./N.C.							
140G-N-EA1TA	—	1 AL — N.O./N.C. (Thermal)	250	20	0.5	1 (39)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum 0.03 A DC)	—
140G-N-EA2B	—	2 Aux — N.O./N.C.	400	17	1	1 (39)	12 A at 250V AC; 3 A at 400V AC	0.5 A at 125V DC; 0.3 A at 250V DC	12 A at 125V AC; 12 A at 250V AC
140G-N-EA2J	—	2 Aux — N.O./N.C.	24	20	0.5	1 (39)	—	Maximum: 0.1 A at 24V DC Minimum: 0.01 A at 5V DC	Yes
140G-R-EA1TA	—	1 AL — N.O./N.C. (Thermal)	250	(3)	(3)	(3)	6 A at 250V AC (2)	0.5 A at 110V DC; 0.3 A at 250V DC (Minimum: 0.03 A DC)	—
140G-R-EA4A	—	4 Aux — N.O./N.C.	400	(3)	(3)	(3)	12 A at 250V AC; 3 A at 400V AC	0.5 A at 125V DC; 0.3 A at 250V DC	15 A at 125V AC; 15 A at 250V AC
140G-R-EA4J	—	4 Aux — N.O./N.C.	24	(3)	(3)	(3)	—	Maximum 0.1 A at 24V DC; Minimum: 0.01 A at 5V: DC	Yes
140G-G-EAB1B	—	1 N.C. Early Break	400	18	1	1 (39)	12 A at 250V AC; 3 A at 400V AC	0.5 A at 125V DC; 0.3 A at 250V DC	12 A at 125V AC; 12 A at 250V AC
140G-G-EAM1B		1 N.O. Early Make							
140G2-K-EAM2A		1 N.C Early Make	250 AC	20	1		12A at 250V AC, 0.3A at 150V DC	0.15 A at 250V DC	

(1) Contacts are wired with 600 V (UL/CSA) insulated wire. No voltage derating of circuit breaker required.
(2) See Table 307 on page 150 for expanded description of the voltage ratings.
(3) Contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Table 307 - 250 V AC/DC Expanded Description

Voltage	Class of Use	AC	DC
110V DC	DC-12	–	0.5 A
	DC-14	–	0.05 A
125V AC/DC	AC-12, AC-13, AC-14	6 A	–

Voltage	Class of Use	AC	DC
250V AC/DC	AC-15	5 A	–
	AC-12 and DC-12	6 A	0.3 A
	AC-13	6 A	–
	AC-14, DC-14	5 A	0.03 A
	AC-15	4 A	–

All shunt trip devices are wired with 600V (UL/CSA) insulated wire. No voltage derating is required.

Table 308 - Shunt Trip Devices

Cat. No. 140G-	Application Ratings					Electrical Operating Ratings (Nominal Values)				
	Factory-installed Modification Order Code	Rated Voltage U_e	Wires		Shunt Trip Type	Operation Voltage [V]		Inrush Power Consumption		Opening Time [ms]
			Length [m (ft)]	Size [mm^2/AWG]		Minimum	Maximum	AC [VA]	DC [W]	
Bulletin 140G Frame Size G, H, I, J										
G-SNR	–	12V DC	1 (3.3)	0.5 /20	Shunt open release	8.4	13.2	–	50	≤ 15
G-SNJ	-SJ	24...30V AC/DC				16.8	33	50	50	
G-SNKY	-SKY	48...60V AC/DC				33.6	66	60	60	
G-SND	-SD	110...127V AC 110...125V DC				77	139 AC 137 DC	50	50	
G-SNA	-SA	220...240V AC 220...250V DC				154	278 AC 274 DC	50	50	
G-SNB	-SB	380...440V AC		1 /17		266	484	55	–	
G-SNC	-SC	480...525V AC				336	577	55	–	
Bulletin 140G Frame Size N										
N-SNJ	-SJ	24V AC/DC	1 (3.3)	0.5/20	Shunt open release	16.8	26.4	–	300	≤ 20
N-SNKY	-SK	48V AC/DC		0.5/20		33.6	52.8	300	300	
N-SND	-SD	110...120V AC/DC		0.5/20		77	132	300	300	
N-SNA	-SA	220...240V AC/DC		0.5/20		154	264	300	–	
N-SNB	-SB	380...400V AC		1/17		266	440	300	–	
NS-SNCJ	-RJ	24V AC/DC		0.5/20	Shunt close release	20.4	26.4	300	300	≤ 80
NS-SNCKY	-RK	48V AC/DC		0.5/20		40.8	52.8		300	
NS-SNCD	-RD	110...120V AC/DC		0.5/20		93.5	126.5		300	
NS-SNCA	-RA	220...240V AC/DC		0.5/20		187	196.5		300	
NS-SNCB	-RB	380...400V AC		1/17		323	440		–	
Bulletin 140G Frame Size R										
R-SNJ	-SJ	24V AC/DC	1 (3.3)	0.5 /20	Shunt open release	16.8	26.4	–	200	≤ 60
R-SNKY	-SK	48V AC/DC		0.5/20		33.6	52.8	200	200	
R-SND	-SD	110...120V AC/DC		0.5/20		77	132	200	200	
R-SNA	-SA	220...240V AC/DC		0.5/20		154	264	200	200	
R-SNB	-SB	380...400V AC/DC		1 /17		266	440	200	–	
R-SNCJ	-RJ	24V AC/DC	1 (3.3)	0.5 /20	Shunt close release	20.4	26.4	–	200	≤ 80
R-SNCKY	-RK	48V AC/DC		0.5/20		40.8	52.8	200	200	
R-SNCD	-RD	110...120V AC/DC		0.5/20		93.5	126.5	200	200	
R-SNCA	-RA	220...240V AC/DC		0.5/20		187	196.5	200	200	
R-SNCB	-RB	380...400V AC/DC		1 / 17		323	440	200	–	
Bulletin 140G2 Frame Size K and L										
K-SNR	-SR	12V DC	1 (3.3)	1.25/16	Shunt open release	8.4	13.2	–	132	≤ 50
K-SNJ	-SJY	24...60V AC/DC				16.8	66	330	330	
K-SND	-SDA	110...240V AC 110...250V DC				77	278 AC 274 DC	363...825	363...825	
K-SNB	-SB	380...440V AC				266	484	304... 352	304... 352	
K-SNC	-SC	480...525V AC				336	577	384...420	384...420	

All undervoltage release devices are wired with 600V (UL/CSA) insulated wire. No voltage derating is required.

Table 309 - Undervoltage Release Devices

Cat. No.	Application Ratings				Electrical Operating Ratings (Nominal Values)					
			Wires		Electrical Specifications					
	Factory-installed Modification Order Code	Rated Voltage U_e [V]	Length [m (ft.)]	Size [mm^2 / AWG]	Dropout Voltage [V]		Pickup Voltage Max [V]	UVR Power Absorbed During Normal Operation		Opening Time [ms]
					Min	Max		AC [VA]	DC [W]	
Bulletin 140G Frame Size G, H, I, and J										
140G-G-UVJ	-UJ	24...30V AC/DC	1 (3.3)	0.5 /20	8.4	21	25.5	1.5	1.5	≤ 15
140G-G-UVKY	-UR	48V AC/DC			16.8	33.6	40.8	1	1	
140G-G-UVY	-UY	60V AC/DC			21	42	51	1	1	
140G-G-UVD	-UD	110...127V AC 110...125V DC			38.5	88.9 AC 87.5 DC	108 AC 106 DC	2	2	
140G-G-UVA	-UA	220...240V AC 220...250V DC			77	154 AC 175 DC	208 AC 212.5 DC	2.5	2.5	
140G-G-UVB	-UB	380...440V AC		1 / 17	133	308	374	3	–	
140G-G-UVC	-UC	480...525V AC			168	367.5	446	4	–	
Bulletin 140G Frame Size N and NS										
140G-N-UVJ	-UJ	24V AC/DC	1 (3.3)	0.5 /20	8.4	21	25.5	–	5	≤ 20
140G-N-UVKY	–	60V AC/DC			21	42	51	5	5	
140G-N-UVD	-UD	110...120V AC/DC			38.5	88.9 AC 87.5 DC	108 AC 106 DC	5	5	
140G-N-UVA	-UA	220...240V AC/DC			77	154 AC 175 DC	208 AC 212.5 DC	5	5	
140G-N-UVB	-UB	380...400V AC		1 / 17	133	308	374	5	–	
140G-N-UVC	-UC	415...440V AC			168	367.5	446	5	–	
Bulletin 140G Frame Size R										
140G-R-UVJ	-UJ	24V AC/DC	1 (3.3)	0.5 /20	8.4	21	25.5	–	5	≤ 30
140G-R-UVKY	-UKY	60V AC/DC			21	42	51	5		
140G-R-UVD	-UD	110...120V AC/DC			38.5	88.9 AC 87.5 DC	108 AC 106 DC	5		
140G-R-UVA	-UA	220...240V AC/DC			77	154 AC 175 DC	208 AC 212.5 DC	5		
140G-R-UVB	-UB	380...400V AC		1 mm^2/17 AWG	133	308	374	5	–	
140G-R-UVC	-UC	415...440V AC		0.5 mm^2/20 AWG	168	367.5	446	5		
Bulletin 140G2 Frame Size K and L										
140G2-K-UVJ	-UJ	24...30V AC/DC	1 (3.3	0.5 /20	8.4	21	25.5	6.5	4.5	≤ 50
140G2-K-UVKY	-UY	48...60V AC/DC			16.8	42	51	6.5	5.5	
140G2-K-UVD	-UD	110...127V AC 110...125V DC			38.5	88.9 AC 87.5 DC	108 AC 106 DC	5.2	3.7	
140G2-K-UVA	-UA	220...240V AC 220...250V DC			77	154 AC 175 DC	208 AC 212.5 DC	5.2	2.6	
140G2-K-UVB	-UB	380...440V AC		1 / 17	133	308	374	4.7	–	
140G2-K-UVC	-UC	480...525V AC			168	367.5	446	6	–	

All motor operators are wired with 600V (UL/CSA) insulated wire. No voltage derating is required.

Table 310 - Motor Operators

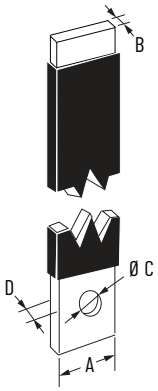
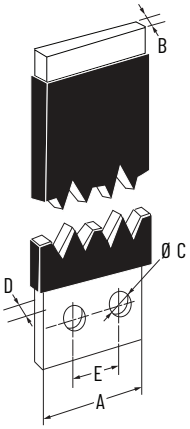
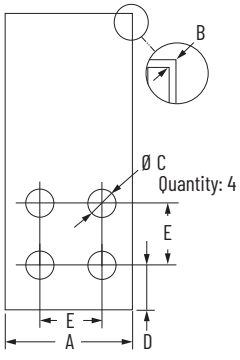
Cat. No.	Application Ratings				Application Specifications, Electrical Operating Ratings (Nominal Values)								
	Rated Voltage U_e [V]	For Use with Frame Size	Wire Length [m (ft.)]	Wire Size [mm^2 / AWG]	Operating Voltage [V]		Time [s]			Minimum Control Impulse Time [ms] (1)	Inrush Power		UVR Power Absorbed During Normal Operation	
					Minimum	Maximum	Open	Close	Reset		AC [VA]	DC [W]	AC [VA]	DC [W]
140G-G-EOPJ	24V DC	G, I	1 (3.3)	0.5 / 20	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	–	(2)
140G-H-EOPJ		H, J			20.4	26.4	0.1	0.1	(2)	≥ 150	–	500	–	350
140G-G-EOPKY	48...60V DC	G, I	1 (3.3)	0.5 / 20	(2)	(2)	(2)	(2)	(2)	(2)	–	(2)	–	350
140G-H-EOPKY		H, J			40.8	66	0.1	0.1	(2)	≥ 150	–	500	–	350
140G-G-EOPD	110...125V AC/DC	G, I	1 (3.3)	0.5 / 20	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
140G-H-EOPD		H, J			106.3	137	0.1	0.1	(2)	≥ 150	500	500	350	350
140G-G-EOPA	220...250V AC/DC	G, I	1 (3.3)	0.5 / 20	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
140G-H-EOPA		H, J			212.6	275	0.1	0.1	(2)	≥ 150	500	500	350	350
140G-G-EOPB	380...440V AC	G, I	1 (3.3)	1 / 17	(2)	(2)	(2)	(2)	(2)	(2)	(2)	–	(2)	–
140G-H-EOPB		H, J			374	484	0.1	0.1	(2)	≥ 150	500	–	350	–
140G-G-EOPC	480...525V AC	G, I	1 (3.3)	1 / 17	(2)	(2)	(2)	(2)	(2)	(2)	(2)	–	(2)	–
140G-H-EOPC		H, J										(2)		(2)
140G2-K-EOPJ	24V DC	K	1 (3.3)	0.5 / 20	20.4	26.4	1.5	< 0.08	3	≥ 100	–	300	–	150
140G2-K-EOPKY	48...60V DC				40.8	66								
140G2-K-EOPD	110...125V AC/DC	K	1 (3.3)	0.5 / 20	93.5	137	1.5	< 0.08	3	≥ 100	300	300	150	150
140G2-K-EOPA	220...250V AC/DC				187	275								
140G2-K-EOPB	380V AC	K	1 (3.3)	1 /17	323	418	1.5	< 0.08	3	≥ 100	300	–	150	–

(1) Opening and closing times.
(2) Contact your local Rockwell Automation sales office or Allen-Bradley distributor.

Table 311 - Spring Charging Motors

Cat. No.	Application Ratings				Application Specifications, Electrical Operating Ratings (Nominal Values)					
	Rated Voltage U_e [V]	For Use with Frame Size	Wire Length [m (ft.)]	Wire Size [mm^2 / AWG]	Operating Voltage [V]		Time [s]		Inrush Power	
					Minimum	Maximum	Inrush	Charging	AC [VA]	DC [W]
140G-NS-SCMJ	24...30V AC/DC	NS	1 (3.3)	0.5 / 20	20.4	33		8...10	–	≤ 400
140G-NS-SCMKY	48...60V AC/DC				40.8	66			≤ 400	≤ 400
140G-NS-SCMD	100...130V AC/DC				106.3	143			≤ 400	≤ 400
140G-NS-SCMA	220...250V AC/DC				212.6	275			–	≤ 400
140G-NS-SCMB	380...415V AC		1 (3.3)	1 / 17	323	456		8...10	≤ 400	–
140G-R-SCMJ	24...30V AC/DC	R	1 (3.3)	0.5 / 20	20.4	33	0.2	4...5	500	500
140G-R-SCMKY	48...60V AC/DC				40.8	66				
140G-R-SCMD	100...130V AC/DC				106.3	143				
140G-R-SCMA	220...250V AC/DC				212.6	275				

Table 312 - Busbar Specifications for Compatibility with Circuit Breaker Terminals

Diagram	Frame Size	Amperage	Busbar Dimensions [mm (in.)]							Terminal Torque		Hex Tool/ Wrench Size
			Width (A)		Thickness (B)		Terminal Hole Ø (C)	Hole Center (D)	Space Between Terminal Holes (E)	Fastener	[N•m (lb•in)]	
			Minimum	Maximum	Minimum	Maximum						
	G	–	13 (0.51)	16 (0.63)	3.5 (1.38)	5 (0.2)	6.5 (0.26)	7.5 (0.3)	–	M6	6 (53)	M5
	H	–		20 (0.79)	2.5 (0.1)							
	I	–	17 (0.67)	24 (0.95)	5 (0.2)	8 (0.32)	8.5 (0.34)	9.5 (0.37)	–	M8	8 (71)	M6
	J	–		25 (0.98)								
	K [1]	–	25 (0.984)	32.5 (1.279)	5 (0.2)	10 (0.39)	10.5 (0.41)	12 (0.72)	–	M10	36 (318.6)	M8
	L [1]	–	25 (0.984)	32.5 (1.279)	5 (0.2)	10 (0.39)	10.5 (0.41)	12 (0.72)	–	M10	36 (318.6)	M8
	N	–	50 (1.97)	–	10 (0.39)	20 (0.79)	11 (0.4) each	14 (0.55)	25 (0.98)	(2) M10	18 (161)	M5
	**Front Busbar**											
	R	2000 A [2]	102 (4.02)	–	6.4 (0.25)	–	15 (0.59)	20 (0.79)	40 (1.57)	Fasteners supplied by customer		
		2500 A, 80% [2]										
	Rear Busbar [3]											
	R	2000 A [2]	102 (4.02)	–	6.4 (0.25)	–	15 (0.59)	114 (4.49)	40 (1.57)	Fasteners supplied by customer		
		2500 A, 80% [2]										
		2500 A, 100% [4]	102 (4.02)	–	6.4 (0.25)	–	13 (0.51)	98 (3.86)	44.45 (1.75)	M12 Stud	69.5 (615)	19 mm
		3000 A, 80% [4]										
		3000 A, 100% [4]										

(1) Frame size K and L have a Cat. No. prefix of '140G2-'
(2) Quantity required: 2
(3) Always use two wrenches to avoid straining the insulating parts of the breaker and apply the tightening torque of the terminals using high-strength fasteners. Check tightness after 24 hours.
(4) Quantity required: 4

Table 313 - Cable (Ring) Terminal Specifications for Compatibility with Circuit Breaker Terminals

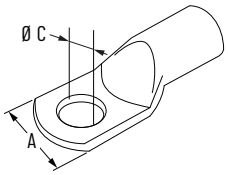
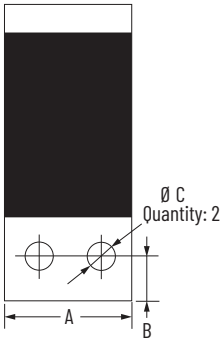
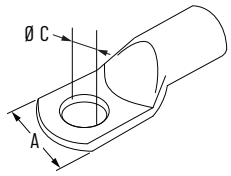
Diagram	Cat. No.	Frame Size	[mm (in.)]		Number of Cables	Fastener	Cable (Ring) Terminal Tightening Torque [N•m (lb•in)]	Fastener Terminal Tool
			Width (A)	Terminal Hole Ø (B)				
	140G	G	16 (0.63)	6.5 (0.26)	1	M6	6 (53)	CH5
		H	20 (0.79)					
		I	24 (0.95)	8.5 (0.34)	1	M8	8 (71)	CH6
		J	25 (0.98)					
	140G2	K	32.5 (1.28)	10.5 (0.41)	1	M10	36 (319)	CH8
		L						
	140G	N, NS	Select extended terminals from Table 314 on page 154 or spreader terminals from Table 315 on page 155					

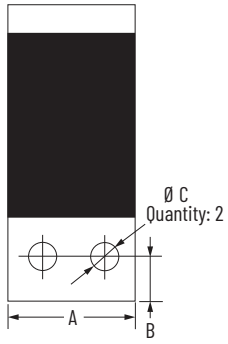
Table 314 - Busbar or Cable (Ring) Terminal Specifications for Compatibility with Extended Terminal Accessories

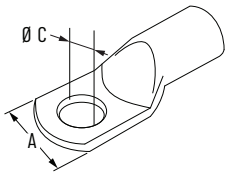
Busbar	Cat. No	Frame Size	[mm (in.)]			Number of Pieces	Fastener
			Max Width (A)	Depth to Hole (B)	Terminal Hole Ø (C)		
	140G	G	20 (0.79)	4 (0.16)	8.5 (0.34)	1	M8
		H					
		I	20 (0.79)	6 (0.24)	10 (0.39)	1	M10
		J		10 (0.39)			
	140G2	K	32 (1.26)	8 (0.31)	11 (0.43)	1	M10
		L					
	140G	N, NS	50 (1.97)	10 (0.39)	4 x 11 (1) (0.16 x 0.43)	2	Class 4.8 screws (not supplied)

Cable Terminal	Cat. No.	Frame Size	[mm (in.)]		Number of Cables	Fastener	Cable Tightening Torque [N•m (lb•in)]
			Max Width (A)	Terminal Hole Ø (B)			
	140G	G	20 (0.79)	8.5 (0.34)	1	Class 4.8 screws (not supplied)	9 (79.7)
		H					
		I	20 (0.79)	10 (0.39)	1	Class 4.8 screws (not supplied)	18 (159.3)
		J					
	140G2	K	32.5 (1.28)	11 (0.43)	1	Class 4.8 screws (not supplied)	18 (159.3)
		L					
	140G	N, NS	–	–	–	Class 8.8 screws (not supplied)	40 (354)

(1) Only use two holes diagonally

Table 315 - Busbar or Cable (Ring) Terminal Specifications for Compatibility with Spreader Terminal Accessories

Busbar	Cat. No.	Frame Size	[mm (in.)]			Number of Pieces	Fastener
			Max Width (A)	Depth to Hole (D)	Terminal Hole Ø (C)		
	140G	G	25 (0.98)	4 (0.16)	8.5 (0.34)	1	M8
		H	30 (1.81)	4 (0.16)	10.5 (0.41)	1	M10
		I		4 (0.16)			
		J		10 (0.39)			
	140G2	K	40 (1.57)	10 (0.39)	11 (0.43)	1	M10
		L					
	140G	N/NS	50 (1.97)	10 (0.39)	3 x 13 (0.12 x 0.51)	2	Not specified

Cable Terminal	Cat. No.	Frame Size	[mm (in.)]			Number of Cables	Fastener	Cable Tightening Torque [N•m (lb•in)]
			Max Width (A)	Terminal Hole Ø (B)				
	140G	G	25 (0.98)	8.5 (0.34)		1	M8	9 (79.66)
		H	30 (1.18)	10.5 (0.41)		1	M10	18 (159.31)
		I						
		J						
	140G2	K	40 (1.57)	11 (0.43)		1	Class 4.8 screws (not supplied)	18 (159.31)
		L						
	140G	N/NS	45 (1.77)	13 (0.51)		3		40 (354)

Notes:

Throughout this section, wiring diagrams have a reference number in the upper left corner, underneath the figure title. This reference number correlates to the reference number that appears on the individual instruction sheet for that device.

Status Contacts

Auxiliary/Alarm Contacts (AX/AL/TU AL)

Figure 10 - Auxiliary Contact (AX2)

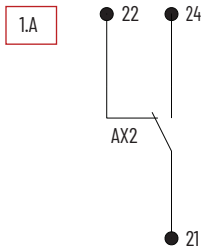


Figure 11 - Alarm Contact (AL1)

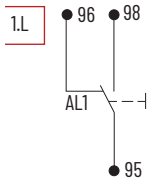


Figure 12 - Trip Unit Alarm Contact (TU AL)

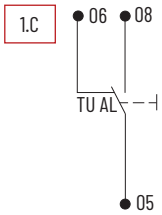


Figure 13 - Auxiliary/Alarm Contacts (AX2/AL1)

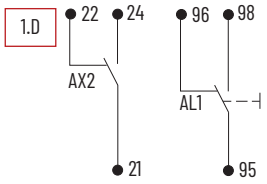


Figure 14 - Auxiliary/Alarm Contacts (AX1/AX2/AL1)

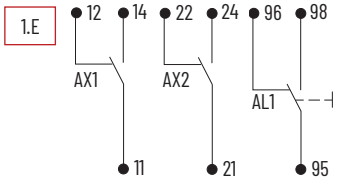


Figure 15 - Auxiliary/Alarm Contacts (AX1/AX2/AX3/AL1)

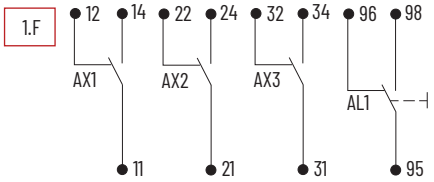


Figure 16 - Auxiliary/Alarm Contacts (AX1/AX2/AX3/AL1/AL2)

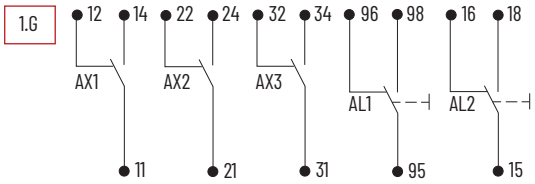


Figure 17 - Auxiliary/Alarm/Trip Unit Contacts (AX2/AX3/AL1/AL2/TU AL)

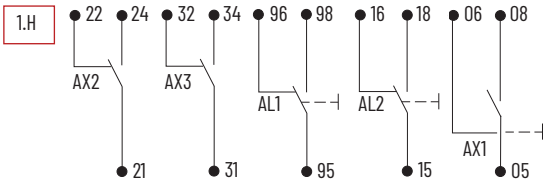


Figure 18 - Frame Size H and J, Auxiliary Contacts (AX1/AX2)

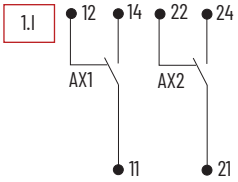


Figure 19 - Frame Size N and NS, Auxiliary Contacts (AX1/AL)

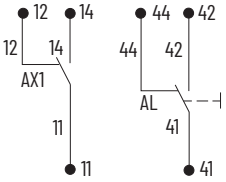


Figure 20 - Frame Size N and NS, Auxiliary Contacts (AX2/AX3)

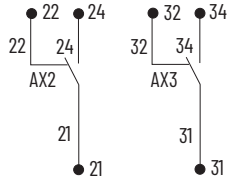


Figure 21 - Auxiliary Contacts (AX1/AX2/AX3/AX4)

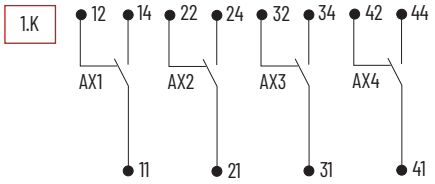
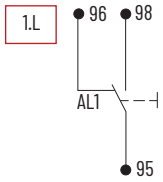


Figure 22 - Trip Unit Alarm Contact (AL1)



Auxiliary Contacts for Handles

Figure 23 - One Early Make Auxiliary Contact for Direct Operating Handle (Bul. 140G Frame Size G...J)

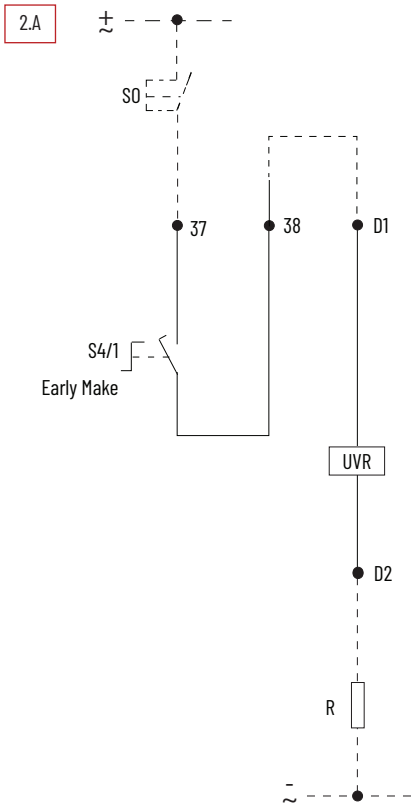


Figure 24 - Two Early Make Auxiliary Contacts for Direct Operating Handle (Bul. 140G Frame Size G...J) or Rotary Handle (Bul. 140G2 Frame Size K and L)

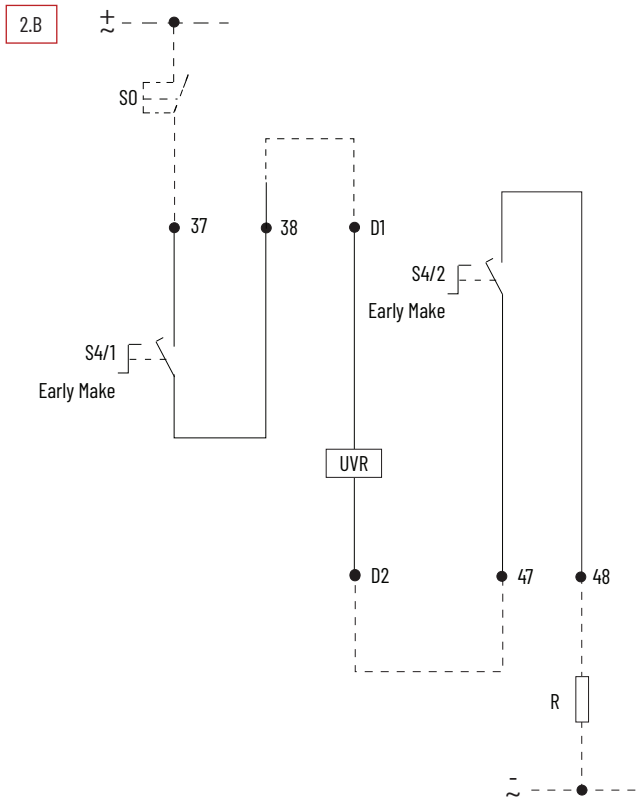
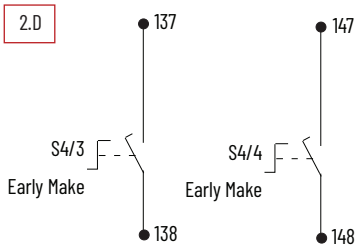
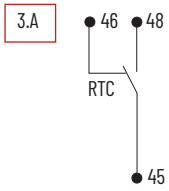


Figure 25 - One Early Break Auxiliary Contact for Rotary Operating Handle (Bul. 140G Frame Size G... J)



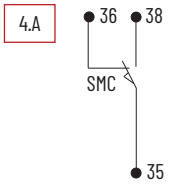
Ready-to-Close Auxiliary Contacts

Figure 26 - Ready-to-Close Auxiliary Contact (Bul. 140G Frame Size NS)



Spring Charged Auxiliary Contacts

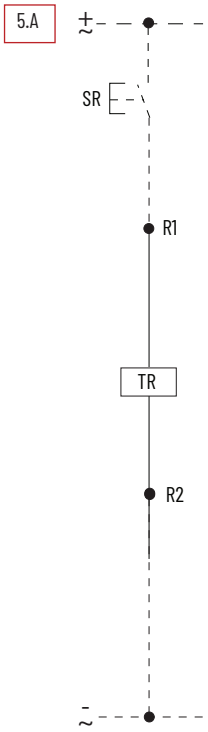
Figure 27 - Auxiliary Contact for Signaling Springs Charged (Bul. 140G Frame Size NS)



Protection/Control Accessories

Trip Reset Module

Figure 28 - Trip Reset Module (Bul. 140G Frame Size NS)



Shunt Trip Modules

Figure 29 - Shunt Trip Module (Bul. 140G Frame Size G...J) (Bul. 140G2 Frame Size K and L)

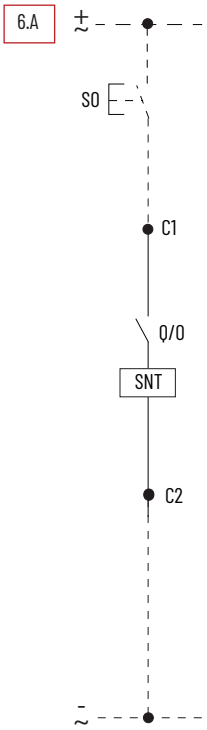


Figure 30 - Shunt Trip Module (Bul. 140G Frame Size N, NS, and R)

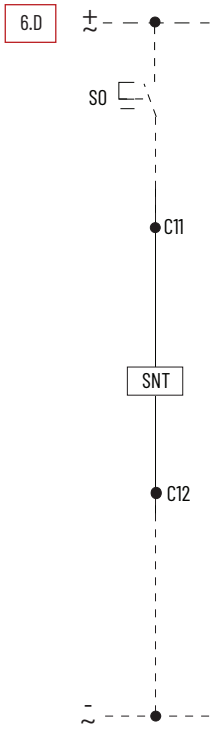
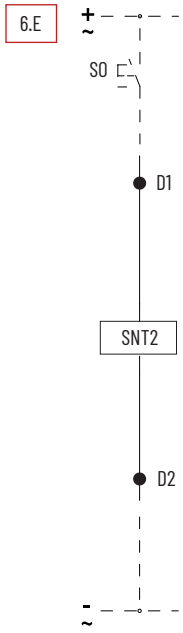
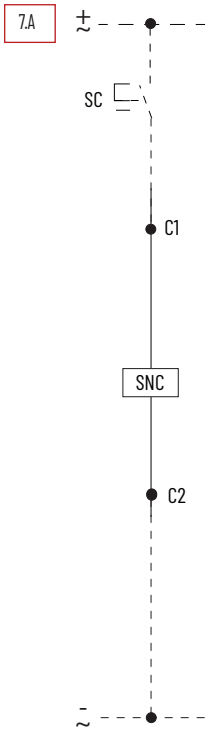


Figure 31 - Second Shunt Trip (Bul. 140G Frame Size N and NS)



Shunt Close Module

Figure 32 - Shunt Close Module (Bulletin 140G Frame Size NS)



Undervoltage Release Modules

Figure 33 - Undervoltage Release Module (Bul. 140G Frame Size G... J, N, and NS) (Bul. 140G2 Frame Size K and L)

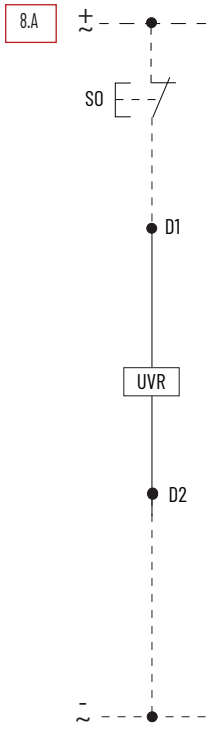


Figure 34 - Undervoltage Release Module with E-Stop (Bul. 140G Frame Size G...J, N, and NS) (Bul. 140G2 Frame Size K and L)

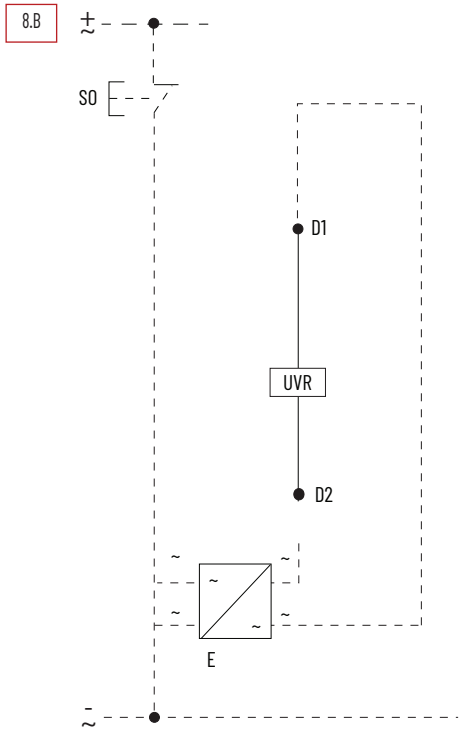
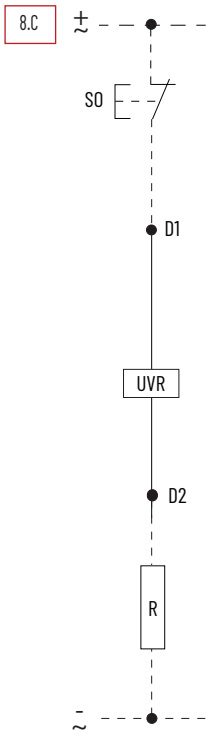


Figure 35 - Undervoltage Release Module with Resistor (Bul. 140G Frame Size G...J)



IEC Residual Current Release Modules

Figure 36 - Earth Leakage Protector (Bul. 140G Frame Size G...J)

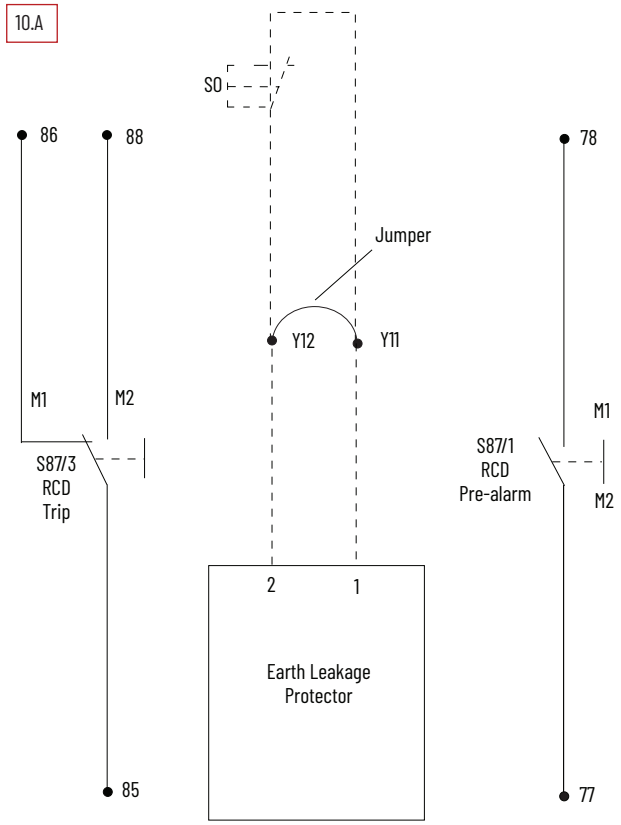
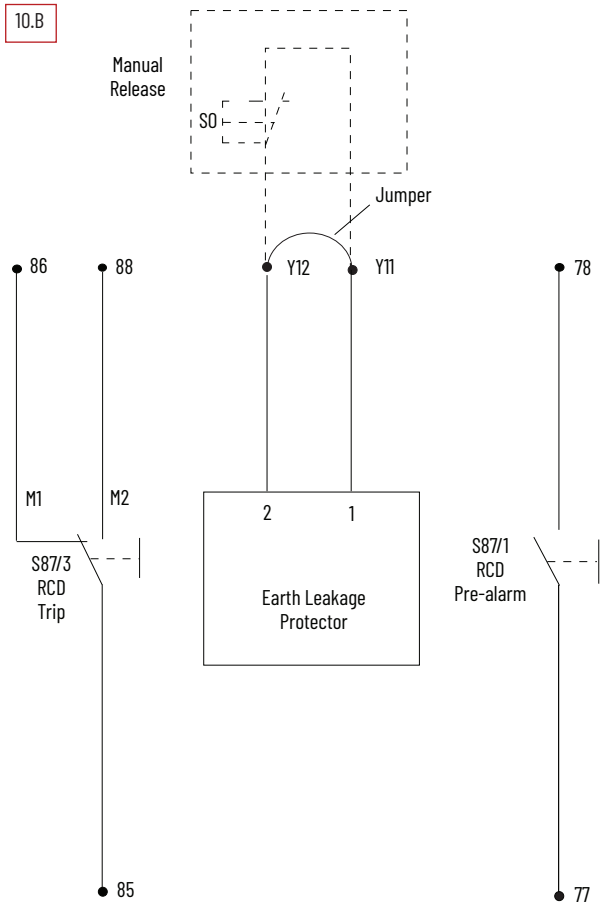


Figure 37 - Earth Leakage Protector (Bul. 140G2 Frame Size K and L)



Neutral Current Transformer Modules

Figure 38 - Current Sensor for External Neutral Conductor (Bul. 140G Frame Size N, NS, and R)

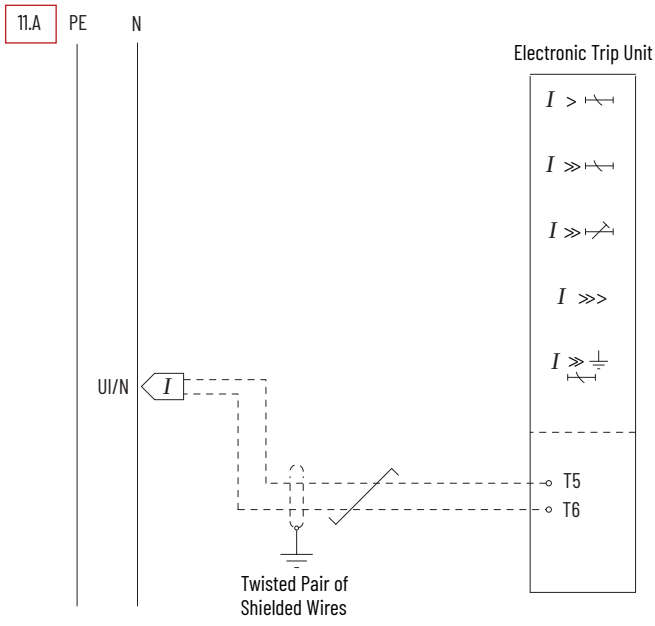


Figure 39 - Current Sensor for External Neutral Conductor (Bul. 140G Frame Size H and J)

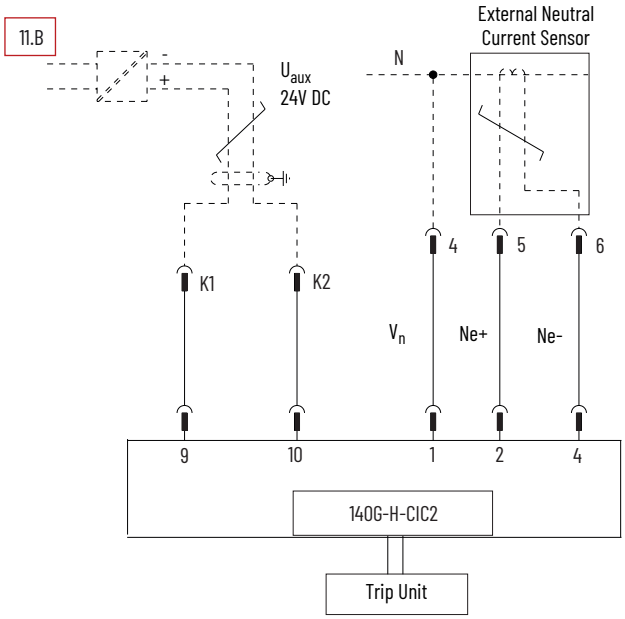
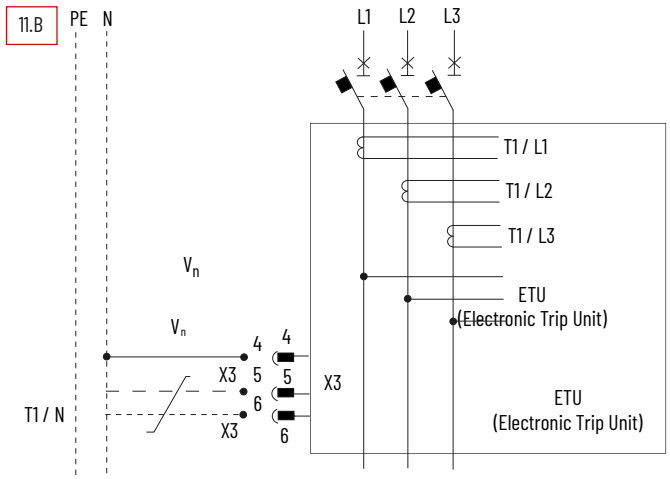


Figure 40 - Current Sensor for External Neutral Conductor (Bul. 140G2 Frame Size K and L)



Maintenance Mode Accessories

Figure 41 - LSIG-MM Trip Unit Connectors (Bul. 140G2 Frame Size K and L)

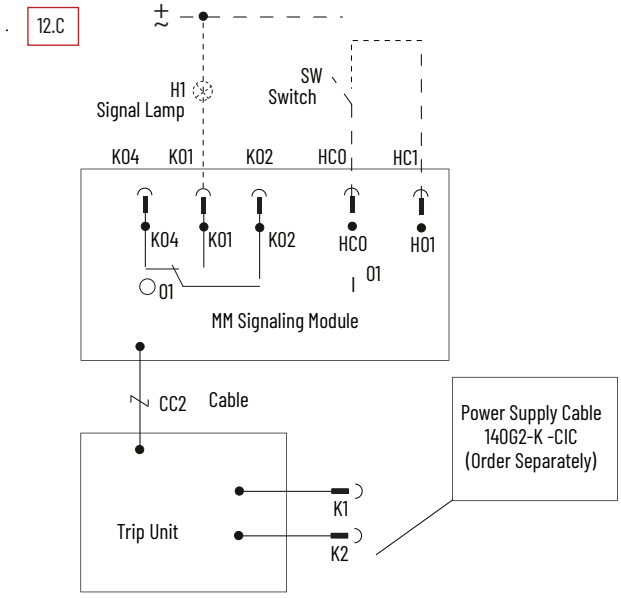
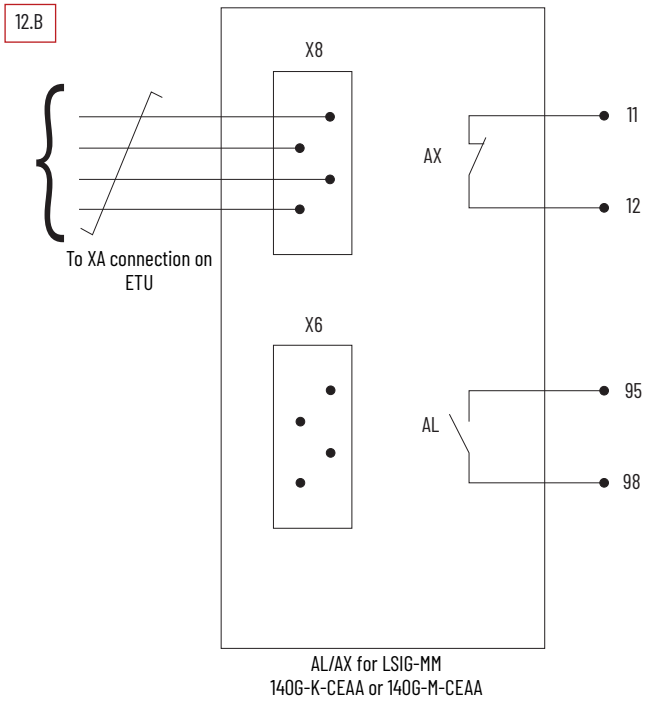


Figure 42 - LSIG-MM Maintenance Mode Signal Contacts (Bul. 140G Frame Size K and M)



Replacement Trip Unit Modules

Figure 43 - Replacement Trip Unit Module (Bul. 140G Frame Size H and J)

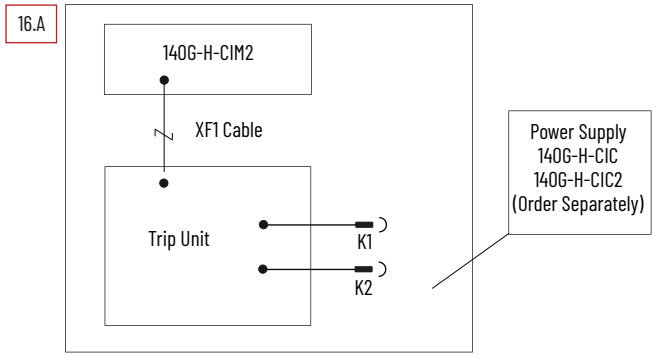
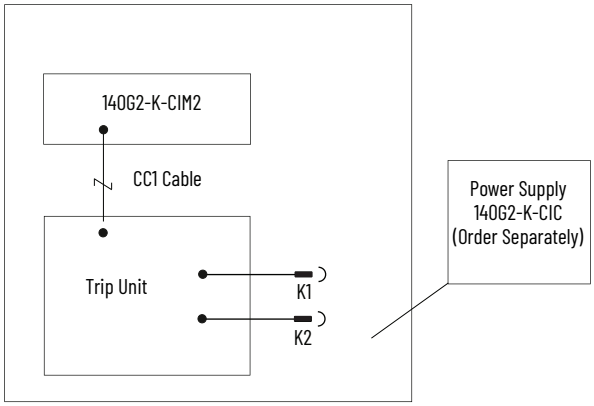
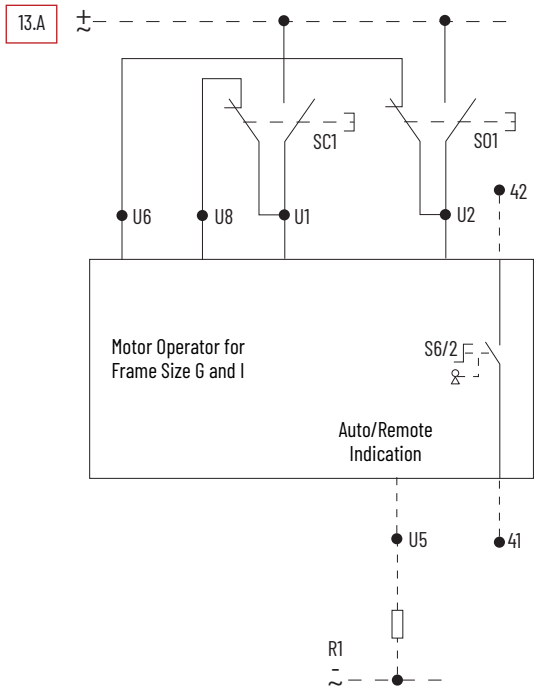


Figure 44 - Replacement Trip Unit Module (Bul. 140G2 Frame Size K and L)



Motor Operators

Figure 45 - Motor Operator (Bul. 140G Frame Size G and I)



Stored Energy Operating Mechanisms

Figure 46 - Stored Energy Operating Mechanism (Bul. 140G Frame Size K and M)

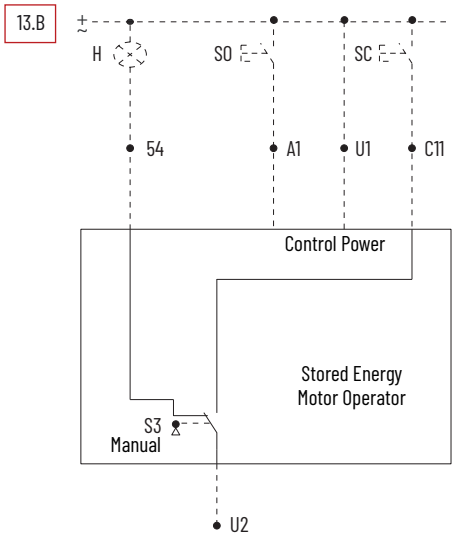


Figure 47 - Stored Energy Operating Mechanism (Bul. 140G Frame Size H and J)

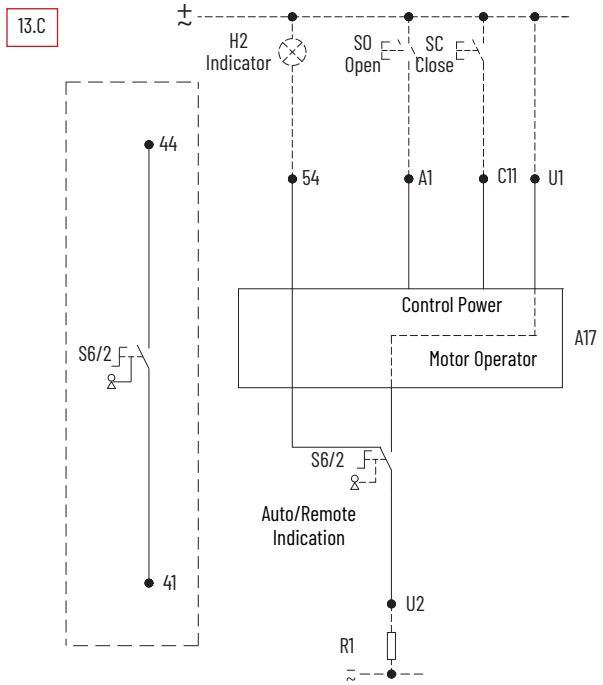
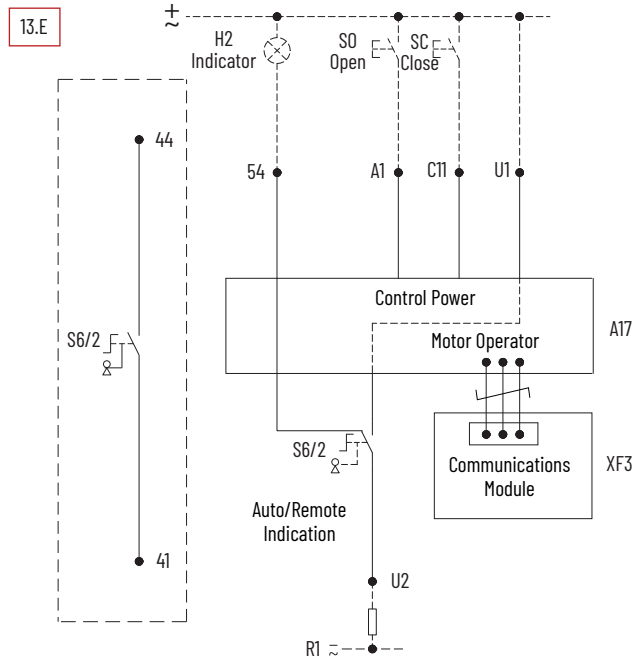
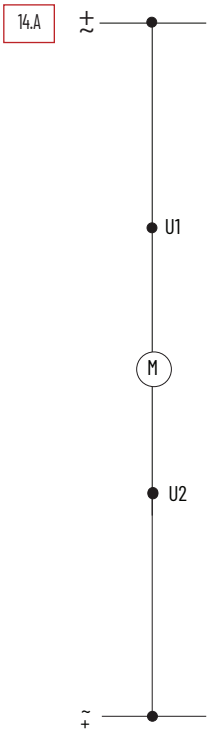


Figure 48 - Stored Energy Operating Mechanism with Communications Module (Bul. 140G Frame Size H and J)



Spring Charging Motor

Figure 49 - Spring Charging Motor (Bul. 140G Frame Size NS and R)



Using Trip and Let-through Curves

A trip curve is a representation of how a circuit breaker reacts to overcurrents and short-circuit currents. The curve is determined by a specific set of test conditions, so you should use the curve as a guideline with the documented tolerances; real-world deviations from the test criteria may alter the individual results as compared to the curve.

The curves for thermal magnetic trip units show two protections; the curves for electronic trip units will show up to four protections on the same graph. Some trip curve graphs also display a side graph that shows the device self-protections interacting with the circuit protections. To more quickly respond at certain current conditions, slower protections may be disabled in favor of faster protections. The bottom axis of each graph displays current as a multiple of the nominal current. Each chart is valid for multiple rated currents.

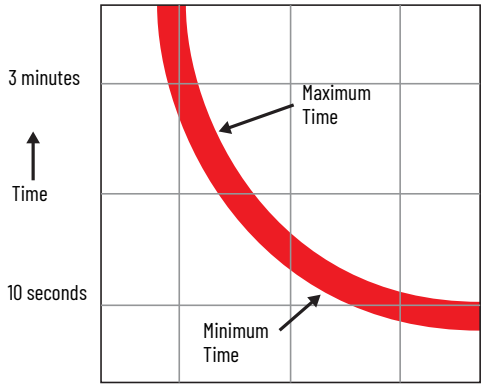
A let-through curve is a representation of the peak current and total let-through energy a breaker experiences while interrupting the current. This energy affects downstream devices. Each graph shows the available short-circuit current as root mean square (rms) values, making each chart valid for both AC and DC.

Trip Curve for a Thermal-magnetic MCCBs

The most commonly selected form of thermal protection is the bimetallic version. This works similarly to a traditional overload relay in which a bimetallic element is heated, causing a deflection, which then exerts pressure on a trip bar and causes the circuit breaker to trip. Using the bimetallic model, we can provide a thermal protection curve as shown in Figure 50.

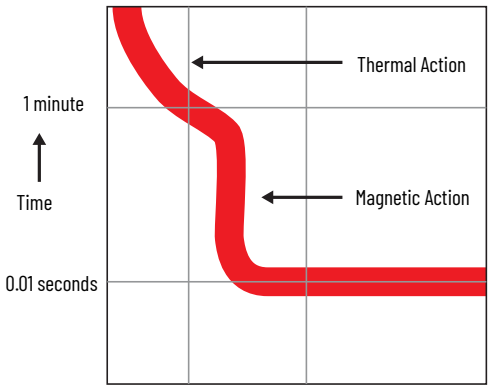
The outer edges of the line reflect the minimum and maximum times. The area between is the trip setting range.

Figure 50 - Example Bimetallic Trip Curve



Combining the short-circuit and overcurrent protection provides us with a protection curve shown in Figure 51.

Figure 51 - Example Thermal-magnetic MCCB Trip Curve



Trip Curve for an Electronic MCCB

An alternative to using fixed-thermal protection is to use electronic overcurrent protection, which electronically replicates the function of the mechanical overcurrent device.

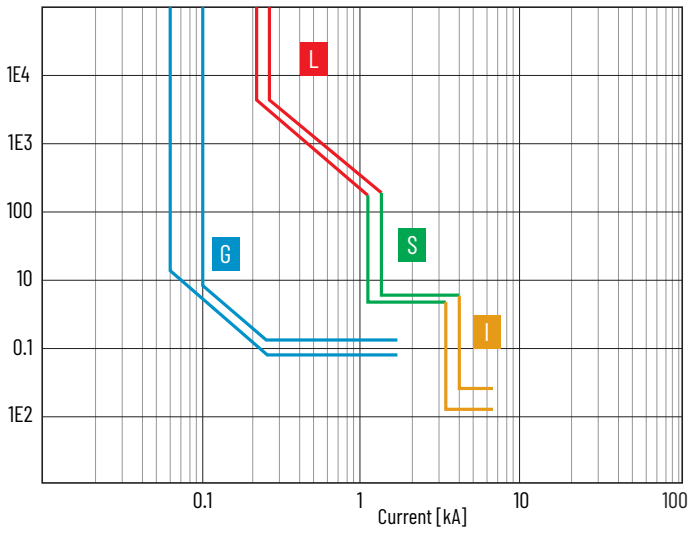
One of the benefits of using electronic trip units is their ability to tailor the tripping characteristics of the circuit breaker for the application.

The electronic trip unit has the ability to provide advanced protection in the form of additional trip functionality such as adjustable:

- Long Time: Allows the long time between 1.05 and ~1.3 x the thermal rating to be delayed, similar to how an adjustable relay changes classes
- Short Time: Adjustable short time between thermal and short-circuit
- Instantaneous Trip: Adjustable instantaneous short-circuit trip time
- Ground Fault: Adjustable time and value of ground fault tripping

Figure 52 shows an example trip curve for electronic MCCBs.

Figure 52 - Example Electronic MCCB Trip Curve



Legend	
L	Overcurrent Protection Long-time Delay
S	Short-term Protection Short-time Delay
I	Short-circuit Protection Instantaneous Trip
G	Ground Fault Protection

Electronic trip units are available in a variety of trip settings. The most common combinations are LSI (long-time, short-time, and instantaneous), LSIG (long-time, short-time, instantaneous, and ground fault), and LIU (low-interruption) trip settings; therefore a wide variety of options exist for customizing the protection the circuit breaker provides within the control panel.

Trip and Let-through Curve Index

Table 316 through Table 321 list the individual curves that are available for Bulletin 140G MCCBs, 140MG MCPs, and MPCBs. You can find the most up-to-date versions of these publications by clicking the links in the tables or by searching by the publication number at rok.auto/literature. The trip curves that are listed in these tables are current as of the date of publication.

Table 316 - Thermal-magnetic MCCBs: Time-current Curves

Bulletin No.	Frame Size	Voltage Rating [V AC]	Current Rating [A]	Figure No.
140G	G	600Y/347V AC	15...30	Figure 53
			15...32	Figure 54
			35...50	Figure 55
			60...100	Figure 56
			125	Figure 57
			160	Figure 58
	H	600V AC	15...30	Figure 59
			32	Figure 60
			35...50	Figure 61
			60...70	Figure 62
			80...100	Figure 63
			110...125	Figure 64
			160	Figure 65
	I	600Y/347V AC	60...100	Figure 66
			110...150	Figure 67
			160...225	Figure 68
	J	600V AC	25...50	Figure 69
			60...70	Figure 70
			80...100	Figure 71
			110...150	Figure 72
			160...225	Figure 73
			250	Figure 74
140G2	K	600V AC	300, 400	Figure 75
	L	600V AC	500, 600, 630	Figure 76

Table 317 - Electronic MCCBs: Time-current and Ground Fault Protection Curves

Bulletin No.	Frame Size	Voltage Rating [V AC]	Frequency [Hz]	Current Rating [A]	Protection Type	Figure No.
140G	H	600	50/60	25, 60, 100, 125	LSI	Figure 77
					G	Figure 78
	J	600	50/60	40, 60, 100, 150, 250	LSI	Figure 79
					G	Figure 80
140G2	K	600	50/60	300, 400	LSI	Figure 81
					G	Figure 82
	L	600	50/60	500, 600, 630	LSI	Figure 83
					G	Figure 84
140G	N, NS	600	50/60	1200	LSI	Figure 93
					G	Figure 94
				400, 600, 800, 1000, 1200, 1250	LSIG-MM	Figure 95, Figure 96
	R	600	50/60	2000, 2500, 3000	LSIG	Figure 97, Figure 98

Table 318 - MCCBs: Let-through Curves

Voltage Rating [V AC]	Curve Type	Frame Size	Figure No.
240	Let-through energy	J, H, N, L	Figure 99
	Peak let-through current	J, H, N, L	Figure 100
480	Let-through energy	G, H, J, K, L, N, R	Figure 101
	Peak let-through current		Figure 102
600	Let-through energy	G, H, J, K, L, N, R	Figure 103
	Peak let-through current		Figure 104

Table 319 - Current-limiting MCCBs: Let-through Curves

Voltage Rating [V AC]	Interrupt Rating [kA]	Curve Type	Frame Size	Figure No.
480	65	Total let-through energy	HC, JC, KC, LC	Figure 105
		Peak let-through current		Figure 106
	100	Total let-through energy		Figure 105
		Peak let-through current		Figure 106
600	65	Total let-through energy		Figure 107
		Peak let-through current		Figure 108
	100	Total let-through energy		Figure 107
		Peak let-through current		Figure 108

Table 320 - Bulletin 140MG MCPs: Time-current Curves

Frame Size	Voltage Rating [V AC]	Current Rating [A]	Figure No.
G	600Y/347	3...125	Figure 109
H	600	3...100	Figure 110
		125	Figure 111
I	600Y/347	100...150	Figure 112
J	600	150...200	Figure 113
K	600	300, 400	Figure 114
L	600	60	Figure 115
N	600	1200	Figure 116

Table 321 - Bulletin 140MG MPCBs: Time-current Curves

Frame Size	Protection Type	Voltage Rating [V AC]	Current Rating [A]	Figure No.
H,	DIP	600	25, 60, 100	Figure 117...Figure 120
J			40, 60, 100, 150	
K			300, 400	Figure 121...Figure 124
L			500	
H	MotorSense		40, 60, 100	Figure 125...Figure 130
J			100, 150, 200	Figure 131...Figure 136
K			250, 300	Figure 137...Figure 142
L			500	Figure 143...Figure 148

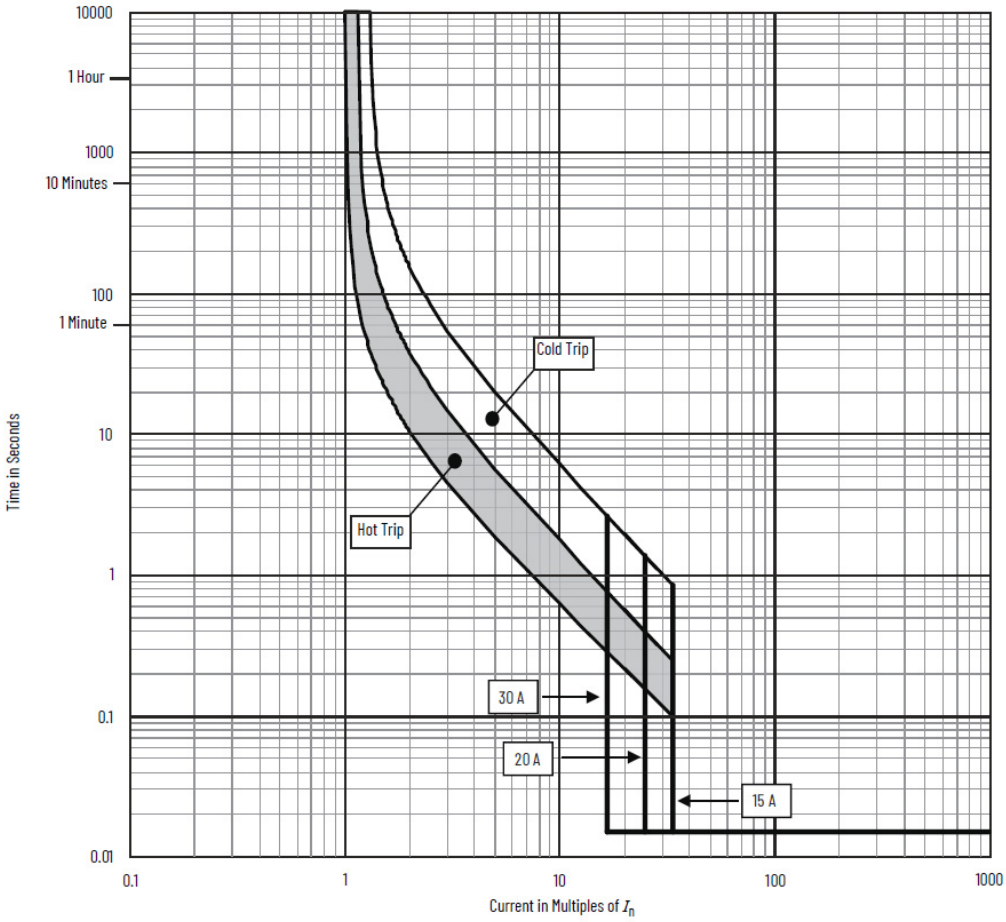
Thermal-magnetic MCCB Trip Curves

The following figures show the thermal-magnetic MCCB trip curves by frame size.

Bulletin 140G Frame Size G Thermal-magnetic MCCB Trip Curves

Figure 53 - Bulletin 140G Frame Size G: Time-current Curve

- Maximum voltage: 600Y/347V AC
- Maximum current: 15...30 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
15...30	500

Figure 54 - Bulletin 140G Frame Size G: Time-current Curve

- Maximum voltage: 600Y/347V AC
- Maximum current: 32 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

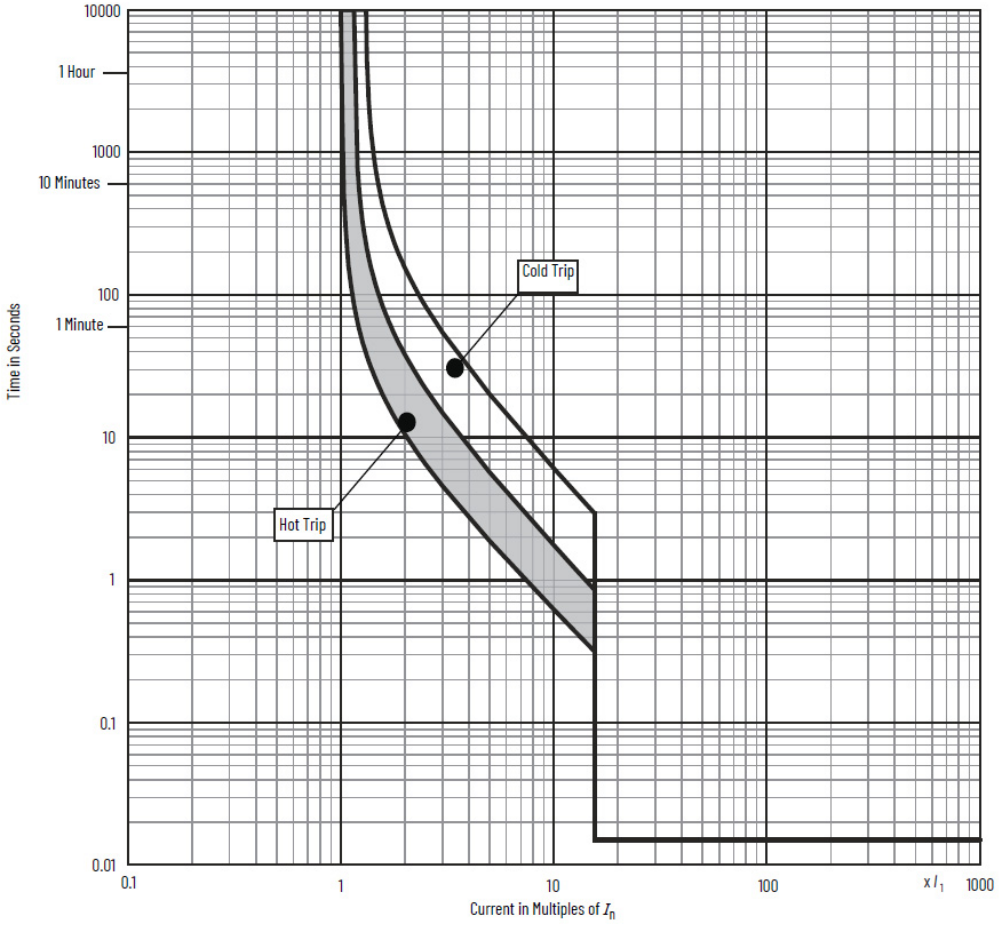
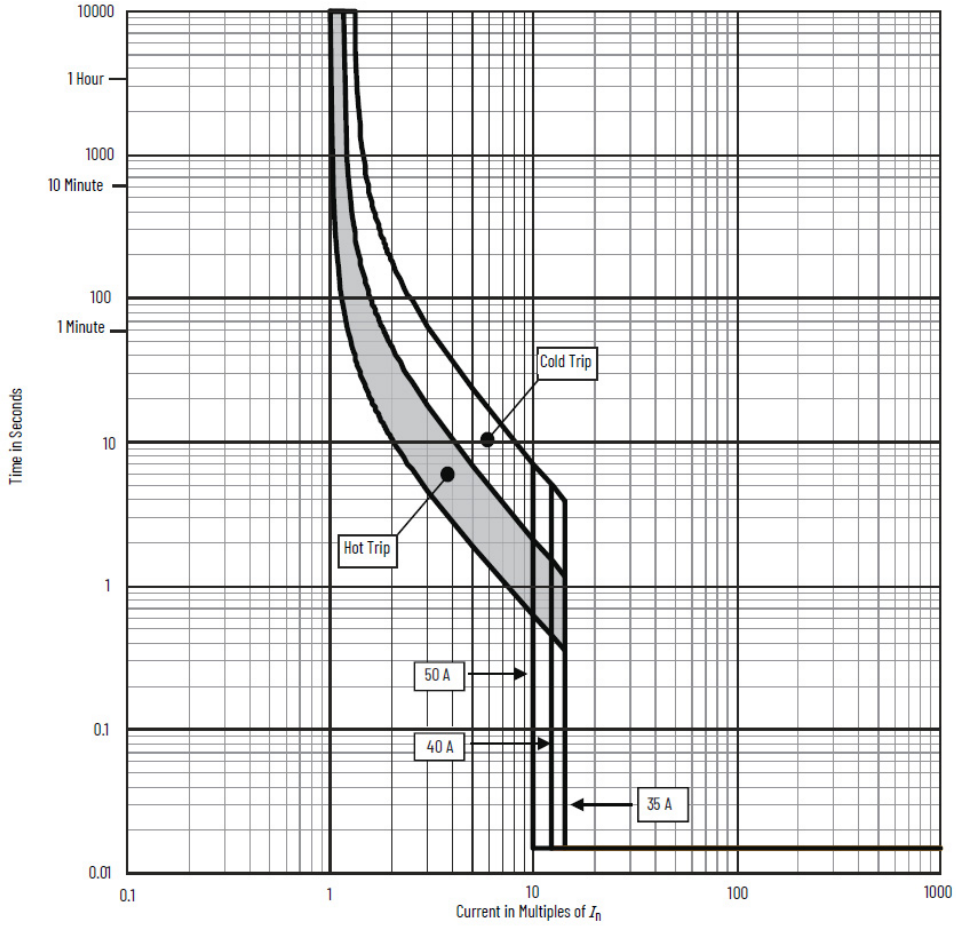


Figure 55 - Bulletin 140G Frame Size G: Time-current Curve

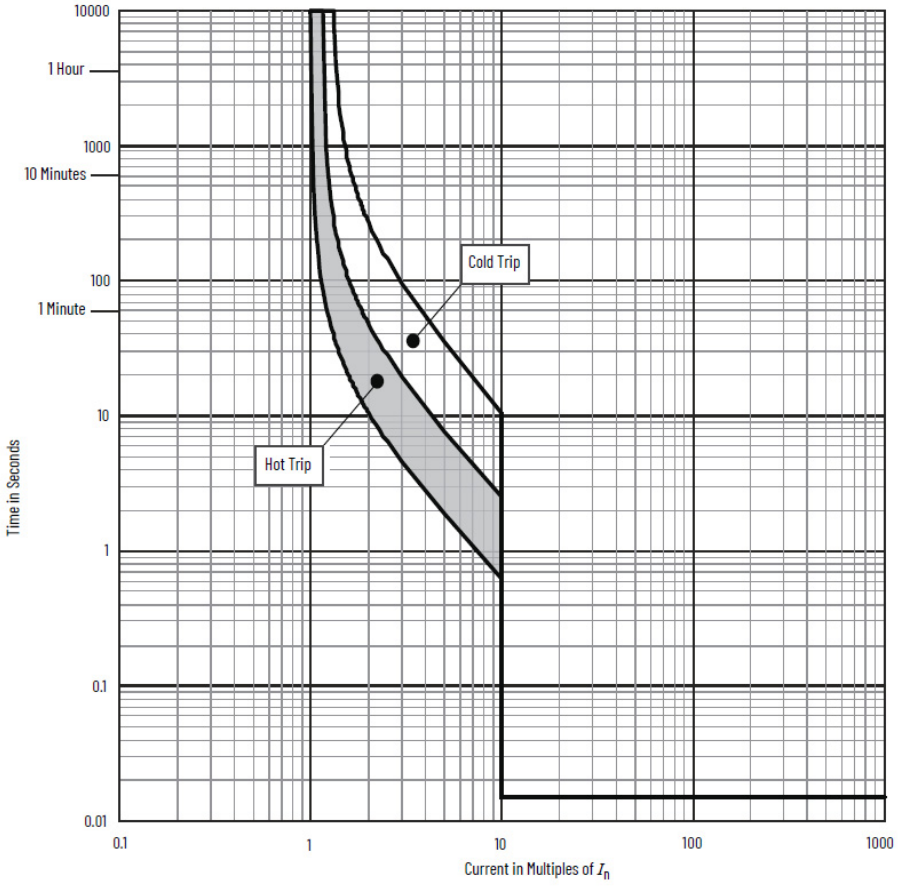
- Maximum voltage: 600Y/347V AC
- Maximum current: 35...50 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
35...50	500

Figure 56 - Bulletin 140G Frame Size G: Time-current Curve

- Maximum voltage: 600Y/347V AC
- Maximum current: 60...100 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
60	600
63	630
70	700
80	800
90	900
100	1000

Figure 57 - Bulletin 140G Frame Size G: Time-current Curve

- Maximum voltage: 600Y/347V AC
- Maximum current: 125 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

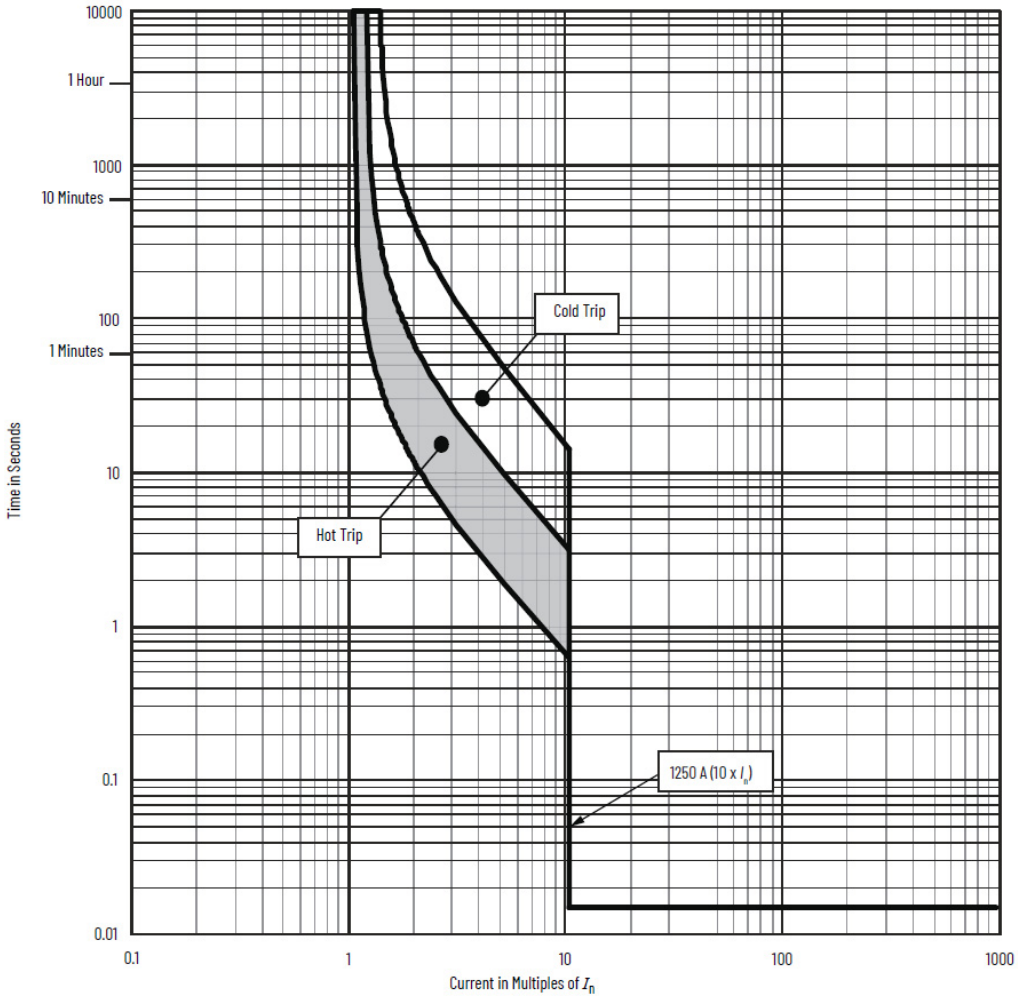
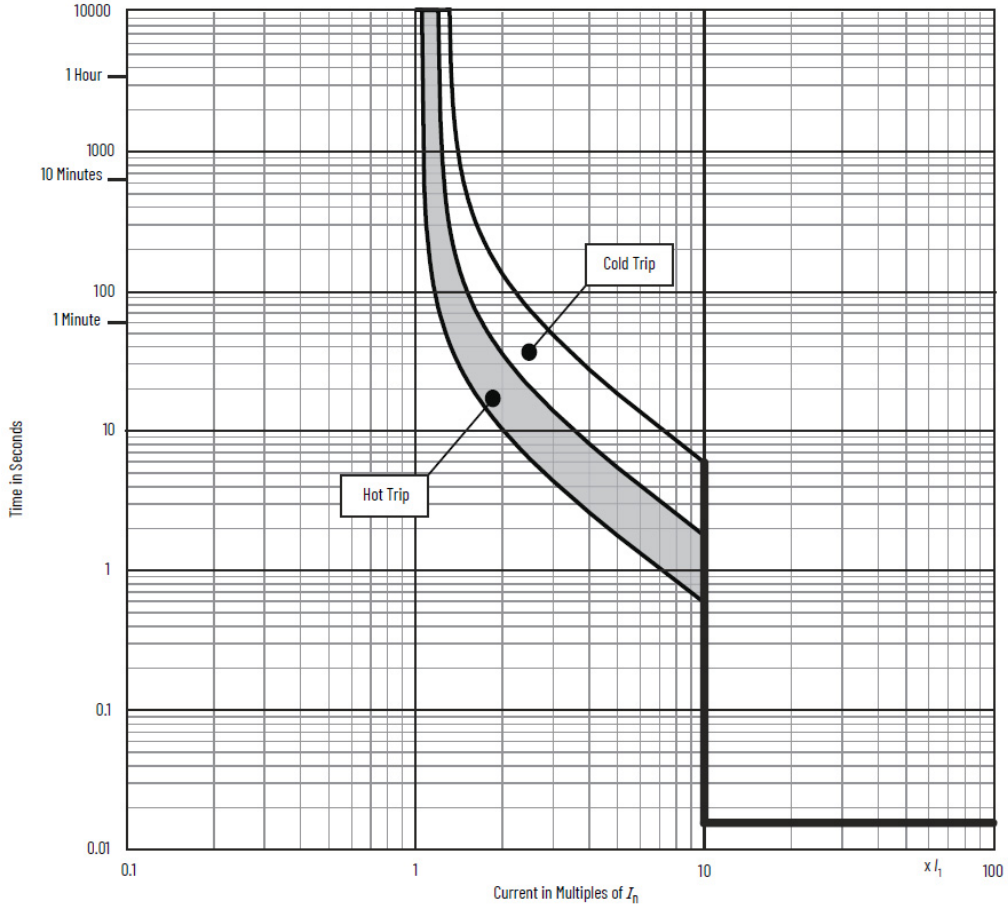


Figure 58 - Bulletin 140G Frame Size G: Time-current Curve

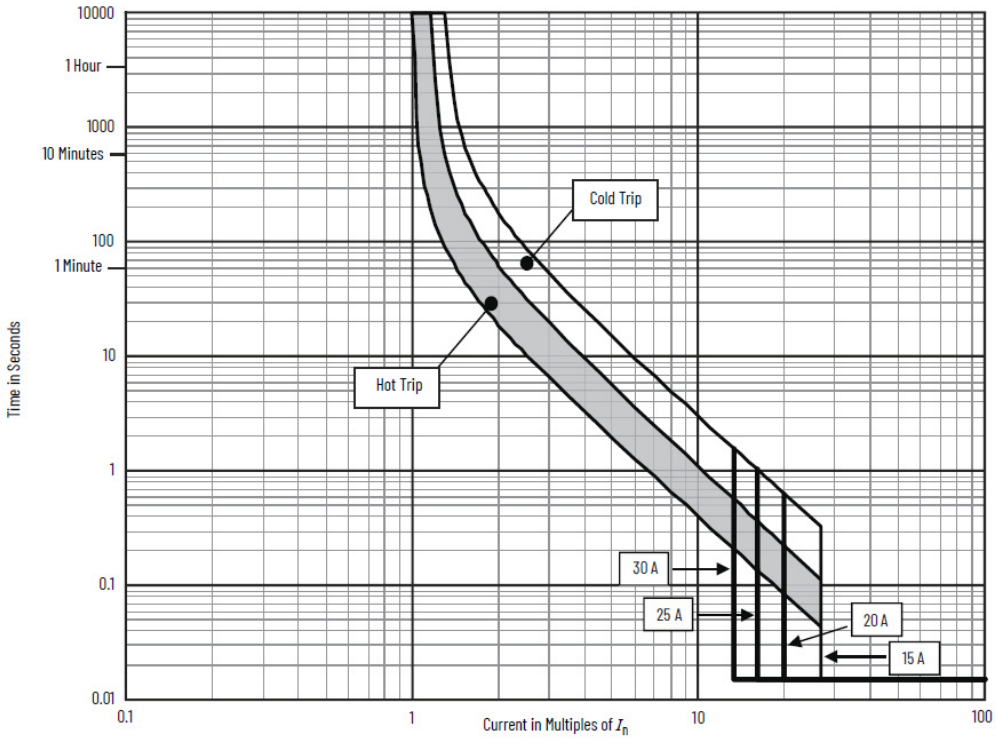
- Maximum voltage: 600Y/347V AC
- Maximum current: 160 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Bulletin 140G-H Frame Size Thermal-magnetic MCCB Trip Curves

Figure 59 - Bulletin 140G Frame Size H: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 15...30 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
15...30	400

Figure 60 - Bulletin 140G Frame Size H: Time-current Curve

- Maximum current: 32 A
- Instantaneous (magnetic) trip: 400 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

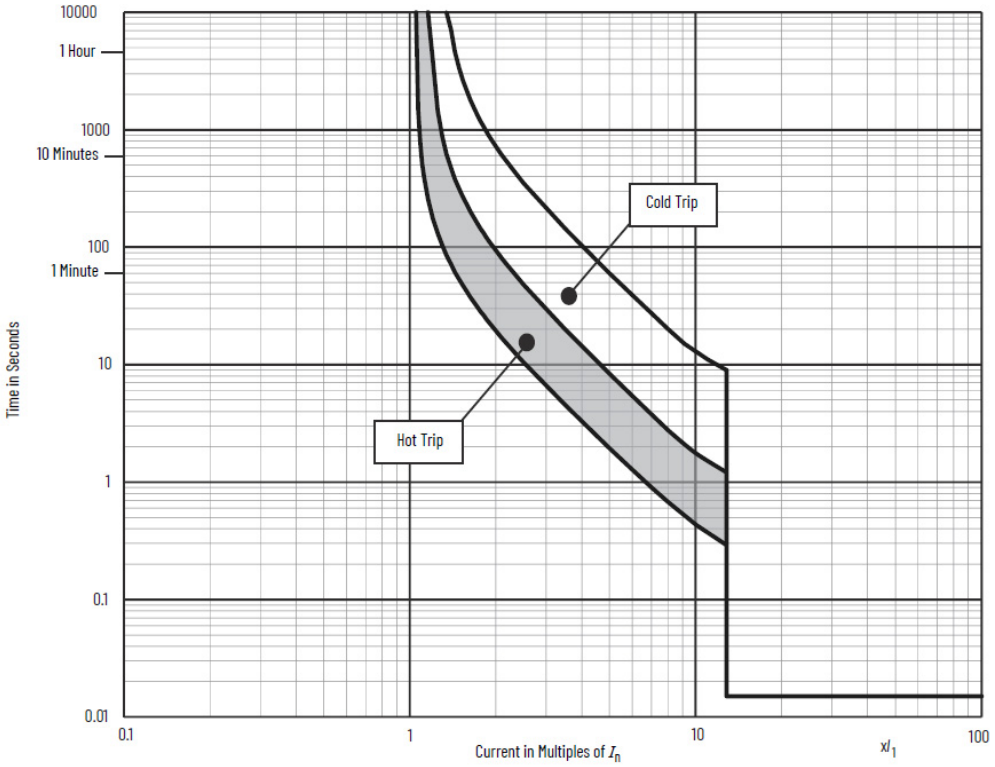
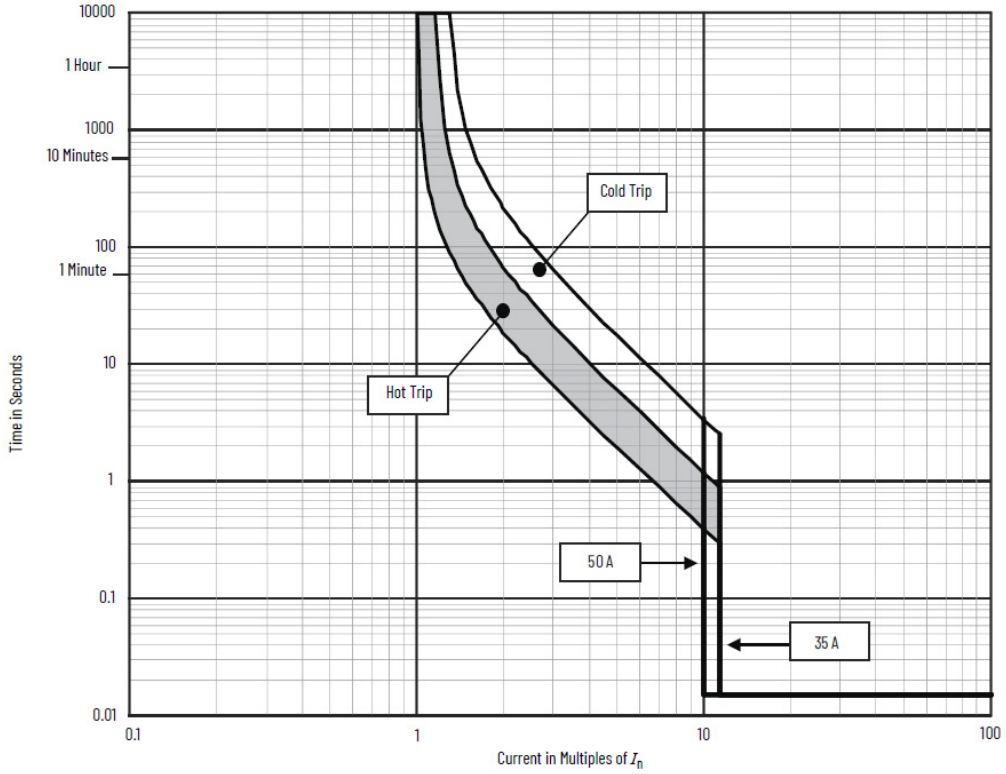


Figure 61 - Bulletin 140G Frame Size H: Time-current Curve

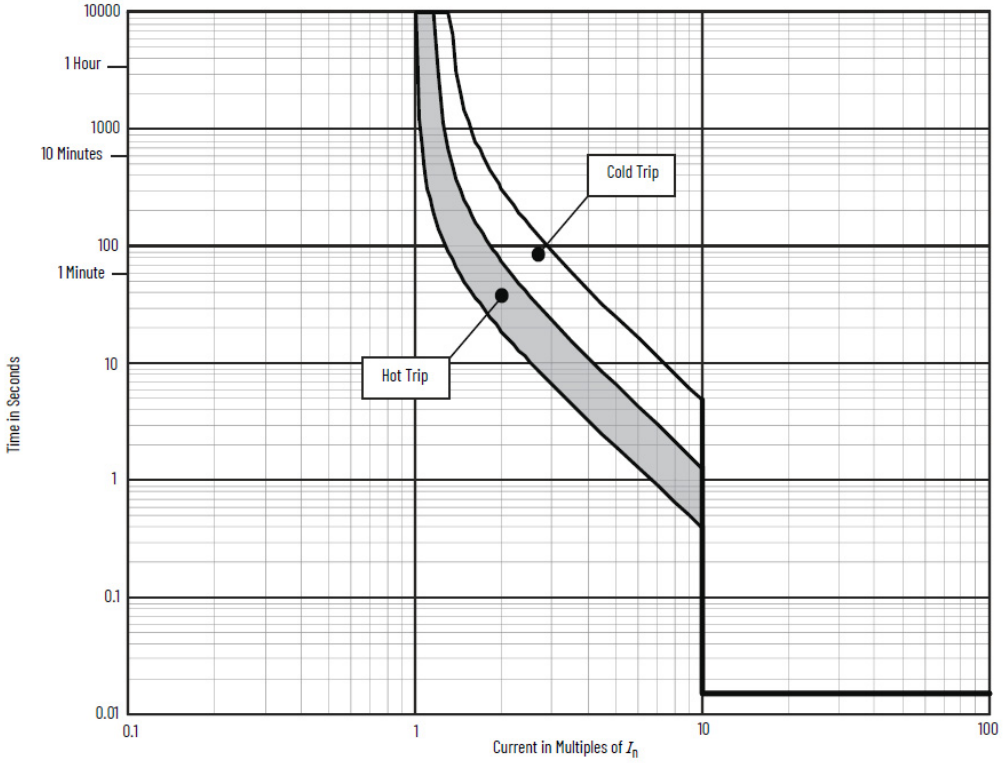
- Maximum voltage: 600V AC
- Maximum current: 35...50 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
35	400
40	400
50	500

Figure 62 - Bulletin 140G Frame Size H: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 60...70 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
60	600
63	630
70	700

Figure 63 - Bulletin 140G Frame Size H: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 80...100 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

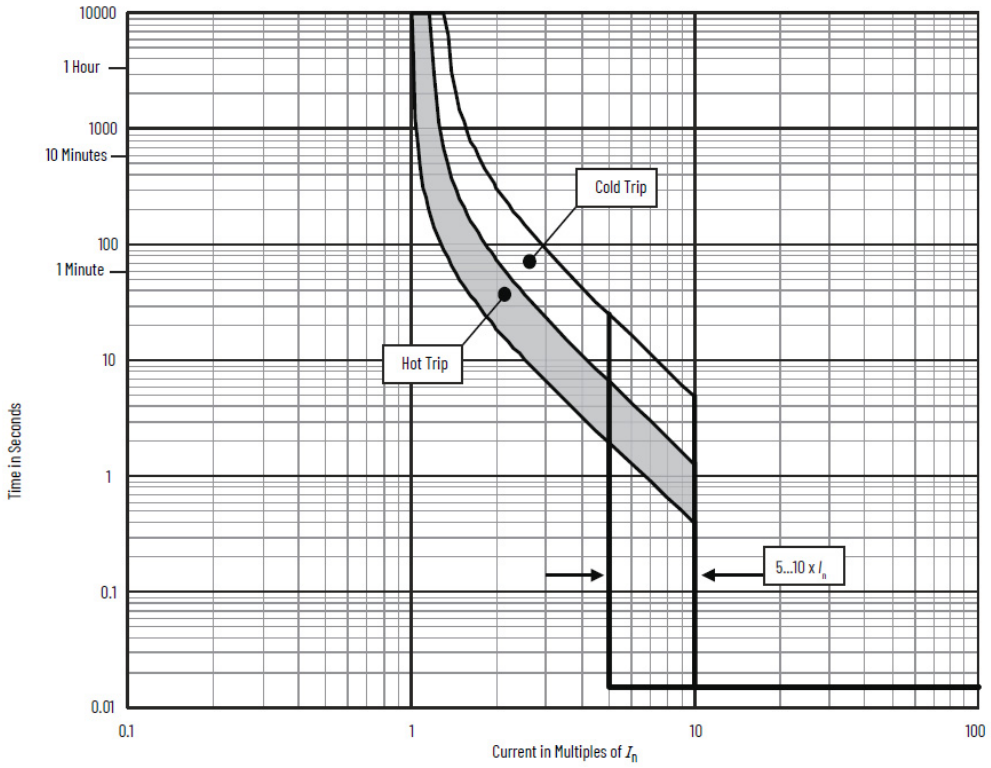


Figure 64 - Bulletin 140G Frame Size H: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 110...125 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

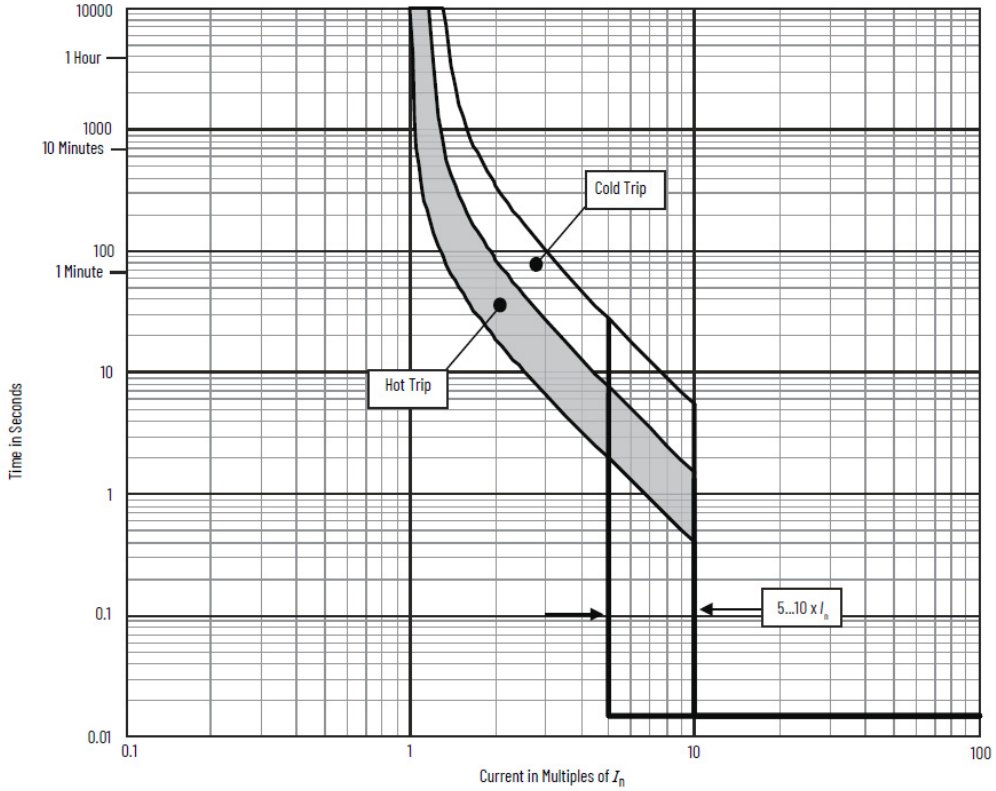
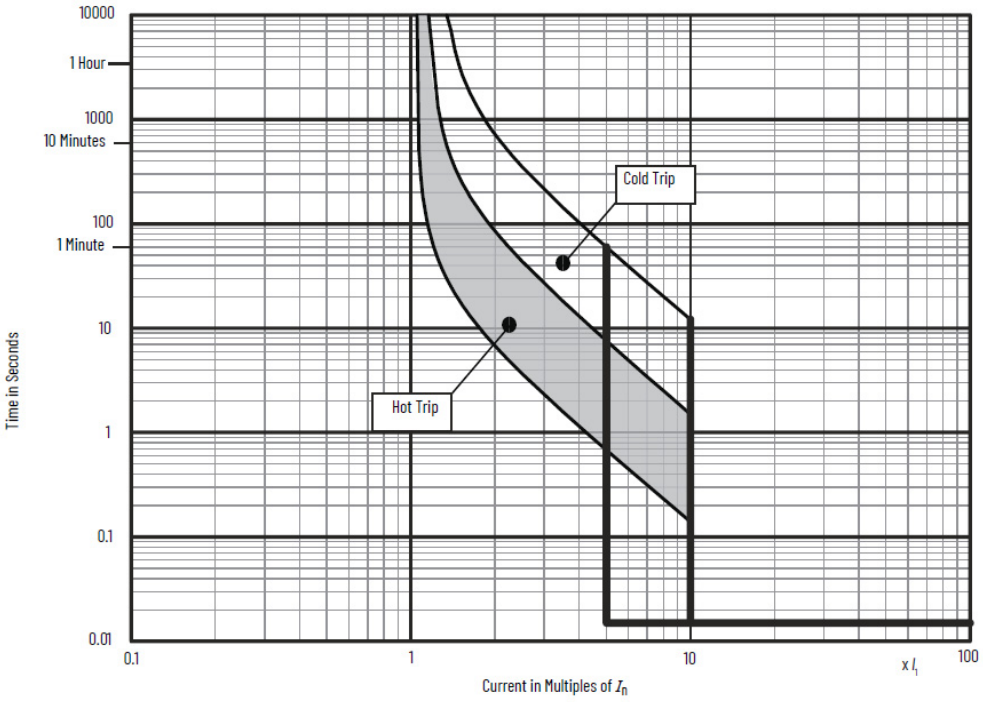


Figure 65 - Bulletin 140G Frame Size H: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 160 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Bulletin 140G Frame Size I Thermal-magnetic MCCB Trip Curves

Figure 66 - Bulletin 140G Frame Size I: Time-current Curve

- Maximum voltage: 600Y/347V AC
- Maximum current: 60...100 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

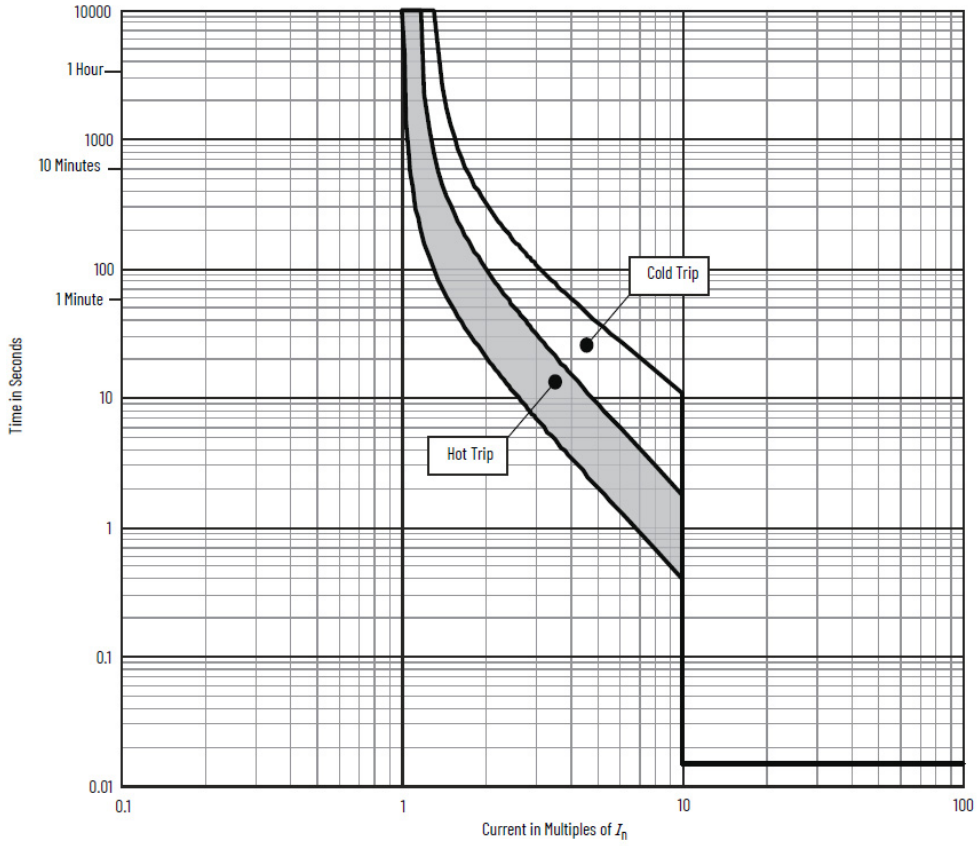


Figure 67 - Bulletin 140G-I Frame Size: Time-current Curve

- Maximum voltage: 600Y/347V AC
- Maximum current: 110...150 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

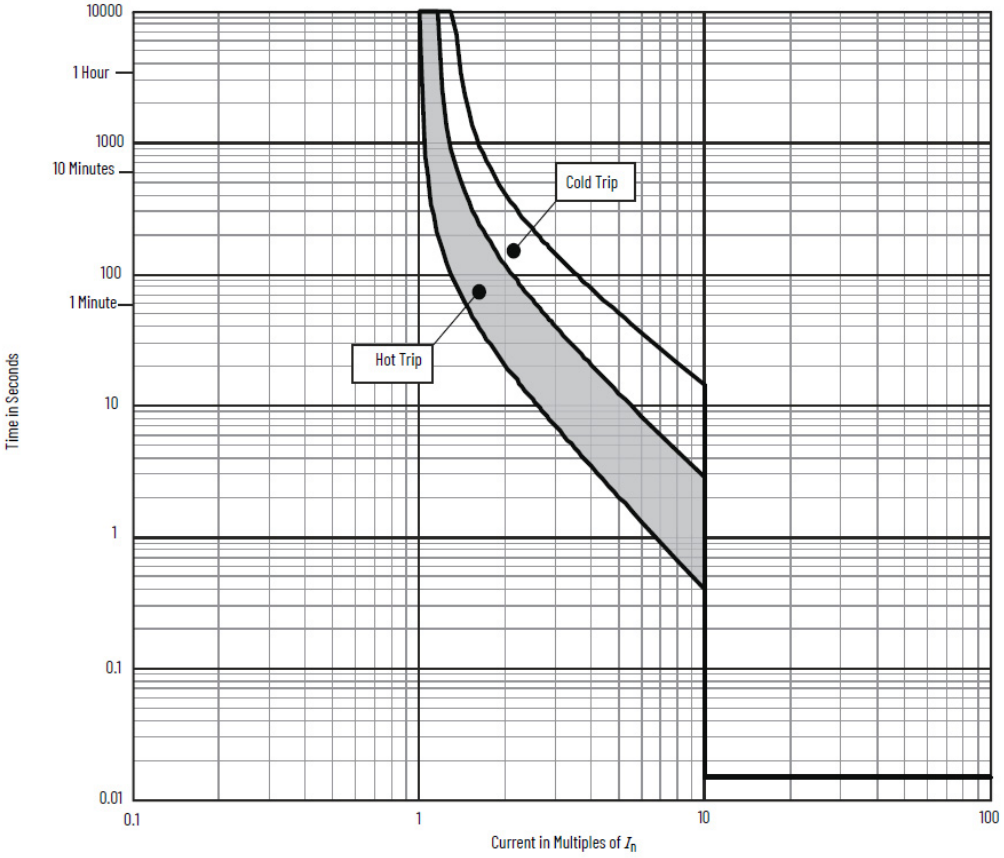
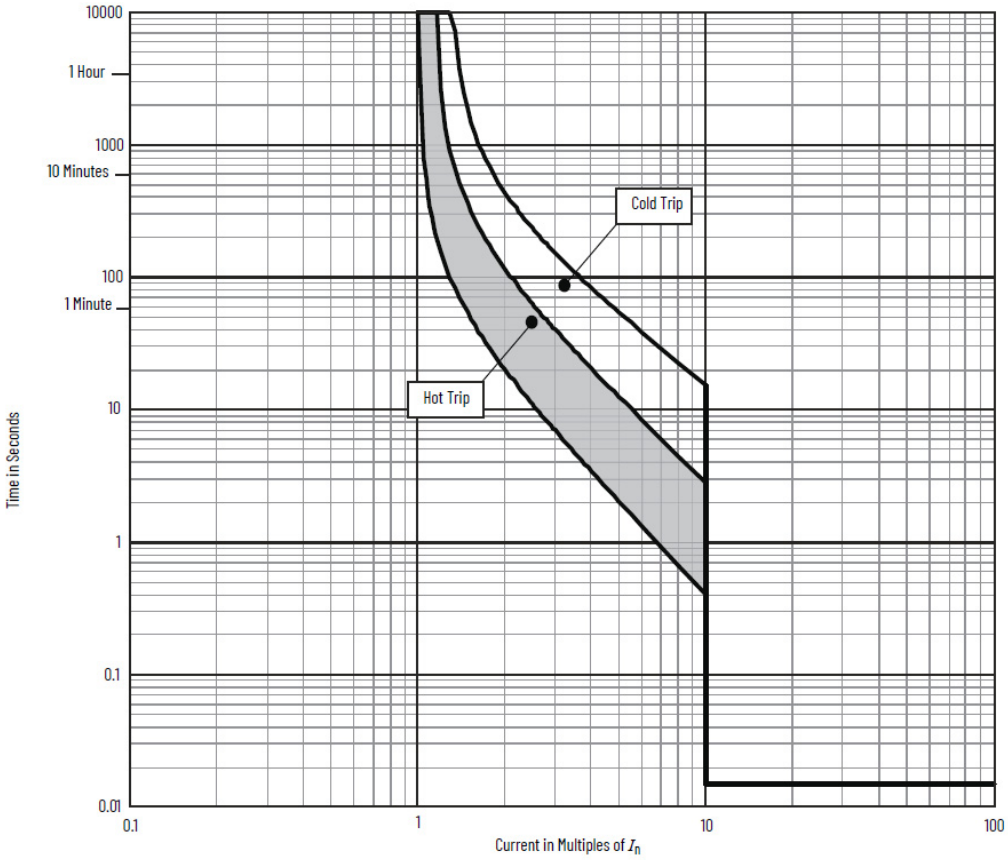


Figure 68 - Bulletin 140G Frame Size I: Time-current Curve

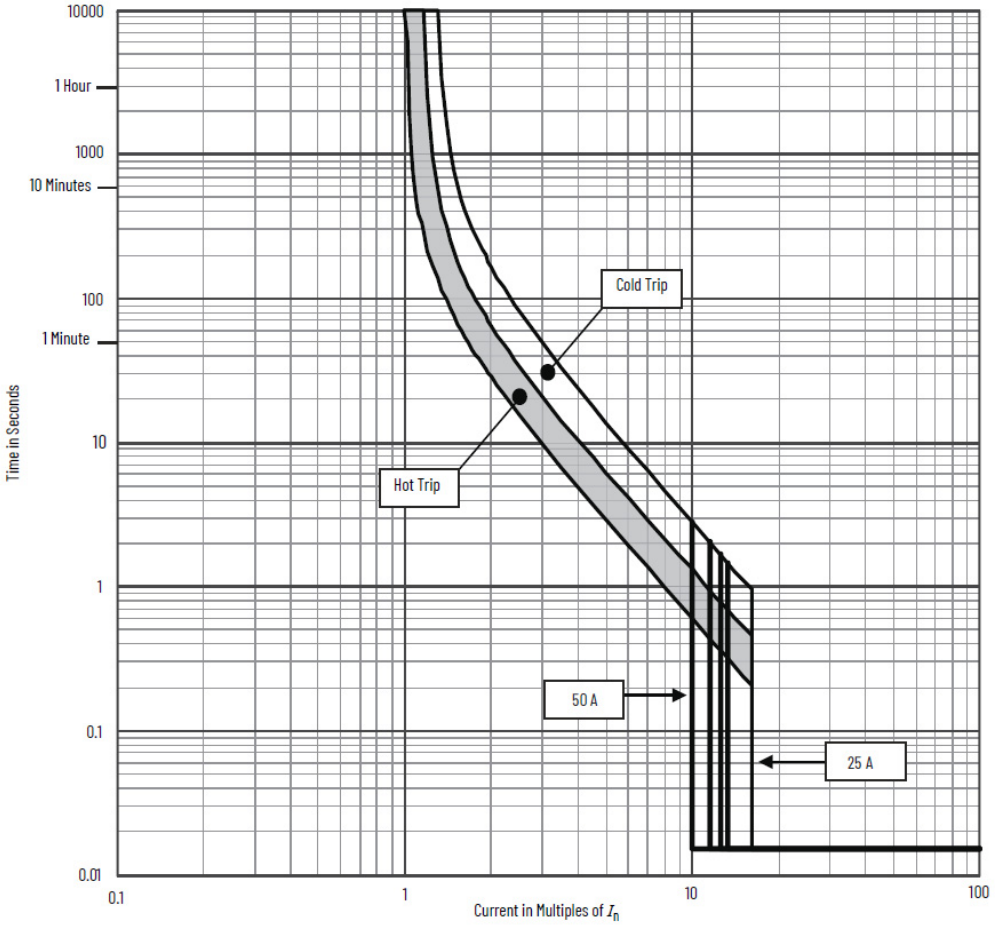
- Maximum voltage: 600Y/347V AC, 480V AC
- Maximum current: 160…225 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Bulletin 140G Frame Size J Thermal-magnetic MCCB Trip Curves

Figure 69 - Bulletin 140G Frame Size J: Time-current Curve

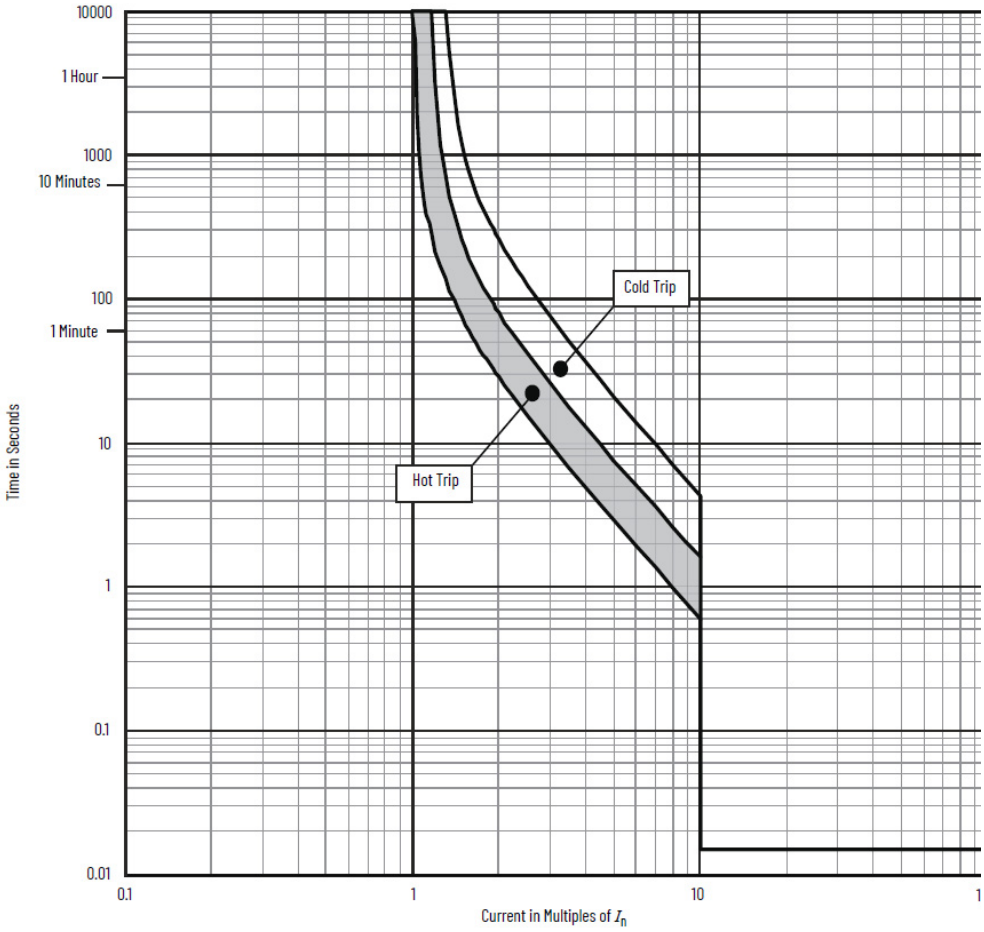
- Maximum voltage: 600V AC
- Maximum current: 25...50 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
25...40	400
50	500

Figure 70 - Bulletin 140G Frame Size J: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 60...70 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Current Ratings	
Rated Current I_n [A]	**Magnetic Trip I_m [A]**
60	600
63	630
70	700

Figure 71 - Bulletin 140G Frame Size J: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 80...100 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

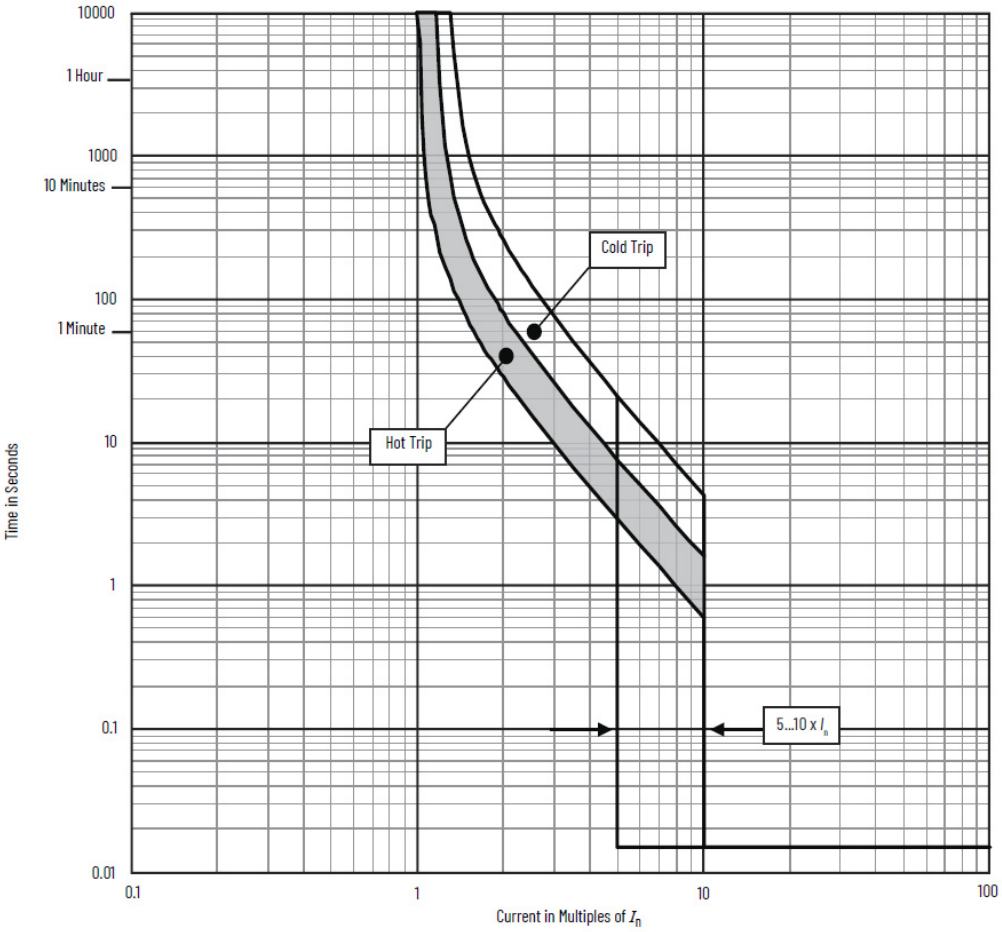


Figure 72 - Bulletin 140G Frame Size J: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 110...150 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

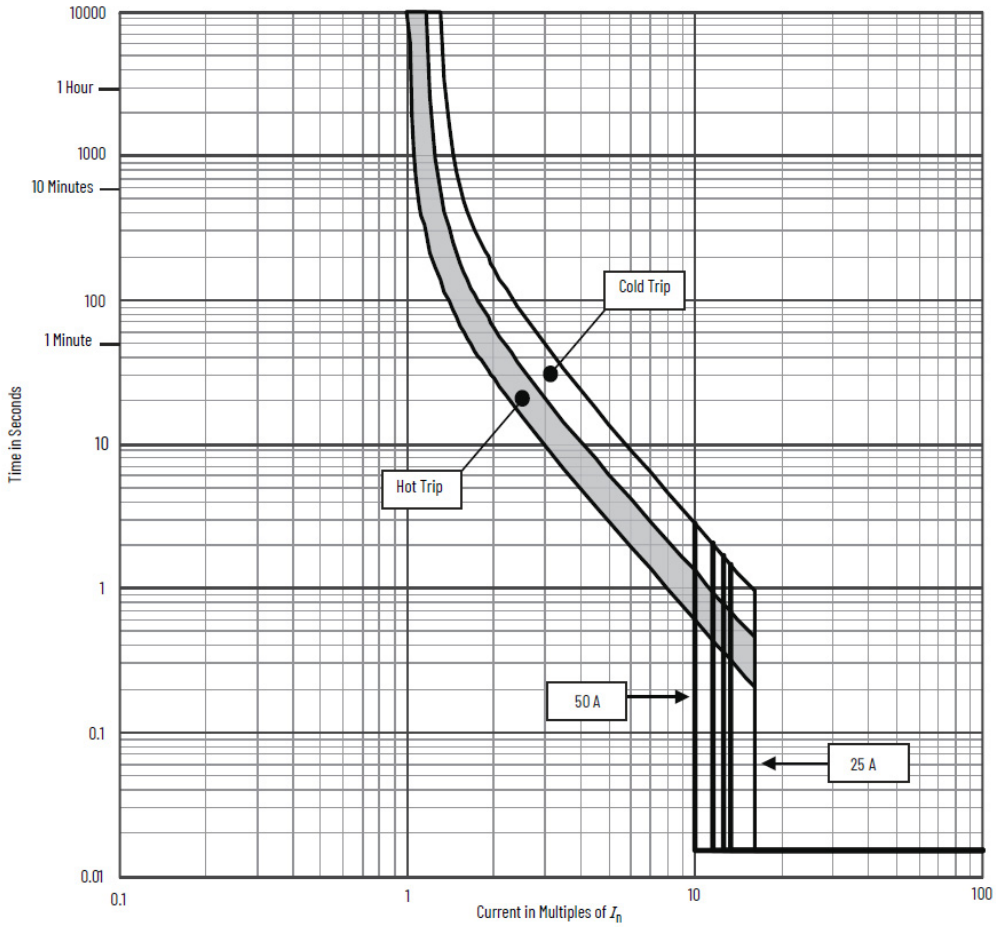


Figure 73 - Bulletin 140G Frame Size J: Time-current Curve

- Maximum voltage: 600V AC
- Maximum current: 160…225 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%

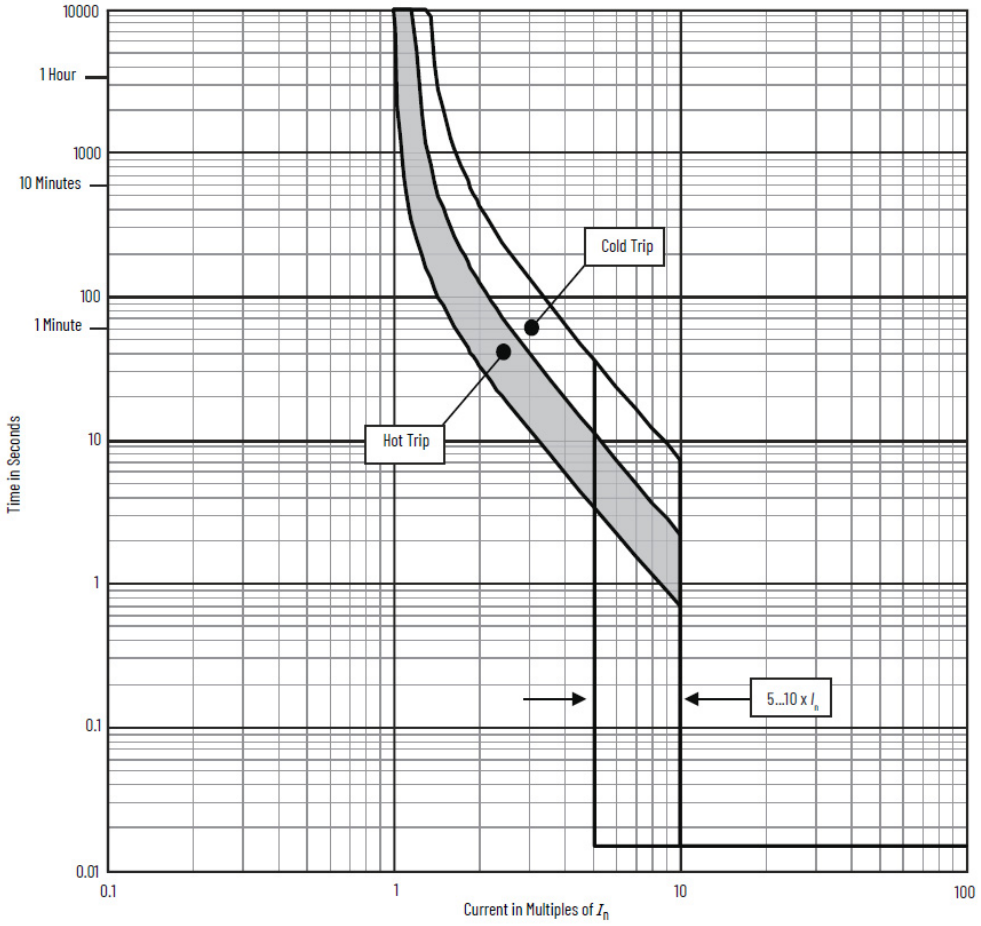
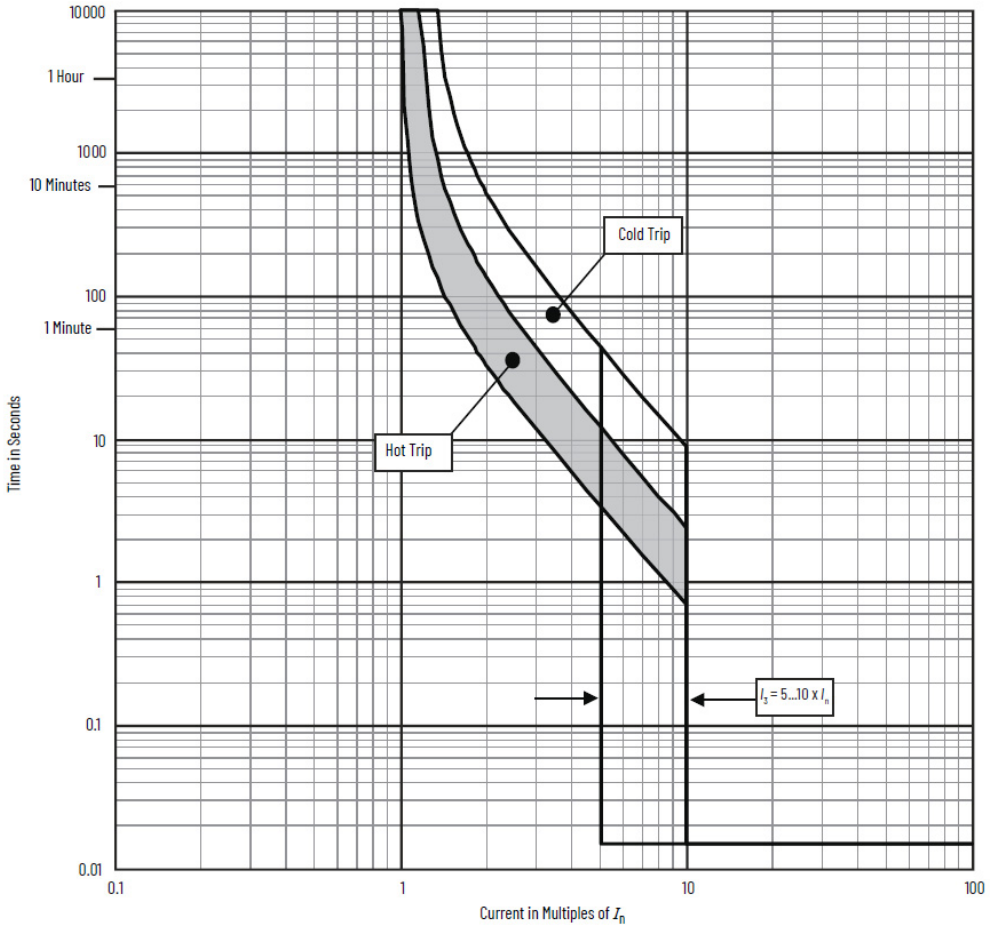


Figure 74 - Bulletin 140G Frame Size J: Time-current Curve

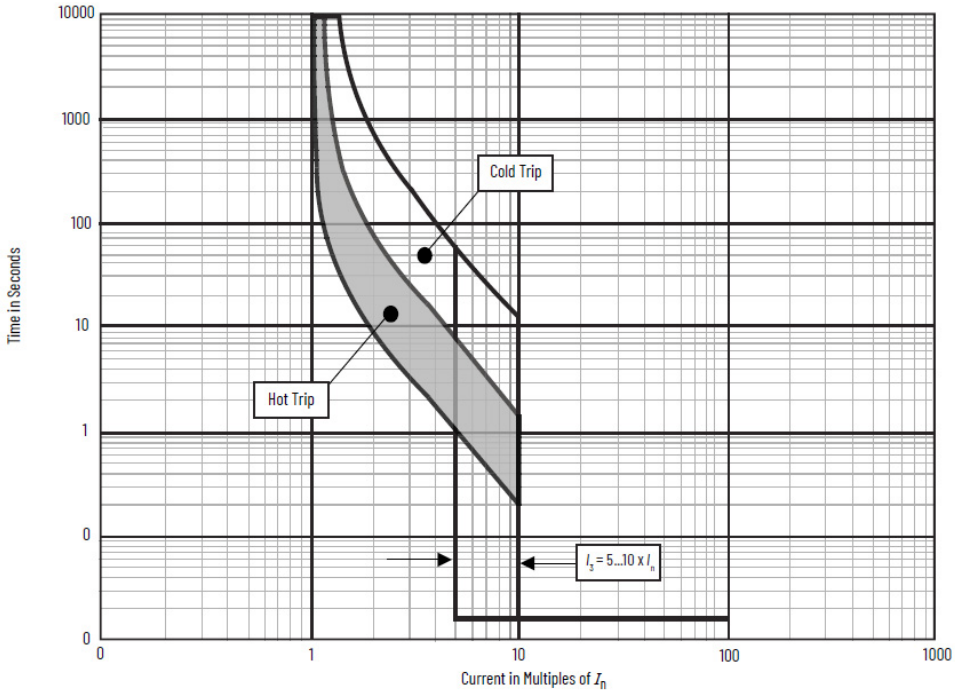
- Maximum voltage: 600V AC
- Maximum current: 250 A
- Instantaneous (magnetic) trip tolerance: -20%/+30%



Bulletin 140G2 Frame Size K Thermal-magnetic MCCB Trip Curves

Figure 75 - Bulletin 140G2 Frame Size K: Time Current Curve

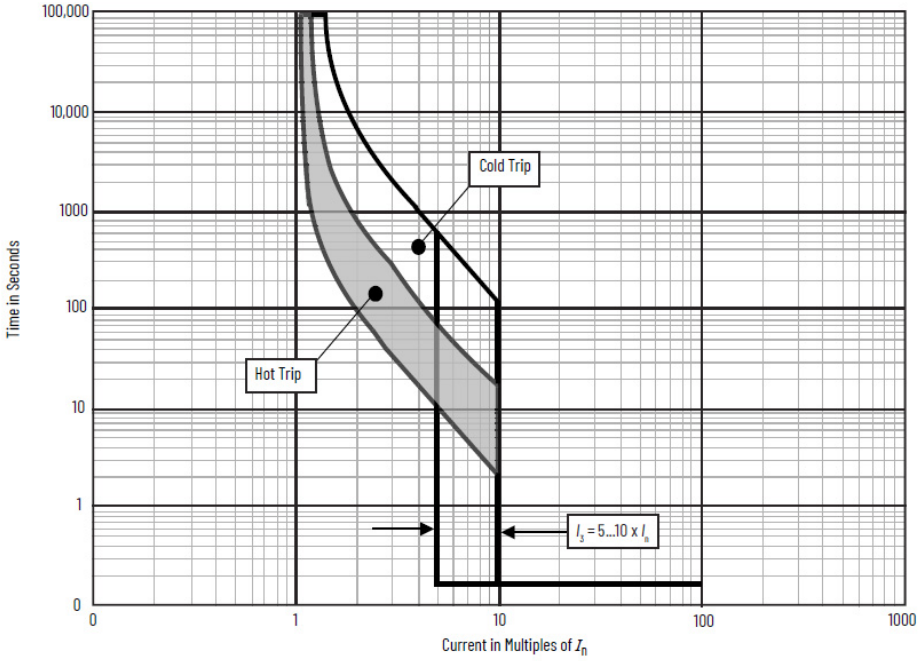
- For thermal-magnetic 300 A and 400 A Frame Size L



Bulletin 140G2 Frame Size L Thermal-magnetic MCCB Trip Curves

Figure 76 - Bulletin 140G2 Frame Size L: Time Current Curve

- For thermal-magnetic 500 A, 600A, and 630 A L frame

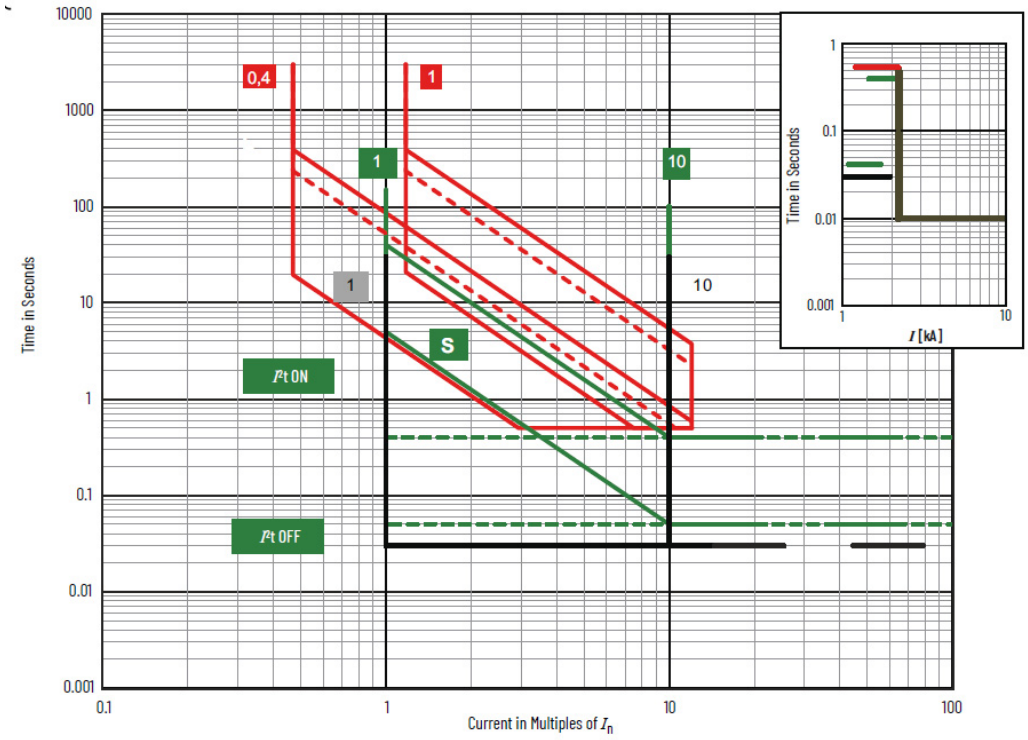


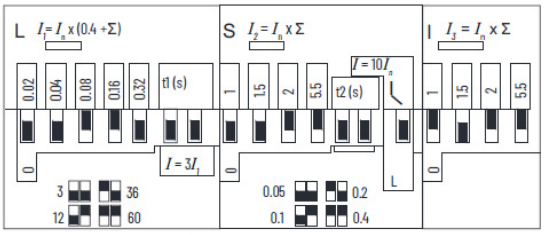
Bulletin 140G Electronic DIP MCCB Trip Curves

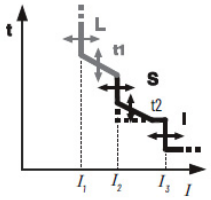
Bulletin 140G Frame Size H Electronic DIP MCCB Trip Curves

Figure 77 - Bulletin 140G Frame Size H Electronic DIP MCCB Trip Unit: Time Current Curve

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 25 A, 60 A, 100 A, 125 A
- Electronic trip unit. Long delay response, short delay with I^2t response, and instantaneous curve







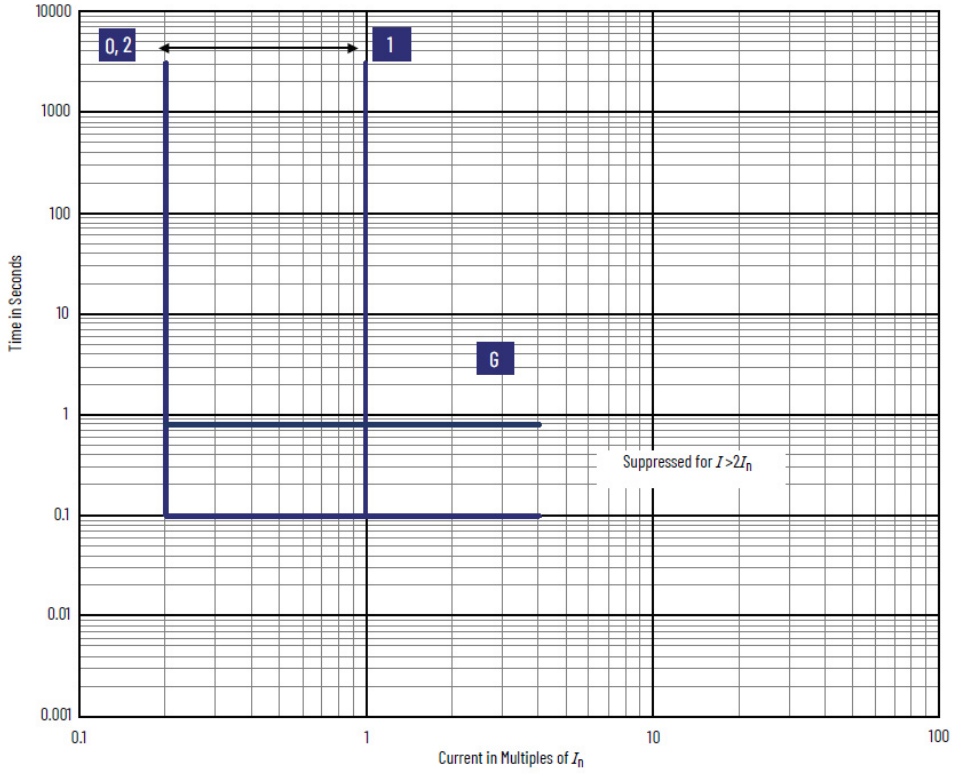
Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
L	1.05 ≤ x I_1 ≤ 1.25	± 20%
S	± 10%	± 20%
I	± 15%	≤ 60 ms
Others	± 20%	–

Notes:

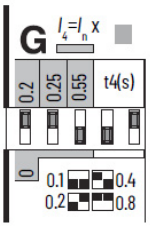
1. Curve accuracy applies from -20...+55 °C (-4...+131 °F) ambient temperature. For possible continuous ampere derating for ambient temperature above 40 °C (104 °F), consult your local Rockwell Automation sales office or Allen-Bradley distributor.
2. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
3. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
4. For high fault current levels, an additional fixed instantaneous hardware override is provided at 10.5 x I_n.

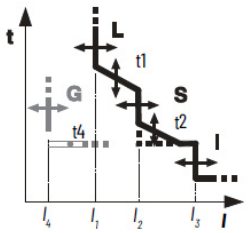
Figure 78 - Bulletin 140G Frame Size H Electronic DIP MCCB Trip Unit: Ground Fault Protection Curve for LSIG MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 25 A, 60 A, 100 A, 125 A



Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
G	± 10%	± 20%



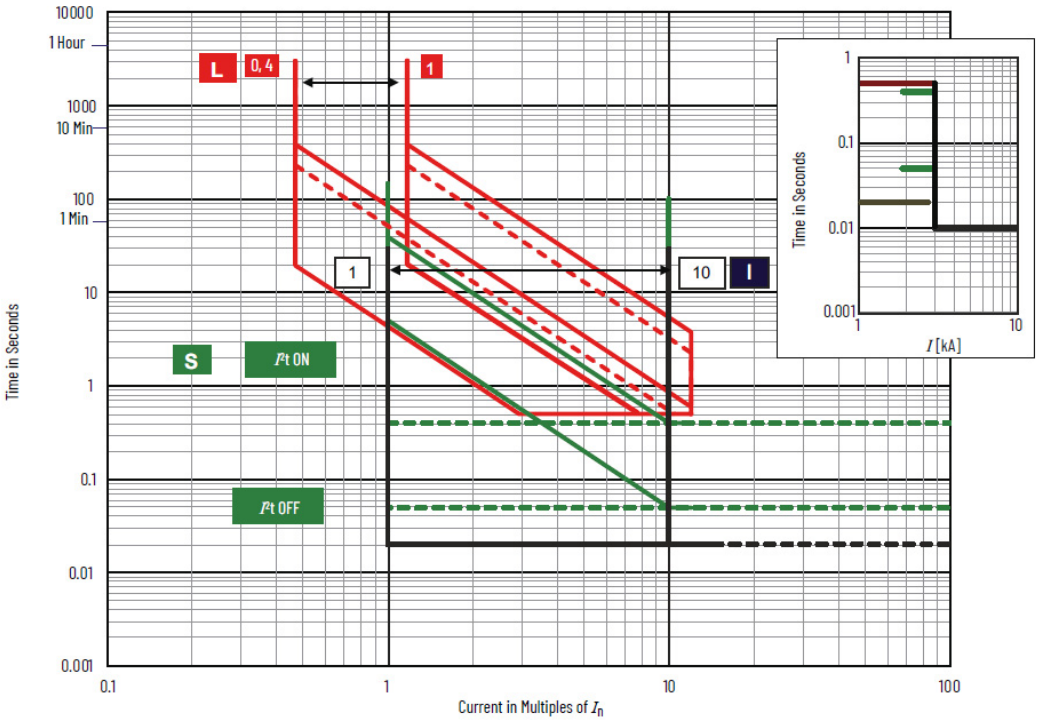


Ground Fault Current Ratings							
I_n [A]	I_4 [I_n]						
	0.2	**0.25**	**0.45**	**0.55**	**0.75**	**0.8**	**1**
25	5	6.25	11.3	13.8	18.8	20	25
60	12	15	27	33	45	48	60
100	20	25	45	55	75	80	100
125	25	31.3	56.3	68.8	93.8	100	125
160 (IEC only)	32	40	75	88	120	128	160

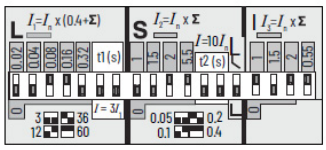
Bulletin 140G Frame Size J Electronic DIP MCCB Trip Curves

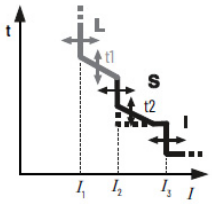
Figure 79 - Bulletin 140G Frame Size J Electronic DIP MCCB Trip Unit: Time-current Curve

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 40 A; 60 A; 100 A; 150 A; 250 A
- Electronic trip unit. Long delay response, short delay with I^2t response, and instantaneous curve



Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
L	$1.05 \le x\ I_1 \le 1.25$	± 20%
S	± 10%	± 20%
I	± 15%	≤ 60 ms
Others	± 20%	



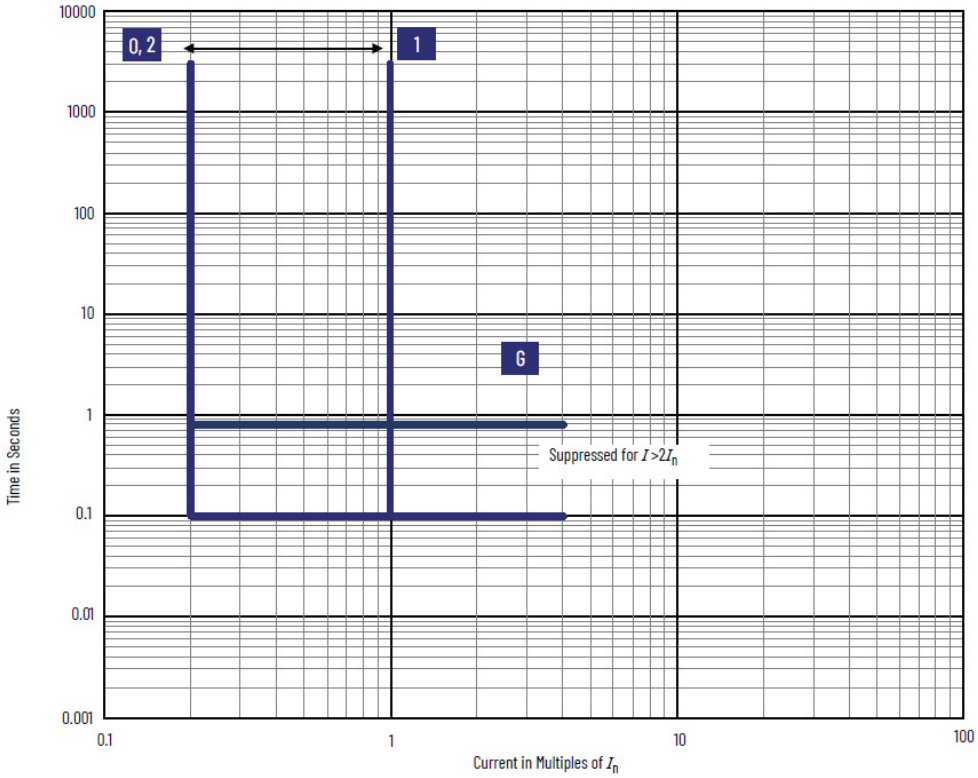


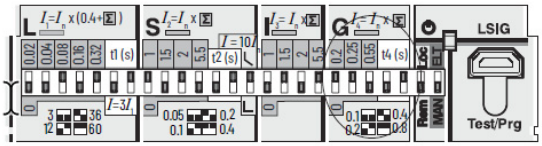
Notes:

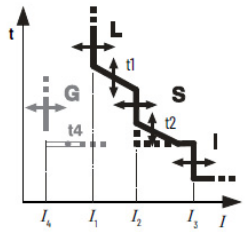
1. Curve accuracy applies from -20...+55 °C (-4...+131 °F) ambient temperature. For possible continuous ampere derating for ambient temperature above 40 °C (104 °F), consult your local Rockwell Automation sales office or Allen-Bradley distributor.
2. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
3. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
4. For high fault current levels, an additional fixed instantaneous hardware override is provided at 10.5 x I_n.

Figure 80 - Bulletin 140G Frame Size J Electronic DIP MCCB Trip Unit: Ground Fault Protection Curve for LSIG MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 40 A, 60 A, 100 A, 150 A, 250 A







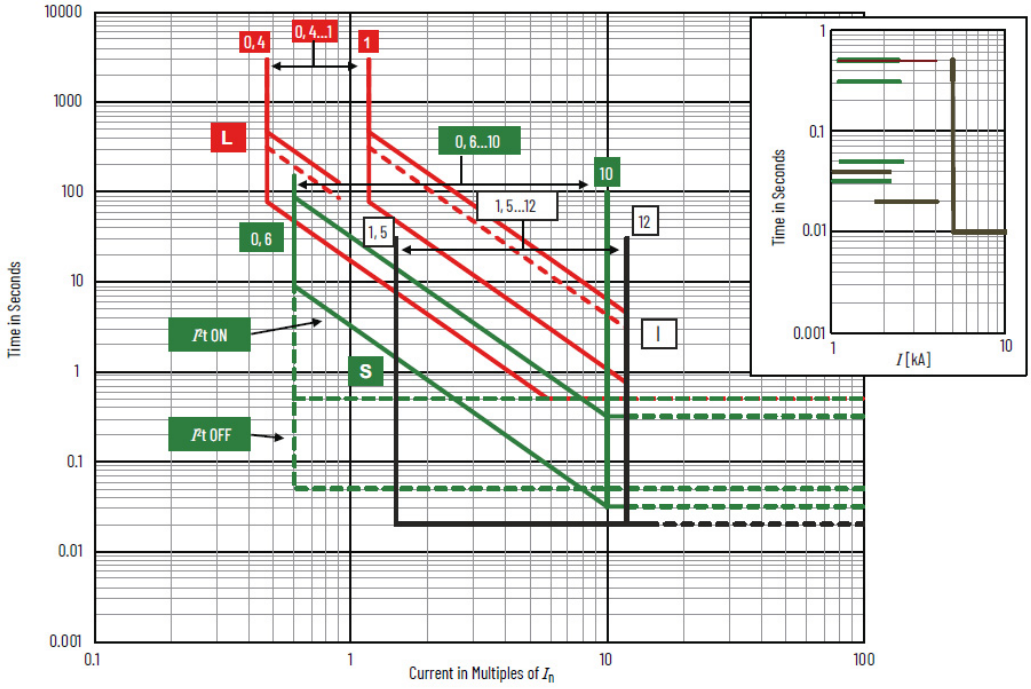
Example:
- I_n = 100 A
- I_4 = 100 x (0.2 + 0.25) = 45 A
- t_4 = 0.2 s at $I > I_4$

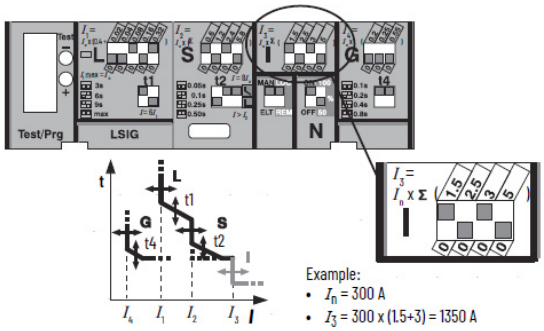
Ground Fault Current Ratings							
I_n [A]	I_4 [I_n]						
	0.2	0.25	0.45	0.55	0.75	0.8	1
25	8	10	18	22	30	32	40
60	12	15	27	33	45	48	60
100	20	25	45	55	75	80	100
150	30	37.5	67.5	82.5	113	120	150
250	50	62.5	113	138	188	200	250

Bulletin 140G2 Frame Size K Electronic DIP MCCB Trip Curves

Figure 81 - Bulletin 140G2 Frame Size K Electronic DIP MCCB Trip Unit: Time-current Curve

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 300 A; 400 A
- Electronic trip unit. Long delay response, short delay with I^2t response, and instantaneous curve





Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
L	$1.05 \le x\ I_1 \le 1.25$	± 20%
S	± 10%	± 20%
I	± 15%	≤ 60 ms
Others	± 20%	–

Notes:

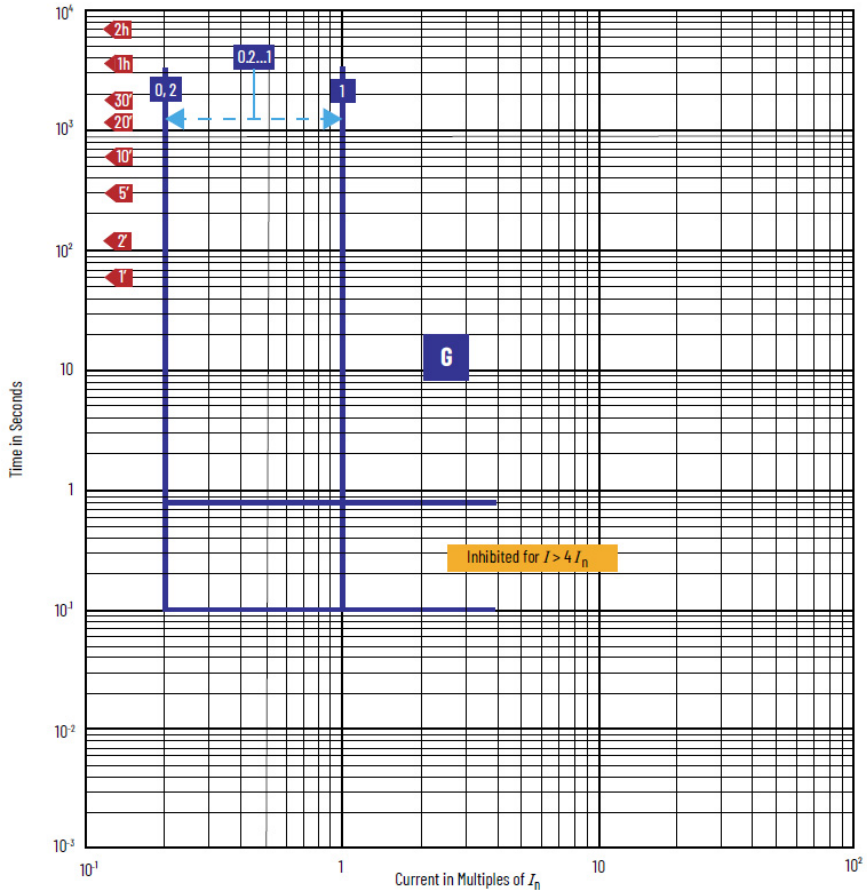
1. Curve accuracy applies from -20...+55 °C (-4...+131 °F) ambient temperature. For possible continuous ampere derating for ambient temperature above 40 °C (104 °F), consult your local Rockwell Automation sales office or Allen-Bradley distributor.

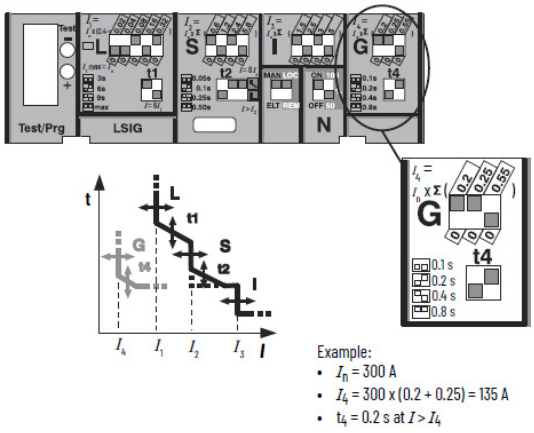
Current Ratings

I_n [A]	I_3 (I_n)														
	1.5	**2.5**	**3**	**4**	**4.5**	**5**	**5.5**	**6.5**	**7**	**7.5**	**8**	**9**	**9.5**	**10.5**	**12**
300	450	750	900	1200	1350	1500	1650	1950	2100	2250	2400	2700	2850	3150	3600
400	600	1000	1200	1600	1800	2000	2200	2600	2800	3000	3200	3600	3800	4200	4800

Figure 82 - Bulletin 140G2 Frame Size K Electronic DIP MCCB Trip Unit: Ground Fault Protection Curve for LSIG MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 300 A, 400 A



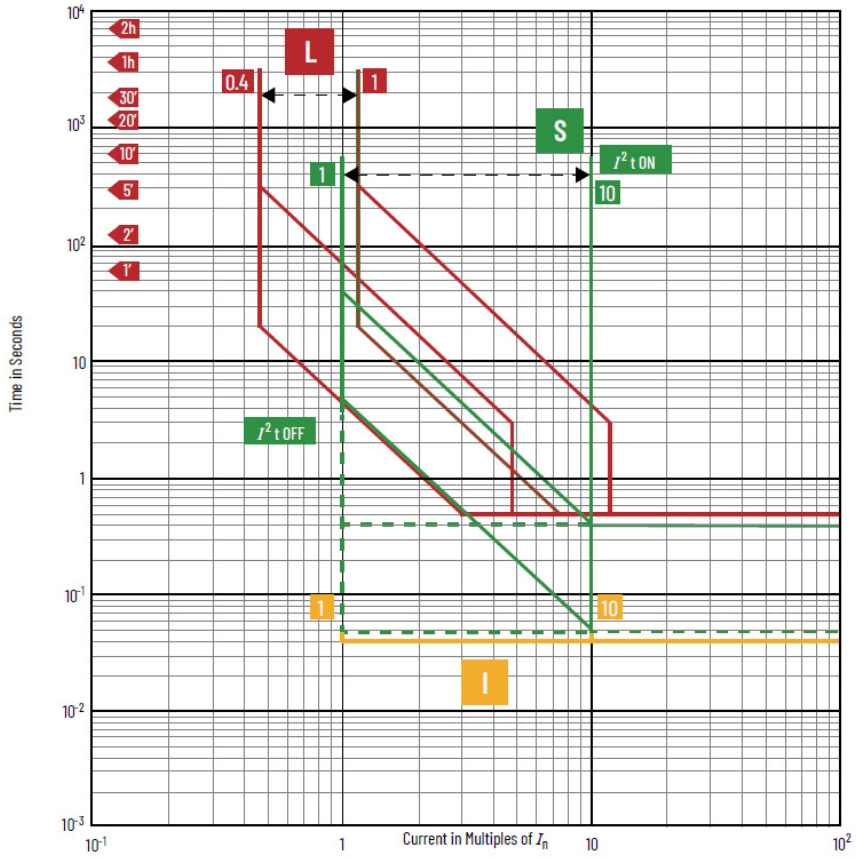


Ground Fault Current Ratings							
I_n [A]	I_4 [I_n]						
	0.2	0.25	0.45	0.55	0.75	0.8	1
300	60	75	135	165	225	240	300
400	80	100	180	220	300	320	400

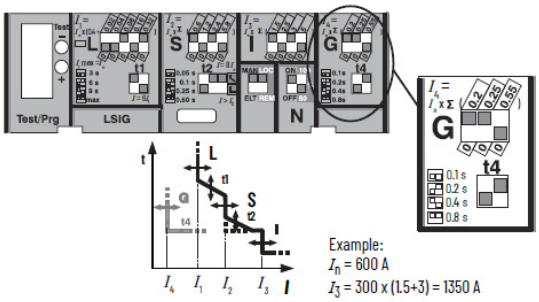
Bulletin 140G2 Frame Size L Electronic DIP MCCB Trip Curves

Figure 83 - Bulletin 140G2 Frame Size L Electronic DIP MCCB Trip Unit: Time-current Curve

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 600 A
- Electronic trip unit. Long delay response, short delay with I^2t response, and instantaneous curve



Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
L	1.05 ≤ x I_1 ≤ 1.25	± 20%
S	± 10%	± 20%
I	± 15%	≤ 60 ms
Others	± 20%	–

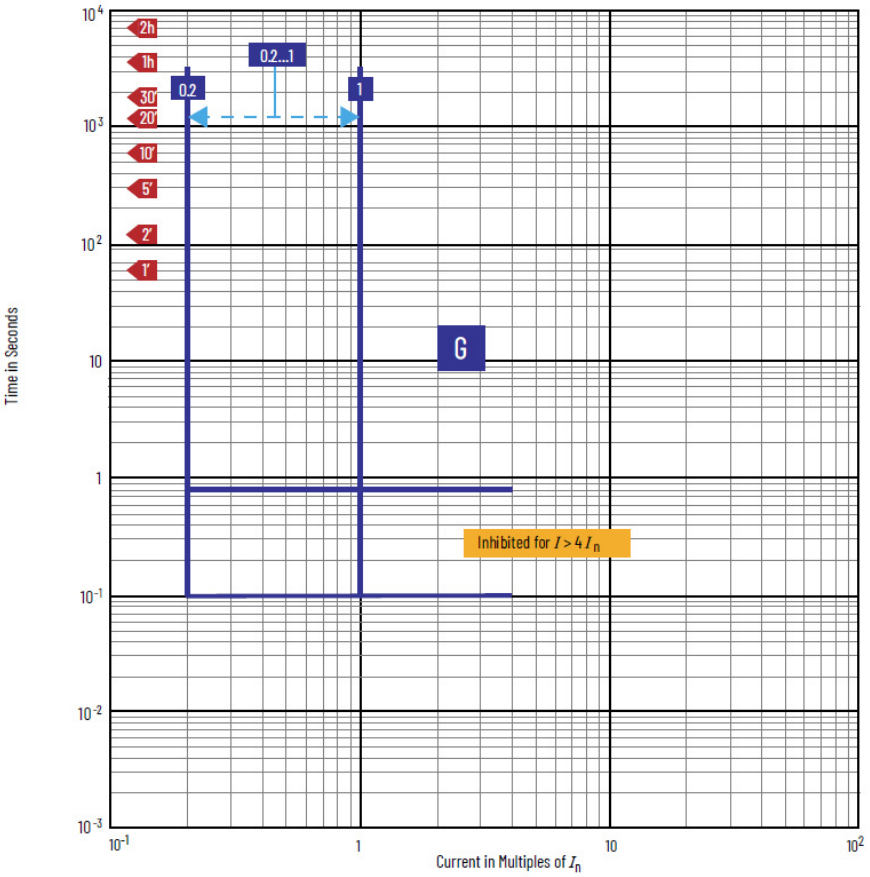


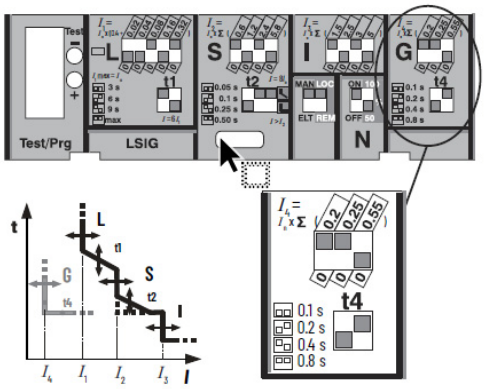
Notes:

1. Curve accuracy applies from -20...+55 °C (-4...+131 °F) ambient temperature. For possible continuous ampere derating for ambient temperature above 40 °C (104 °F), consult your local Rockwell Automation sales office or Allen-Bradley distributor.
2. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
3. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
4. For high fault current levels, an additional fixed instantaneous hardware override is provided at 10.5 x I_n.

Figure 84 - Bulletin 140G2 Frame Size L Electronic DIP MCCB Trip Unit: Ground Fault Protection Curve for LSIG MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 600 A





Example:

- I_n = 100 A
- I_4 = 100 x (0.2 + 0.25) = 45 A
- t_4 = 0.2 s at $I > I_4$

Bulletin 140G Electronic Sense MCCB Time Current Curves

Figure 85 - Bulletin 140G Frame Size H Electronic Sense MCCB Trip Unit: Time-current Curve

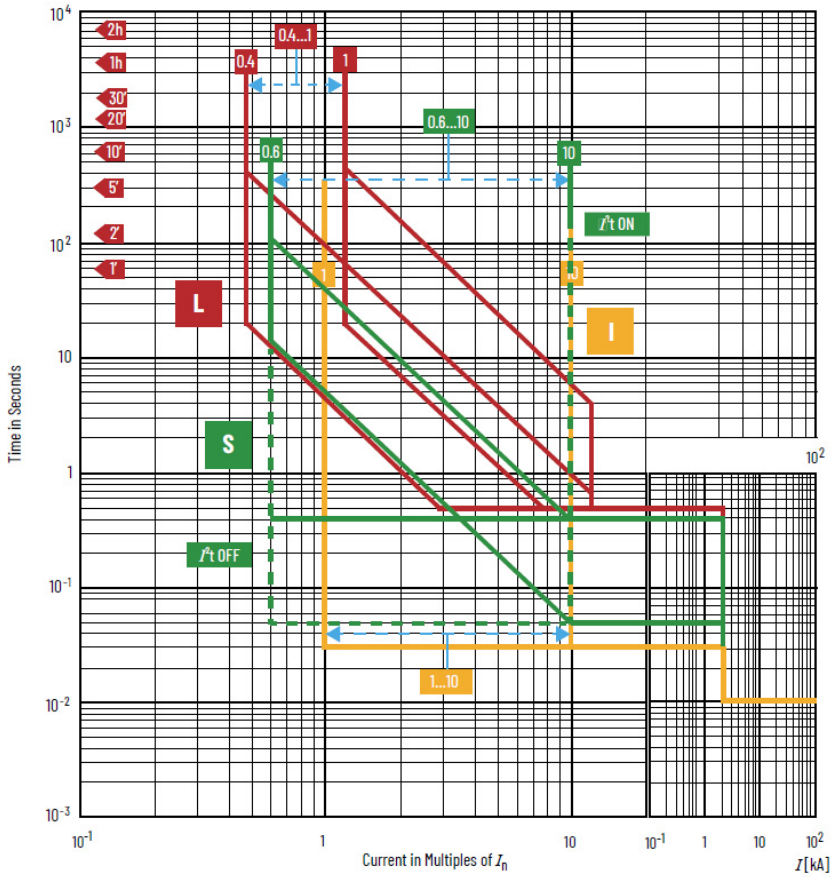


Figure 86 - Bulletin 140G Frame Size H Electronic Sense MCCB Trip Unit: Ground Fault Protection Curve

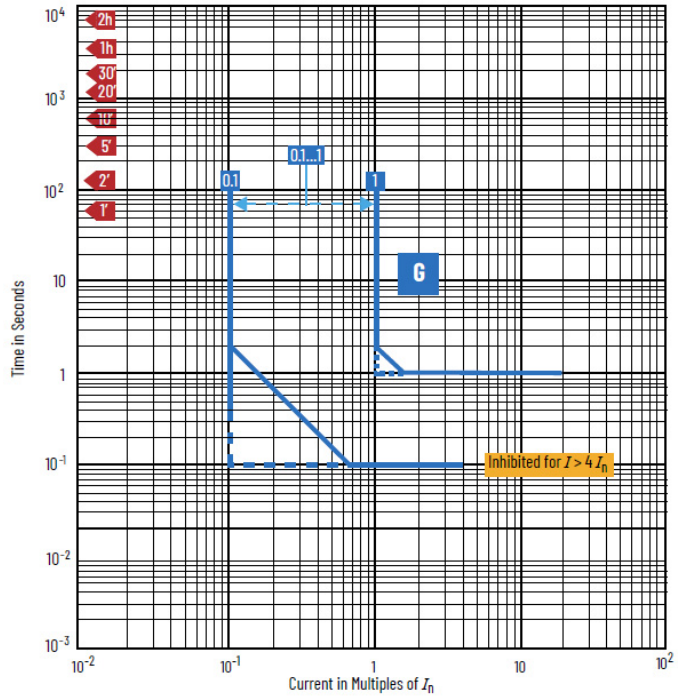


Figure 87 - Bulletin 140G Frame Size J Electronic Sense MCCB Trip Unit: Time-current Curve

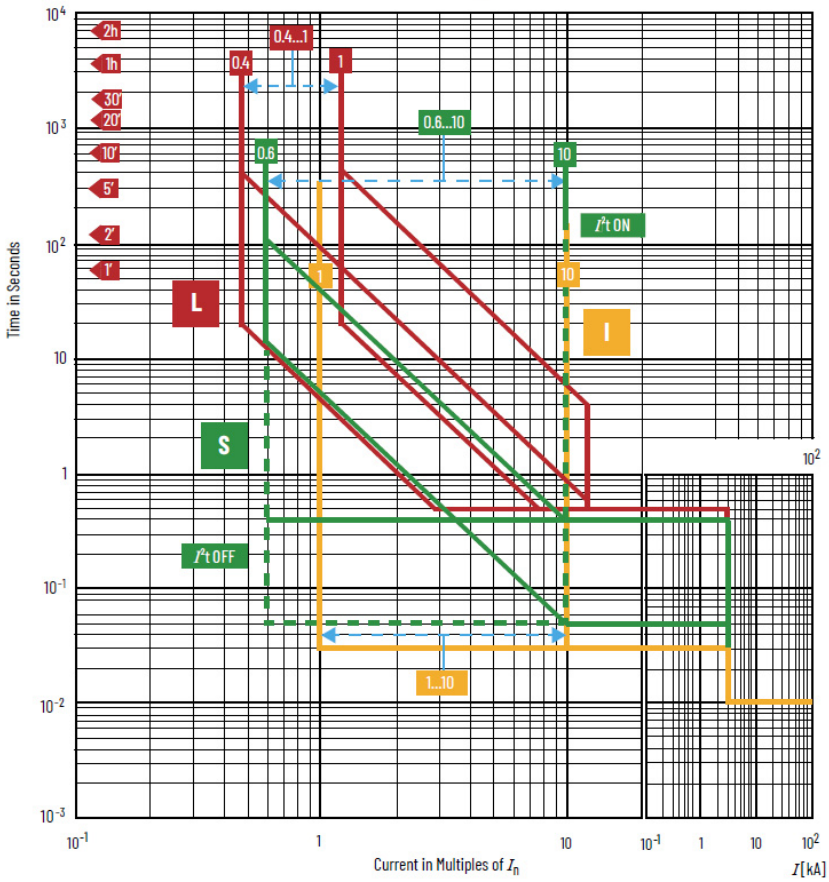


Figure 88 - Bulletin 140G Frame Size J Electronic Sense MCCB Trip Unit: Ground Fault Protection Curve

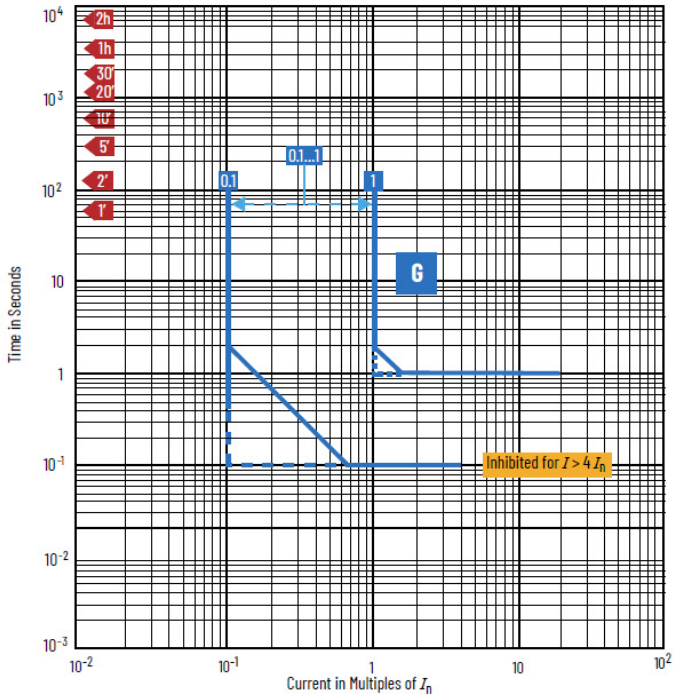


Figure 89 - Bulletin 140G2 Frame Size K Electronic Sense MCCB Trip Unit: Time-current Curve

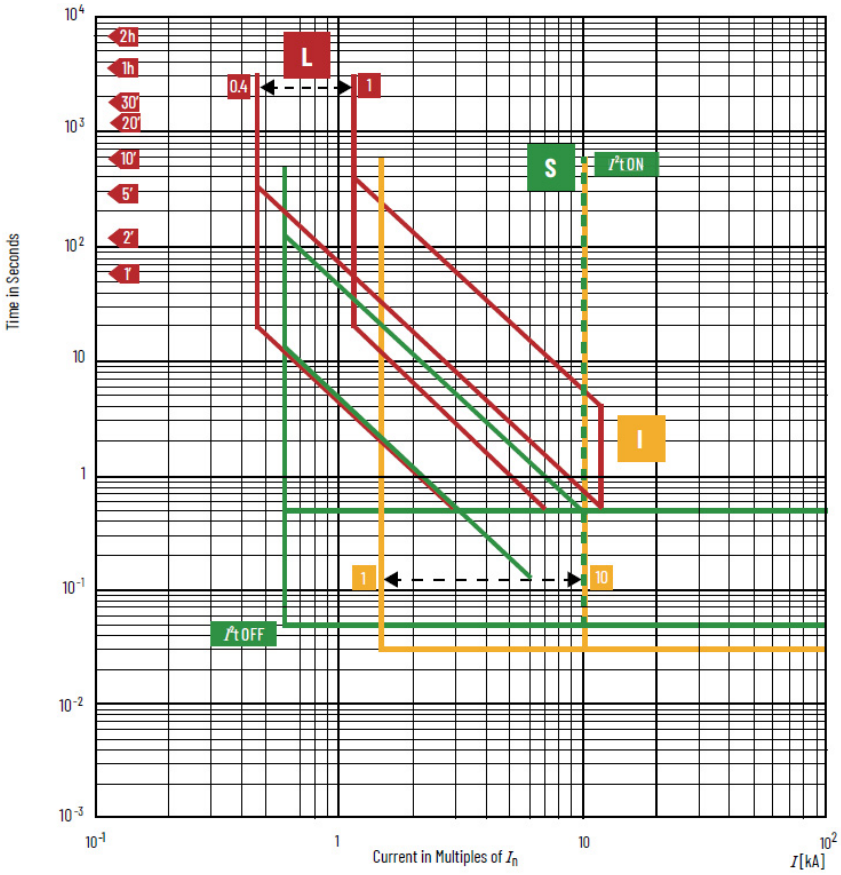


Figure 90 - Bulletin 140G2 Frame Size K Electronic Sense MCCB Trip Unit: Ground Fault Protection Curve

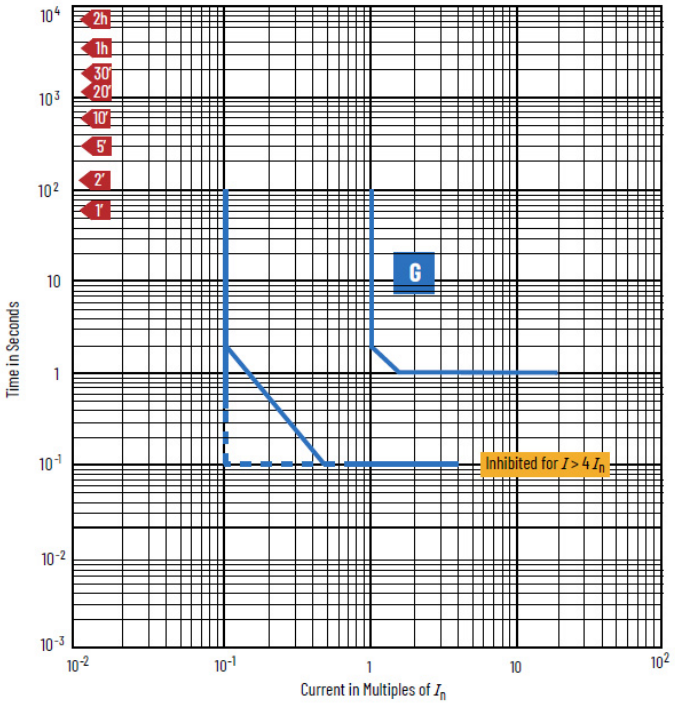


Figure 91 - Bulletin 140G2 Frame Size L Electronic Sense MCCB Trip Unit: Time-current Curve

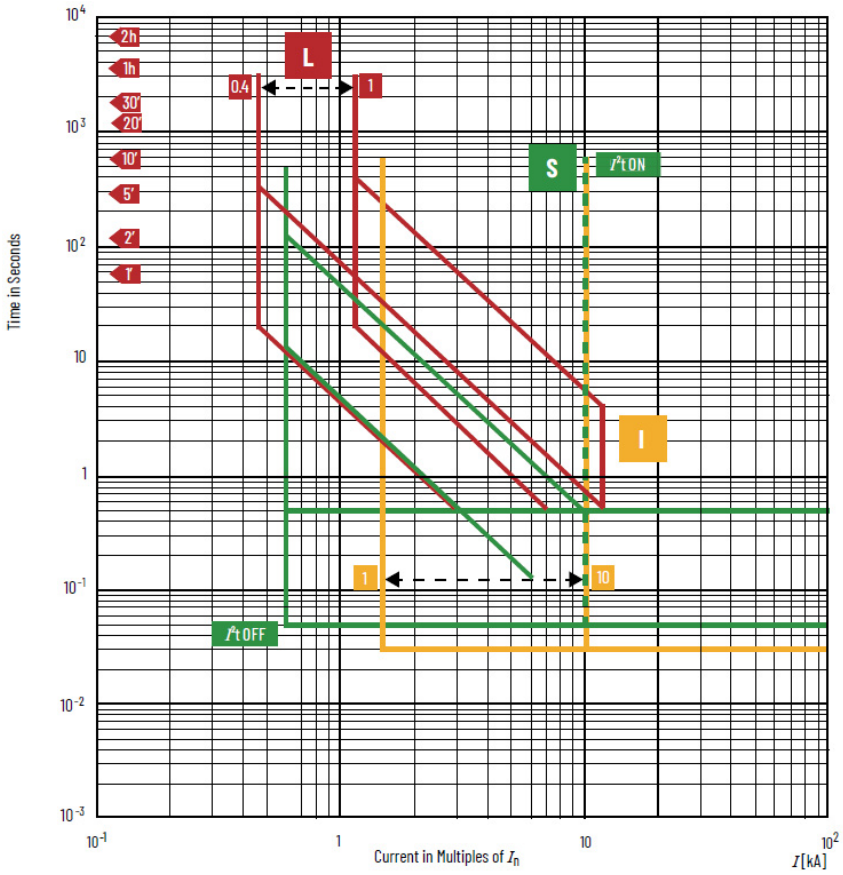
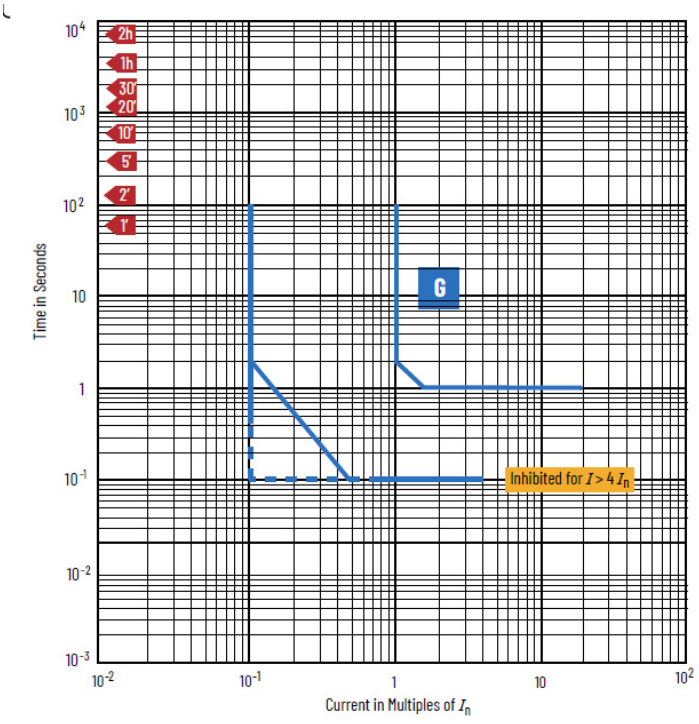


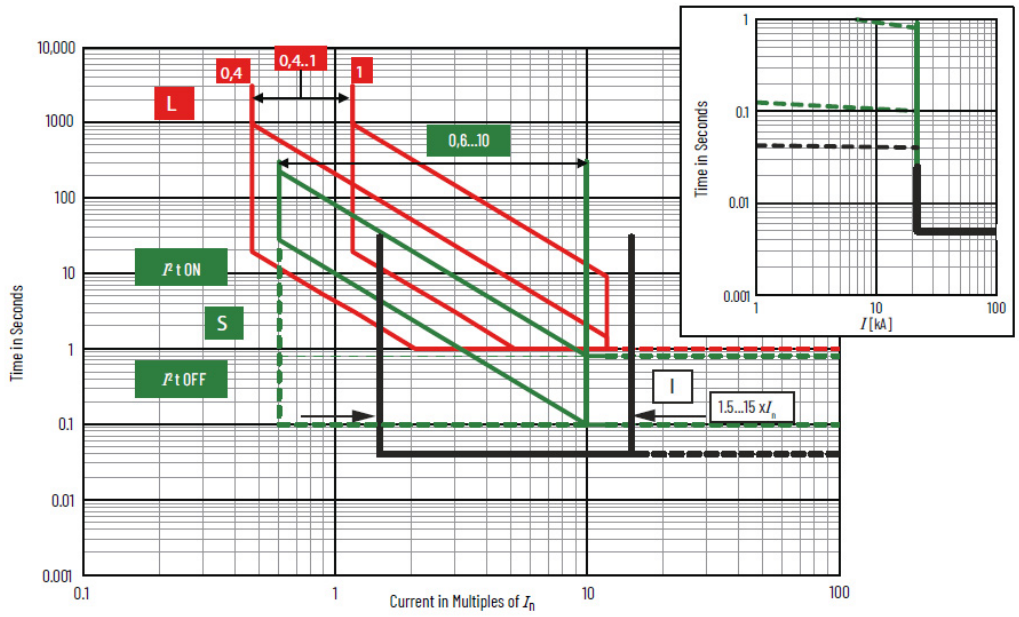
Figure 92 - Bulletin 140G2 Frame Size L Electronic Sense MCCB Trip Unit: Ground Fault Protection Curve



Bulletin 140G Frame Size N and NS Electronic DIP MCCB Trip Curves

Figure 93 - Bulletin 140G Frame Size N and NS: Time-current Curve

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 1200 A
- Electronic trip unit. Long delay response, short delay with I^2t response, and instantaneous curve



For all cases not covered in the Trip Threshold Tolerance Values table, the values in the Tolerance Values table apply.

Trip Threshold Tolerance Values

Protection	Disable	Trip Threshold	Trip Time	Trip Threshold Tolerance	Trip Time Tolerance
L (t = k/I^2)		I_1 = 0.4-0.425-0.45-0.475-0.5-1 x I_n	t_1=3-12-24-36-48-72-108-144 s at 3 I_1	Release between 1.05 and 1.2 I_1	±10% I_g ≤ 6 x I_n
S (t = k)	✓	I_2 = 0.6-0.8-1.2-1.8-2.4-3-3.36-4.2-5-5.8-6.6-7.4-8.2-9-10 x I_n	with $I > I_2$ t_2=0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8 s	±7% I_g ≤ 6 x I_n; ±10% I_g > 6 x I_n	The best of 10% or ±40 ms
S (t = k/I^2)	✓	I_2 = 0.6-0.8-1.2-1.8-2.4-3-3.36-4.2-5-5.8-6.6-7.4-8.2-9-10 x I_n	t_2=0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8 s at 10 I_n	±7% I_g ≤ 6 x I_n; ±10% I_g > 6 x I_n	±15% I_g ≤ 6 x I_n; ±20% I_g > 6 x I_n
I (t = k)	✓	I_3 = 1.5-2-3-4-5-6-7-8-9-10-11-12-13-14-15 x I_n	≤ 30 ms	±10%	–

Tolerance Values

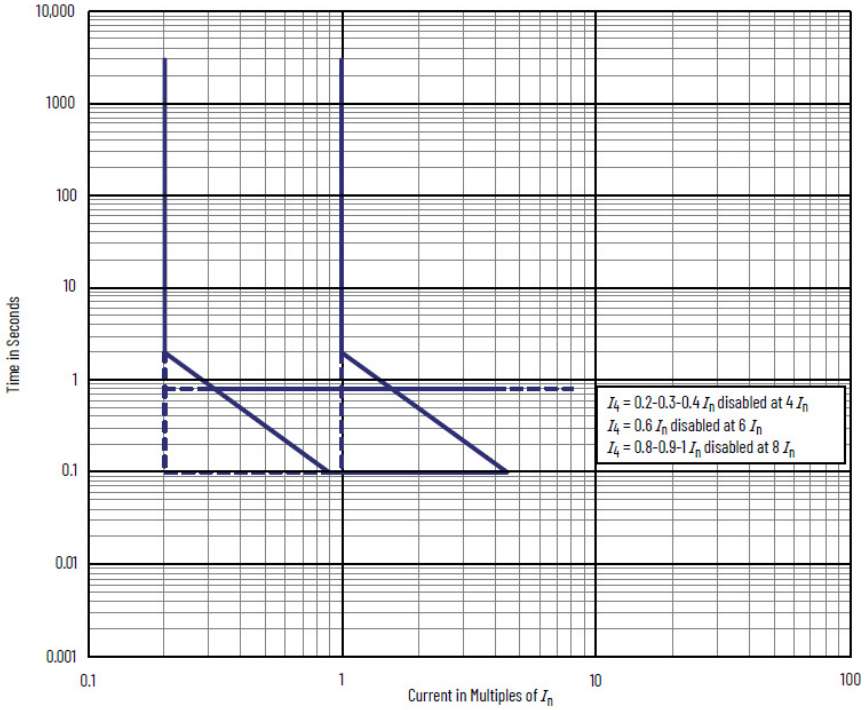
Protection	Trip Threshold	Trip Time
L	1.05 ≤ x I_1 ≤ 1.25	± 20%
S	± 10%	± 20%
I	± 15%	≤ 60 ms
Others	± 20%	–

Notes:

1. The minimum value of this trip is 1 s regardless of curve type (self-protection).
2. These tolerances apply under the following conditions:
   - self-powered relay at full power (without start-up)
   - presence of auxiliary power supply
   - two-phase or three-phase power supply
   - preset trip time ≥ 100 ms
3. The value of this trip is ensured between 40...500 ms from circuit breaker closing; you must set this value yourself.
4. Curve accuracy applies from -20...+55 °C (-4...+131 °F) ambient temperature. For possible continuous ampere derating for ambient temperature above 40 °C (104 °F), consult your local Rockwell Automation sales office or Allen-Bradley distributor.
5. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
6. Total clearing times shown include response times of the trip unit, breaker opening, and interruption of the current.
7. For high fault current levels, an additional fixed instantaneous hardware override is provided at 18 kA.

Figure 94 - Bulletin 140G Frame Size N and NS: Ground Fault Protection Curve for LSIG MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 1200 A



For all cases not covered in the Trip Threshold Tolerance Values table, the values in the Tolerance Values table apply.

Trip Threshold Tolerance Values					
Protection	**Disable**	**Trip Threshold**	**Trip Time**	**Trip Threshold Tolerance**	**Trip Time Tolerance**
G (t = k)	✓	I_4 = 0.2-0.3-0.4-0.6-0.8-0.9-1 x I_n	with $I > I_4$ t_4 = 0.1-0.2-0.4 s	± 7%	The best of ± 10% or ± 40 ms
G (t = k/I^2)	✓	I_4 = 0.2-0.3-0.4-0.6-0.8-0.9-1 x I_n	t_4 = 0.1 at 4.47I_4 t_4 = 0.2 at 3.16 I_4 t_4 = 0.4 at 2.24 I_4 t_4 = 0.8 at 1.58 I_4	± 7%	± 15%

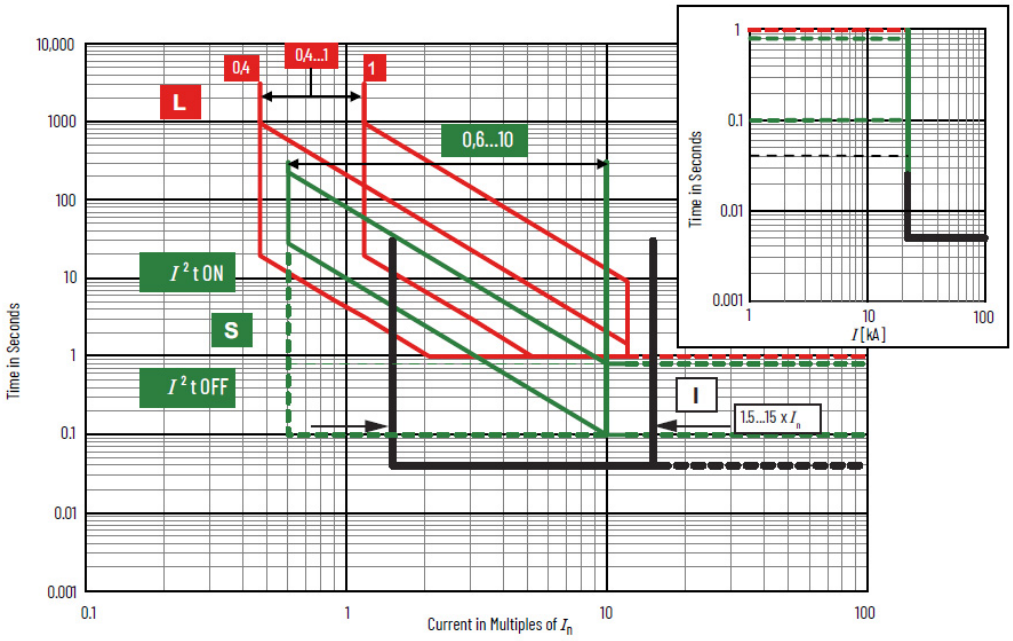
Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
G	± 10%	± 20%
Others	± 20%	–

Ground Fault Protection (I_4) is suppressed at the following levels, where the breaker uses Instantaneous Protection (I_1) to achieve a faster response to these higher current levels:

- I_4 = 0.2...0.4 I_n disabled at 4 x I_n
- I_4 = 0.6 x I_n disabled at 6 x I_n
- I_4 = 0.8...1 I_n disabled at 8 x I_n

Figure 95 - Bulletin 140G Frame Size N and NS: Time-current Curve for LSIG-MM MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n):
  400 A, 600 A, 800 A, 1000 A, 1200 A, 1250 A (IEC)



For all cases not covered in the Trip Threshold Tolerance Values table, the values in the Tolerance Values table apply.

Trip Threshold Tolerance Values

Protection	Disable	Trip Threshold	Trip Time	Trip Threshold Tolerance	Trip Time Tolerance
L (t = k/I^2)		0.4 x $I_n \le I_1 \le 1$ x I_n	3 s ≤ t_1 ≤ 144 s, step 3 s t_1 at 3 x I_1	Release between 1.05 and 1.2 I_1	±10% $I_g \le 6$ x I_n
S (t = k)	✓	0.6 x $I_n \le I_2 \le 10$ x I_n 0.6 x $I_n \le I_2$ startup ≤ 10 x I_n step 0.1 x I_n	Min 0.05 s ≤ t_2 ≤ 0.8 s, step 0.01 s 0.10 s ≤ t_2 startup <30 s, step 0.01 s 0.04 s ≤ t_2 sel ≤ 0.20 s, step 0.01 s	± 7% $I_g \le 6$ x I_n; ± 10% $I_g > 6$ x I_n	The best of ± 10% or ± 40 ms
S (t = k/I^2)	✓	0.6 x $I_n \le I_2 \le 10$ x I_n; step 0.1 x I_n	0.05 s ≤ t_2 ≤ 0.8 s, step 0.01 at 10 x I_n	± 7% $I_g \le 6$ x I_n; ± 10% $I_g > 6$ x I_n	± 15% $I_g \le 6$ x I_n; ± 20% $I_g > 6$ x I_n
I (t = k)	✓	1.5x $I_n \le I_3 \le 15$ x I_n; step 0.1 x I_n	≤ 30 ms	± 10%	–

Tolerance Values

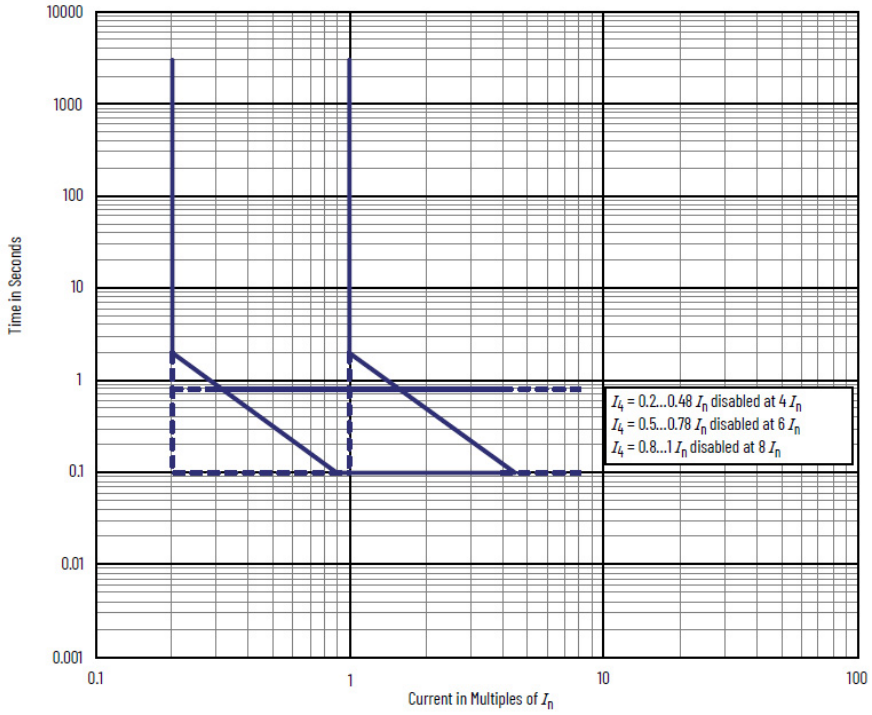
Protection	Trip Threshold	Trip Time
L	1.05 ≤ I_1 ≤ 1.25	± 20%
S	± 10%	± 20%
I	± 15%	≤ 60 ms
Others	± 20%	–

Notes:

1. The minimum value of this trip is 1 s regardless of curve type (self-protection).
2. These tolerances apply under the following conditions:
   - self-powered relay at full power (without start-up)
   - presence of auxiliary power supply
   - two-phase or three-phase power supply
   - preset trip time ≥ 100 ms
3. The value of this trip is ensured between 40 and 500 ms from circuit breaker closing; you must set this value yourself.
4. Curve accuracy applies from -20...+55 °C (-4...+131 °F) ambient temperature. For possible continuous ampere derating for ambient temperature above 40 °C (104 °F), consult your local Rockwell Automation sales office or Allen-Bradley distributor.
5. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
6. Total clearing times shown include the response times of the trip unit, the breaker opening, and the interruption of the current.
7. For high fault current levels, an additional fixed instantaneous hardware override is provided at 18 kA.

Figure 96 - Bulletin 140G Frame Size N and NS: Ground Fault Protection Curve for LSIG-MM MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 400 A, 600 A, 800 A, 1000 A, 1200 A, 1250 A (IEC)



For all cases not covered in the Trip Threshold Tolerance Values table, the values in the Tolerance Values table apply.

Trip Threshold Tolerance Values					
Protection	**Disable**	**Trip Threshold**	**Trip Time**	**Trip Threshold Tolerance**	**Trip Time Tolerance**
G (t = k)	✓	0.2 x $I_n \le I_4 \le$ 1 x I_n step 0.02 x I_n when $I > I_4$	0.1 s ≤ t_4 ≤ 1 s, step 0.05 s 0.10 s ≤ t_4 startup ≤ 1 s, step 0.02 s 0.04 s ≤ t_4 sel ≤ 0.20 s, step 0.01 s	±7%	The best of ±10% or ±40 ms
G (t = k/I^2)	✓	0.2 x $I_n \le I_4 \le$ 1 x I_n step 0.02 x I_n	0.1 s ≤ t_4 ≤ 1 s, step 0.05 at I_g > 4x I_n	±7%	±15%

Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
G	± 10%	± 20%
Others	± 20%	–

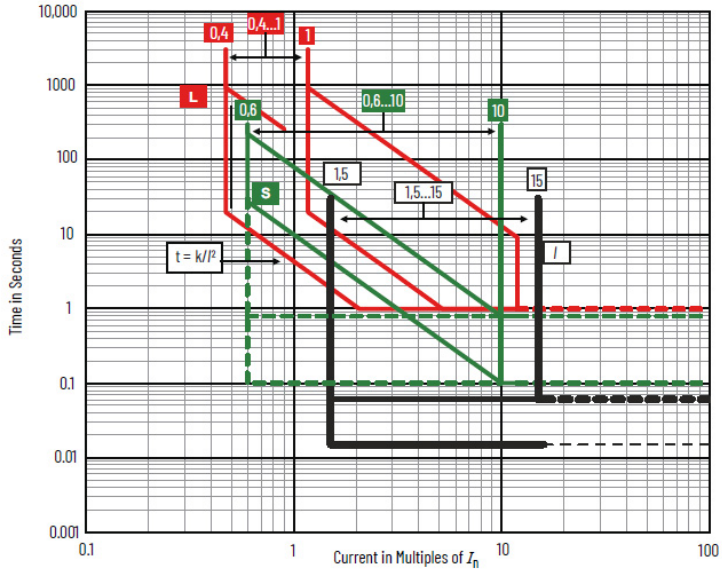
Ground Fault Protection (I_4) is suppressed at the following levels, where the breaker uses Instantaneous Protection (I_1) to achieve a faster response to these higher current levels:

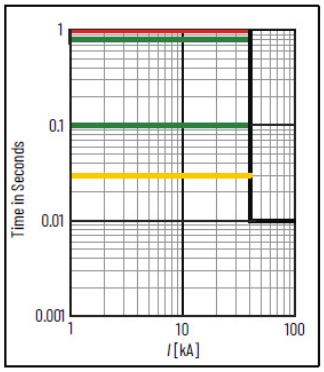
- I_4 = 0.2...0.4 I_n disabled at 4 x I_n
- I_4 = 0.6 x I_n disabled at 6 x I_n
- I_4 = 0.8...1 I_n disabled at 8 x I_n

Bulletin 140G Frame Size R Electronic DIP MCCB Trip Curves

Figure 97 - Bulletin 140G Frame Size R: Time-current Curve for LSIG MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 2000 A, 2500 A, 3000 A
  - I_n = 3000 A, instantaneous I_3 max = 12 x I_n
- Electronic trip unit. Long delay response, short delay with I^2t current ratings





For all cases not covered in the Trip Threshold Tolerance Values table, the values in the Tolerance Values table apply.

Trip Threshold Tolerance Values

Protection	Disable	Trip Threshold	Trip Time	Trip Threshold Tolerance	Trip Time Tolerance
L (t = k/I^2)		I_1 = 0.4-0.425-0.45-0.475-0.5-...1 x I_n	t_1 = 3-12-24-36-48-72-108-144 s at 3 x I_1	Release between 1.05 and 1.2 I_1	±10% I_g ≤ 6 x I_n
S (t = k)	✓	I_2 = 0.6-0.8-1.2-1.8-2.4-3-3.6-4.2-5-5.8-6.6-7.4-8.2-9-10 x I_n	with $I > I_2$ t_2 = 0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8 s	±7% I_g ≤ 6 x I_n; ±10% I_g > 6 x I_n	The best of ±10% or ±40 ms
S (t = k/I^2)	✓	I_2 = 0.6-0.8-1.2-1.8-2.4-3-3.6-4.2-5-5.8-6.6-7.4-8.2-9-10 x I_n	t_2 = 0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8 s at 10 x I_n	±7% I_g ≤ 6 x I_n; ±10% I_g > 6 x I_n	±15% I_g ≤ 6 x I_n; ±20% I_g > 6 x I_n
I (t = k)	✓	I_3 = 1.5-2-3-4-5-6-7-8-9-10-11-12-13-14-15 x I_n	≤ 30 ms	±10%	–

Tolerance Values

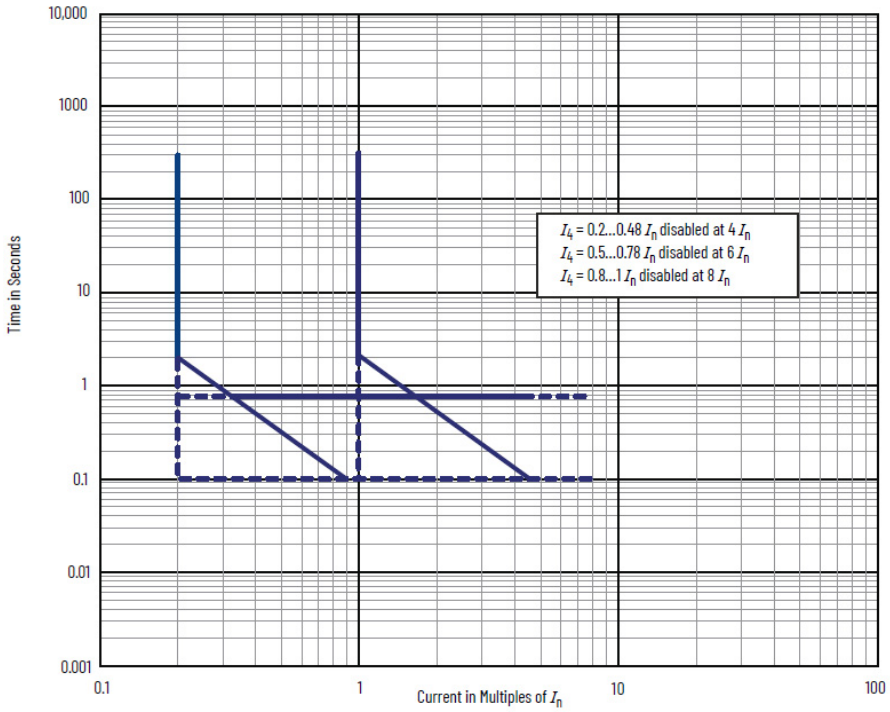
Protection	Trip Threshold	Trip Time
L	1.05 ≤ I_1 ≤ 1.25	± 20%
S	± 10%	± 20%
I	± 15%	≤ 60 ms
Others	± 20%	–

Notes:

1. Minimum trip value is 1 s regardless of curve type (self-protection).
2. These tolerances apply under the following conditions:
   - self-powered relay at full power (without start-up)
   - presence of auxiliary power supply
   - two-phase or three-phase power supply
   - preset trip time ≥ 100 ms
3. The value of this trip is ensured between 40...500 ms from circuit breaker closing; you must set this value yourself.
4. Curve accuracy applies from -20...+55 °C (-4...+131 °F) ambient temperature. For possible continuous ampere derating for ambient temperature above 40 °C (104 °F), consult your local Rockwell Automation sales office or Allen-Bradley distributor.
5. The right portion of the curve is determined by the interrupting rating of the circuit breaker.
6. Total clearing times shown include the response times of the trip unit, breaker opening, and interruption of the current.
7. For high fault current levels, an additional fixed instantaneous hardware override is provided at 18 kA.

Figure 98 - Bulletin 140G Frame Size R: Ground Fault Protection Curve for LSIG-MM MCCBs

- Maximum voltage: 600V AC, 50/60 Hz
- Trip unit rated current (I_n): 2000 A, 2500 A, 3000 A
- Minimum trip value = 1 s, regardless of curve type (self-protection)



For all cases not covered in the Trip Threshold Tolerance Values table, the values in the Tolerance Values table apply.

Trip Threshold Tolerance Values					
Protection	**Disable**	**Trip Threshold**	**Trip Time**	**Trip Threshold Tolerance**	**Trip Time Tolerance**
G (t = k)	✓	I_4 = 0.2-0.3-0.4-0.6-0.8-0.9-1 x I_n	with $I > I_4$; t_4 = 0.1-0.2-0.4-0.8 s	±7%	The best of ±10% or ±40 ms
G (t = k/I^2)	✓	I_4 = 0.2-0.3-0.4-0.6-0.8-0.9-1 x I_n	t_4 = 0.1 at 4.47I_4; t_4=0.2 at 3.16 I_4 t_4 = 0.4 at 2.24 I_4; t_4=0.8 at 1.58 I_4	±7%	±15%

Tolerance Values		
Protection	**Trip Threshold**	**Trip Time**
G	± 10%	± 20%
Others	± 20%	–

Ground Fault Protection (I_4) is suppressed at the following levels, where the breaker uses Instantaneous Protection (I_1) to achieve a faster response to these higher current levels:

- I_4 = 0.2...0.4 I_n disabled at 4 x I_n
- I_4 = 0.6 x I_n disabled at 6 x I_n
- I_4 = 0.8...1 I_n disabled at 8 x I_n

Bulletin 140G and Bulletin 140G2 MCCB Let-through Curves

Figure 99 - Total Let-through Energy Curve for MCCBs, 240V

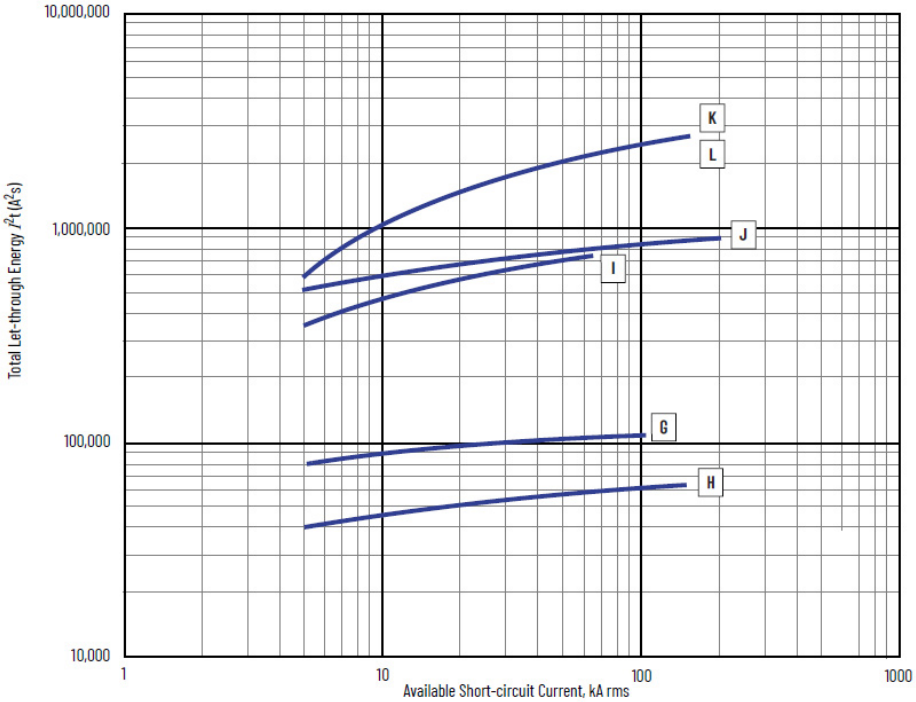


Figure 100 - Peak Let-through Current Curve for MCCBs, 240V

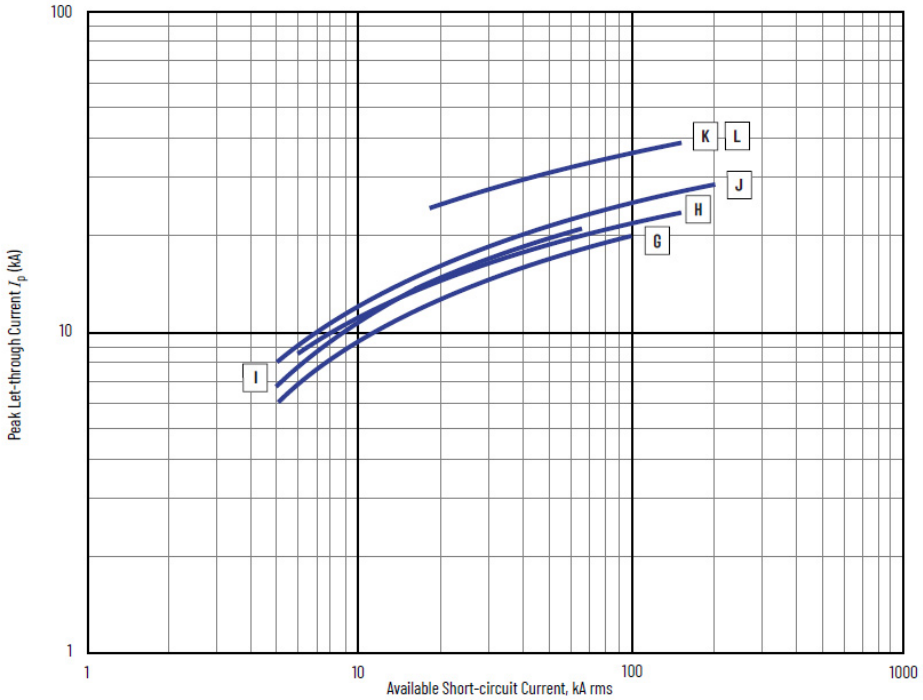


Figure 101 - Total Let-through Energy Curve for MCCBs, 480V

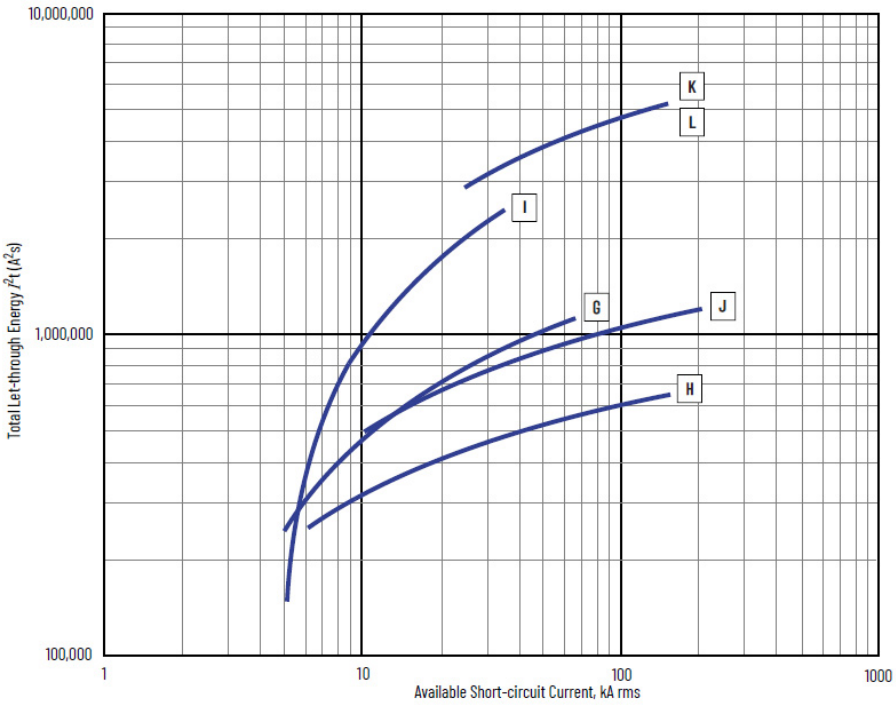


Figure 102 - Peak Let-through Current Curve for MCCBs, 480V

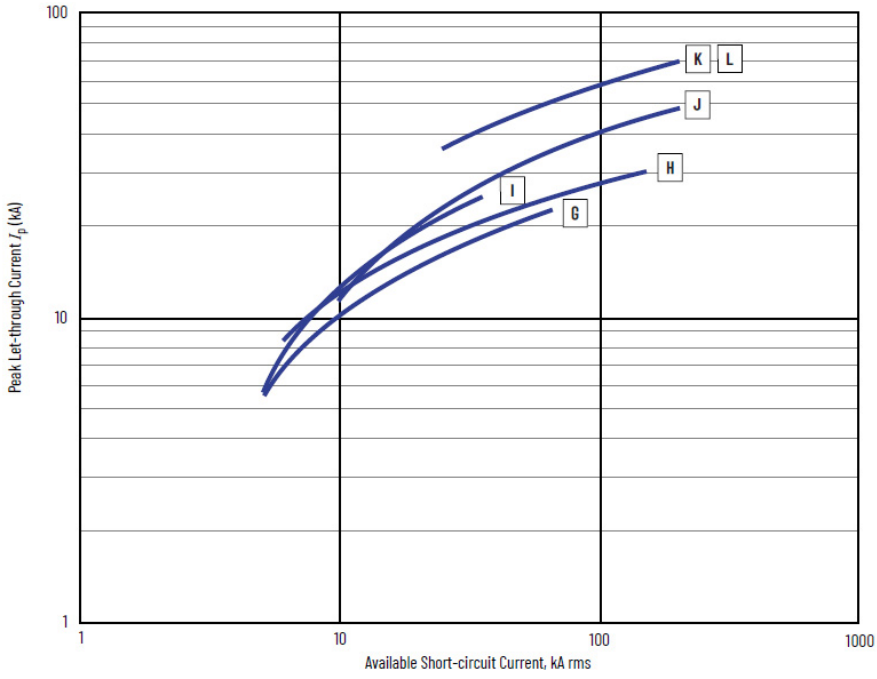


Figure 103 - Total Let-through Energy Curve for MCCBs, 600V

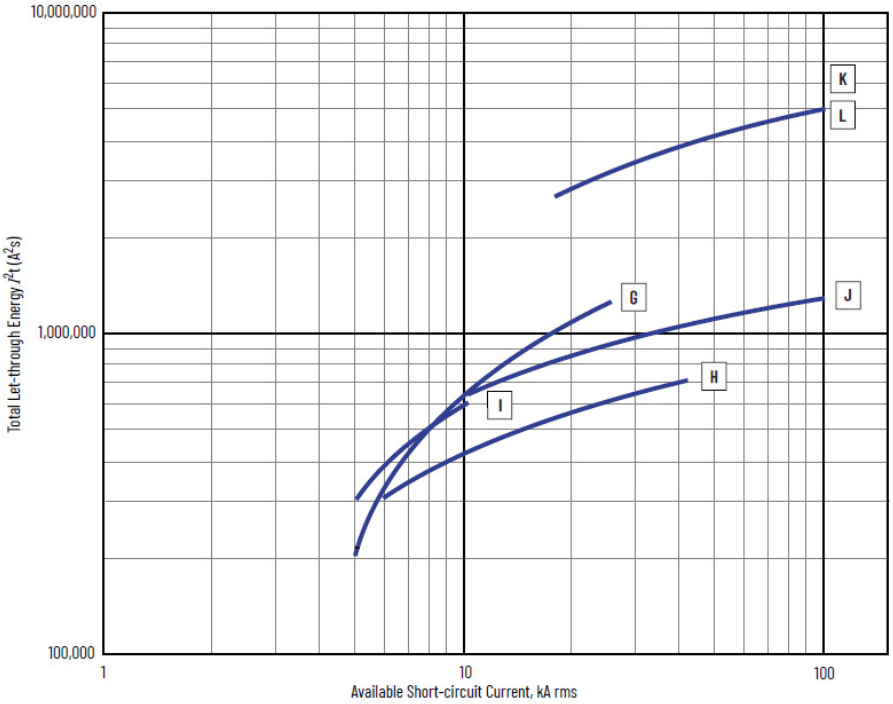
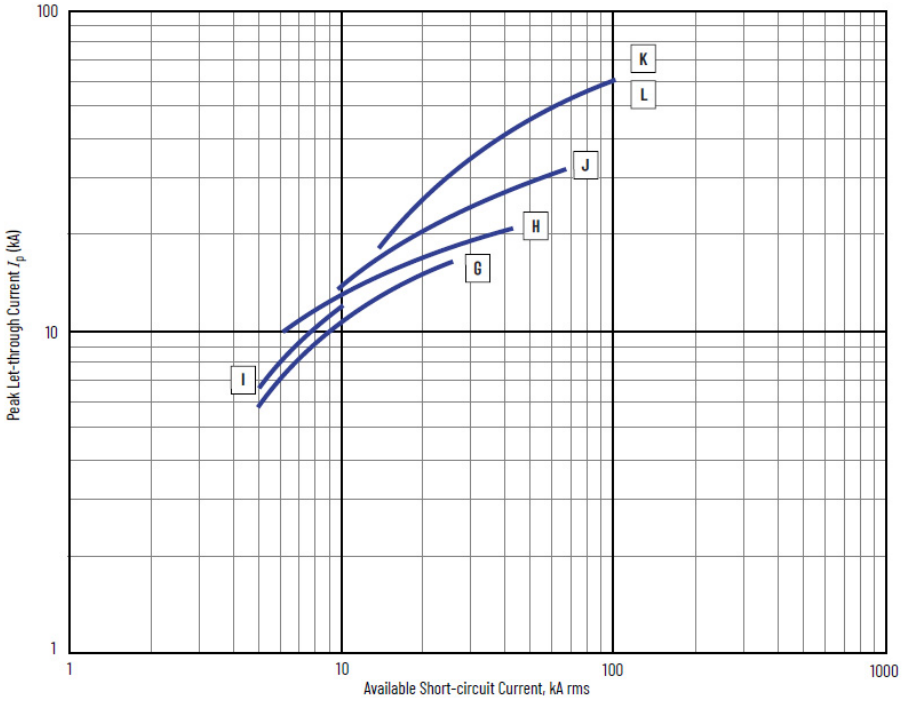


Figure 104 - Peak Let-through Current Curve for MCCBs, 600V



Bulletin 140G Current-limiting MCCB Total Let-through Curves

Figure 105 - Total Let-through Energy Curve for Current-limiting MCCBs, 480V

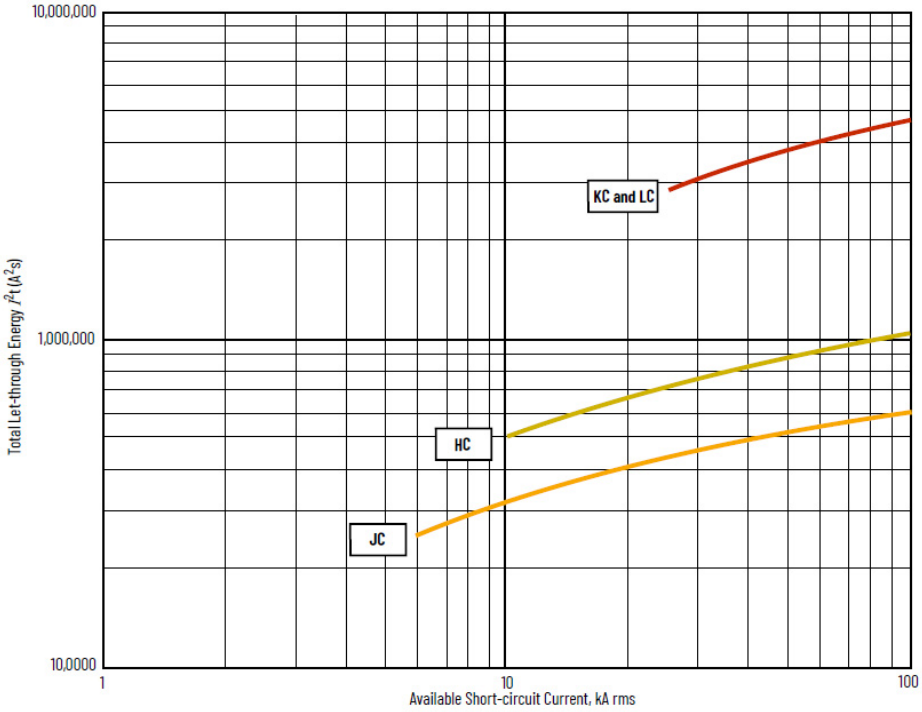


Figure 106 - Peak Let-through Current Curve for MCCBs, 480V

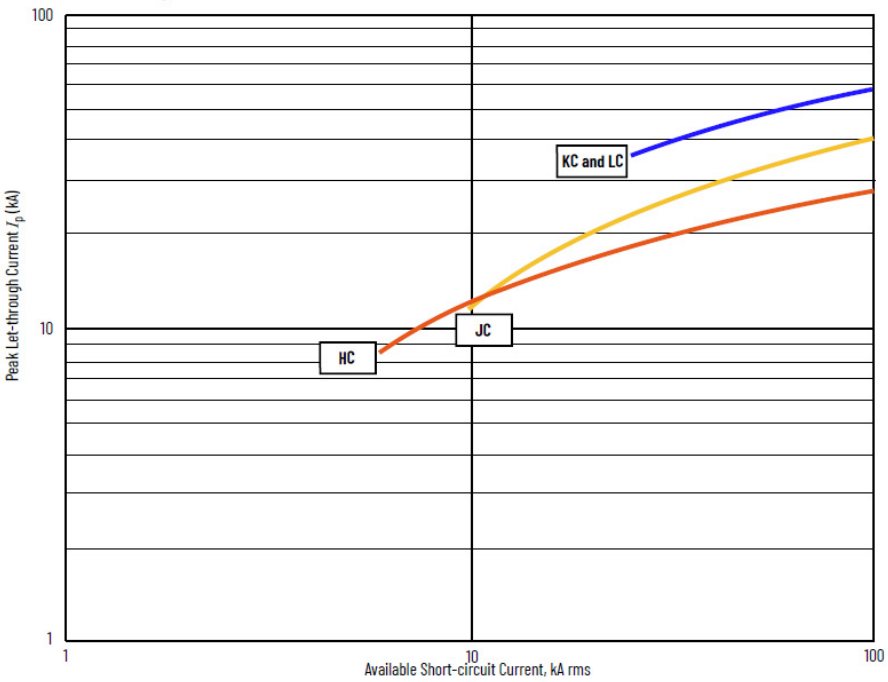


Figure 107 - Total Let-through Energy Curve for Current-limiting MCCBs, 600V

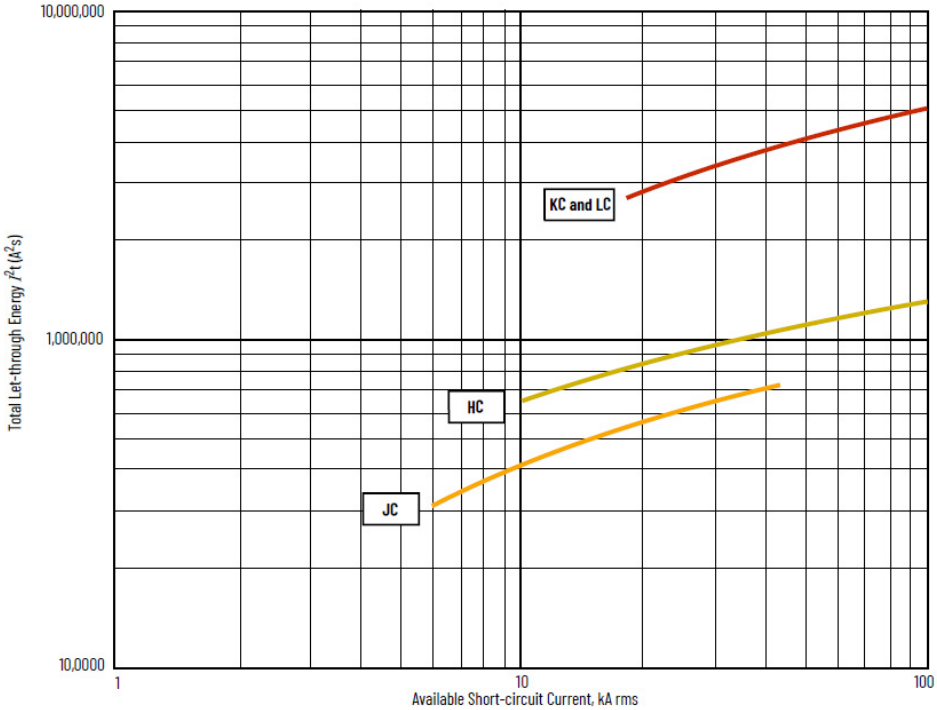
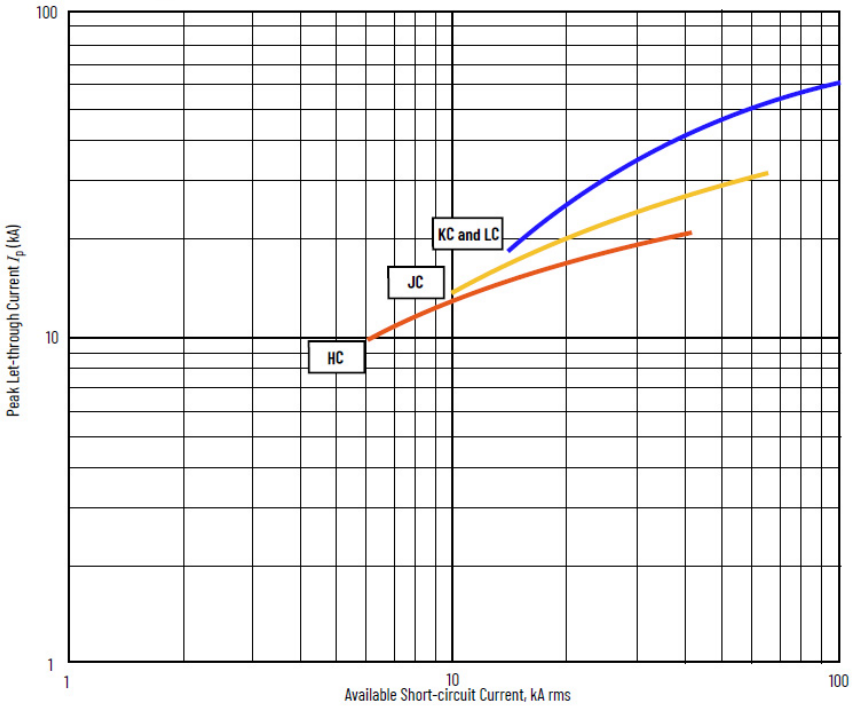


Figure 108 - Peak Let-through Current Curve for MCCBs, 600V

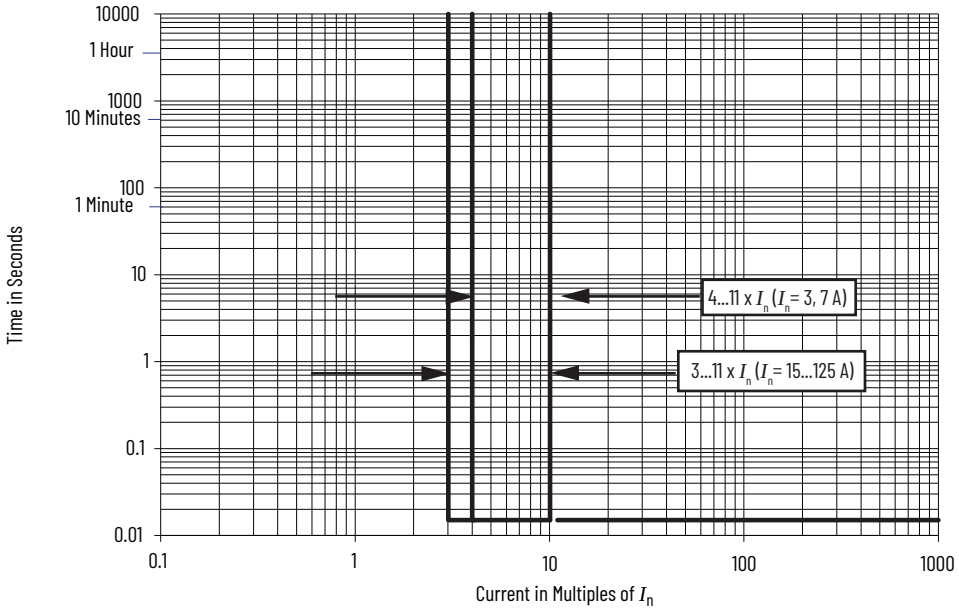


Bulletin 140MG and 140MG2 MCP Trip Curves

MCPs are for use only in combination controllers. For DC applications, pick-up settings are approximately 40% higher.

Figure 109 - Bulletin 140MG Frame Size G: Time-current Curve

- Maximum voltage: 600Y/347V AC, (50/60 Hz)
- Maximum current: 3...125 A



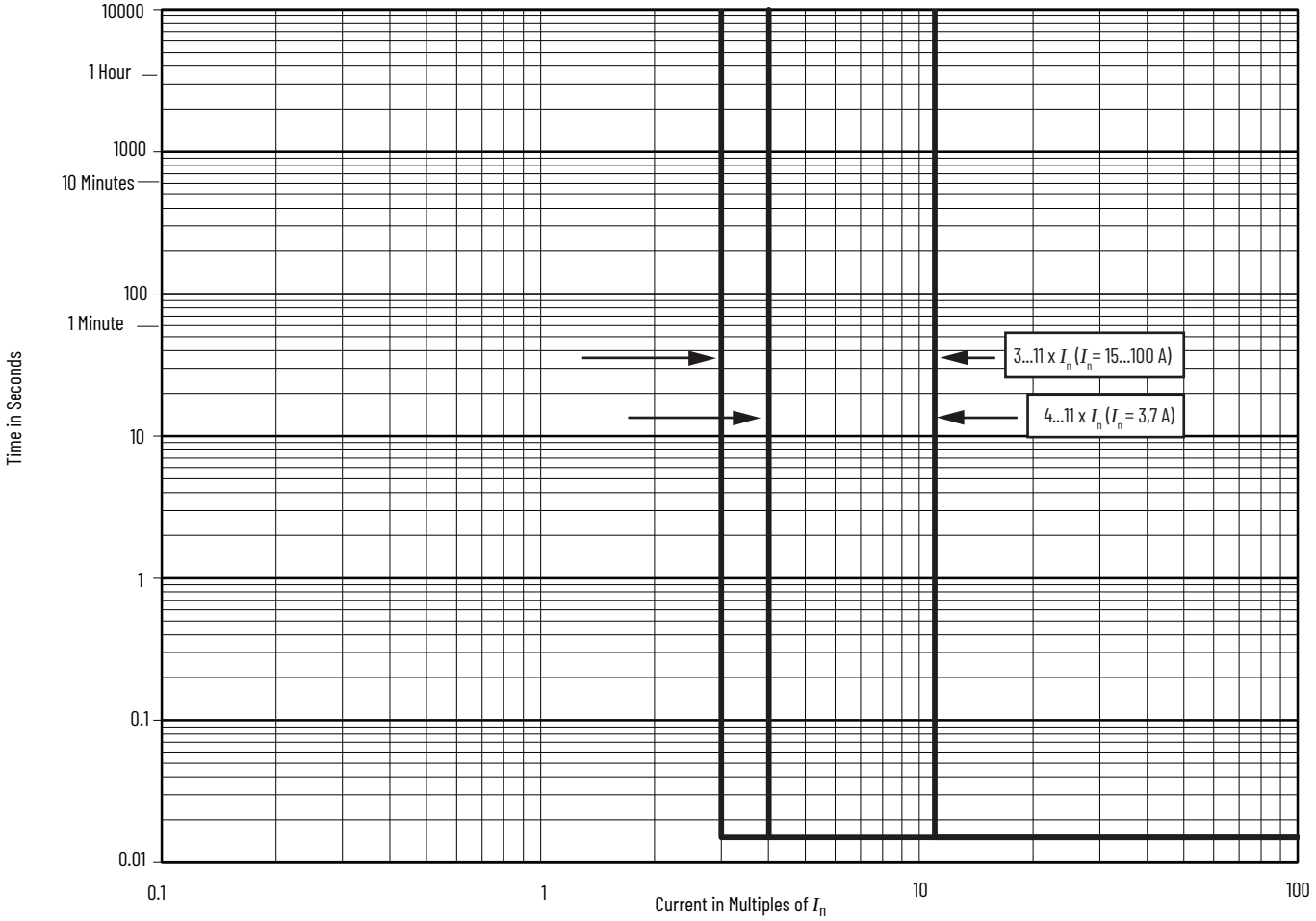
Instantaneous Pick-up Setting									
Cat. No. 140MG-	Amperes [A]								
	A	B	C	D	E	F	G	H	I
G8P-B30	12	15	17	20	23	25	28	30	33
G8P-B70	28	34	40	46	53	59	65	71	77
G8P-C15	45	60	75	90	105	120	135	150	165
G8P-C30	90	120	150	180	210	240	270	300	330
G8P-C50	150	200	250	300	350	400	450	500	550
G8P-C70	210	280	350	420	490	560	630	700	770
G8P-C80	240	320	400	480	560	640	720	800	880
G8P-D10	300	400	500	600	700	800	900	1000	1100
G8P-D12	375	500	625	750	875	1000	1125	1250	1375

Typical Trip Unit Nameplate (1)								
I_3 [A]								
A	B	C	D	E	F	G	H	I
300	400	500	600	700	800	900	1000	1100

(1) See Instantaneous Pick-up Setting table shown at left for trip setting values.

Figure 110 - Bulletin 140MG Frame Size H: Time-current Curve

- Maximum voltage: 600V AC, (50/60 Hz)
- Maximum current: 3...100 A



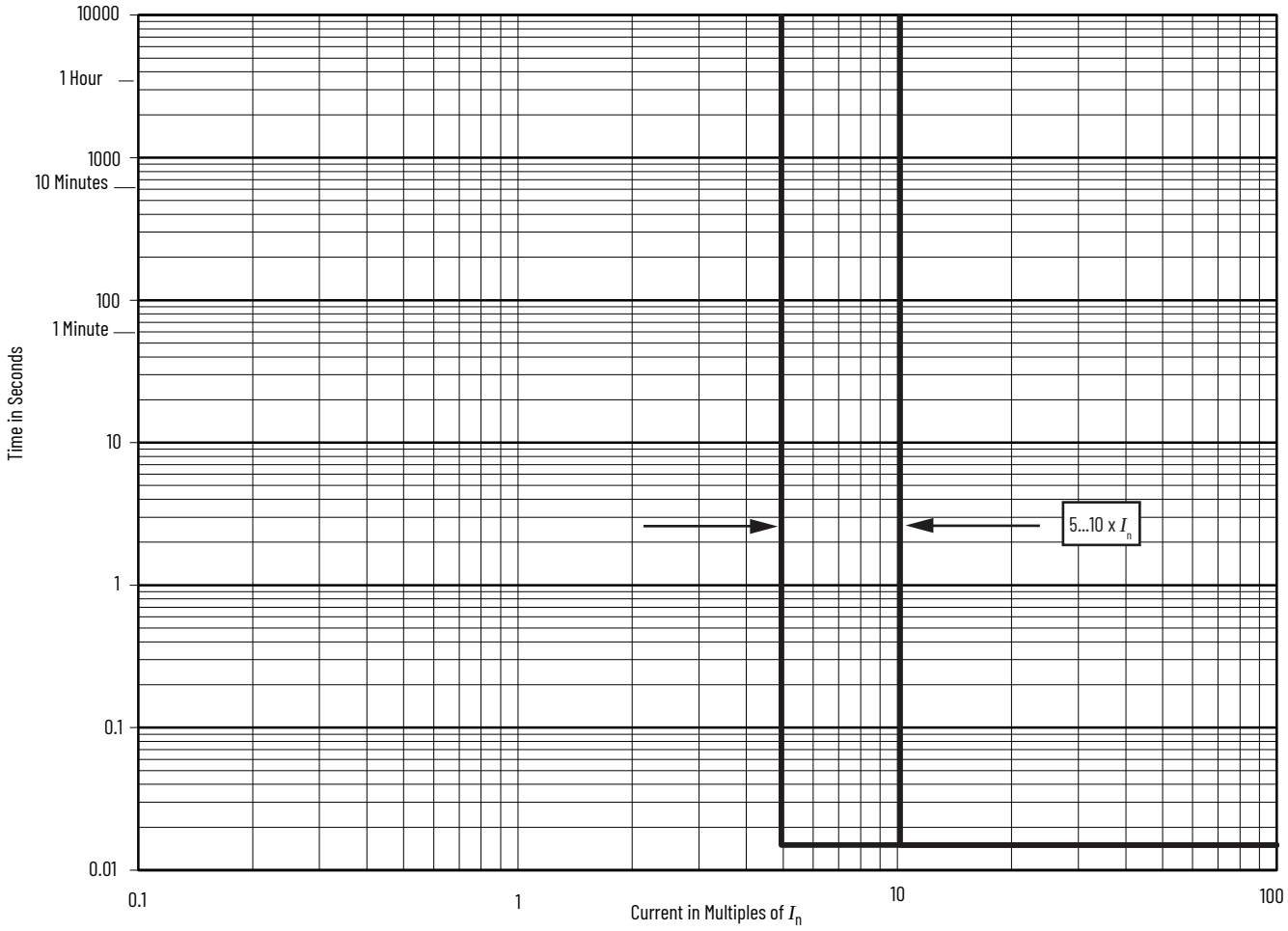
Instantaneous Pick-up Setting									
Cat. No. 140MG-	Amperes [A]								
	A	B	C	D	E	F	G	H	I
H8P-B30	12	15	17	20	23	25	28	30	33
H8P-B70	28	34	40	46	53	59	65	71	77
H8P-C15	45	60	75	90	105	120	135	150	165
H8P-C30	90	120	150	180	210	240	270	300	330
H8P-C50	150	200	250	300	350	400	450	500	550
H8P-C70	210	280	350	420	490	560	630	700	770
H8P-C80	240	320	400	480	560	640	720	800	880
H8P-D10	300	400	500	600	700	800	900	1000	1100
H8P-D12	625	703	781	859	938	1016	1094	1172	1250

Typical Trip Unit Nameplate (1)								
I_3 [A]								
A	B	C	D	E	F	G	H	I
300	400	500	600	700	800	900	1000	1100

(1) See Instantaneous Pick-up Setting table shown at left for trip setting values.

Figure 111 - Bulletin 140MG Frame Size H: Time-current Curve

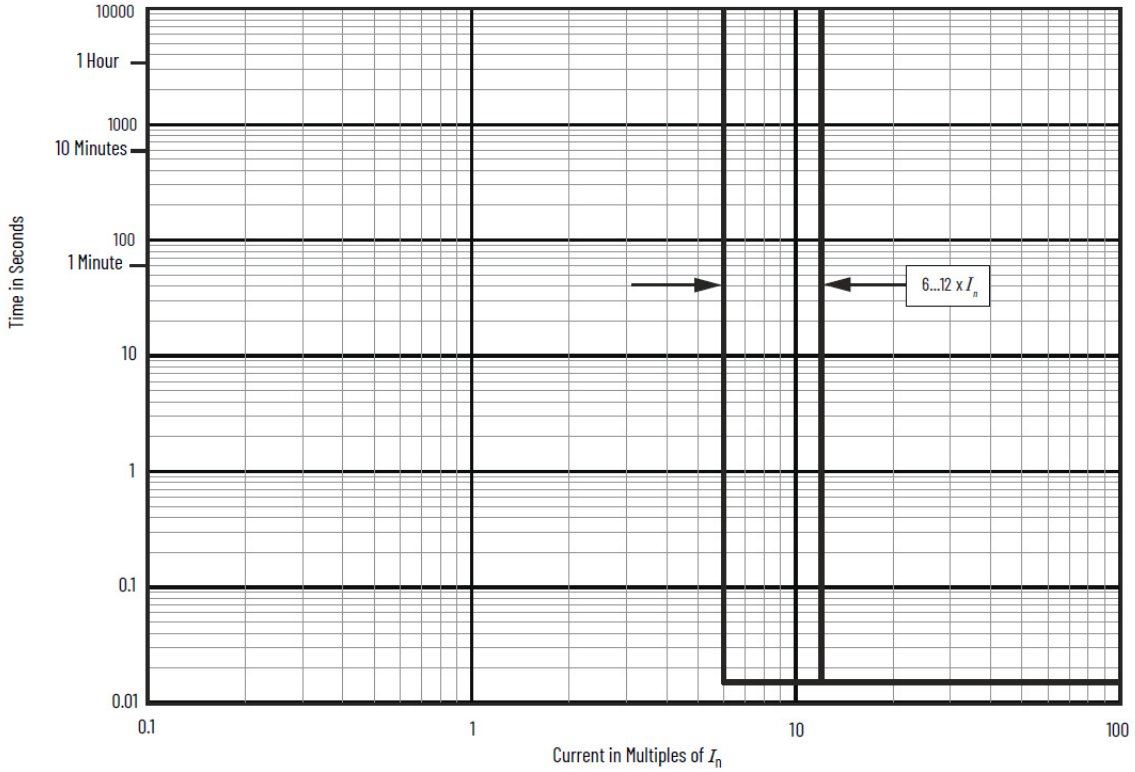
- Maximum voltage: 600V AC, (50/60 Hz)
- Maximum current: 125 A



Typical Trip Unit Nameplate								
I_3 [A]								
A	B	C	D	E	F	G	H	I
625	703	781	859	938	1016	1094	1172	1250

Figure 112 - Bulletin 140MG Frame Size I: Time-current Curve

- Maximum voltage: 600Y/347V AC, (50/60 Hz)
- Maximum current: 100...150 A



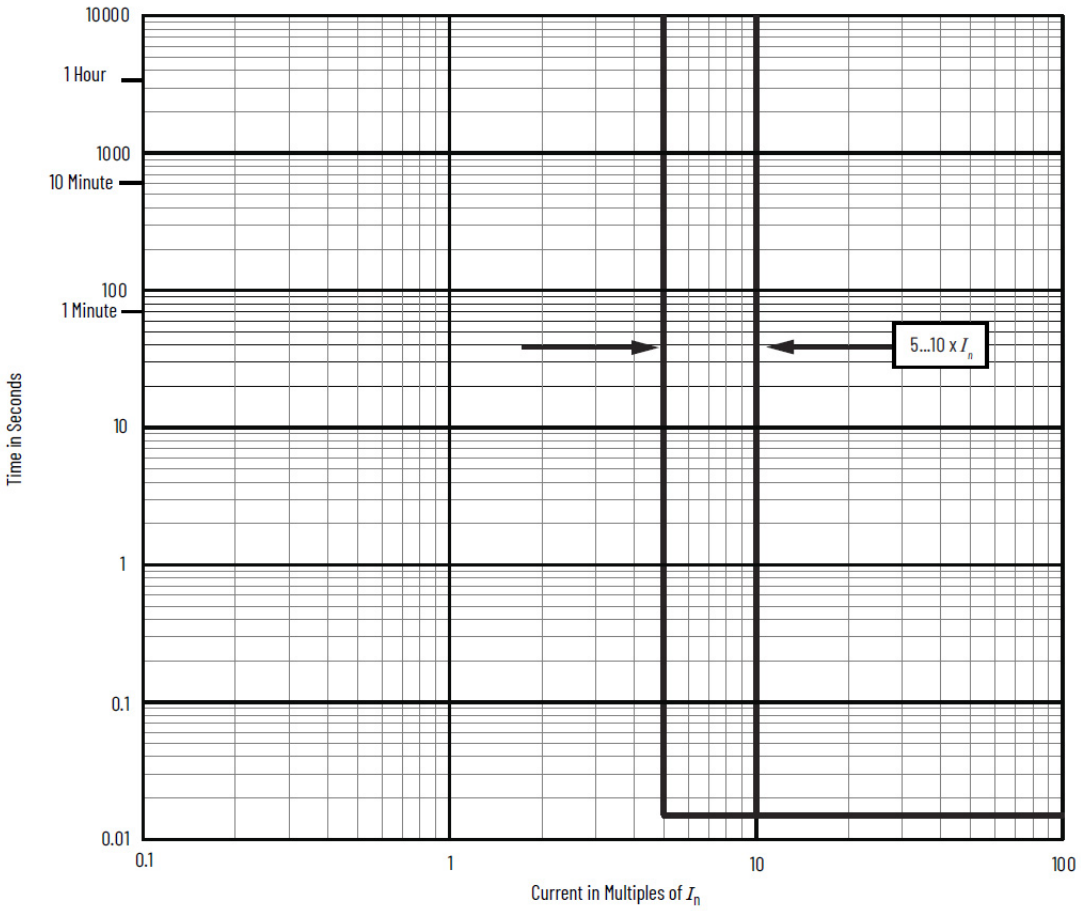
Instantaneous Pick-up Setting									
Cat. No. 140MG-	Amperes [A]								
	A	B	C	D	E	F	G	H	I
I8P-D10	600	675	750	825	900	975	1050	1125	1200
I8P-D11	660	743	825	908	990	1073	1155	1238	1320
I8P-D12	750	844	938	1031	1125	1219	1313	1406	1500
I8P-D15	900	1013	1125	1238	1350	1463	1575	1688	1800

Typical Trip Unit Nameplate (1)								
I_3 [A]								
A	B	C	D	E	F	G	H	I
600	675	750	825	900	975	1050	1125	1200

(1) See Instantaneous Pick-up Setting table shown at left for trip setting values.

Figure 113 - Bulletin 140MG Frame Size J: Time-current Curve

- Maximum voltage: 600V AC, (50/60 Hz)
- Maximum current: 150...200 A



Instantaneous Pick-up Setting									
Cat. No. 140MG-	Amperes [A]								
	A	B	C	D	E	F	G	H	I
J8P-D15	750	844	938	1031	1125	1219	1313	1406	1500
J8P-D17	875	984	1094	1203	1313	1422	1531	1641	1750
J8P-D20	1000	1125	1250	1375	1500	1625	1750	1875	2000
J8P-D22	1125	1266	1406	1547	1688	1828	1969	2109	2250
J8P-D25	1250	1406	1563	1719	1875	2031	2188	2344	2500

Typical Trip Unit Nameplate								
I_3[A]								
A	B	C	D	E	F	G	H	I
750	844	938	1031	1125	1219	1313	1406	1500

Figure 114 - Bulletin 140MG2 Frame Size K: Time-current Curve

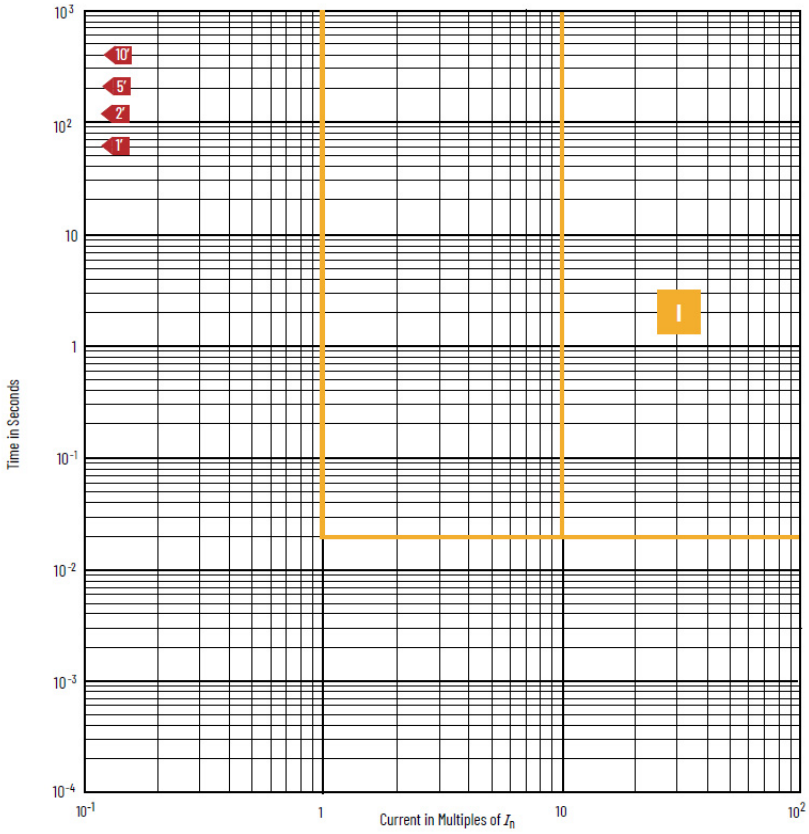


Figure 115 - Bulletin 140MG2 Frame Size L: Time-current Curve

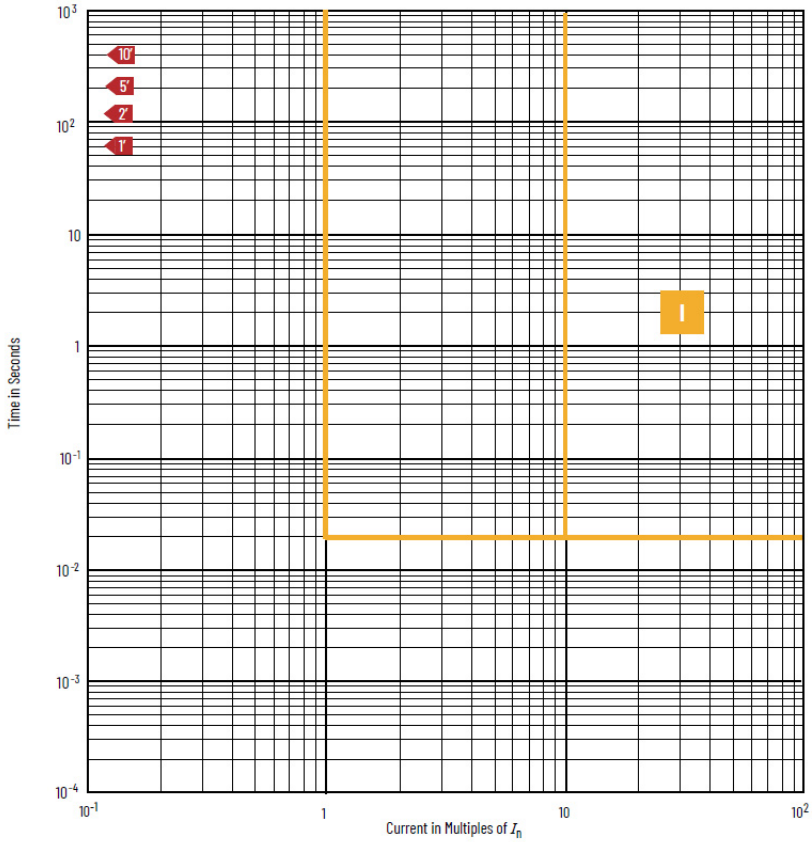
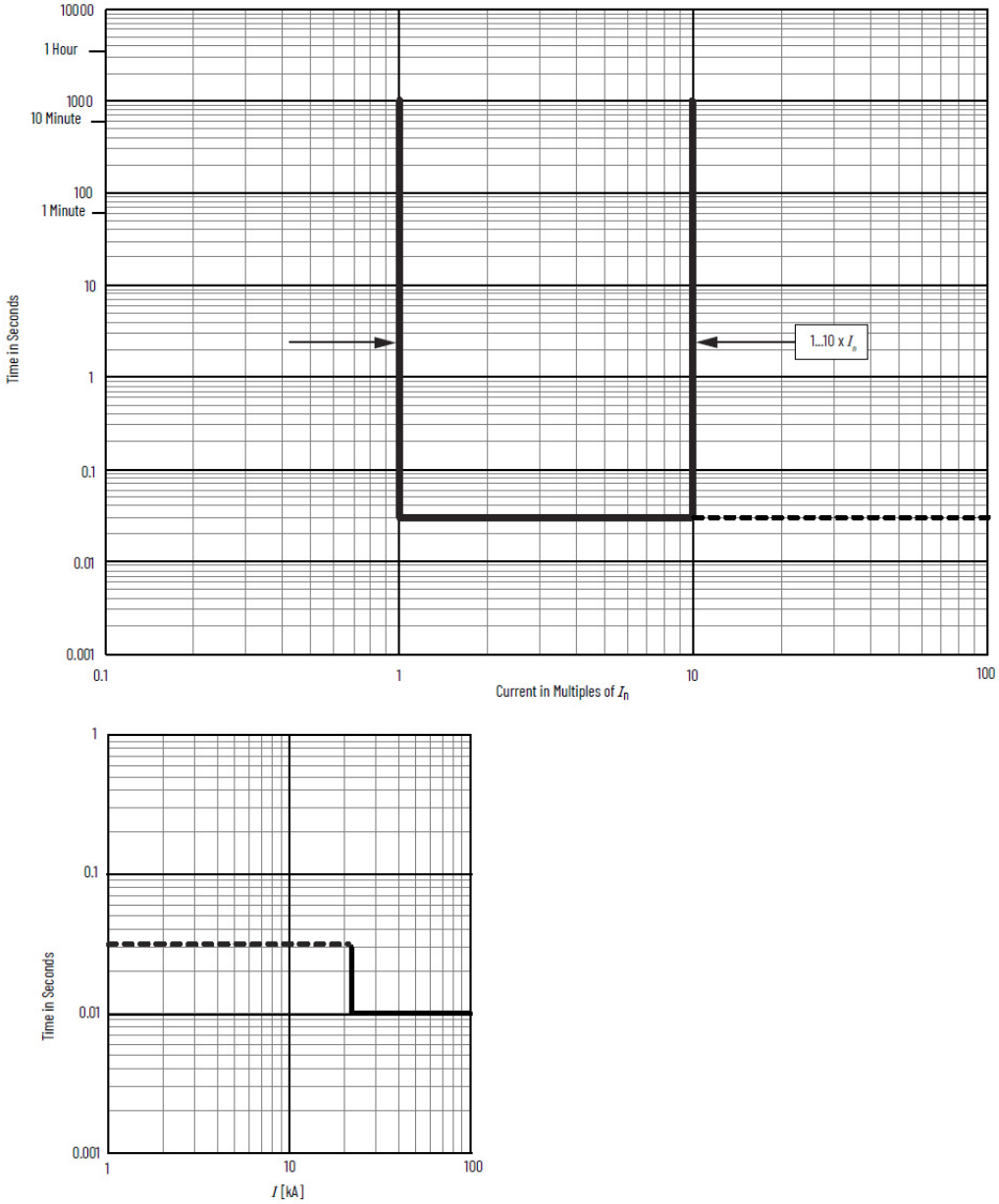


Figure 116 - Bulletin 140MG Frame Size N: Time-current Curve

- Maximum voltage: 600V AC, (50/60 Hz)
- Maximum current: 1200 A

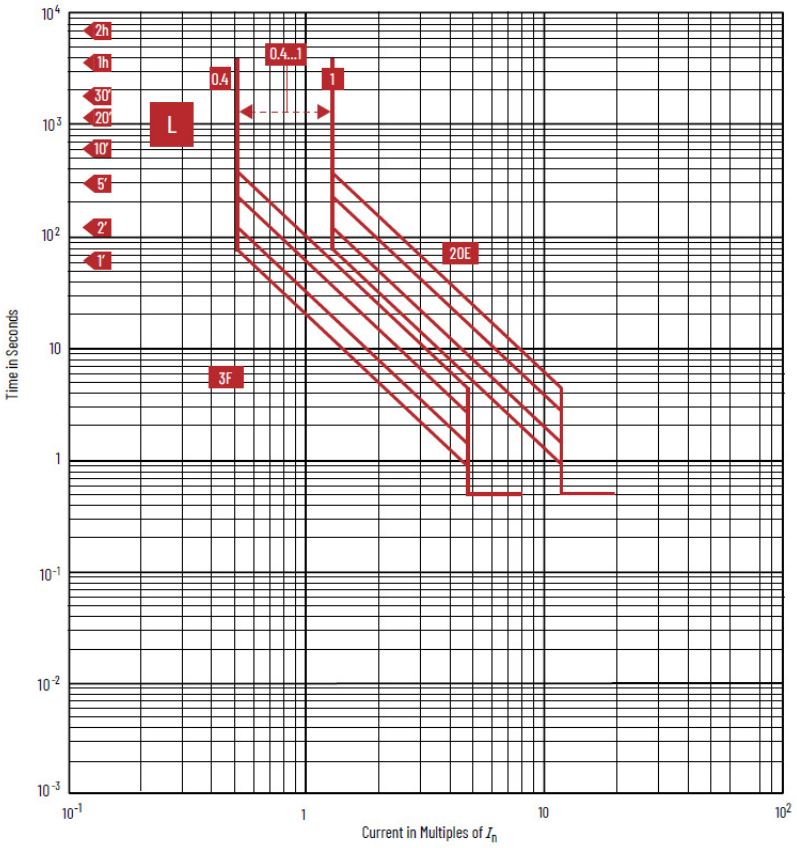


Bulletin 140MG MPCB Trip Curves

Electronic DIP Switch Trip Units

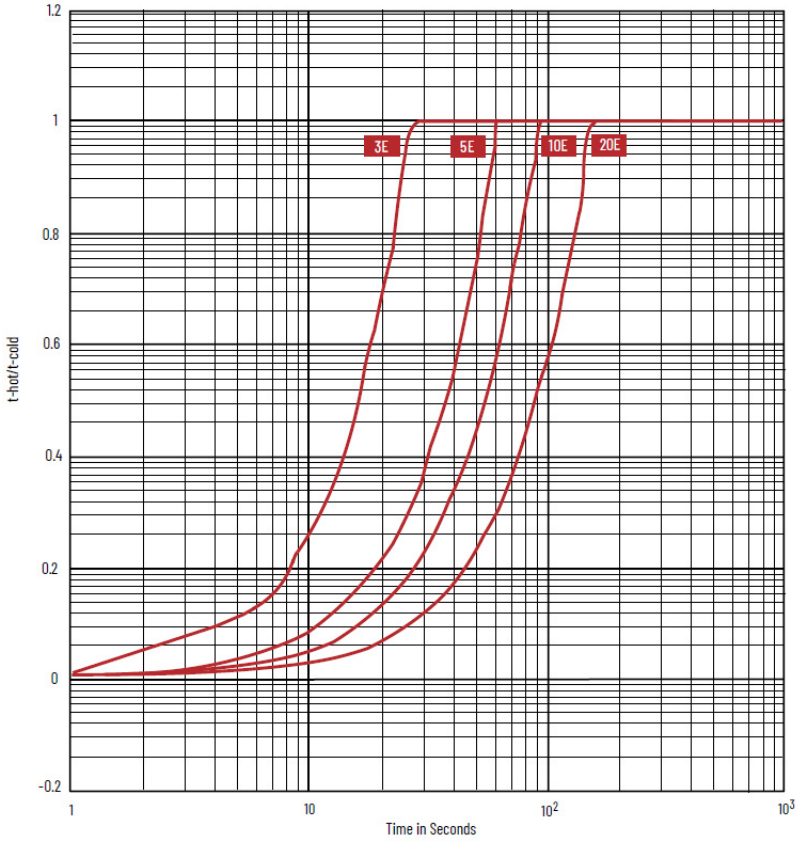
Bulletin 140MG Frame Size H and J

Figure 117 - Bulletin 140MG Frame Size H and J: Electronic DIP Switch Trip Unit: Time-current Curve L Protection (Cold Trip)



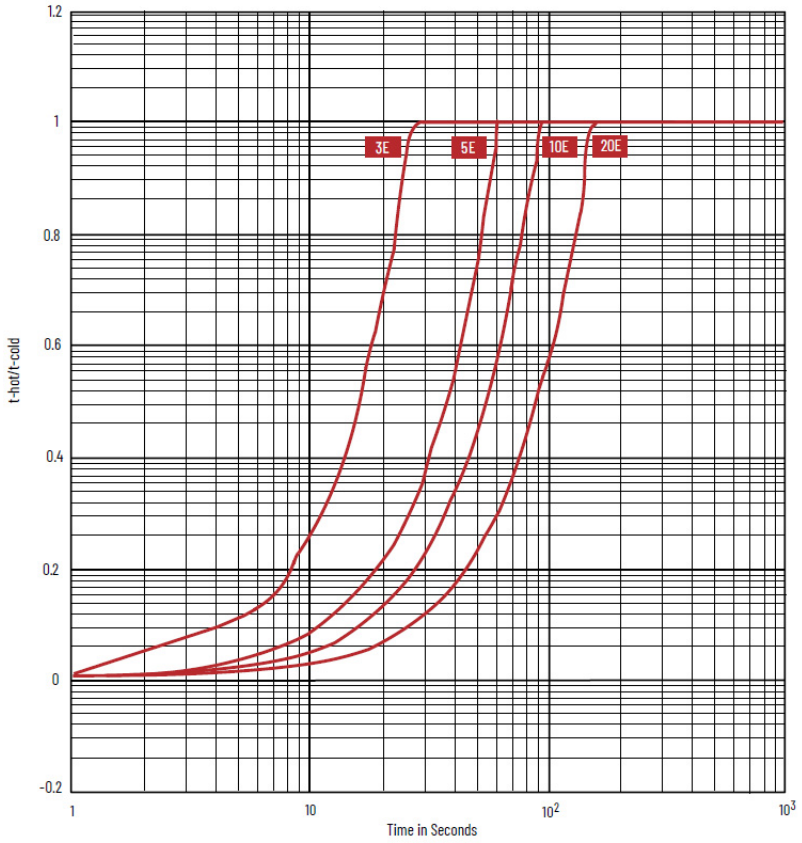
Motor Class	T_1 [s]
5E	5
10E	10
20E	20
30E	30

Figure 118 - Bulletin 140MG Frame Size H and J: Electronic DIP Switch Trip Unit: Time-current Curve L Protection (Hot Trip)



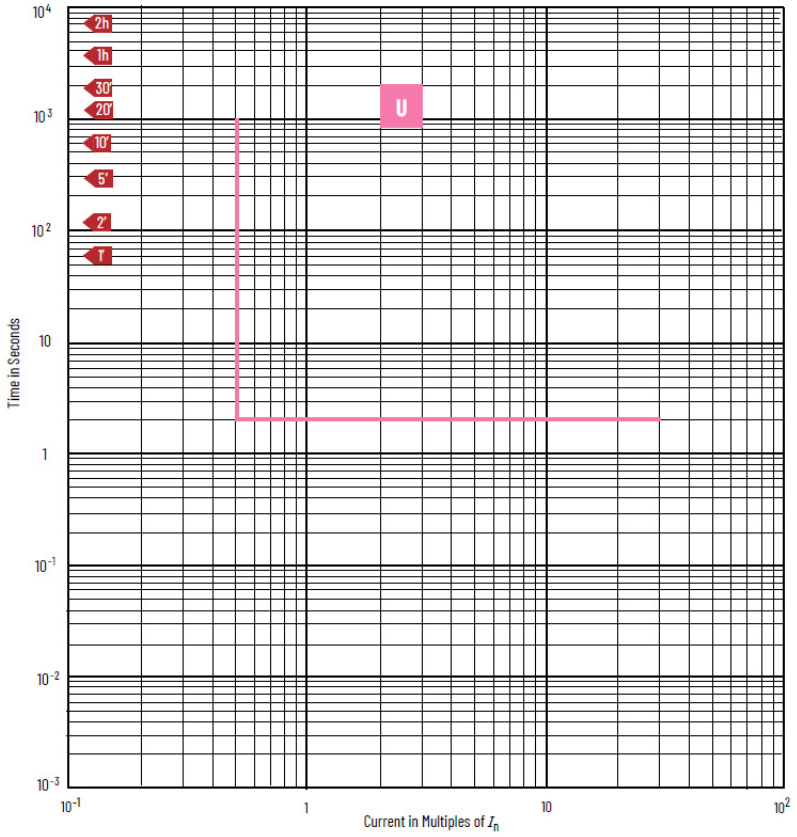
Motor Class	T_1 [s]
5E	5
10E	10
20E	20
30E	30

Figure 119 - Bulletin 140MG Frame Size H and J: Electronic DIP Switch Trip Unit: Time-current Curve I Protection



Motor Class	T_1 [s]
5E	5
10E	10
20E	20
30E	30

Figure 120 - Bulletin 140MG Frame Size H and J: Electronic DIP Switch Trip Unit: Time-current Curve U Protection



Motor Class	T_1 [s]
5E	5
10E	10
20E	20
30E	30

Figure 121 - Bulletin 140MG2 Frame Size K and L: Electronic DIP Switch Trip Unit: Time Current Curve L Protection (Cold Trip)

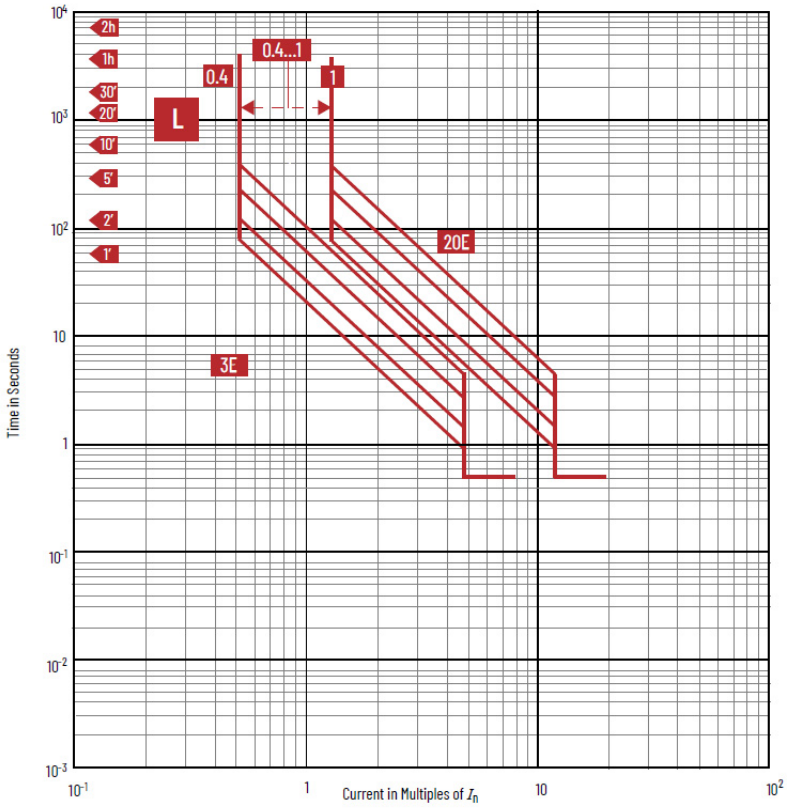


Figure 122 - Bulletin 140MG2 Frame Size K and L: Electronic DIP Switch Trip Unit: Time-current Curve L Protection (Hot Trip)

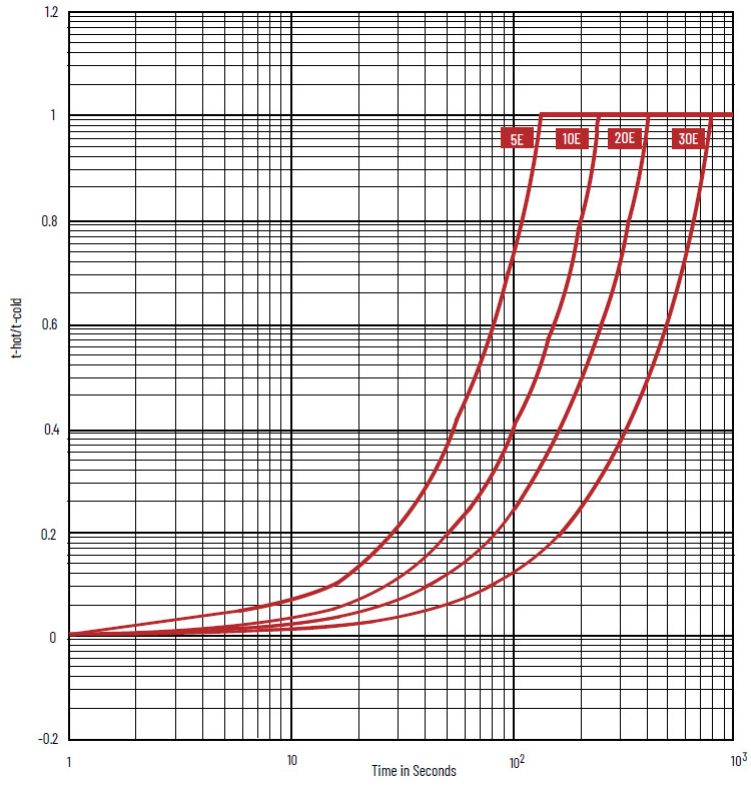


Figure 123 - Bulletin 140MG2 Frame Size K and L: Electronic DIP Switch Trip Unit: Time-current Curve I Protection

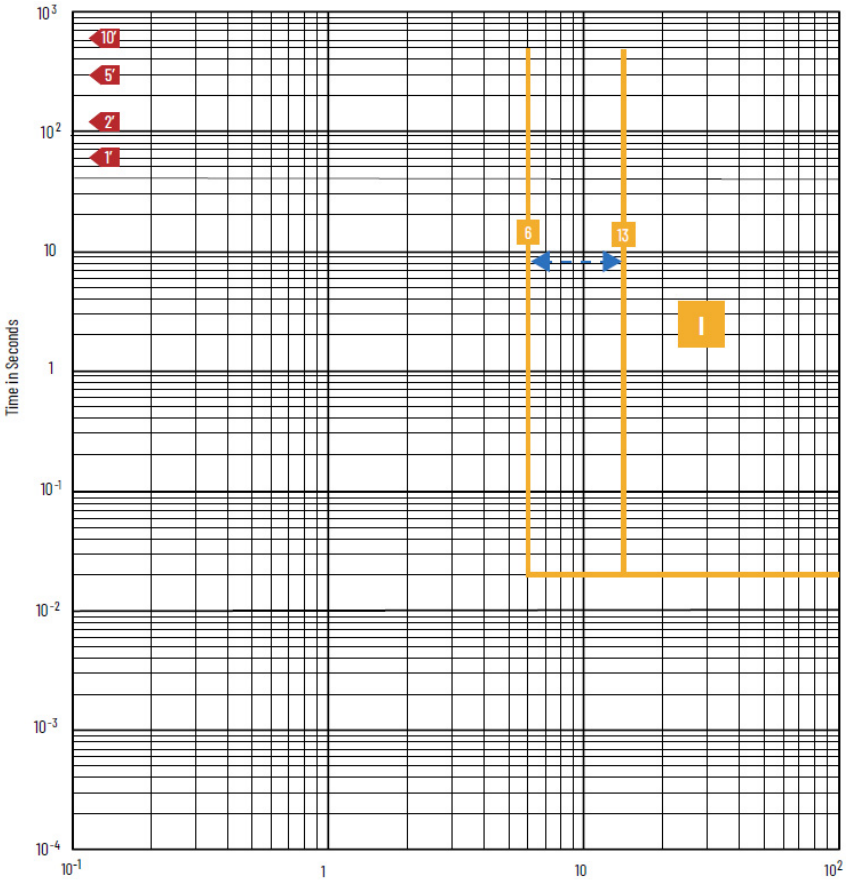
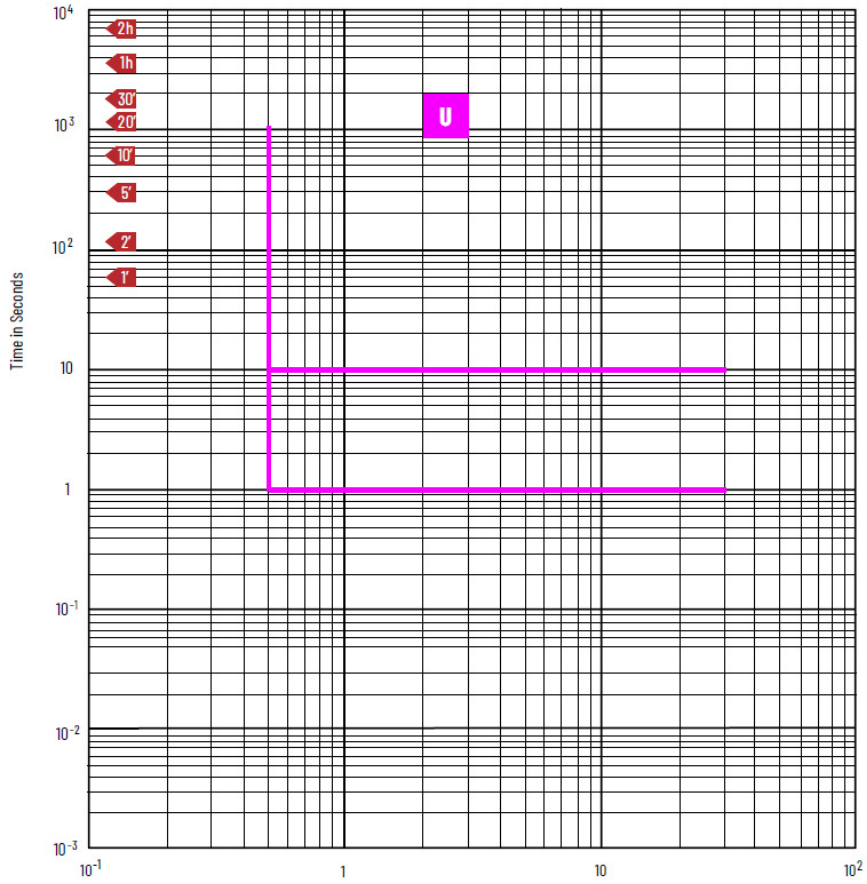


Figure 124 - Bulletin 140MG2 Frame Size K and L: Electronic DIP Switch Trip Unit: Time-current Curve U Protection



Electronic MotorSense Trip Units

Bulletin 140MG Frame Size H

Figure 125 - Bulletin 140MG Frame Size H: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Cold Trip)

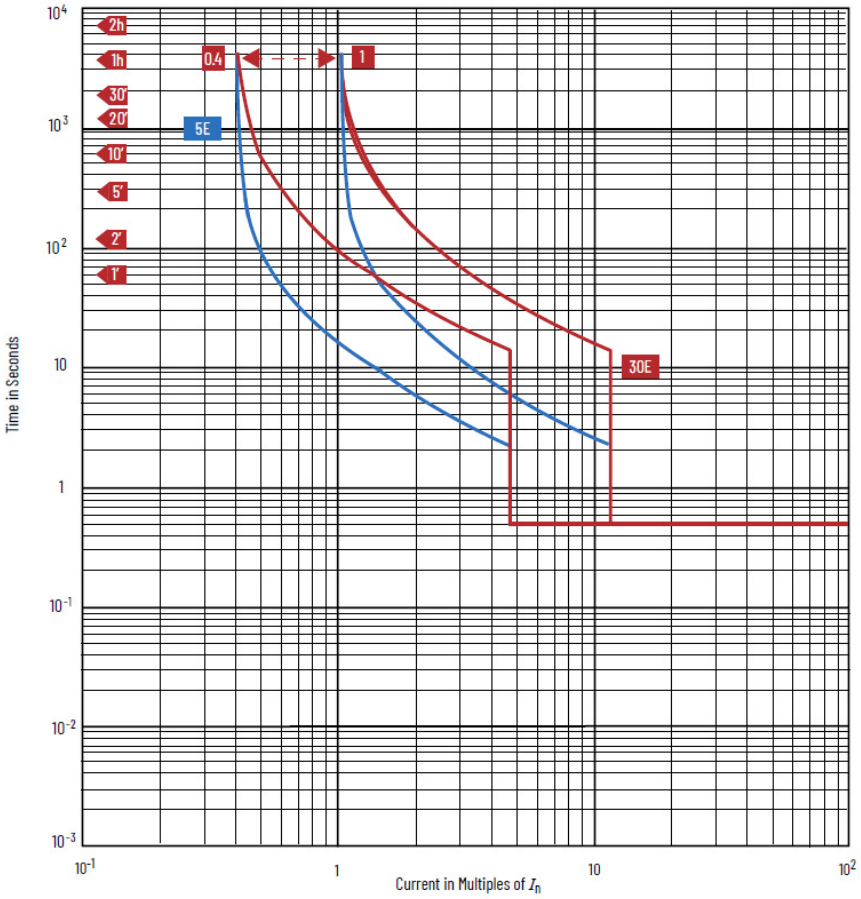


Figure 126 - Bulletin 140MG Frame Size H: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Hot Trip)

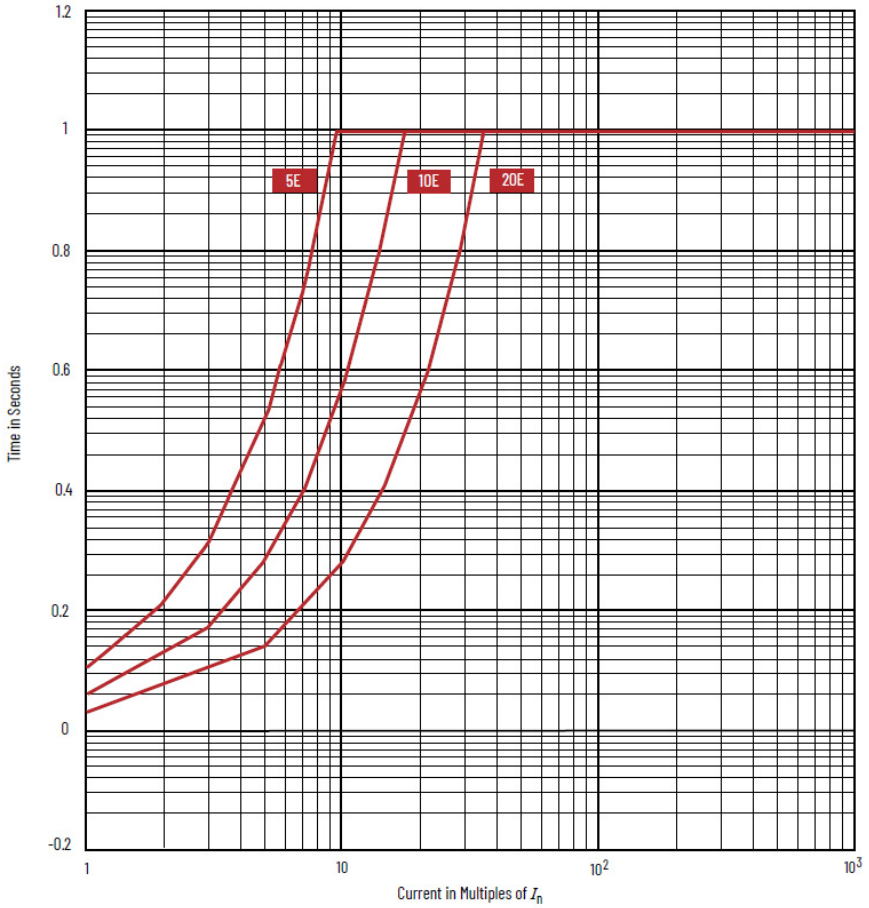


Figure 127 - Bulletin 140MG Frame Size H: Electronic MotorSense Trip Unit — Time-current Curve R Protection JAM

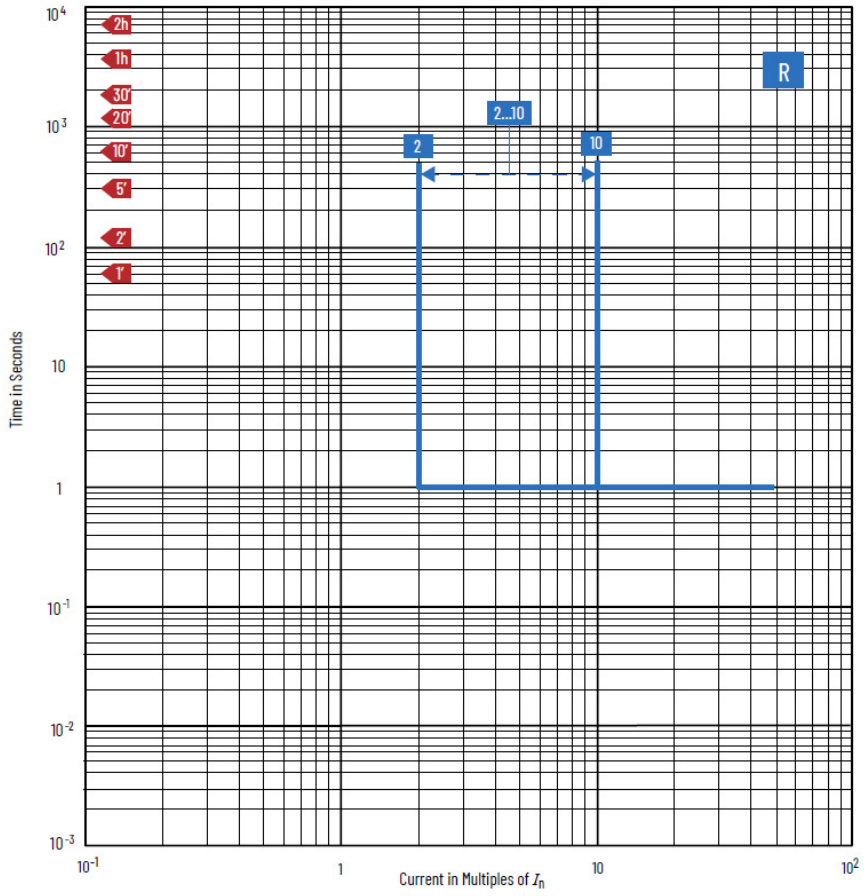


Figure 128 - Bulletin 140MG Frame Size H: Electronic MotorSense Trip Unit — Time-current Curve R Protection STALL

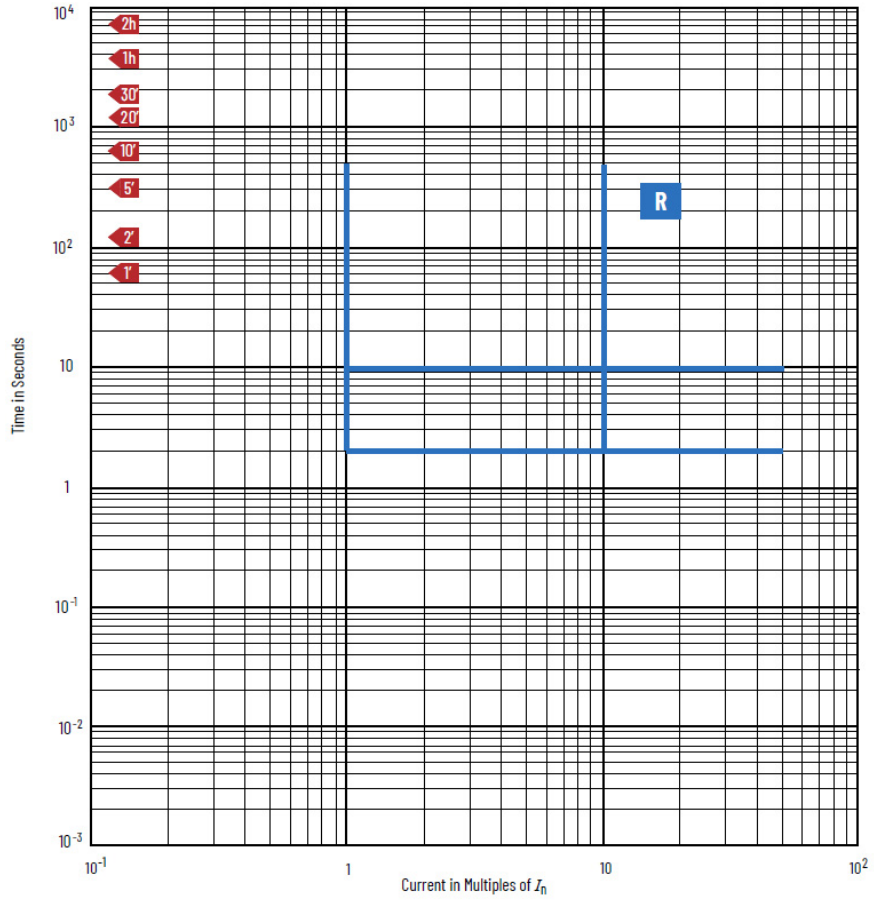


Figure 129 - Bulletin 140MG Frame Size H: Electronic MotorSense Trip Unit — Time-current Curve I Protection

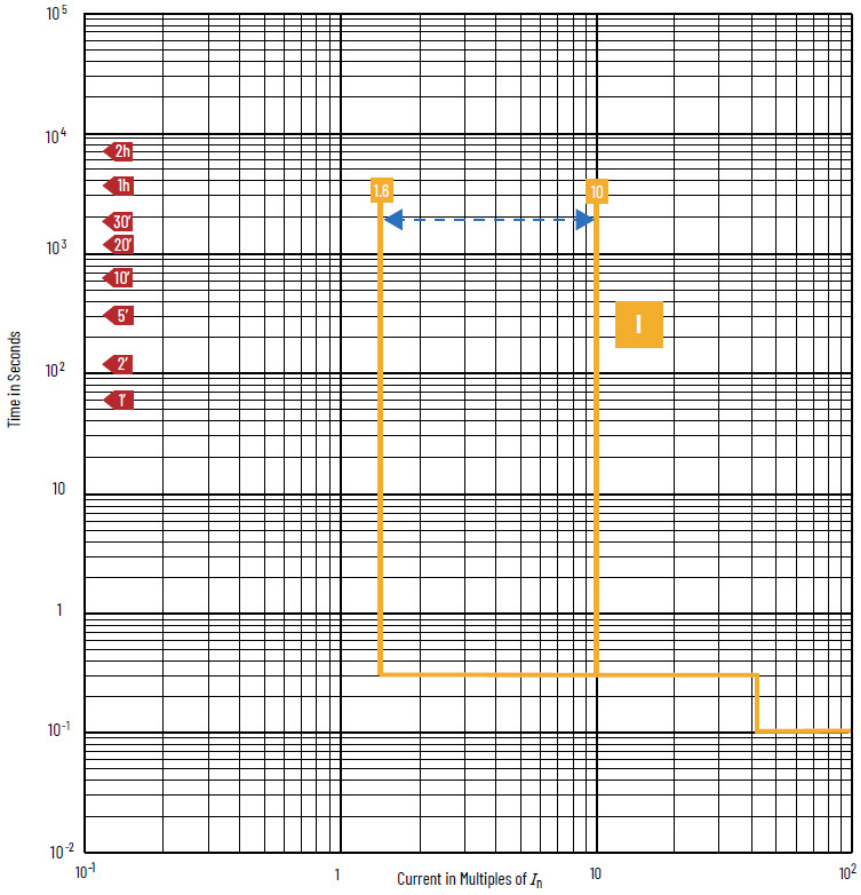
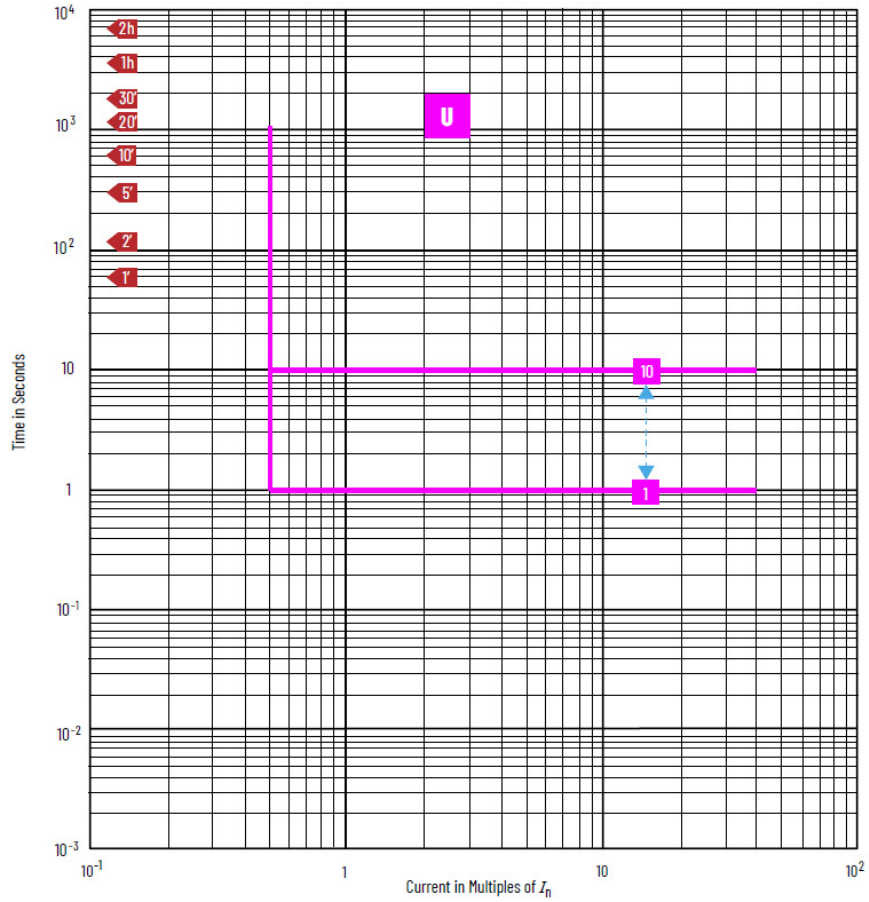


Figure 130 - Bulletin 140MG Frame Size H: Electronic MotorSense Trip Unit — Time-current Curve U Protection



Bulletin 140MG Frame Size J

Figure 131 - Bulletin 140MG Frame Size J: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Cold Trip)

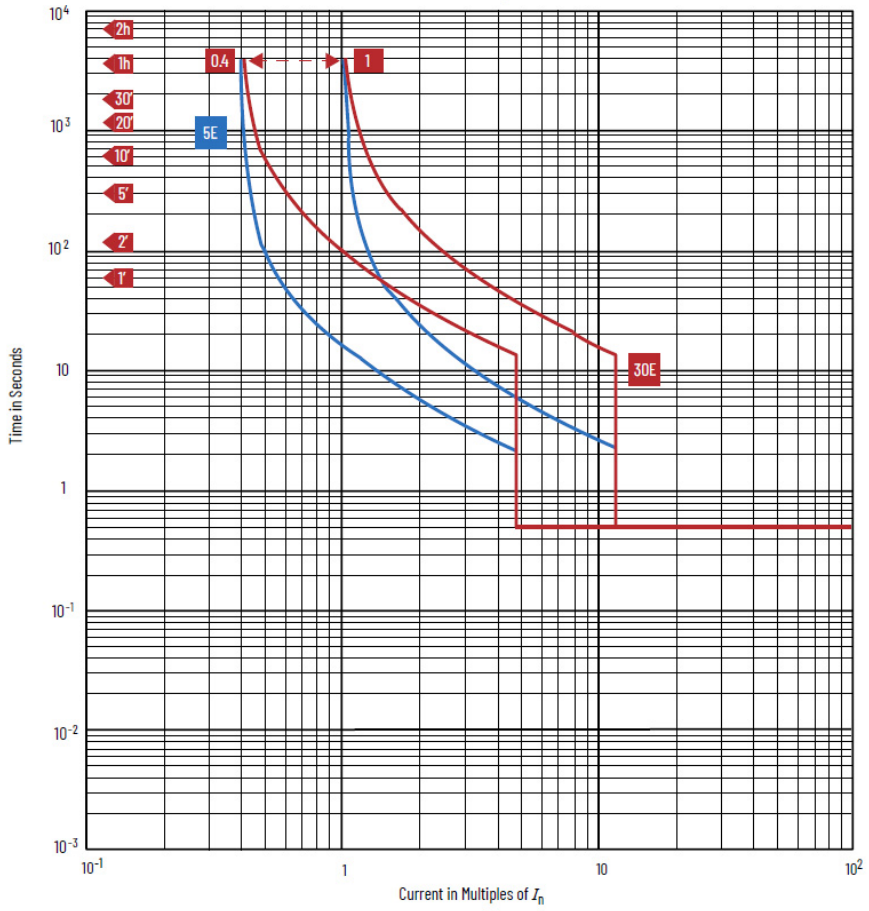


Figure 132 - Bulletin 140MG Frame Size J: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Hot Trip)

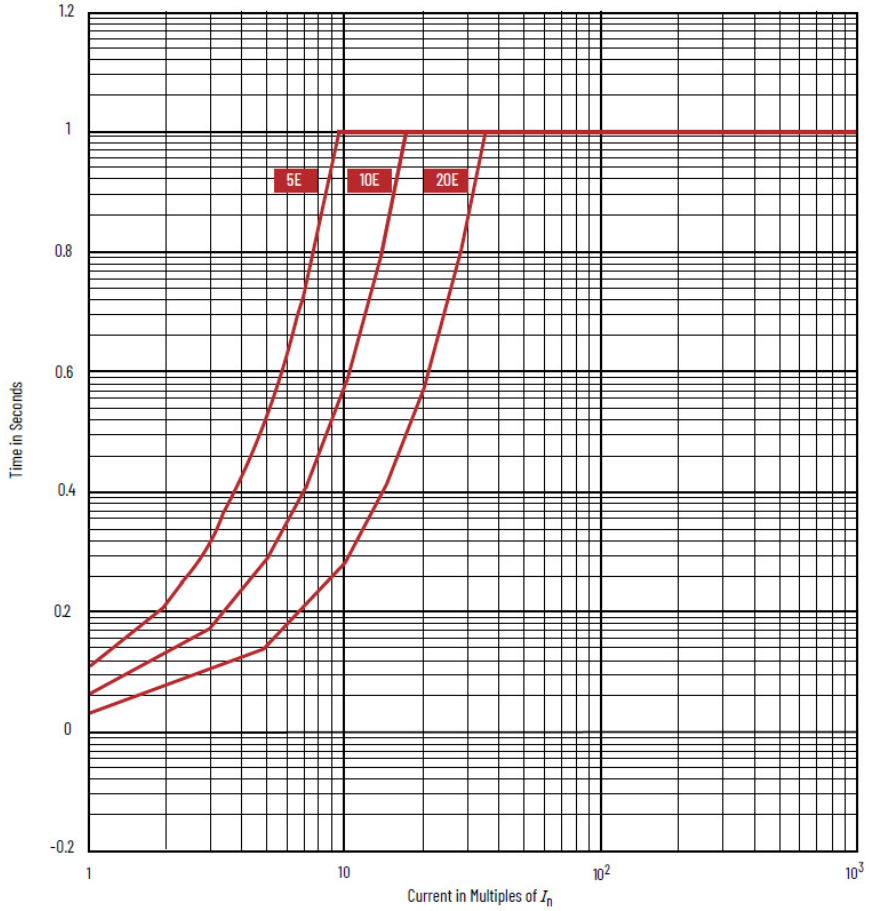


Figure 133 - Bulletin 140MG Frame Size J: Electronic MotorSense Trip Unit — Time-current Curve R Protection JAM

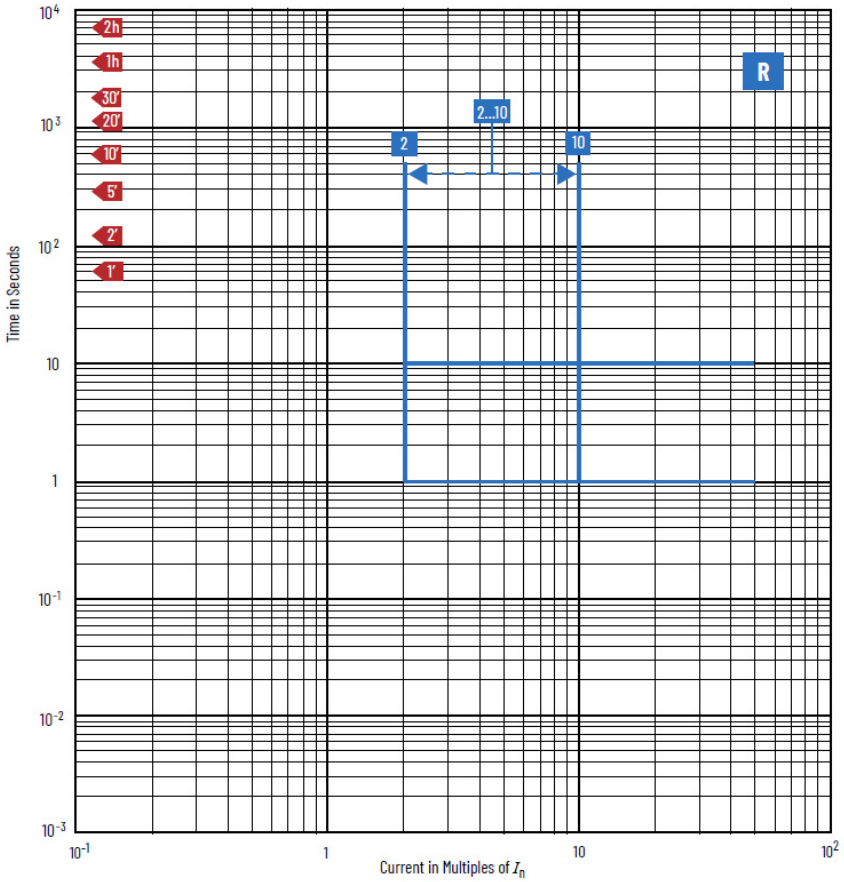


Figure 134 - Bulletin 140MG Frame Size J: Electronic MotorSense Trip Unit — Time-current Curve R Protection STALL

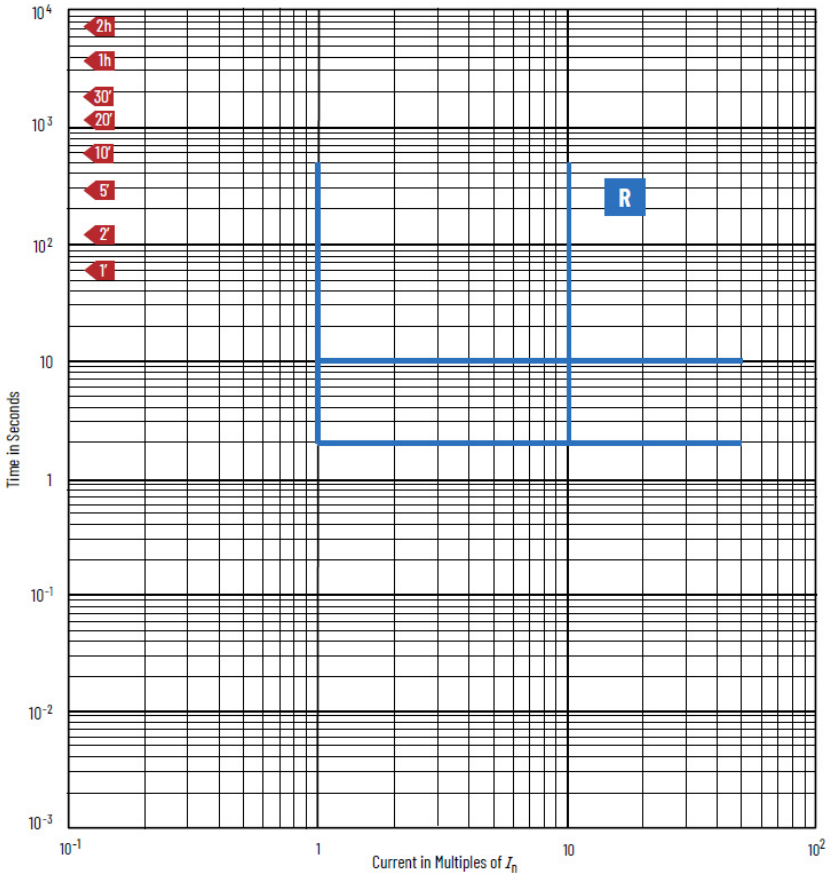


Figure 135 - Bulletin 140MG Frame Size J: Electronic MotorSense Trip Unit — Time-current Curve I Protection

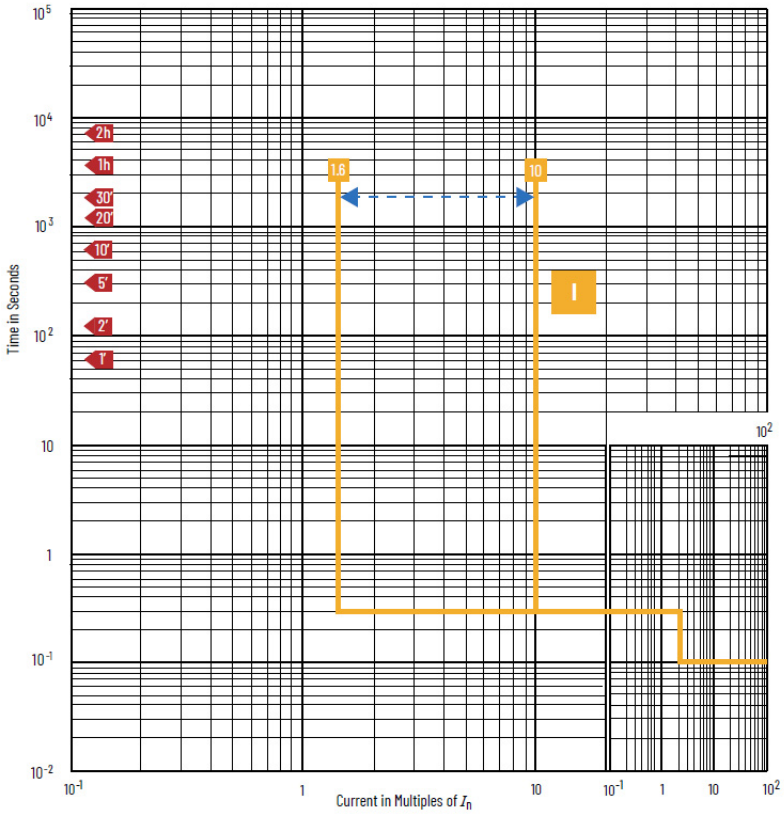
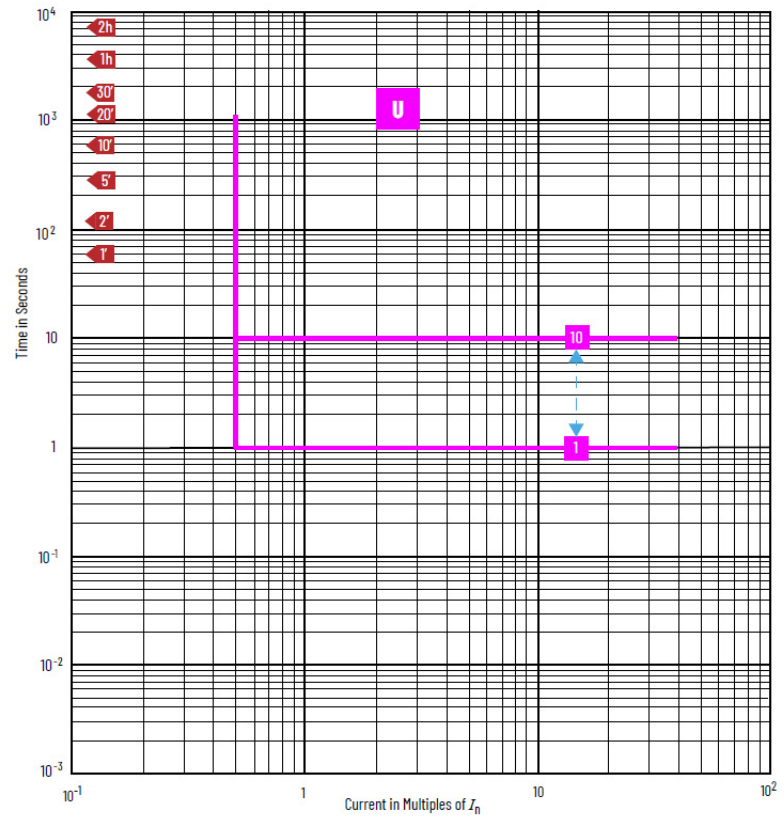


Figure 136 - Bulletin 140MG Frame Size J: Electronic MotorSense Trip Unit — Time-current Curve U Protection



Bulletin 140MG2 Frame Size K

Figure 137 - Bulletin 140MG2 Frame Size K: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Cold Trip)

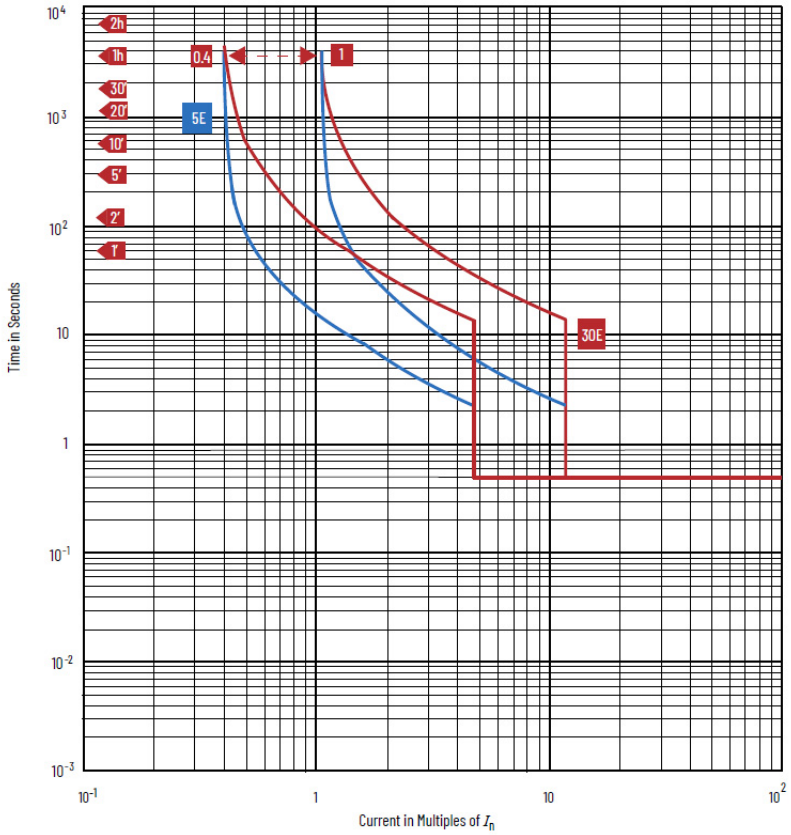


Figure 138 - Bulletin 140MG2 Frame Size K: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Hot Trip)

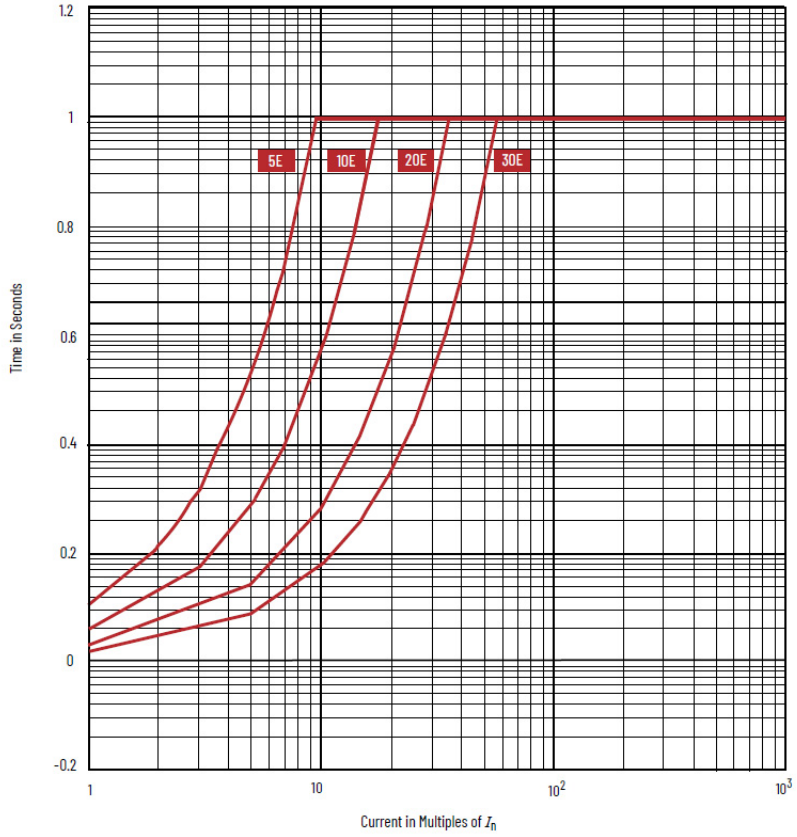


Figure 139 - Bulletin 140MG2 Frame Size K: Electronic MotorSense Trip Unit — Time-current Curve R Protection JAM

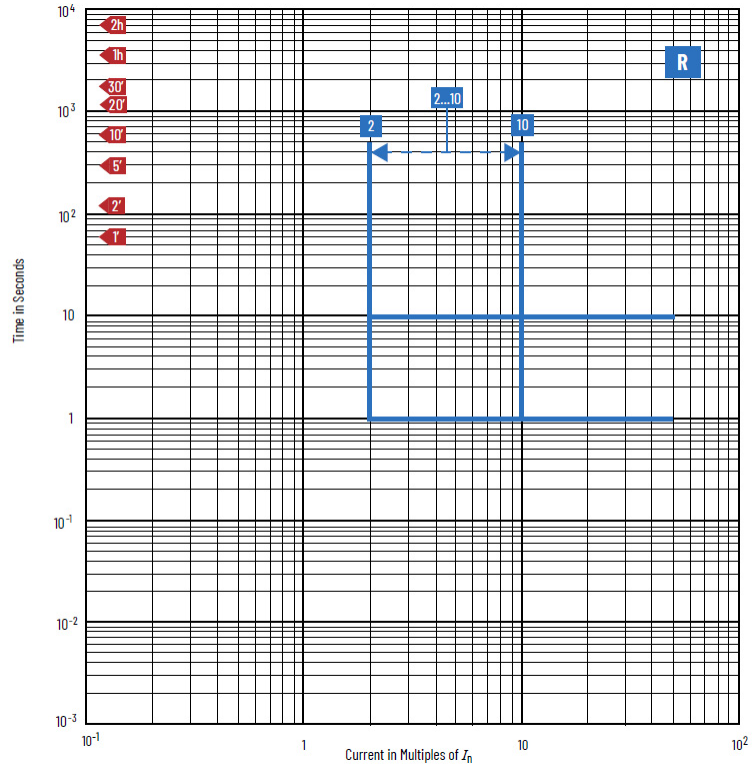


Figure 140 - Bulletin 140MG2 Frame Size K: Electronic MotorSense Trip Unit — Time-current Curve R Protection STALL

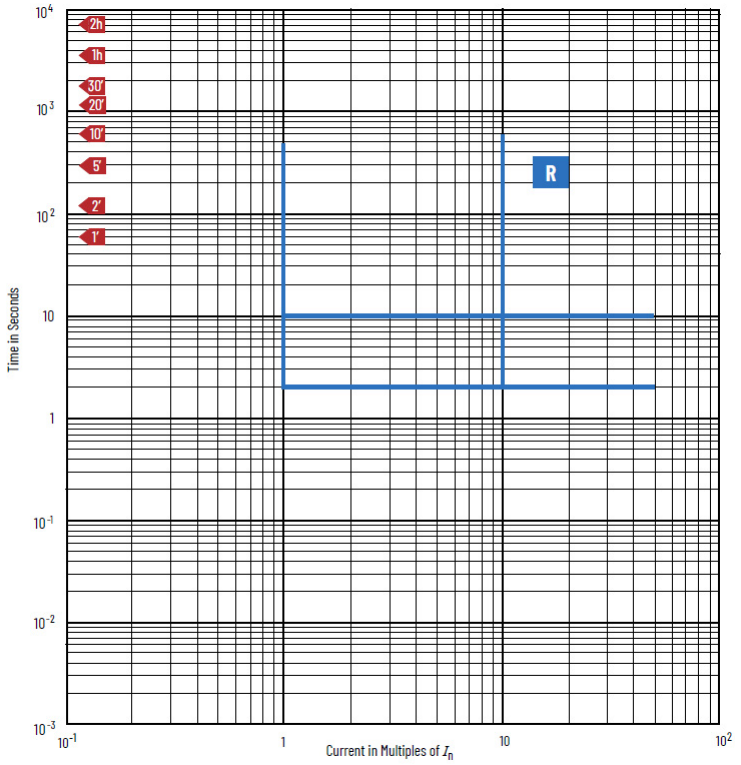


Figure 141 - Bulletin 140MG2 Frame Size K: Electronic MotorSense Trip Unit — Time-current Curve I Protection

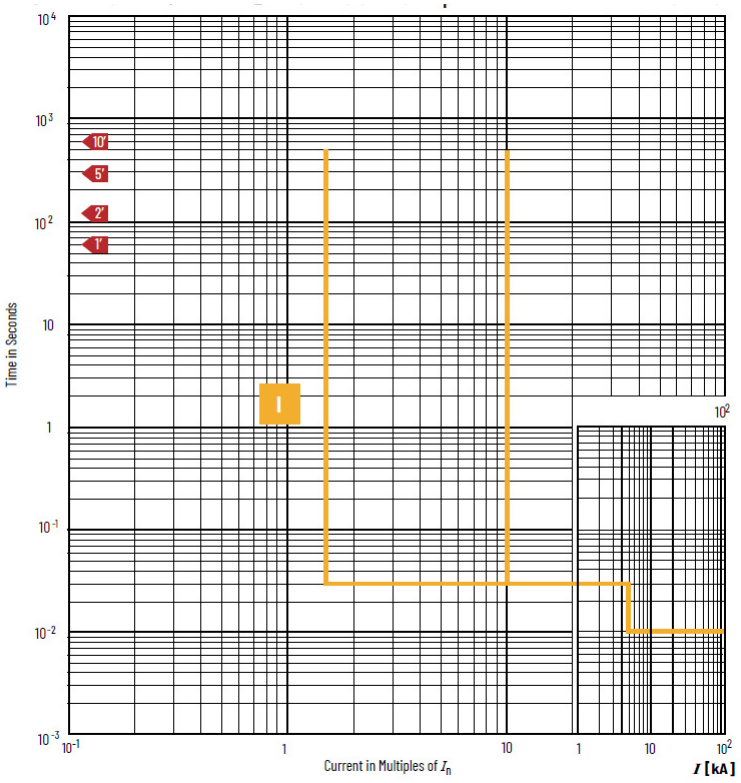
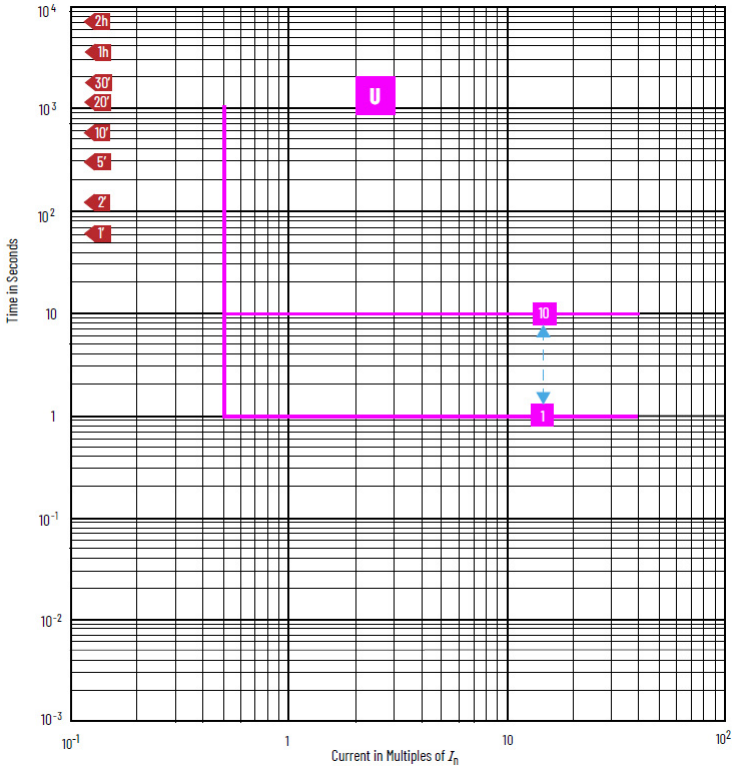


Figure 142 - Bulletin 140MG2 Frame Size K: Electronic MotorSense Trip Unit — Time-current Curve U Protection



Bulletin 140MG2-L Frame Size

Figure 143 - Bulletin 140MG2 Frame Size L: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Cold Trip)

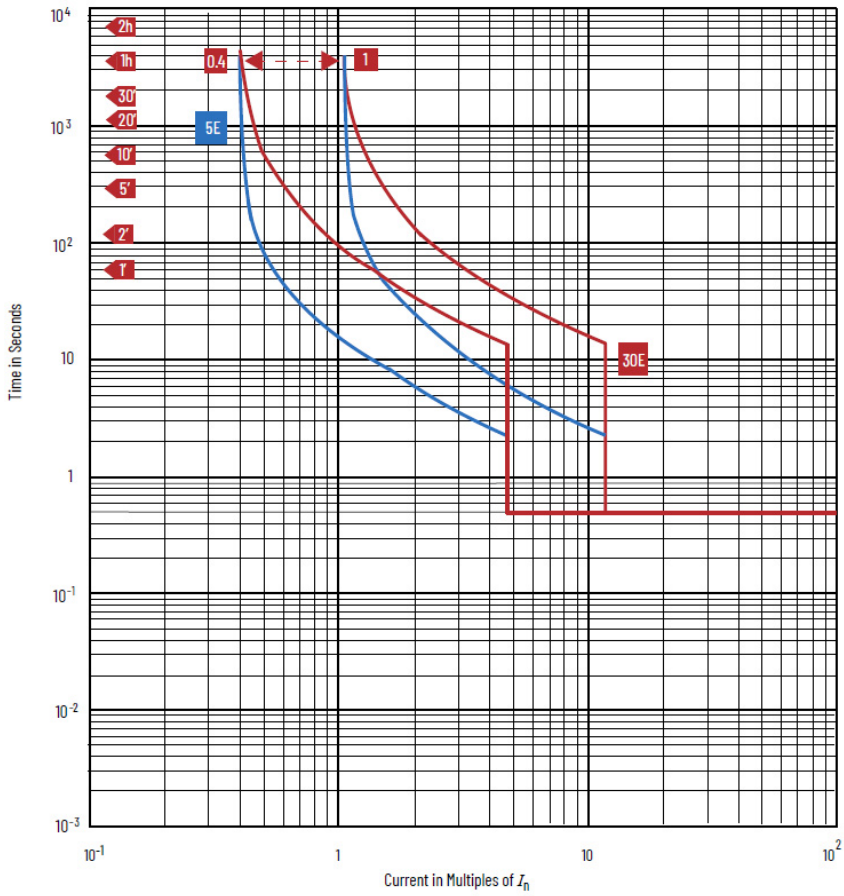


Figure 144 - Bulletin 140MG2 Frame Size L: Electronic MotorSense Trip Unit — Time-current Curve L Protection (Hot Trip)

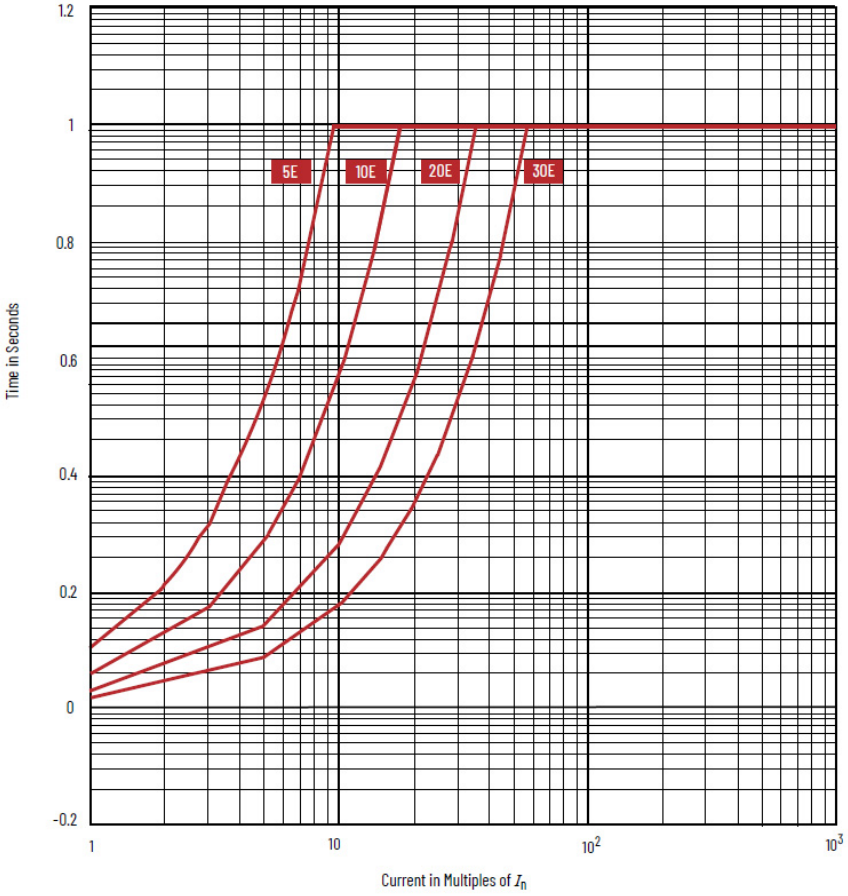


Figure 145 - Bulletin 140MG2 Frame Size L: Electronic MotorSense Trip Unit — Time-current Curve R Protection JAM

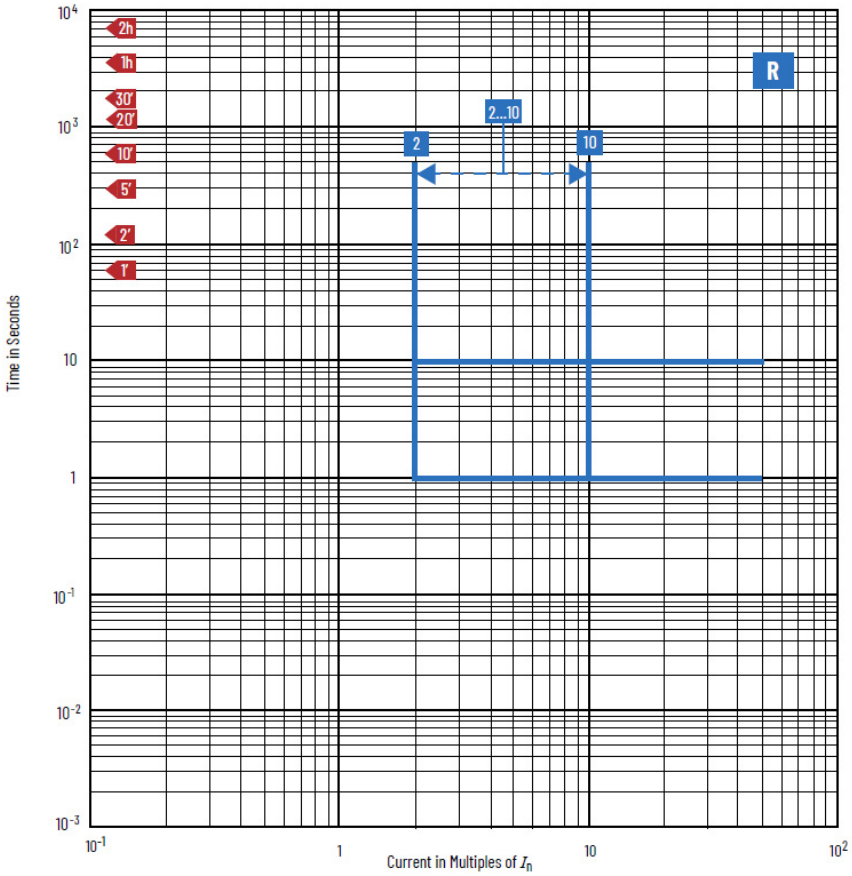


Figure 146 - Bulletin 140MG2 Frame Size L: Electronic MotorSense Trip Unit — Time-current Curve R Protection STALL

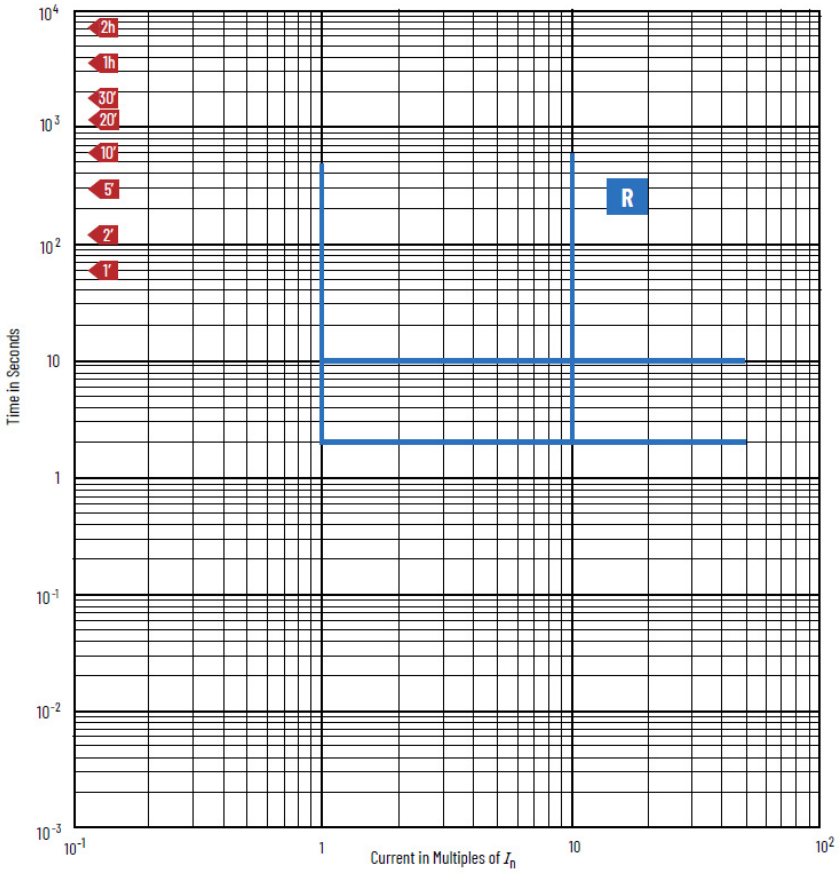


Figure 147 - Bulletin 140MG2 Frame Size L: Electronic MotorSense Trip Unit — Time-current Curve I Protection

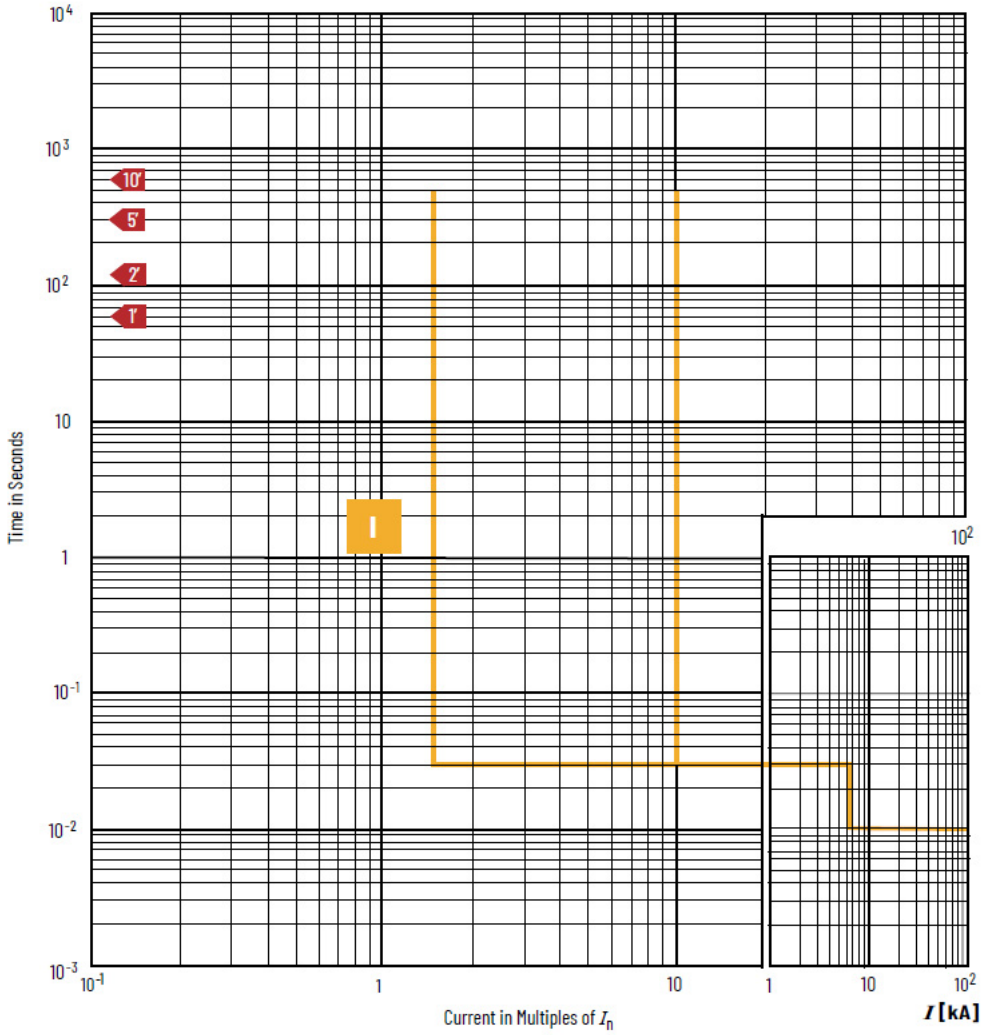
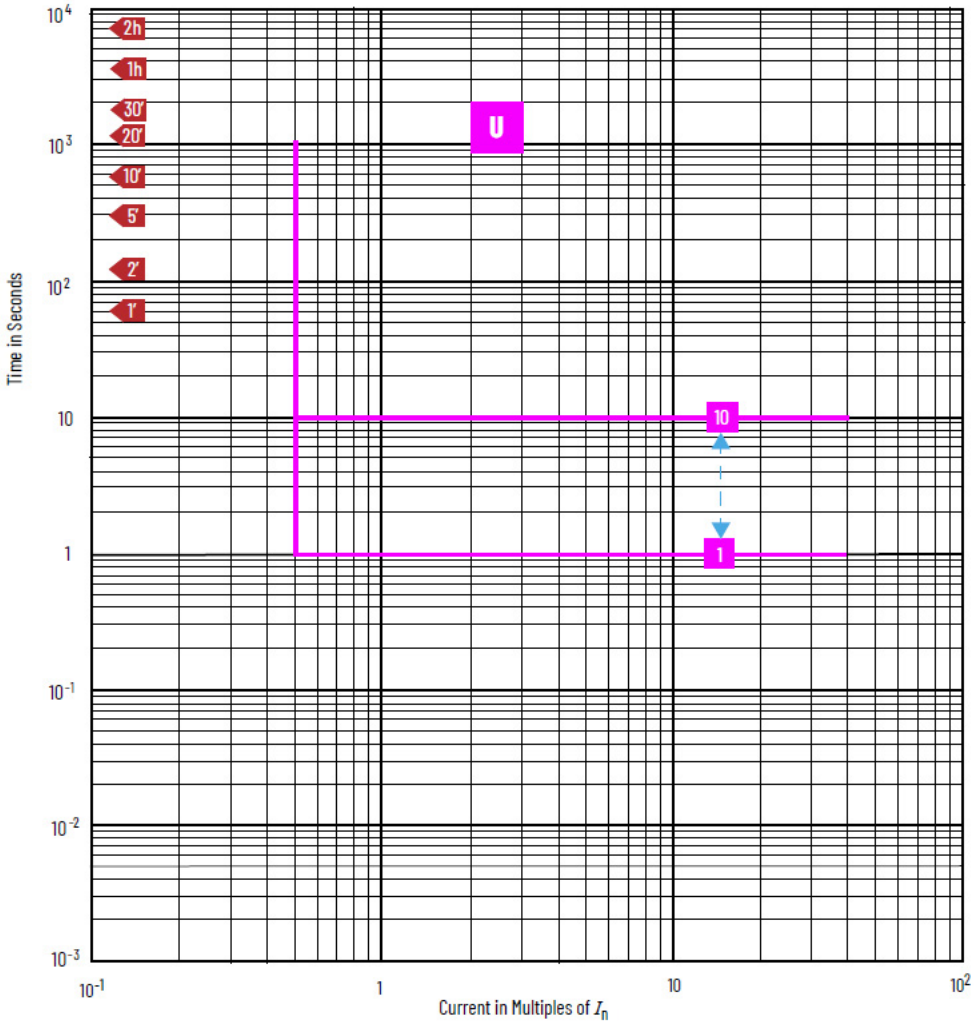


Figure 148 - Bulletin 140MG2 Frame Size L: Electronic MotorSense Trip Unit — Time-current Curve U Protection



Notes:

Dimensions are in millimeters (inches). Dimensions are not intended to be used for manufacturing purposes. Dimension tolerances are ± 0.1 mm (0.004 in).

Bulletin 140G and Bulletin 140MG MCCBs: Frame Size G

Figure 149 - Panel-mount: 140G and 140MG Frame Size G MCCBs

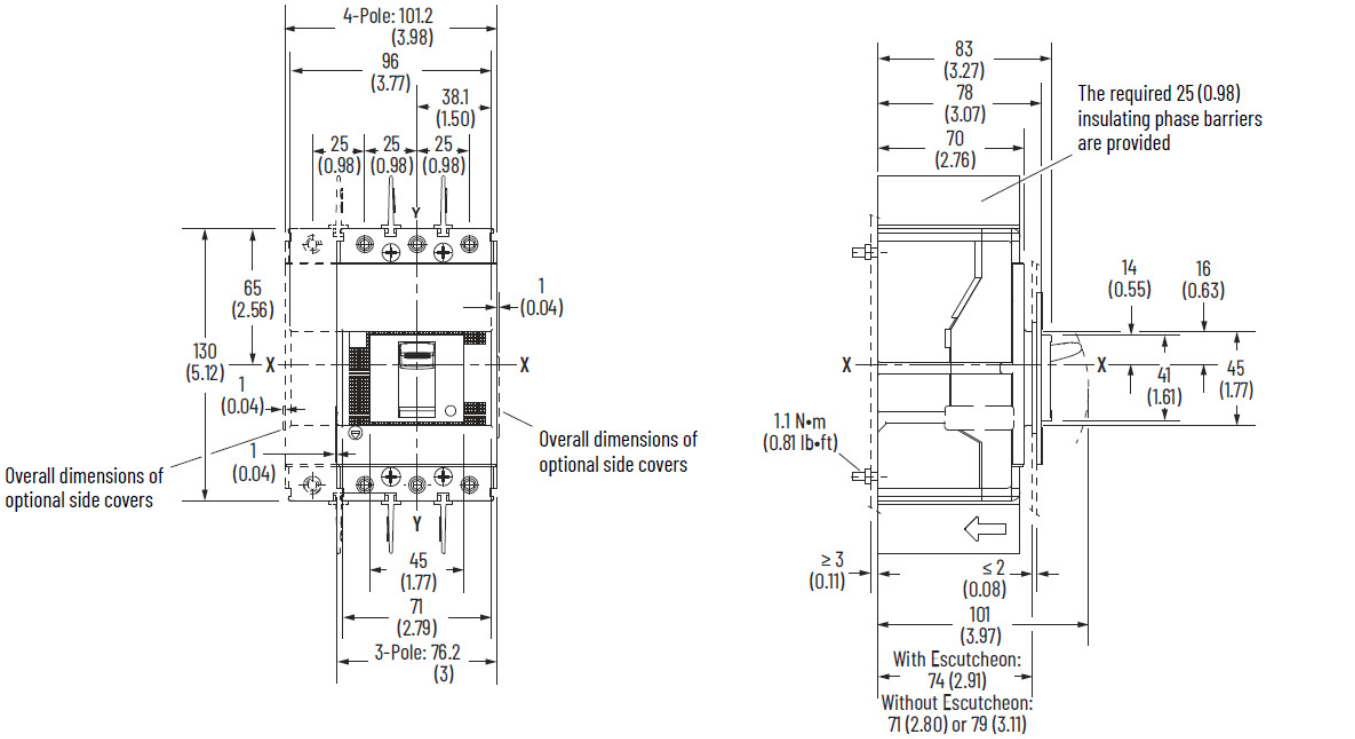


Figure 150 - DIN Rail Mount: 140G-G and 140MG-G MCCBs (Series A)

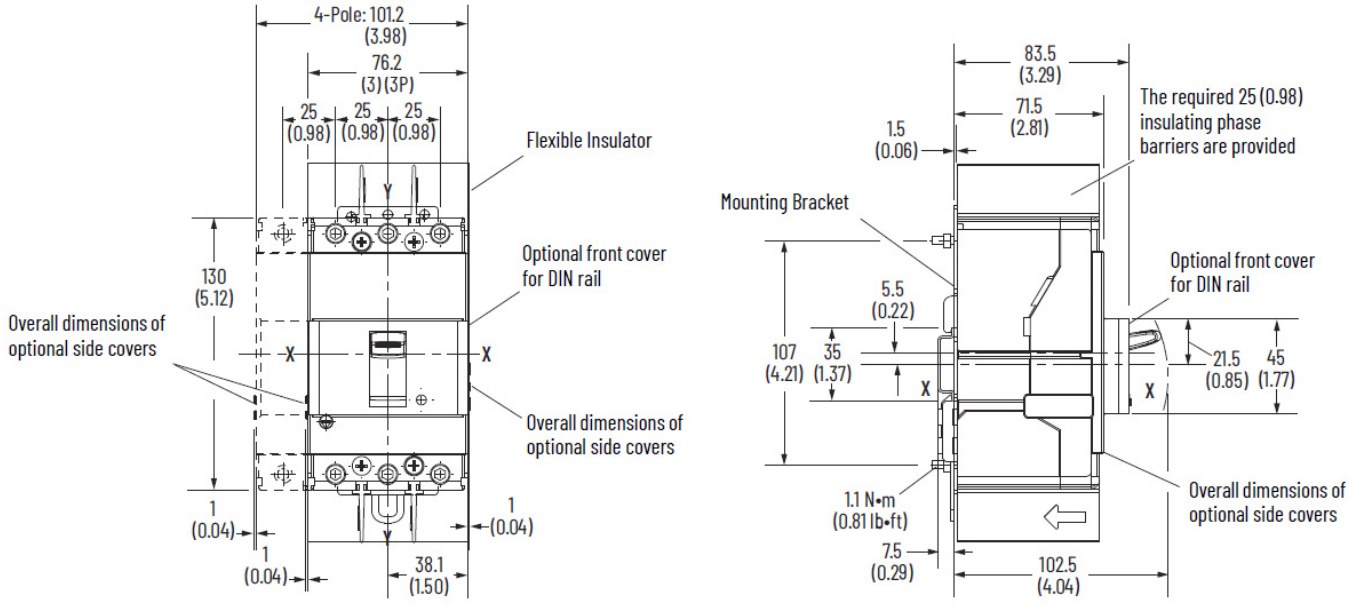


Figure 151 - Drilling Template for Mounting: 140G-G and 140MG-G MCCBs

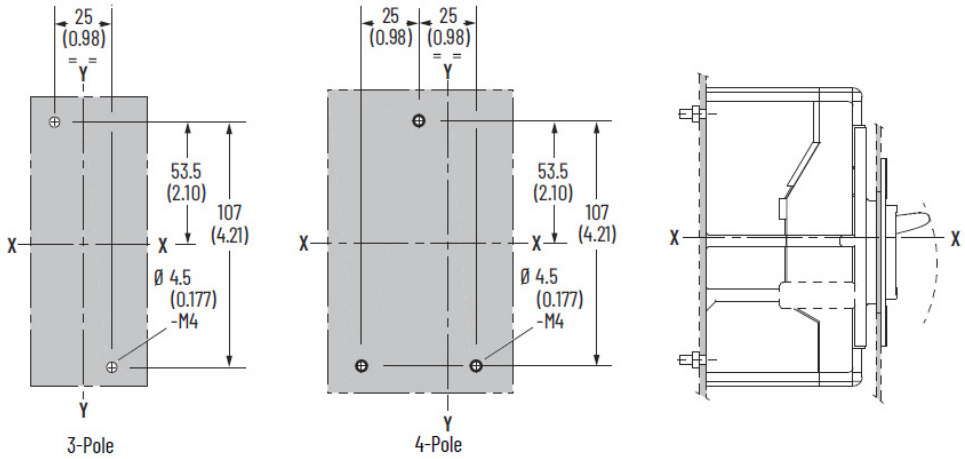


Figure 152 - Terminals: Cat. No. 140G-G-ECM and Cat. No. 140G-G-ECM4

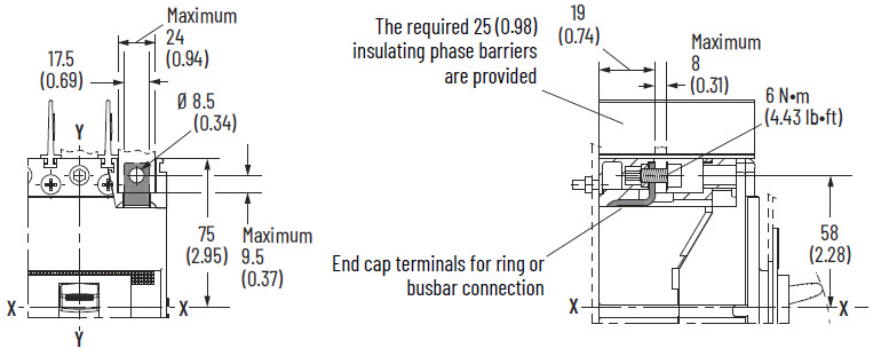


Figure 153 - Extended Terminals: Cat. No. 140G-G-EXT3 and Cat. No. 140G-G-EXT4

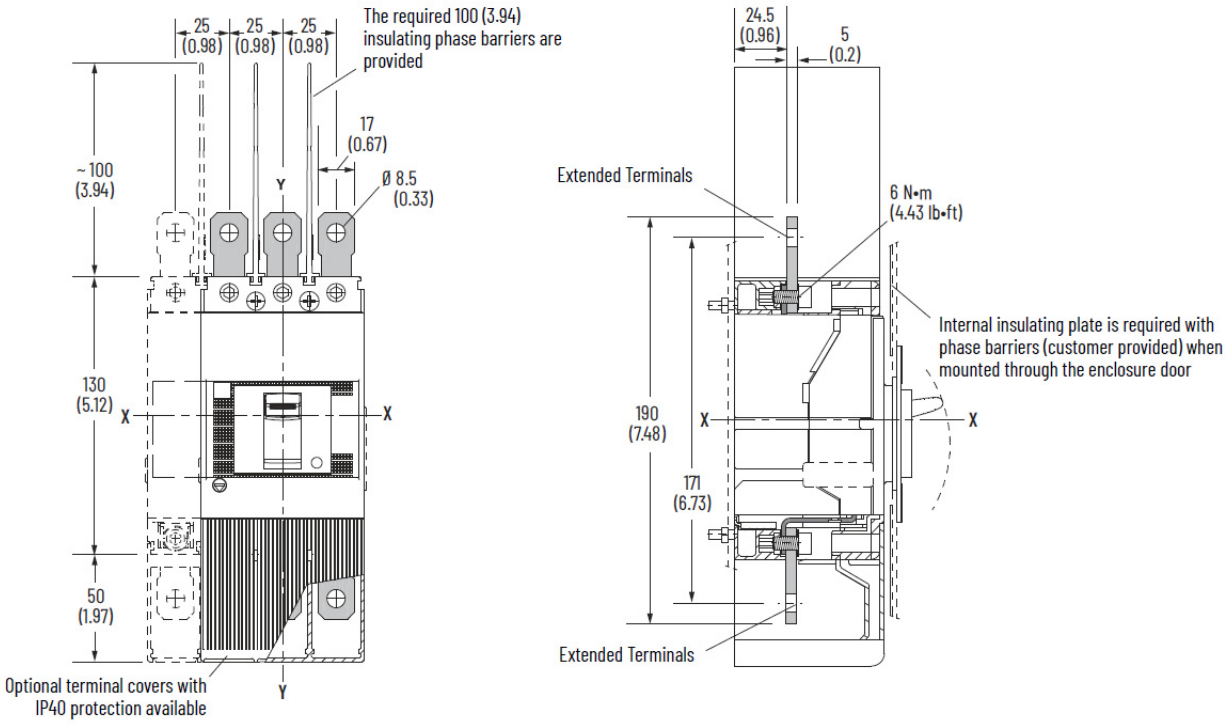


Figure 154 - Spreader Terminals: Cat. No. 140G-G-EXS3 and Cat. No. 140G-G-EXS4

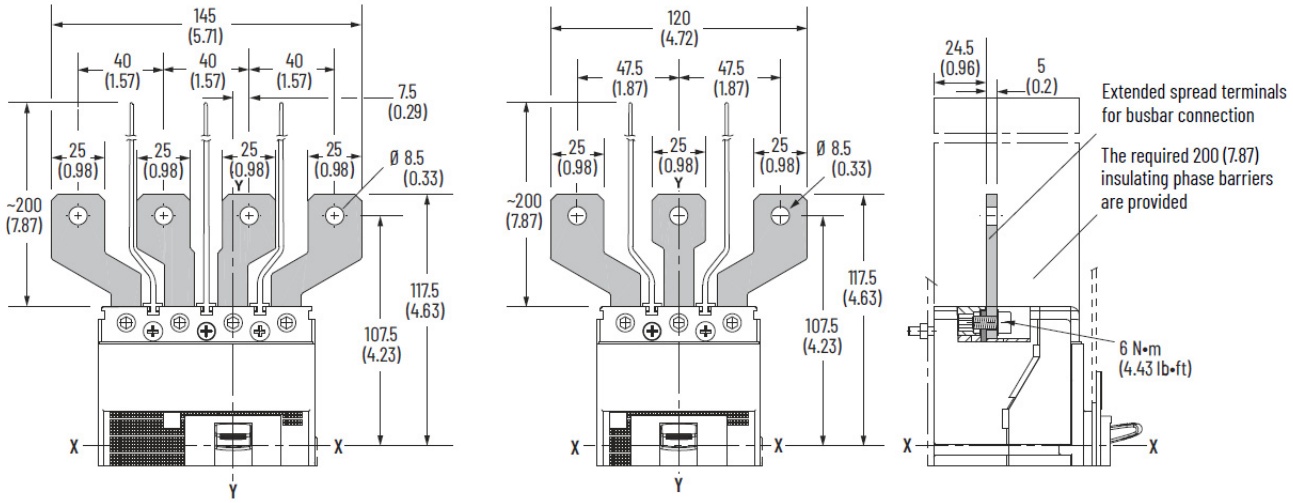


Figure 155 - Terminals (Copper Only Lug): Cat. No. 140G-G-TLC13 and Cat. No. 140G-G-TLC14

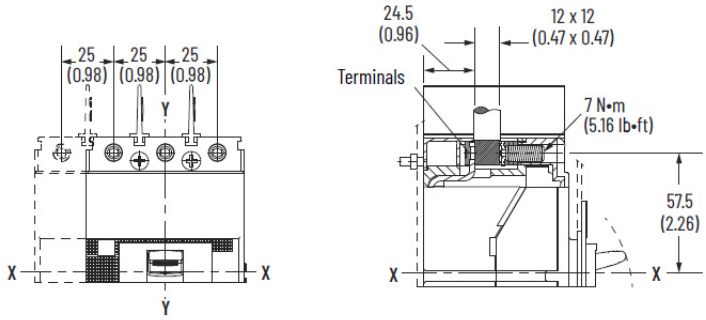


Figure 156 - Terminal (Multi-cable Terminal Lug): Cat. No. 140G-G-MTL63 and Cat. No. 140G-G-MTL64

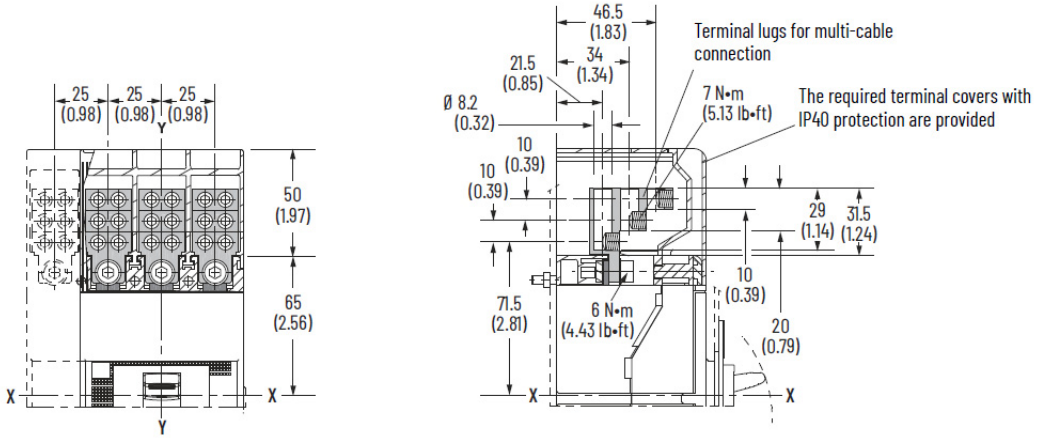


Figure 157 - Direct Rotary Operating Handle: Cat. No. 140G-G-RMB and Cat. No. 140G-G-RMY

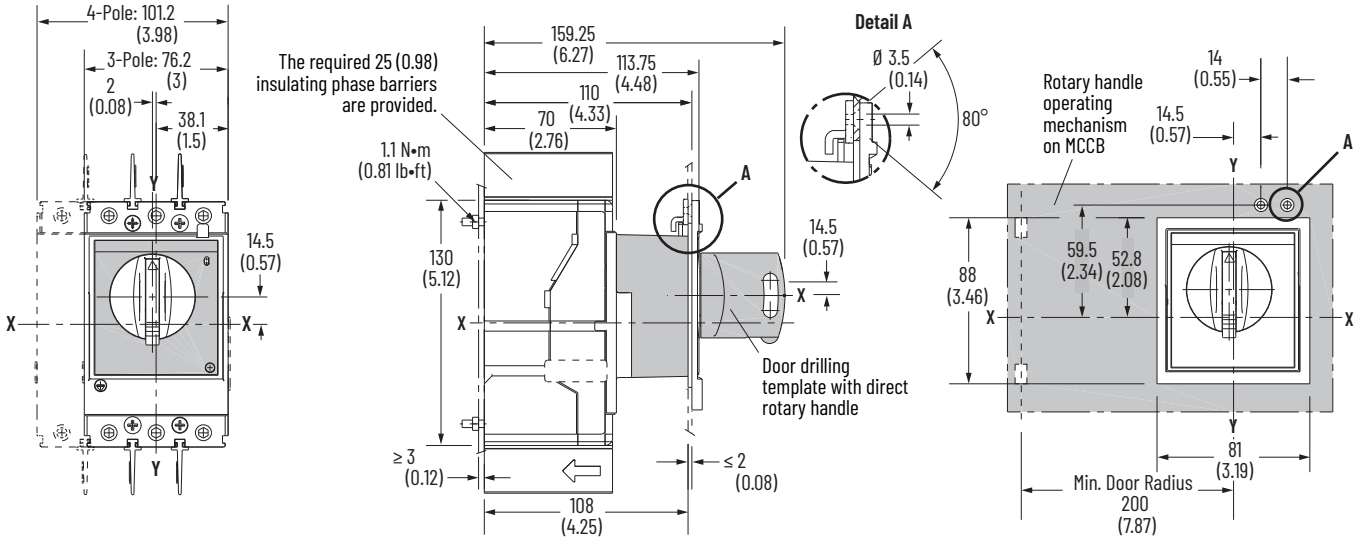
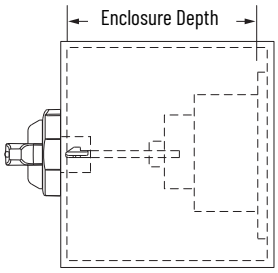


Figure 158 - Minimum/Maximum Enclosure Depth: Cat. No. 140G-G-RVM...

This figure depicts the minimum and maximum enclosure sizes that accommodate the MCCB, operator, and handle. See Figure 159 on page 253 for overall assembly dimension and handle cutout.



Description	Enclosure Size [mm (in.)]	
	Minimum	Maximum
12 in. shaft	191 (7.25)	451 (17.75)
21 in. shaft		679 (26.75)
12 in. shaft with NFPA	229 (9)	451 (17.75)
21 in. shaft with NFPA		679 (26.75)

Figure 159 - Variable Depth Rotary Mechanism: Cat. No. 140G-G-RVM...

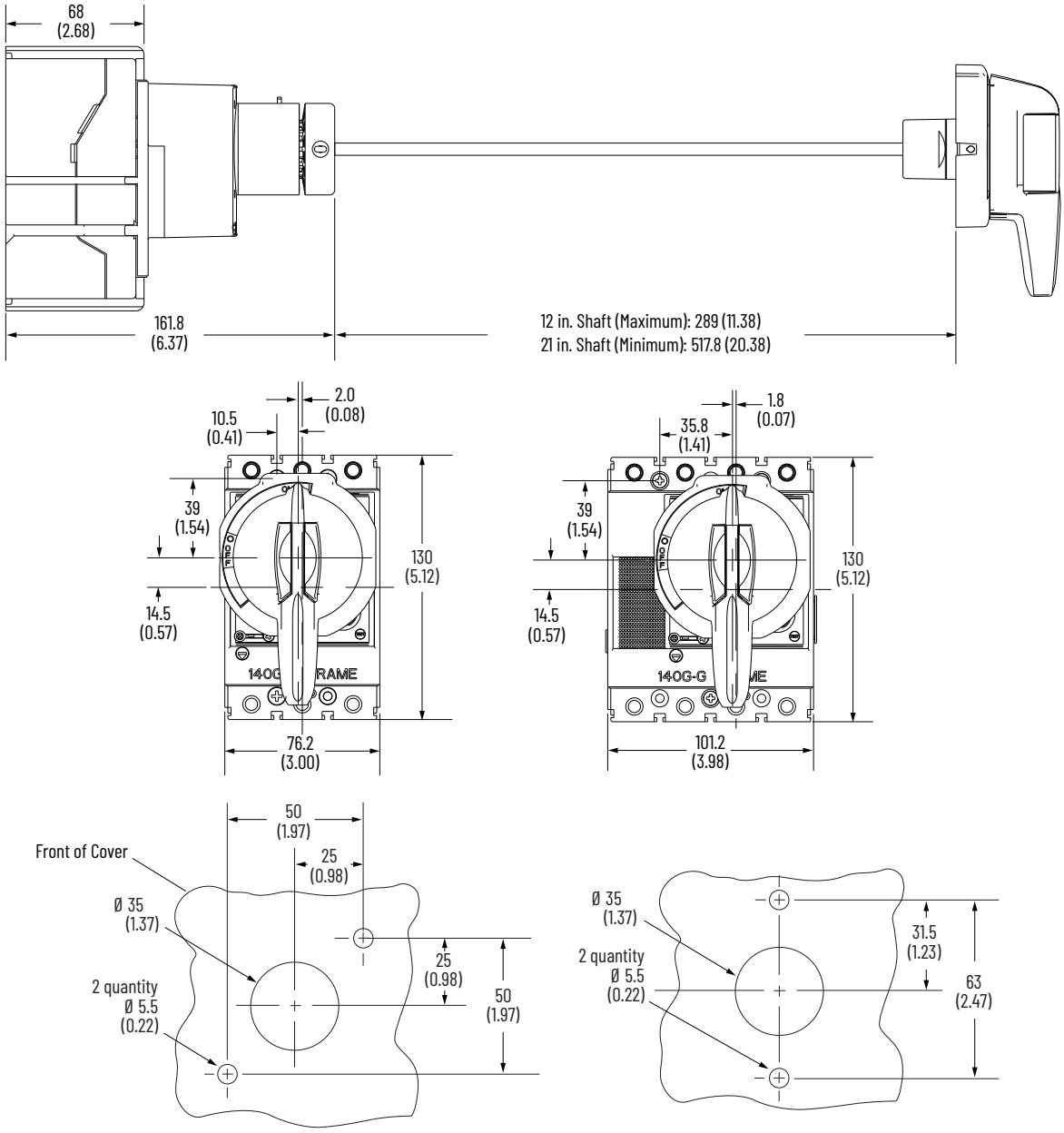


Figure 160 - Motor Operator: Cat. No. 140G-G-EOP...

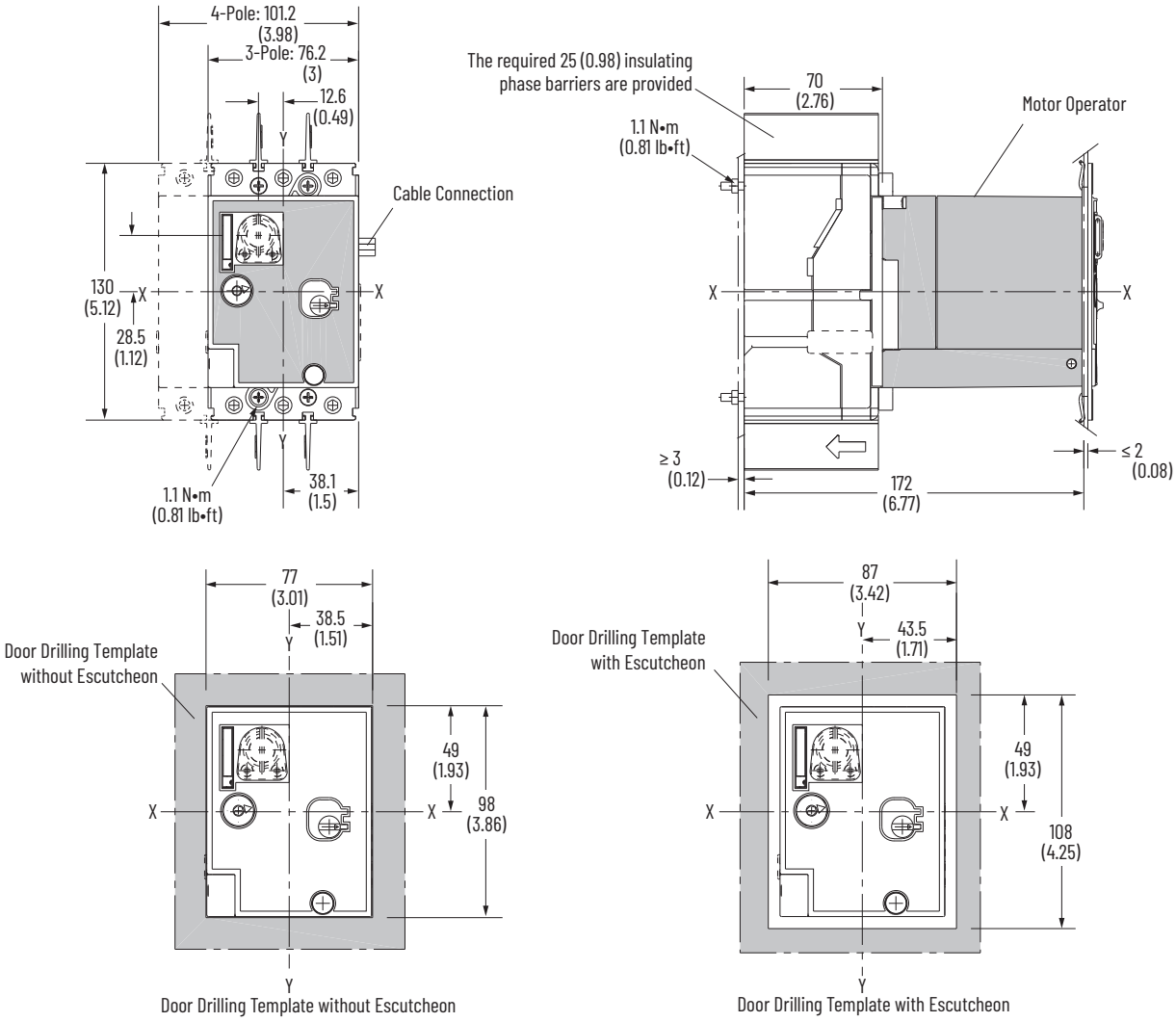


Figure 161 - Residual Current Release Module for 3-Pole MCCBs: Cat. No. 140G-G-ELP1603

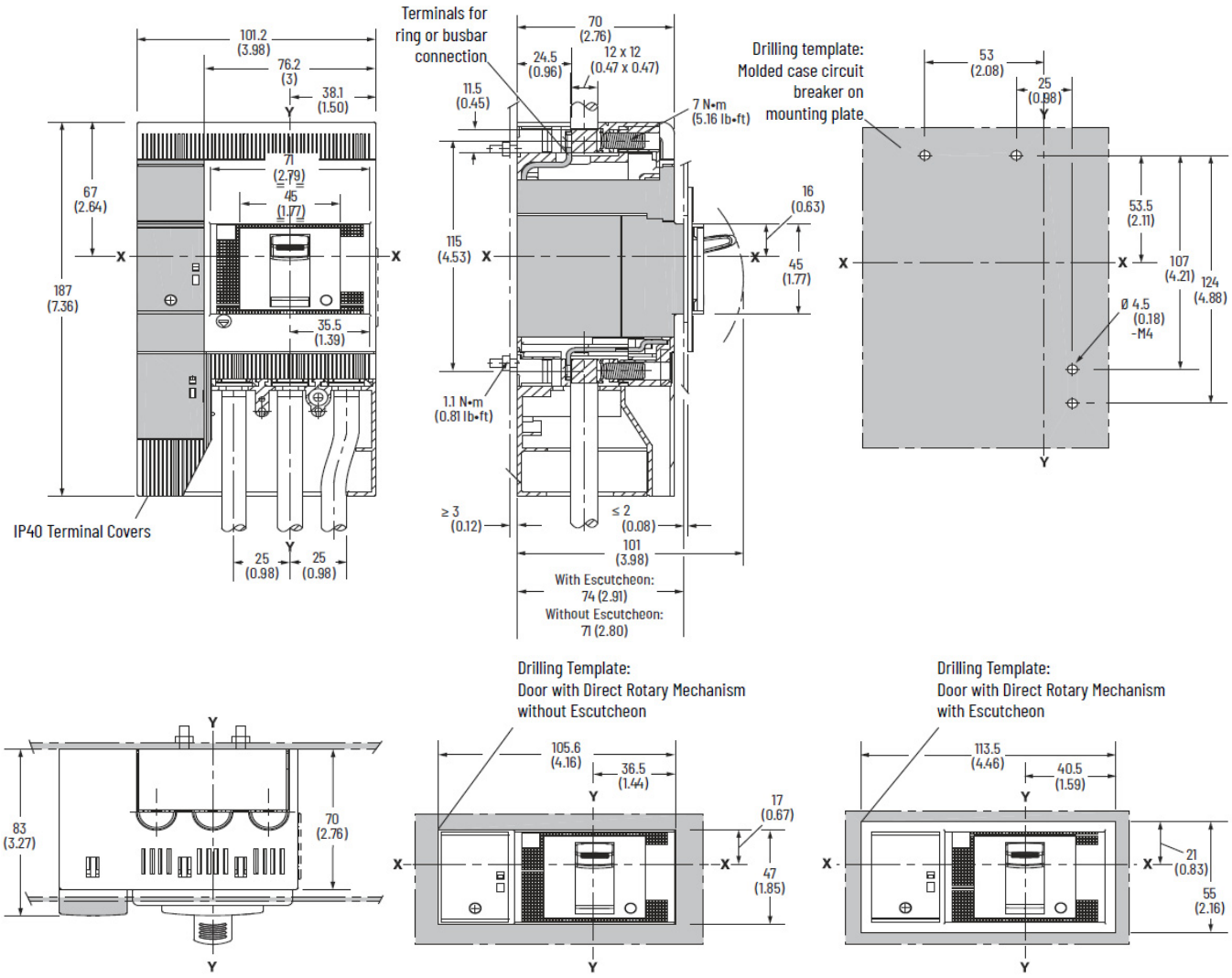


Figure 162 - Residual Current Release Module for 4-Pole MCCBs: Cat. No. 140G-G-ELP1604

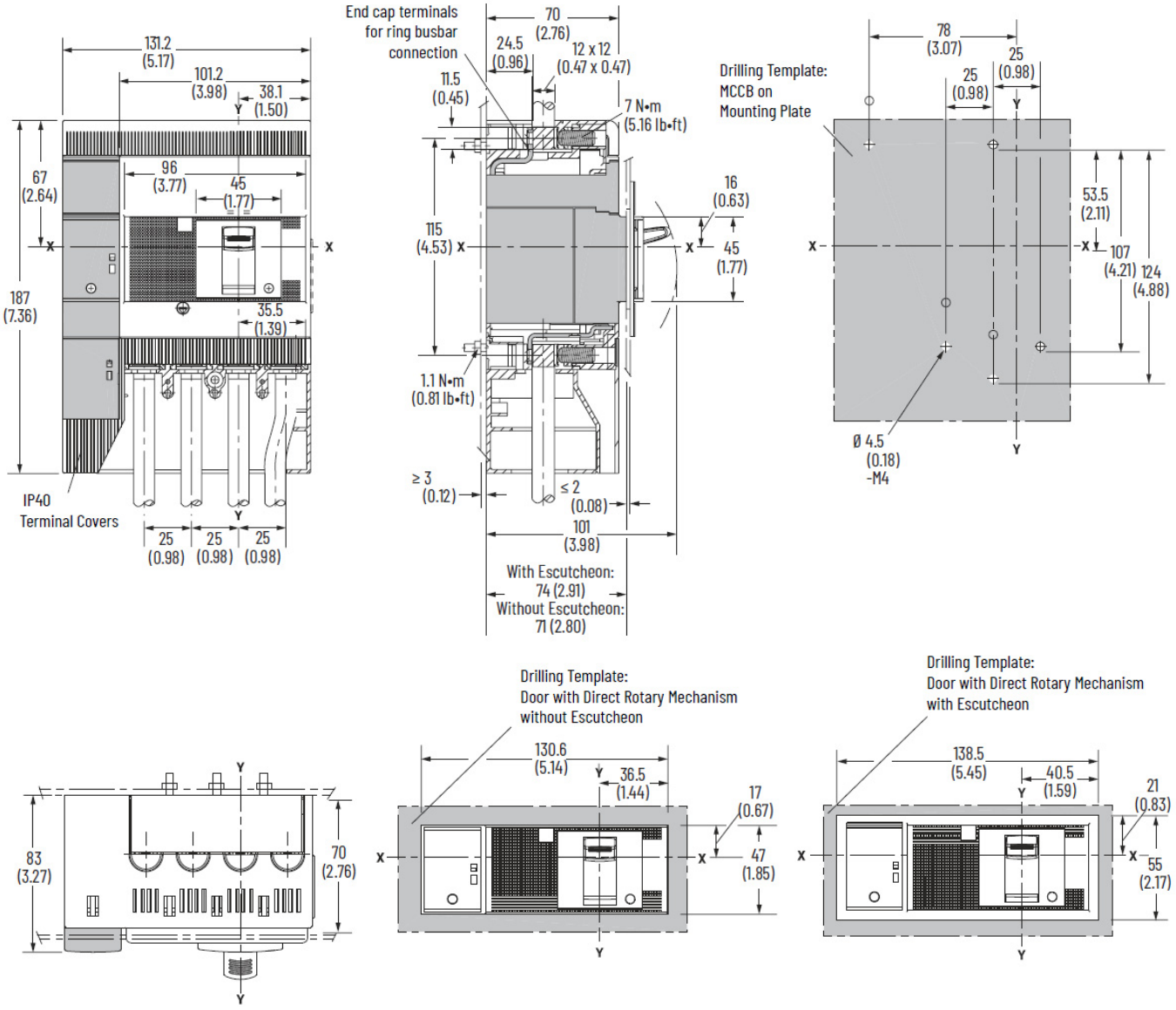


Figure 163 - Metal Bail Flex Cable Operator and Actuator: Cat. No. 140G-G-FCXB...

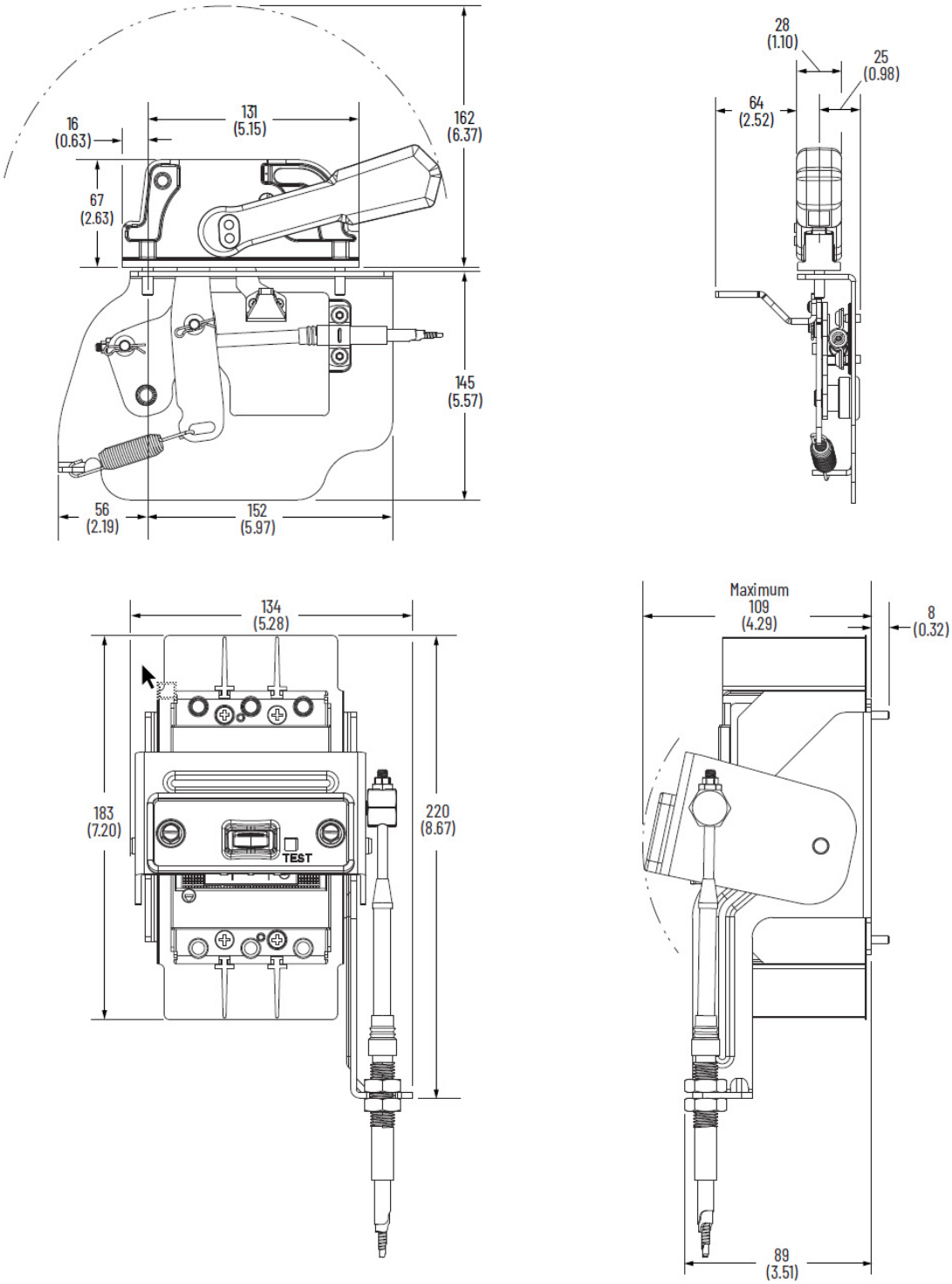


Figure 164 - Replacement Flex Cable Operator and Actuator: Cat. No. 140G-G-FCX...

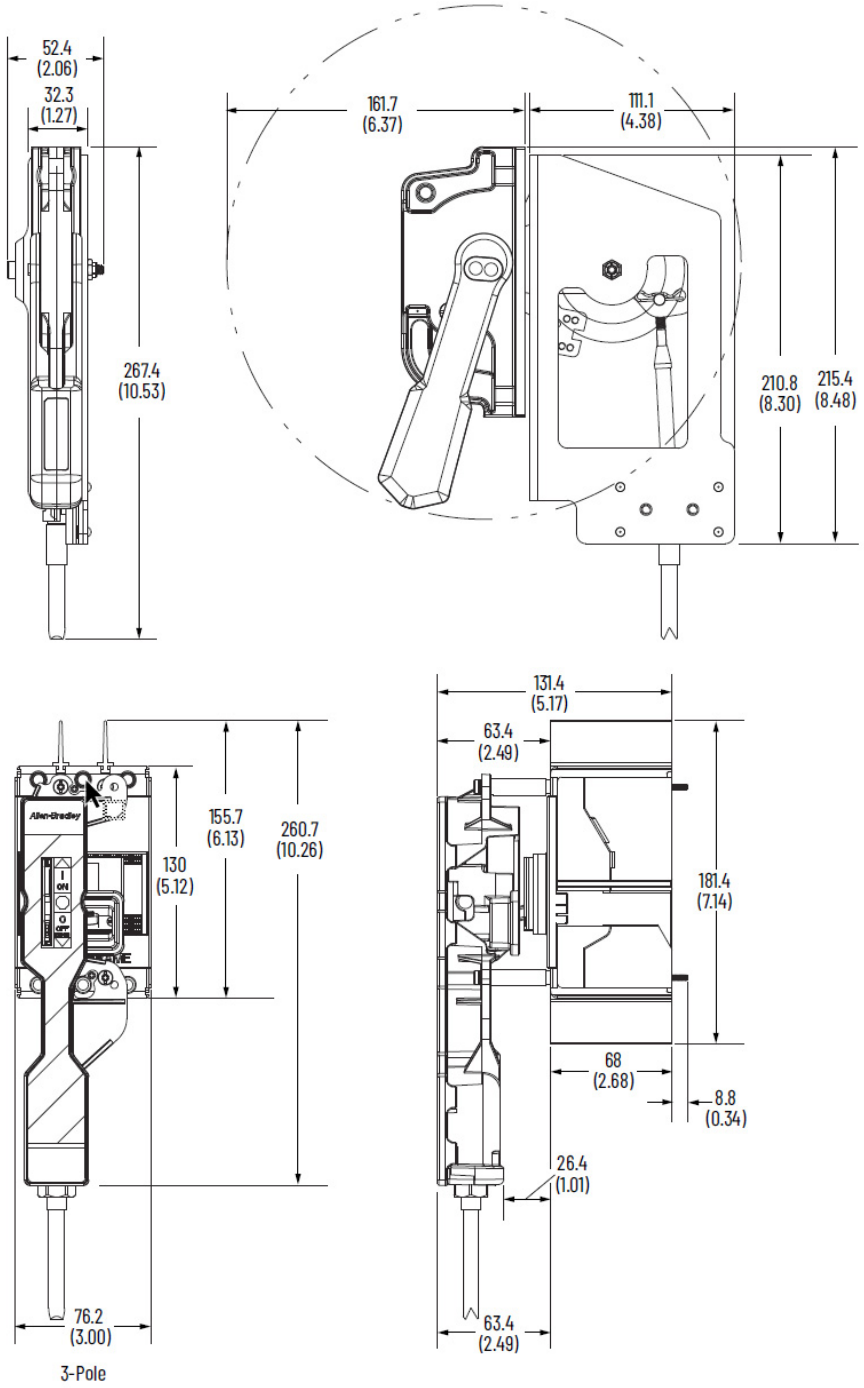


Figure 165 - Direct Rotary Operating Handle: Cat. No. 140G-G-RMB

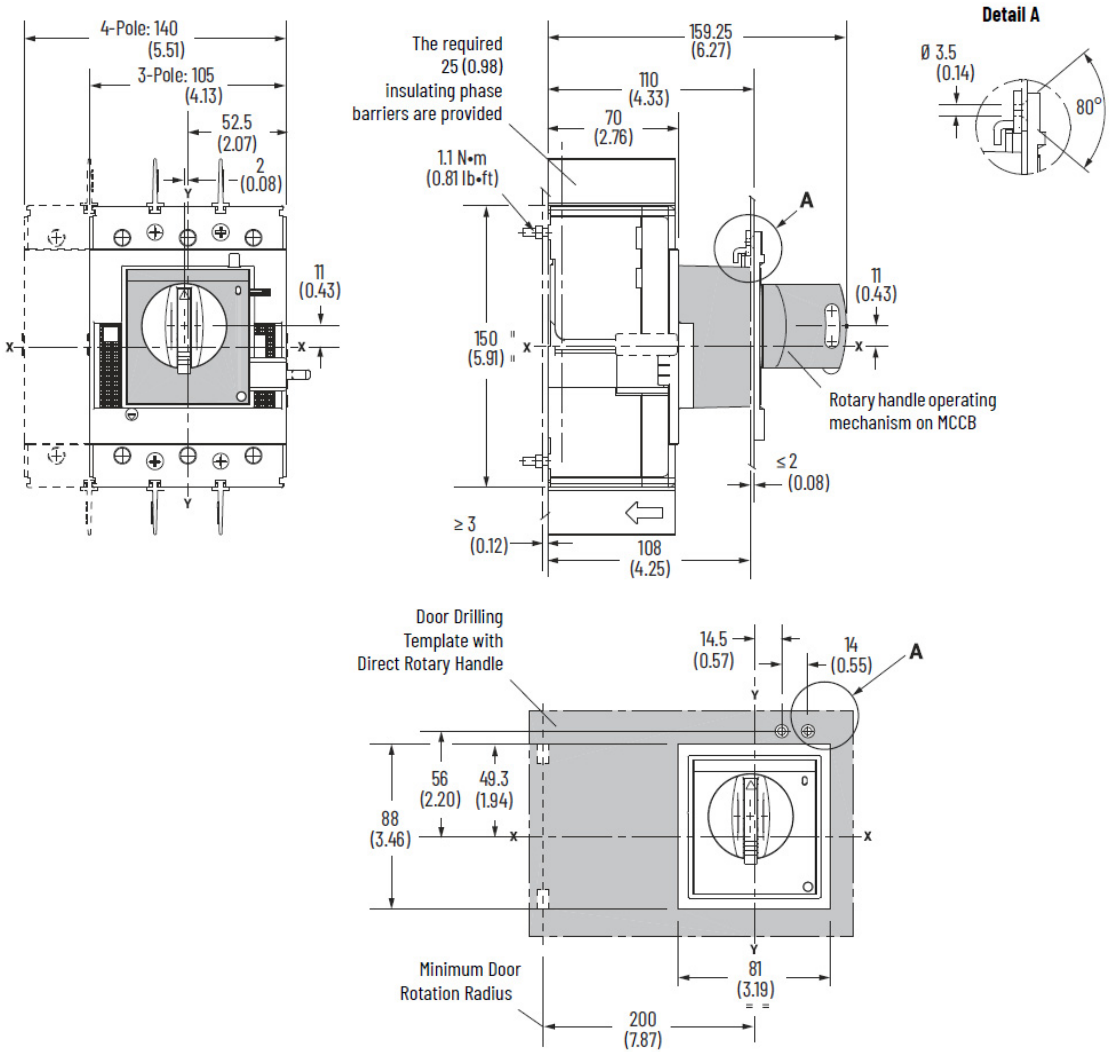


Figure 166 - Through-the-door Rotary Operator

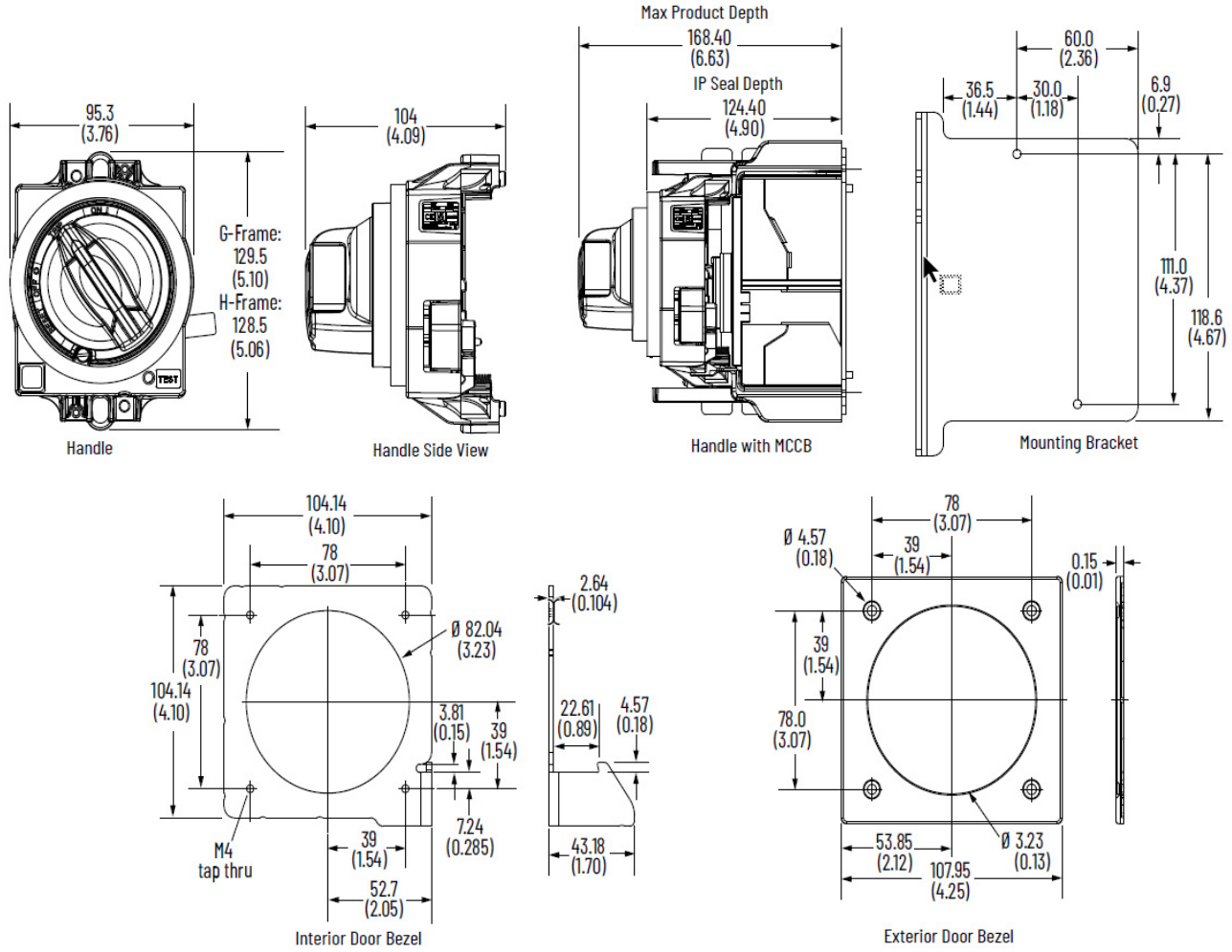
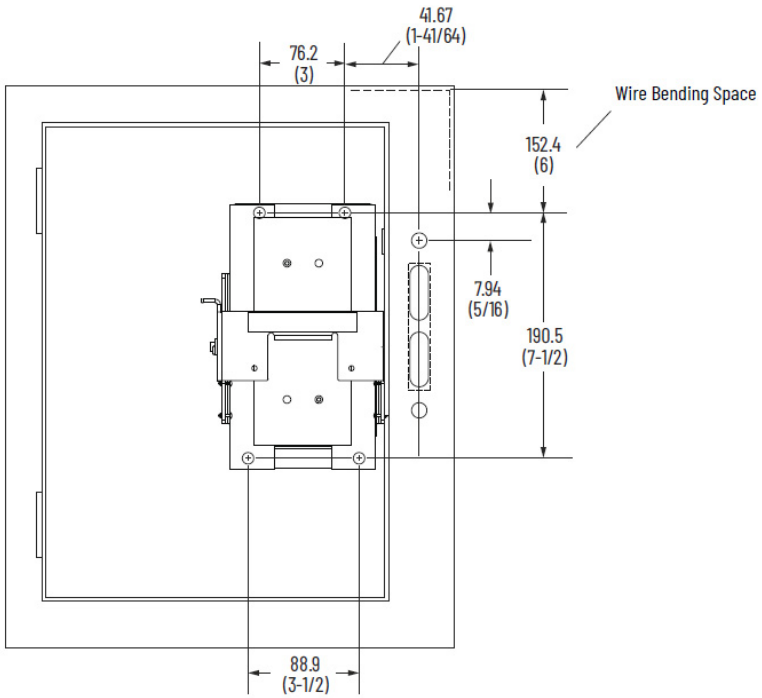


Figure 167 - Enclosure with Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism



Bulletin 140G and Bulletin 140MG MCCBs: Frame Size H

Figure 168 - Panel-mount: 140G and 140MG Frame Size H MCCBs

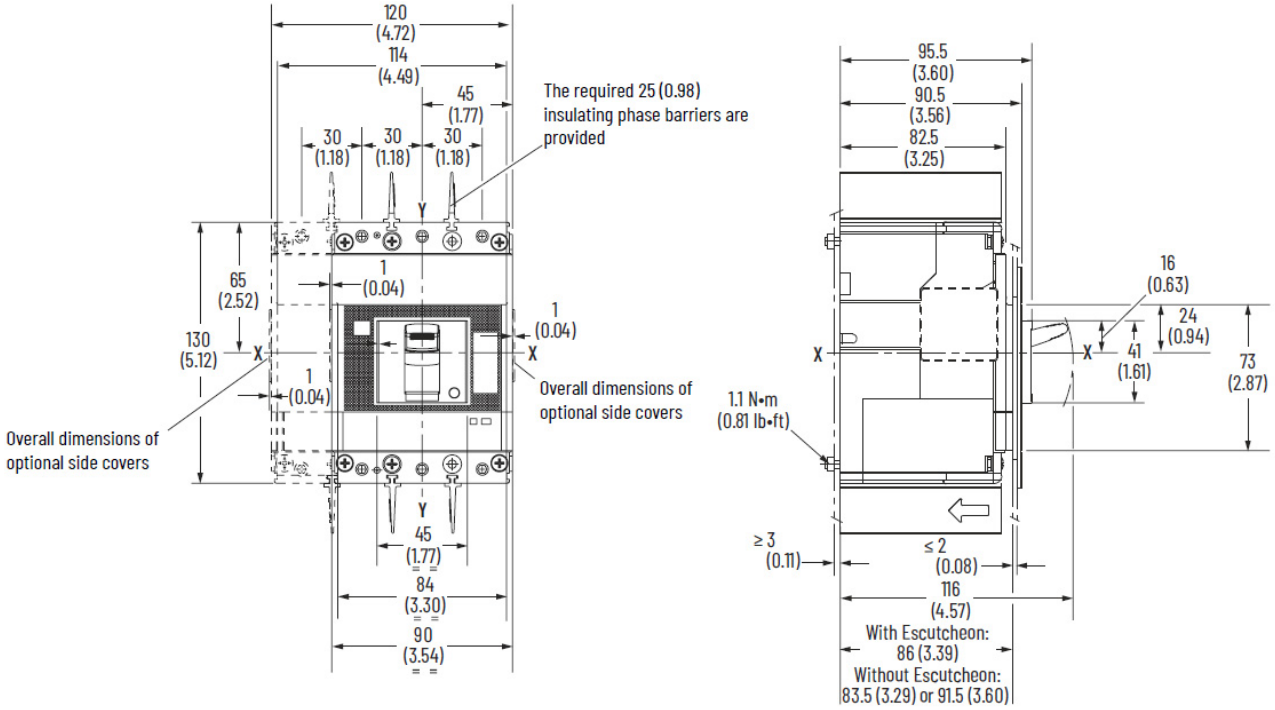


Figure 169 - DIN Rail Mount: 140G-H and 140MG-H MCCBs (Series A)

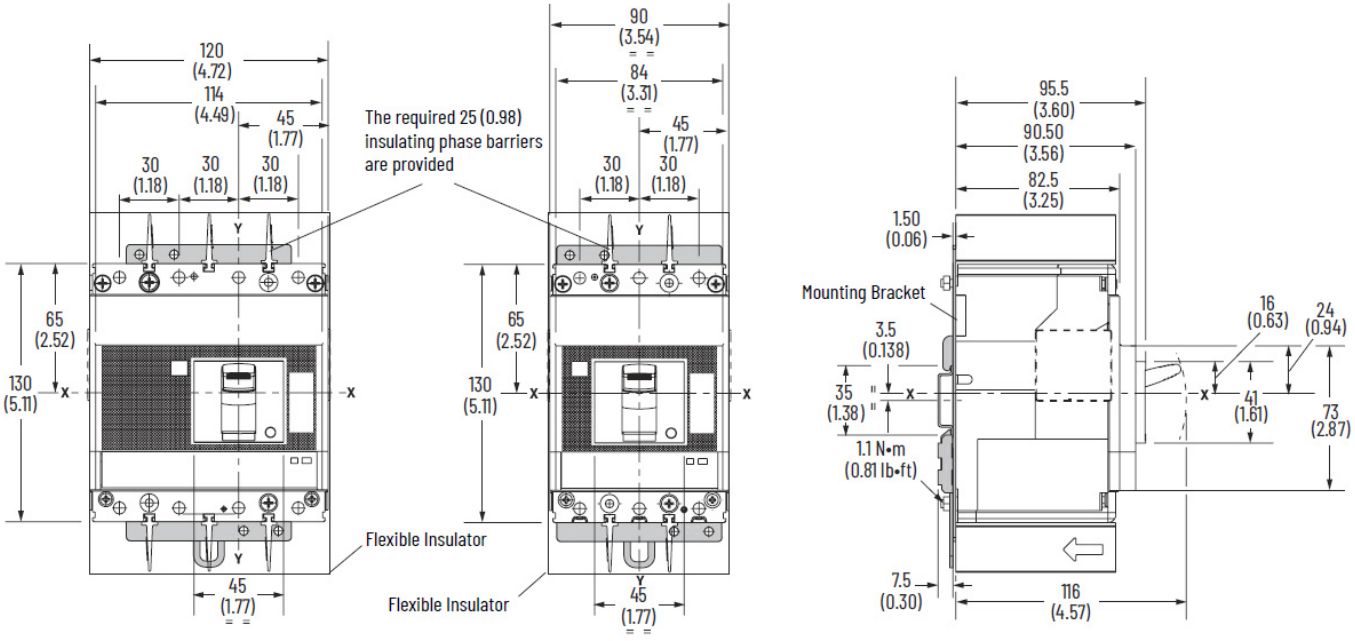


Figure 170 - Drilling Template for Mounting: 140G-H and 140MG-H MCCBs

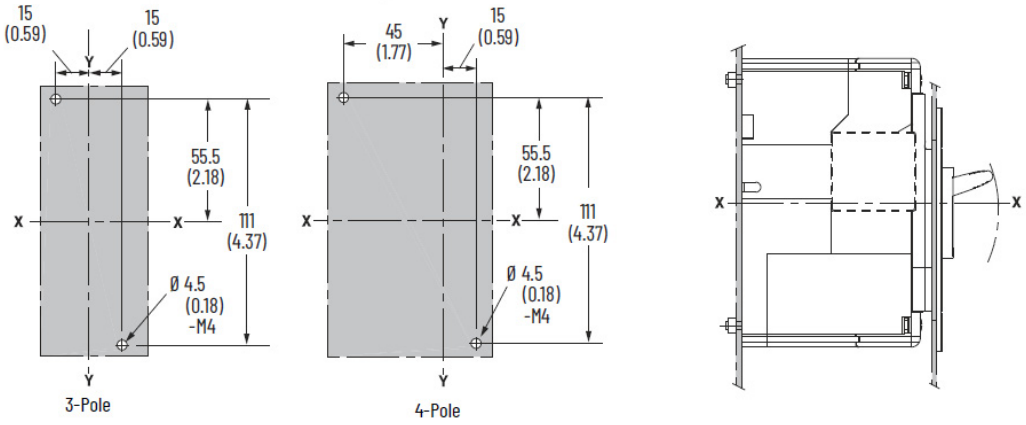


Figure 171 - Terminals: Cat. No. 140G-H-ECM and Cat. No. 140G-H-ECM4

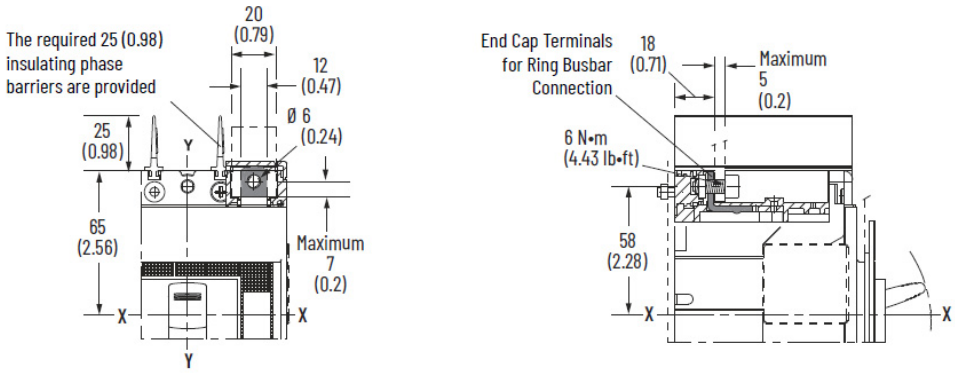


Figure 172 - Extended Terminals: Cat. No. 140G-H-EXT3 and Cat. No. 140G-H-EXT4

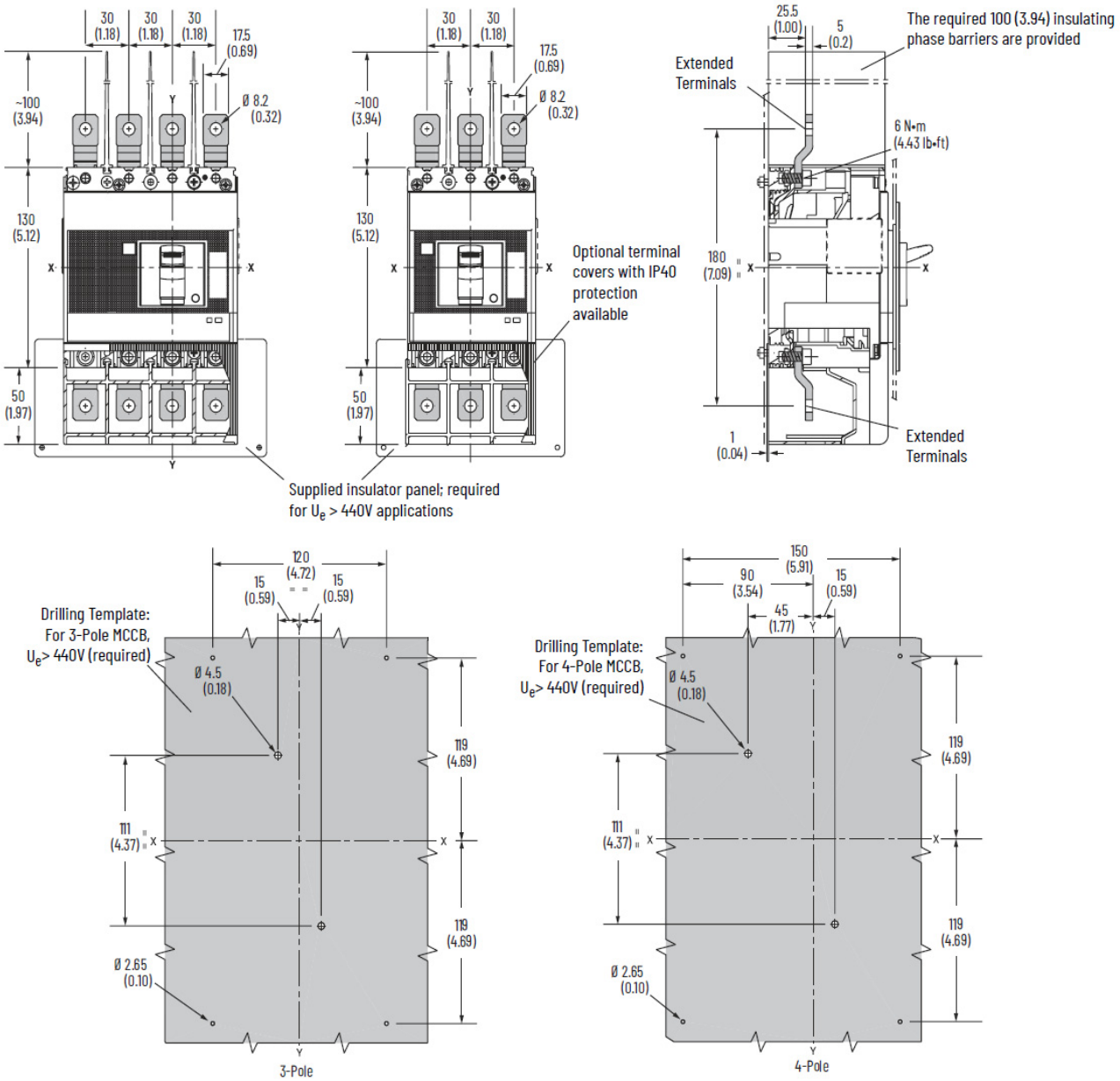


Figure 173 - Spreader Terminals: Cat. No. 140G-H-EXS3 and Cat. No. 140G-H-EXS4

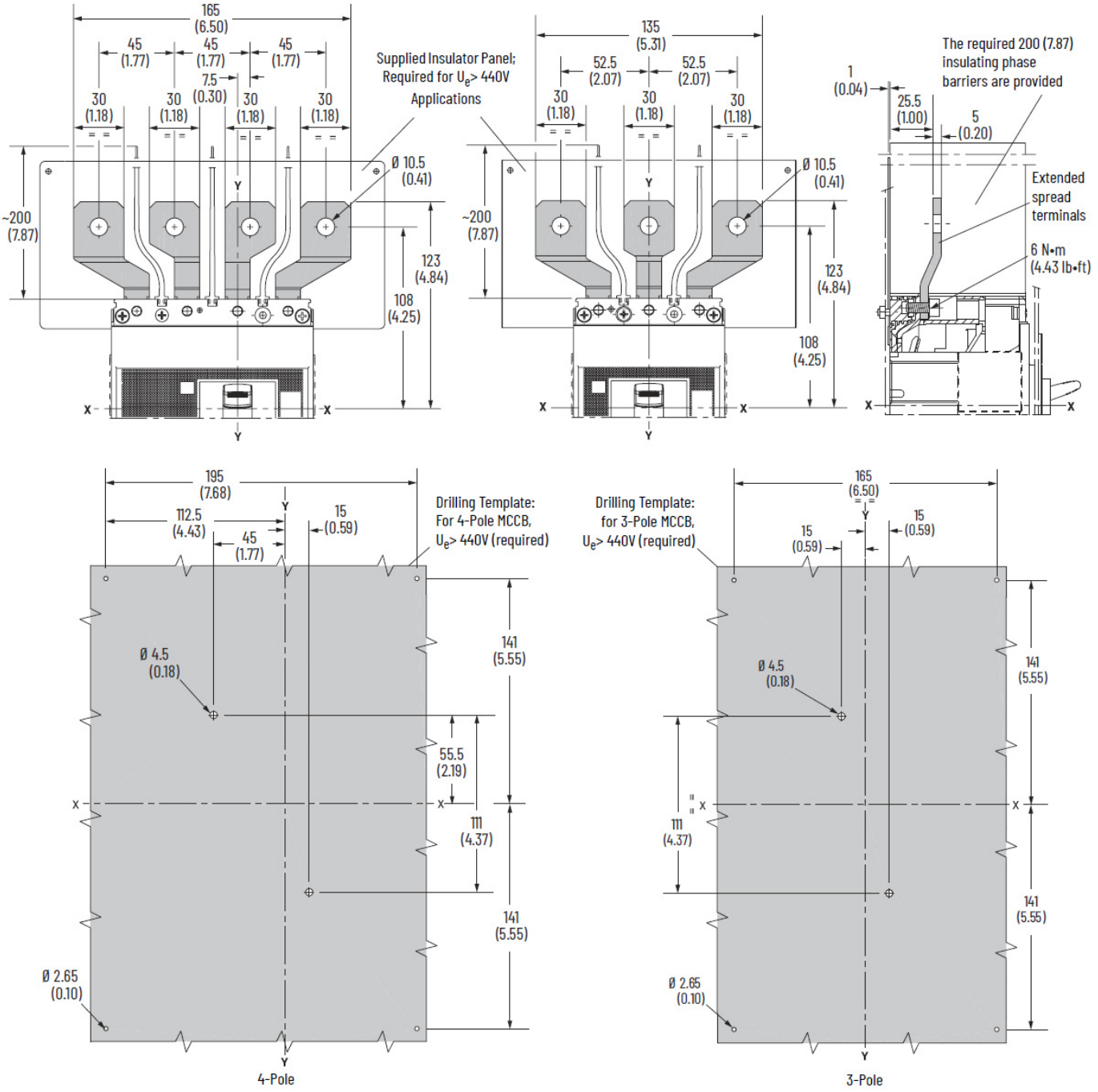


Figure 174 - Terminals: Cat. No. 140G-H-TLC13 and Cat. No. 140G-H-TLC14

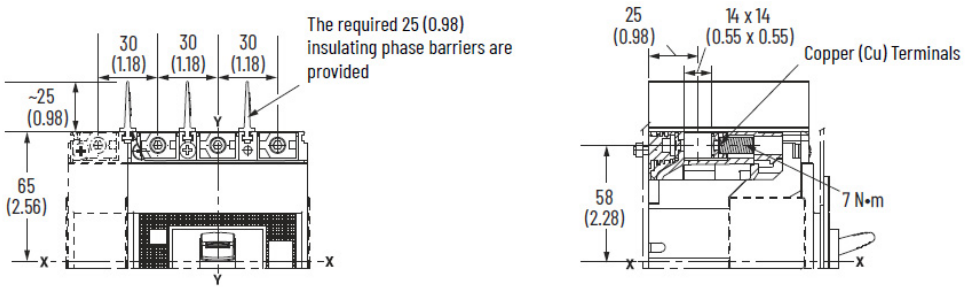


Figure 175 - Terminals: Cat. No. 140G-H-MTL63 and Cat. No. 140G-H-MTL64

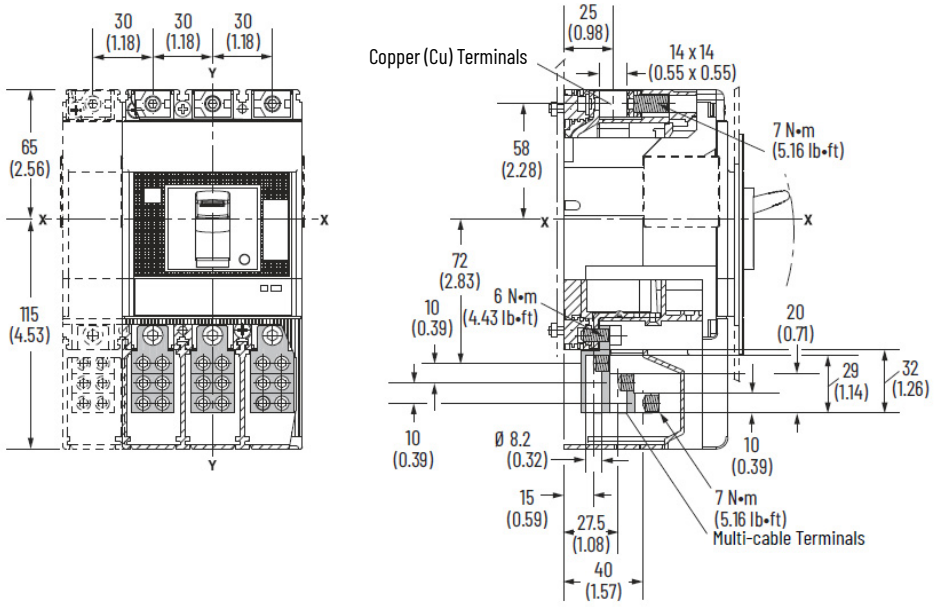


Figure 176 - Direct Rotary Operating Handle: Cat. No. 140G-H-RMB and Cat. No. 140G-H-RMY

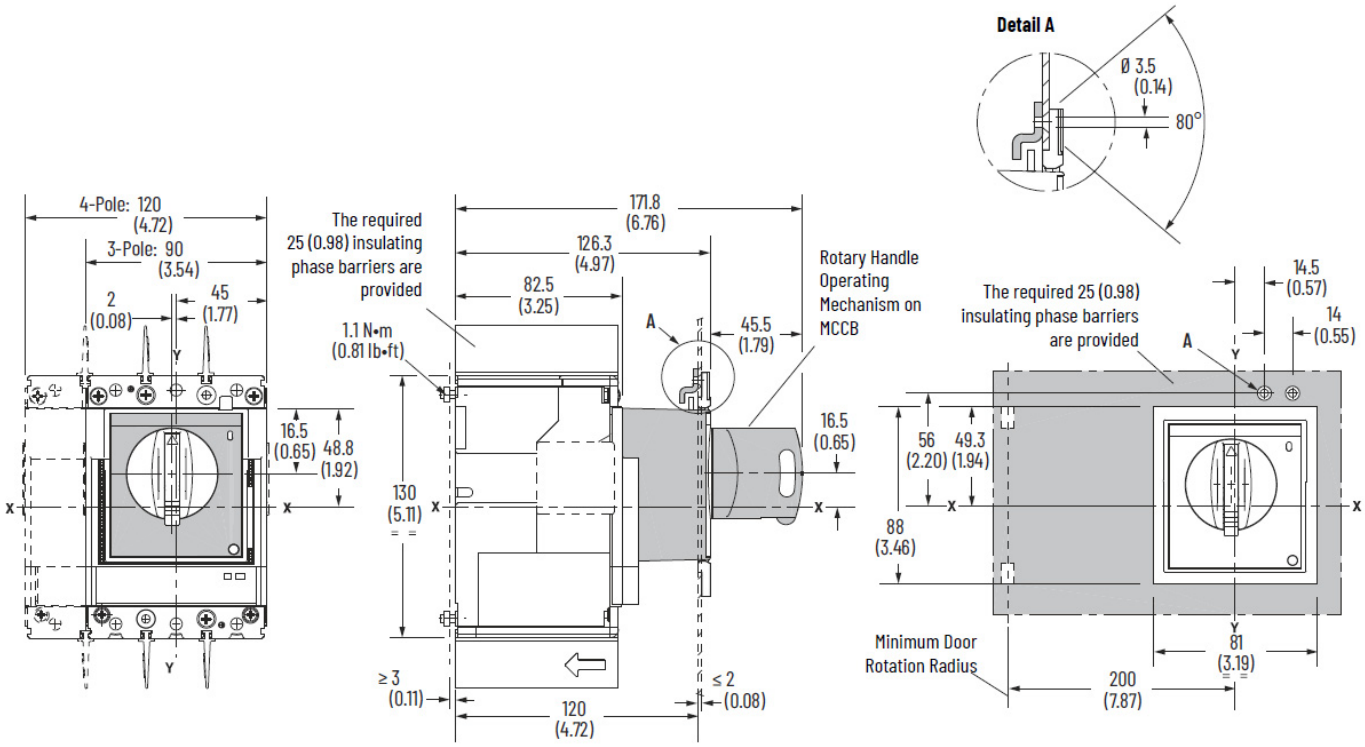
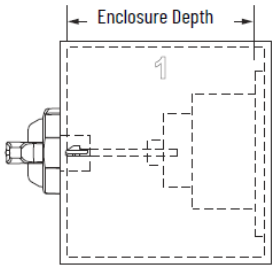


Figure 177 - Minimum/Maximum Enclosure Depth: Cat. No. 140G-H-RVM...

This figure depicts the minimum and maximum enclosure sizes that accommodate the MCCB, operator, and handle. See Figure 178 for overall assembly dimensions and cutout.



Description	Enclosure Size [mm (in.)]	
	Minimum	Maximum
12 in. shaft	205 (8)	464 (18.25)
21 in. shaft		692 (27.25)
12 in. shaft with NFPA	235 (9.25)	464 (18.25)
21 in. shaft with NFPA		692 (27.25)

Figure 178 - Rotary Handle Operating Mechanism: Cat. No. 140G-H-RVM...

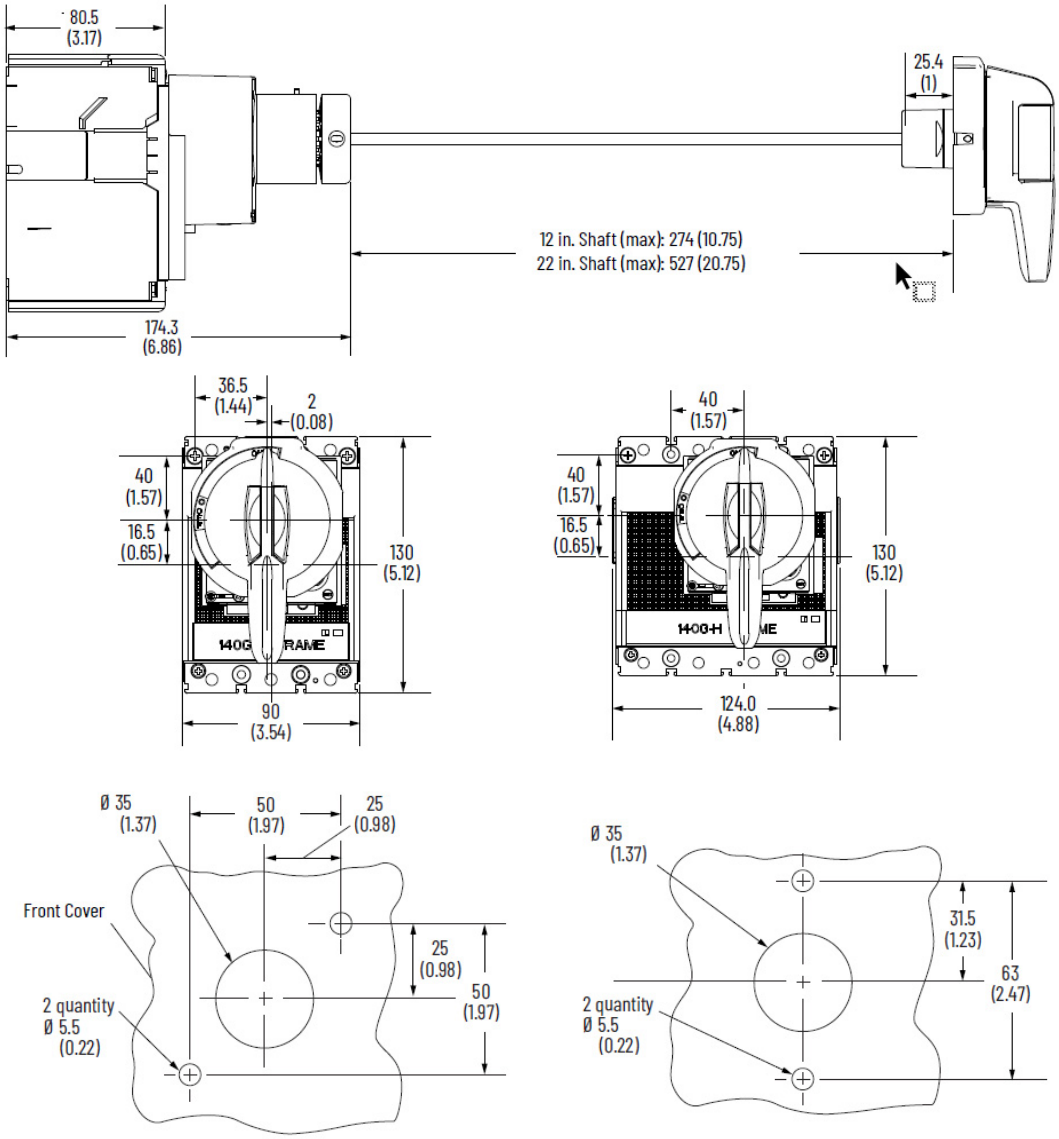


Figure 179 - Motor Operator: Cat. No. 140G-H-EOP...

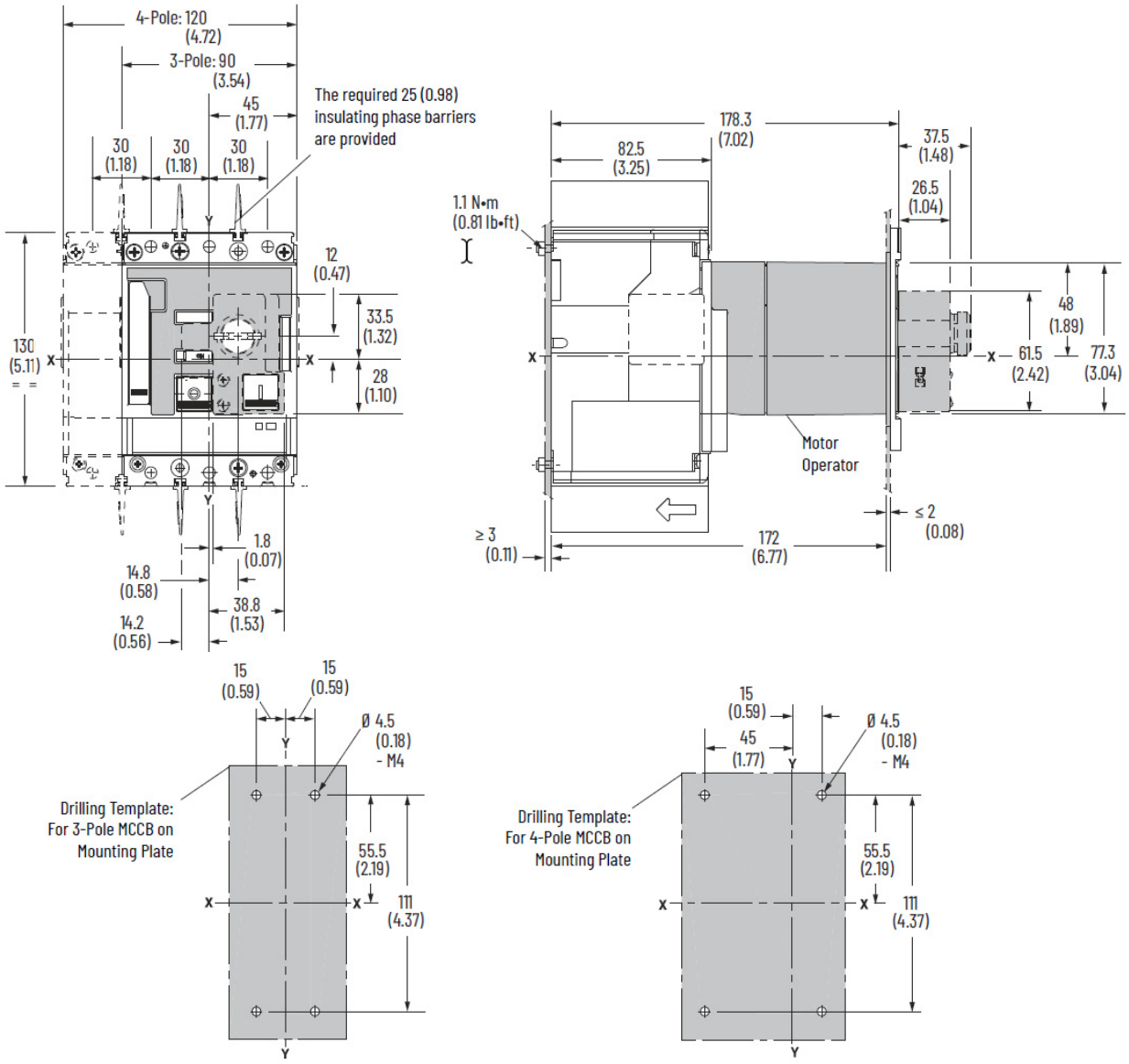


Figure 180 - Door Drilling Template: 140G-H and 140MG-H MCCBs

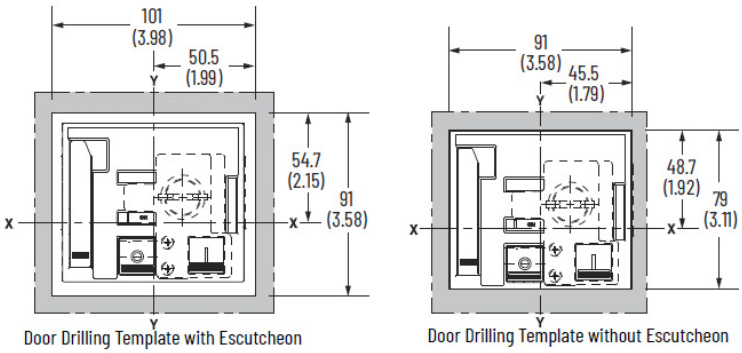


Figure 181 - Metal Bail Flex Cable Operator and Actuator: Cat. No. 140G-H-FCXB...

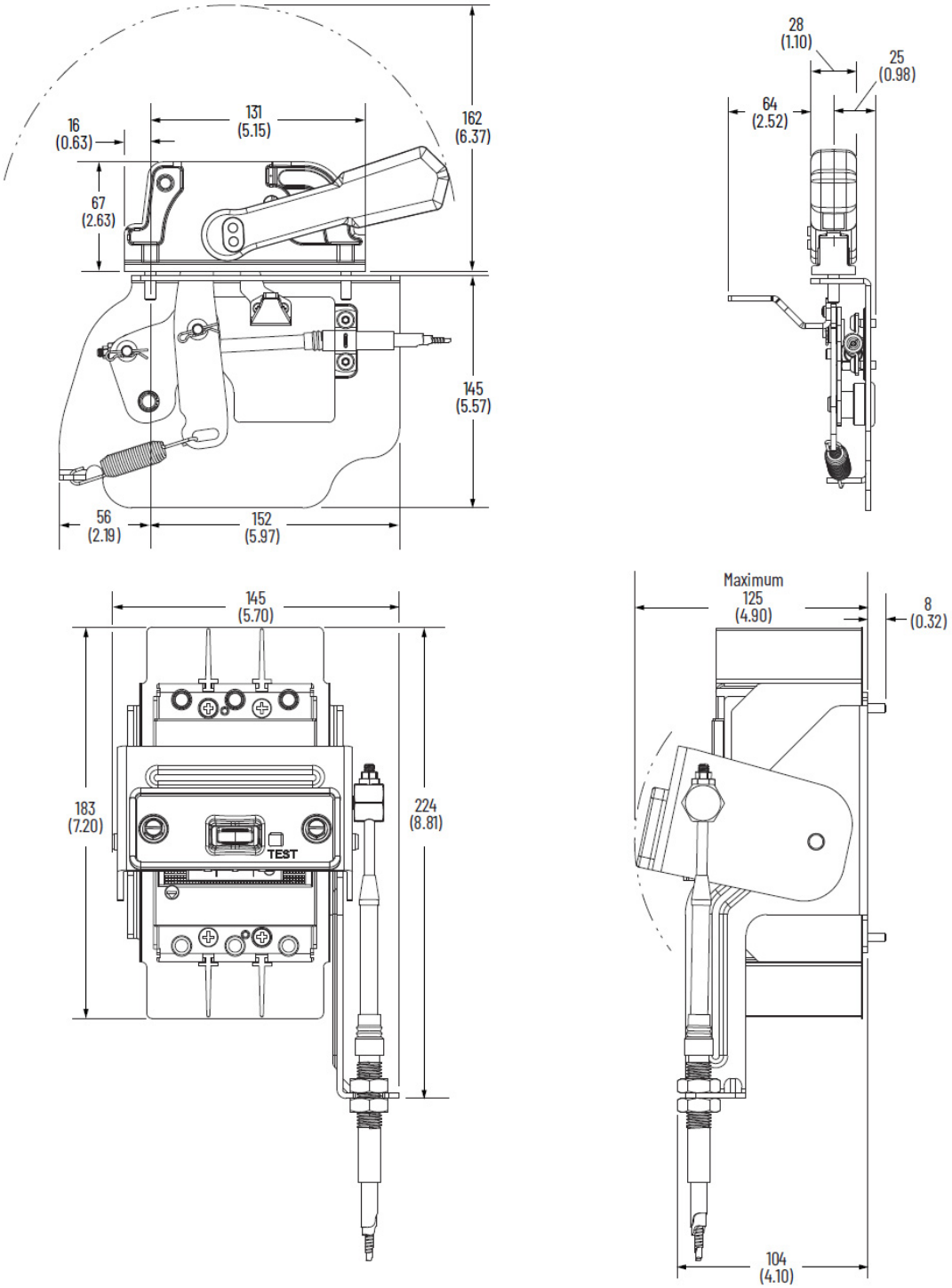


Figure 182 - Replacement Flex Cable Operator and Actuator: Cat. No. 140G-H-FCX...

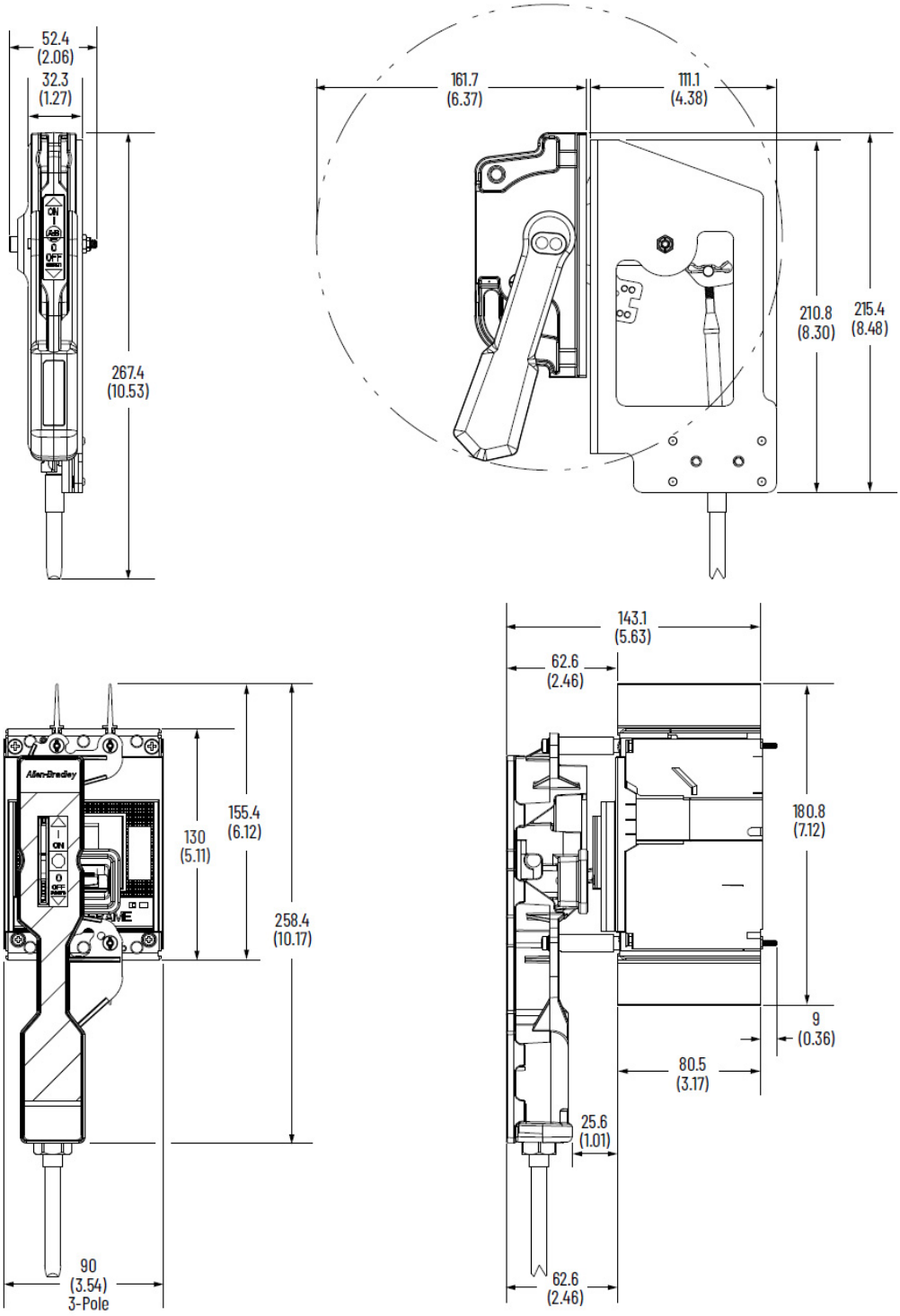


Figure 183 - Residual Current Release Module: Cat. No. 140G-H-ELP1604

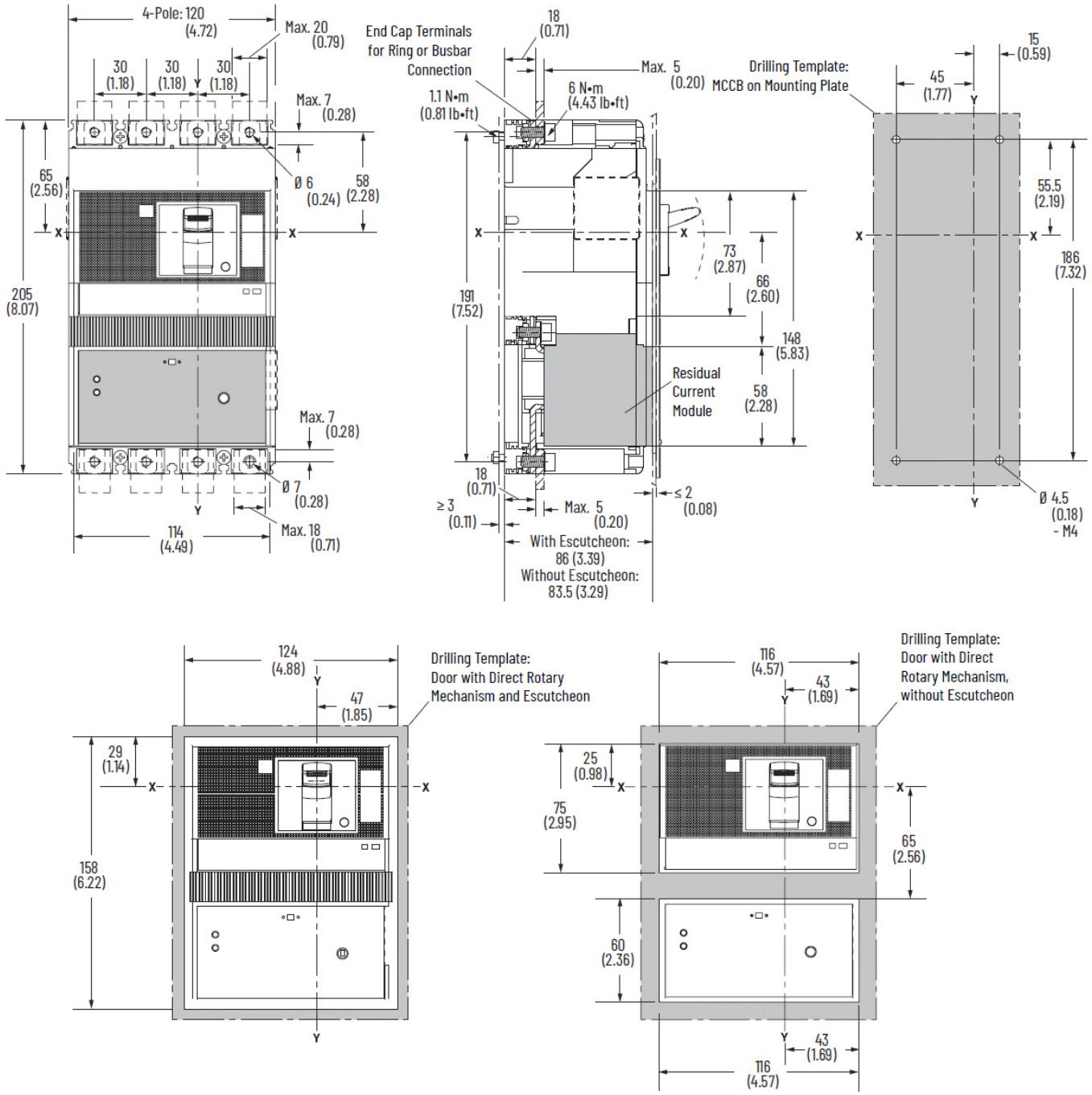


Figure 184 - Through-the-Door Rotary Operator: 140G-H and 140MG-H MCCBs

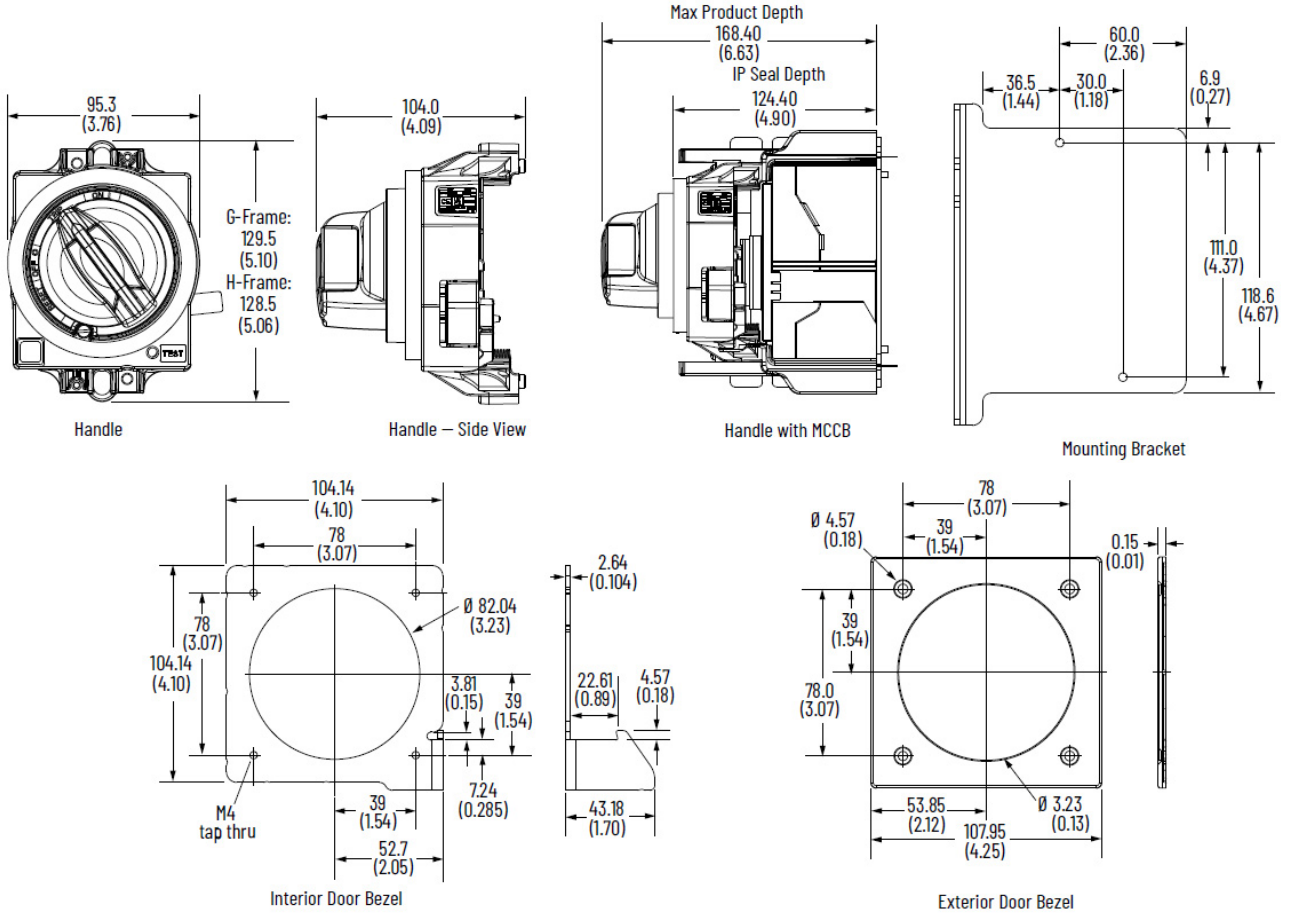


Figure 185 - Enclosure with Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism

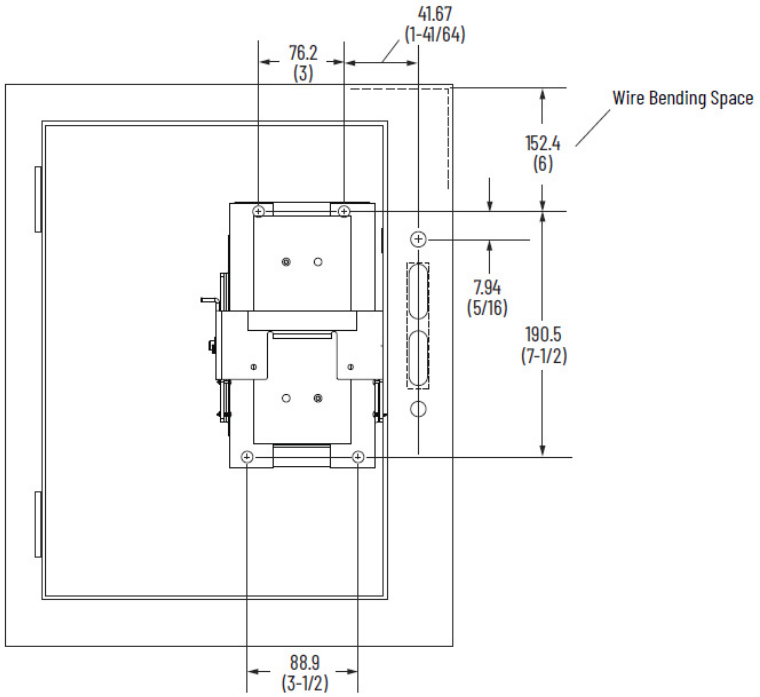
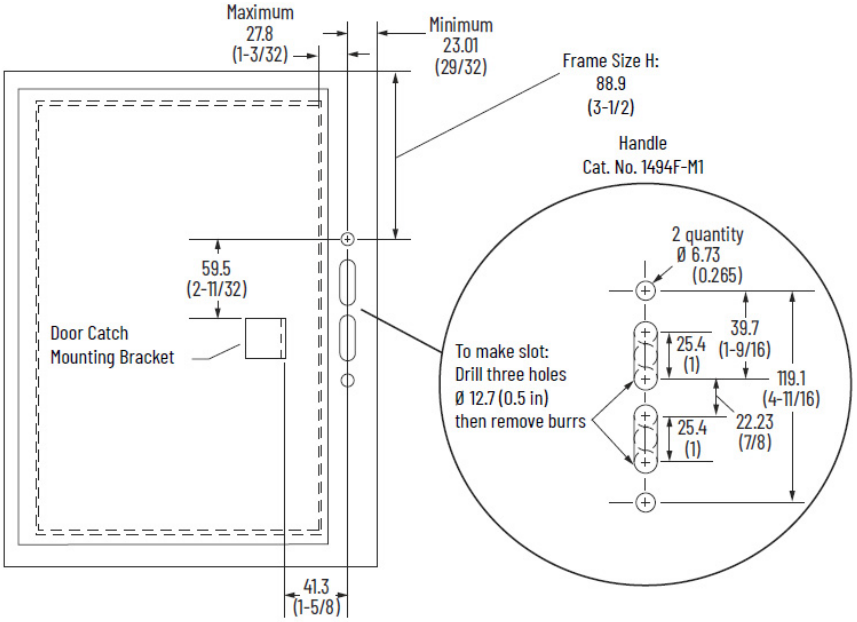


Figure 186 - Enclosure without Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism



Bulletin 140G and Bulletin 140MG, Frame Size I

Figure 187 - Panel-mount: 140G and 140MG Frame Size I MCCBs

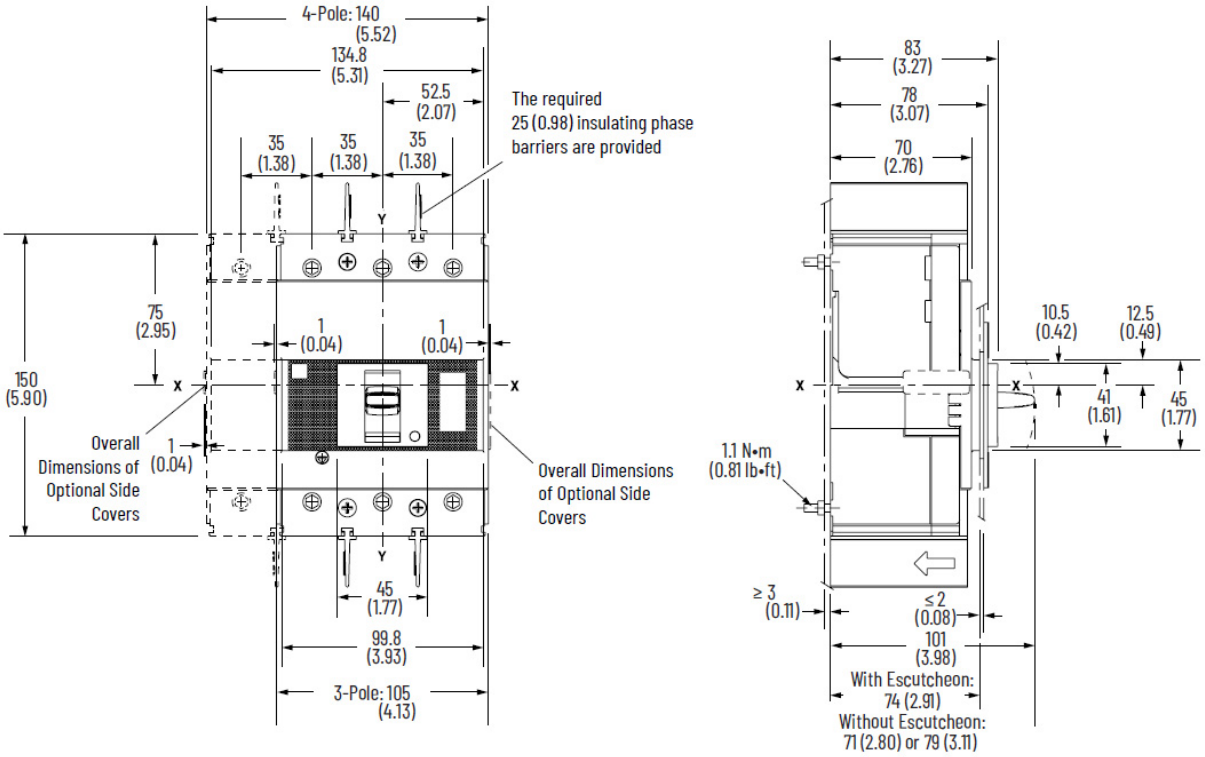


Figure 188 - DIN Rail Mounted: 140G-I and 140MG-I MCCBs (Series A)

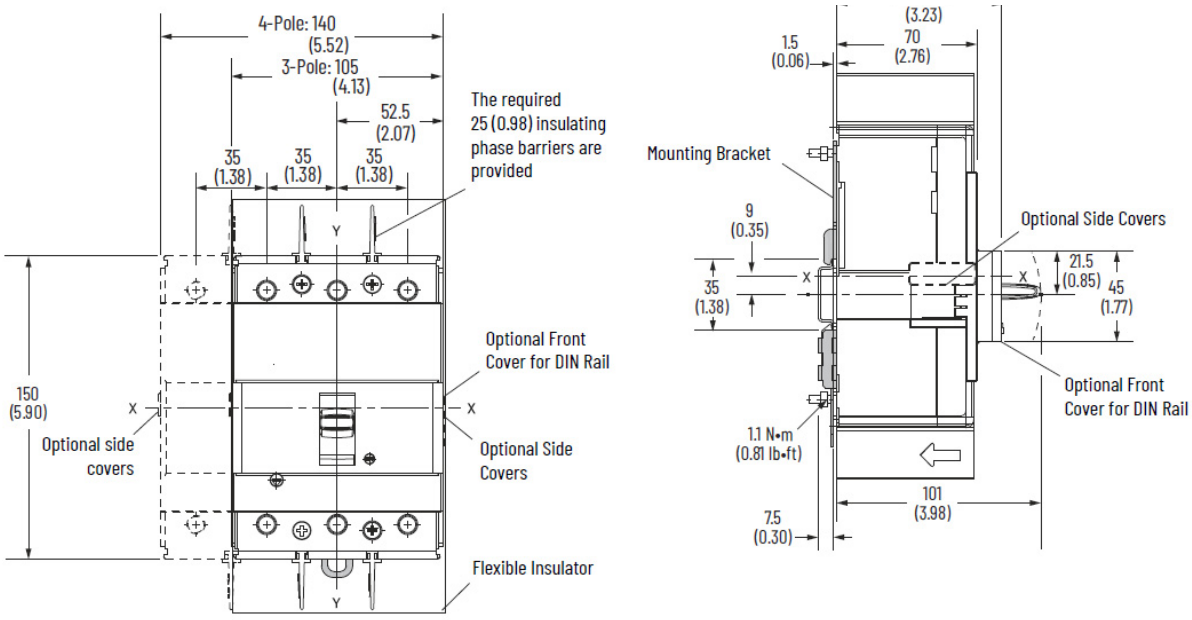


Figure 189 - Drilling Template for Mounting: 140G-I and 140MG-I MCCBs

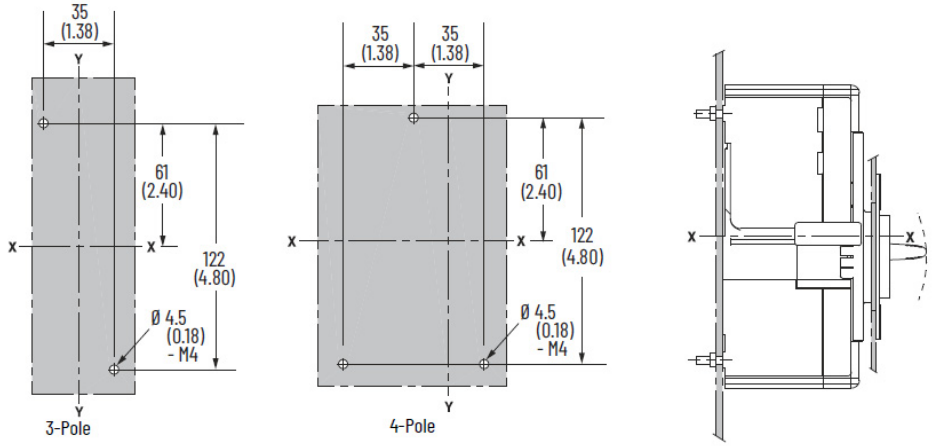


Figure 190 - Terminals: Cat. Nos. 140G-I-ECM and Cat. No. 140G-I-ECM4

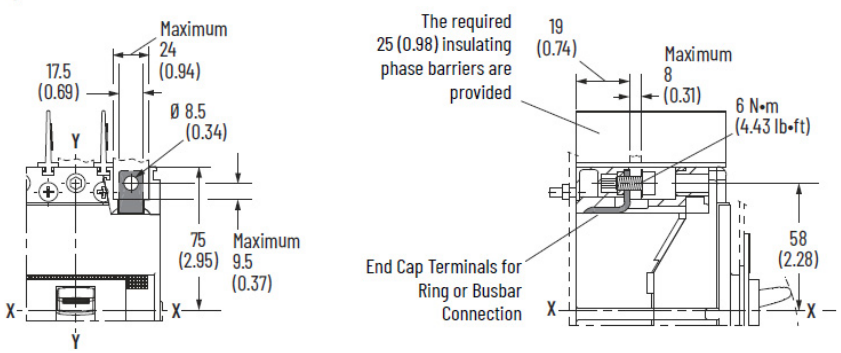


Figure 191 - Terminals: Cat. No. 140G-I-EXS3 and Cat. No. 140G-I-EXS4

U_e> 440V requires supplied insulator panel (not shown in illustration)

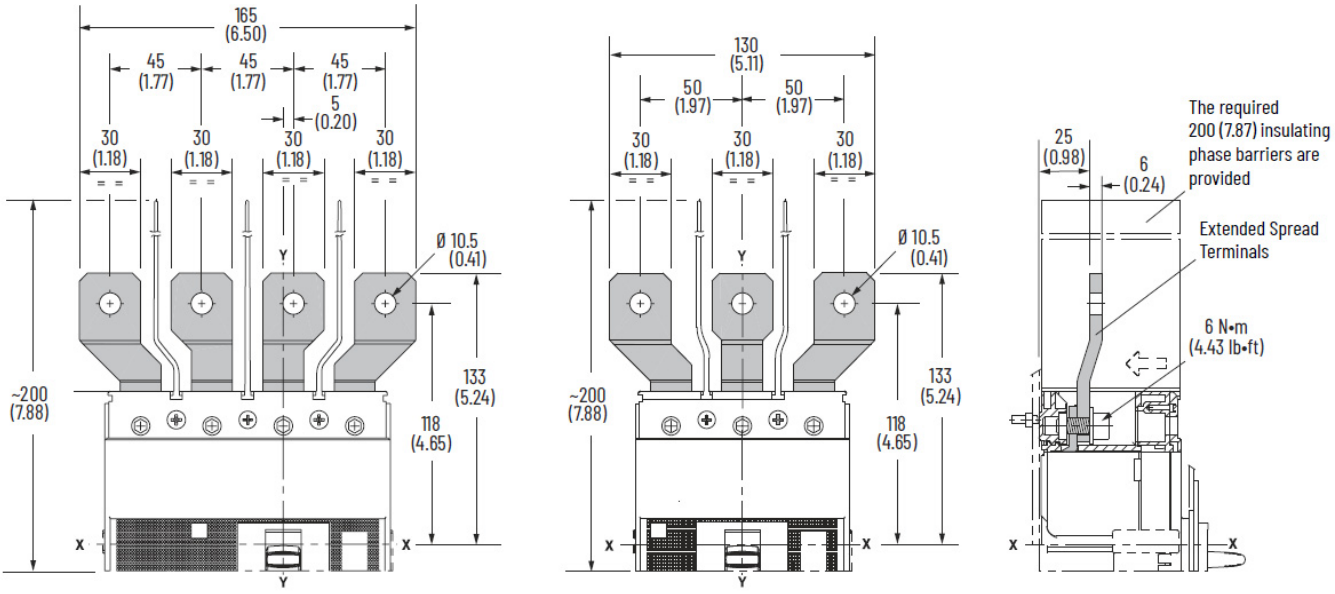


Figure 192 - Extended Terminals: Cat. Nos. 140G-I-EXT3 and Cat. No. 140G-I-EXT4

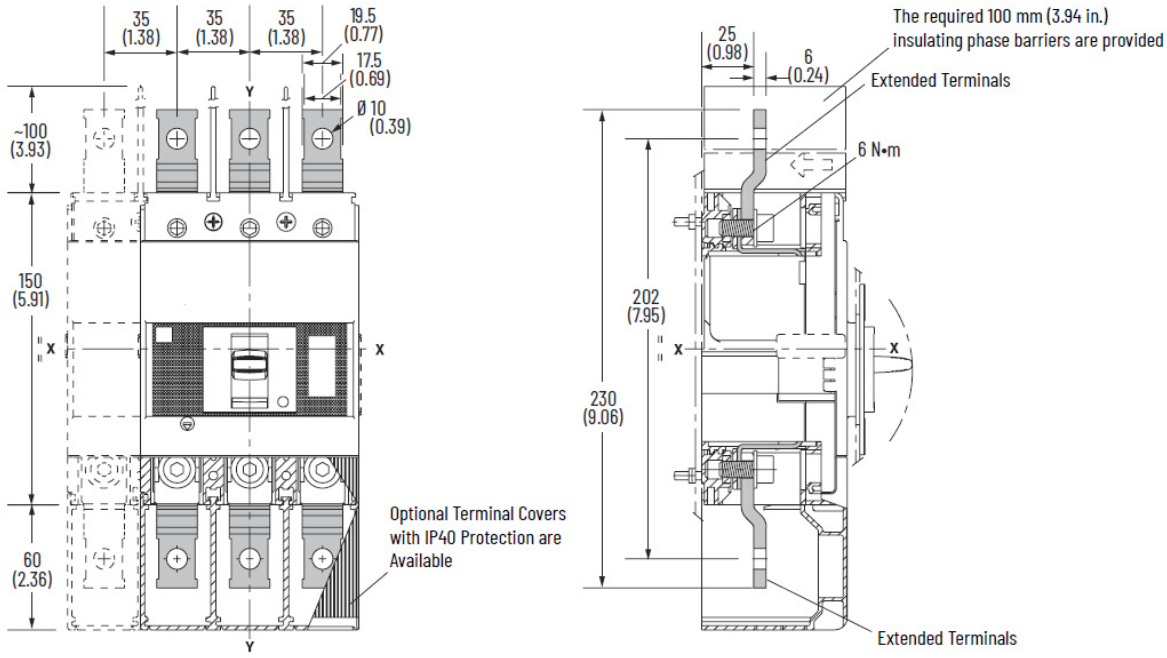


Figure 193 - Terminals: Cat. No. 140G-I-TLA1A3 and Cat. No. 140G-I-TLA1A4

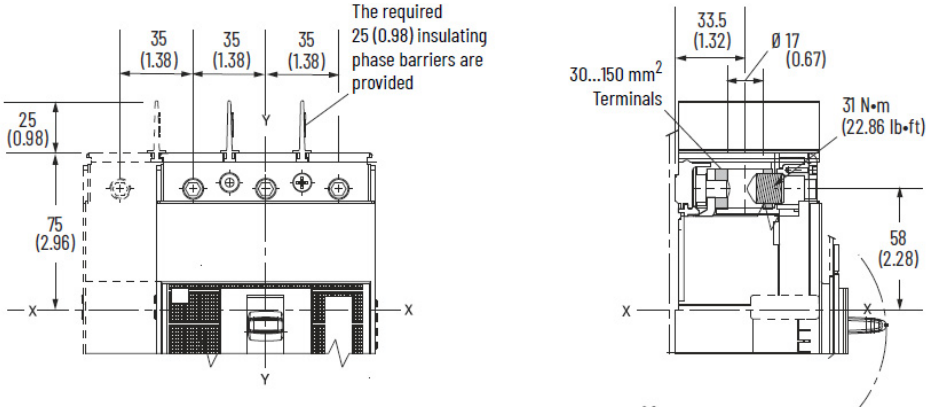


Figure 194 - Terminals: Cat. No. 140G-I-TLA3 and Cat. No. 140G-I-TLA4

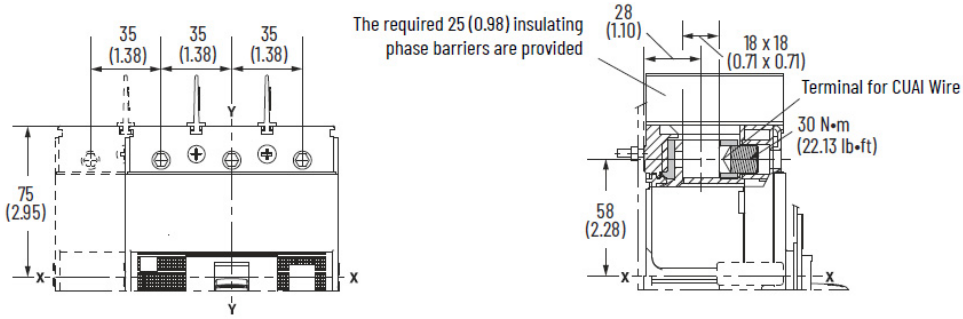


Figure 195 - Terminals: Cat. No. 140G-I-TLC13 and Cat. No. 140G-I-TLC14

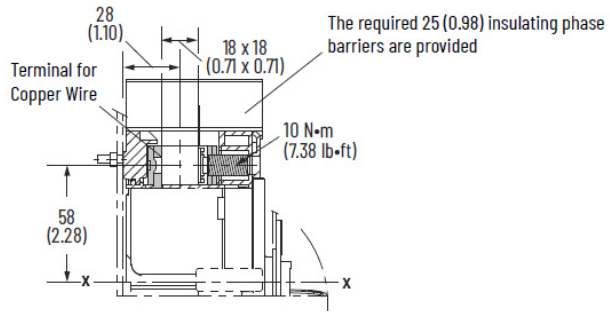


Figure 196 - Terminals: Cat. No. 140G-I-MTL63 and Cat. No. 140G-I-MTL64

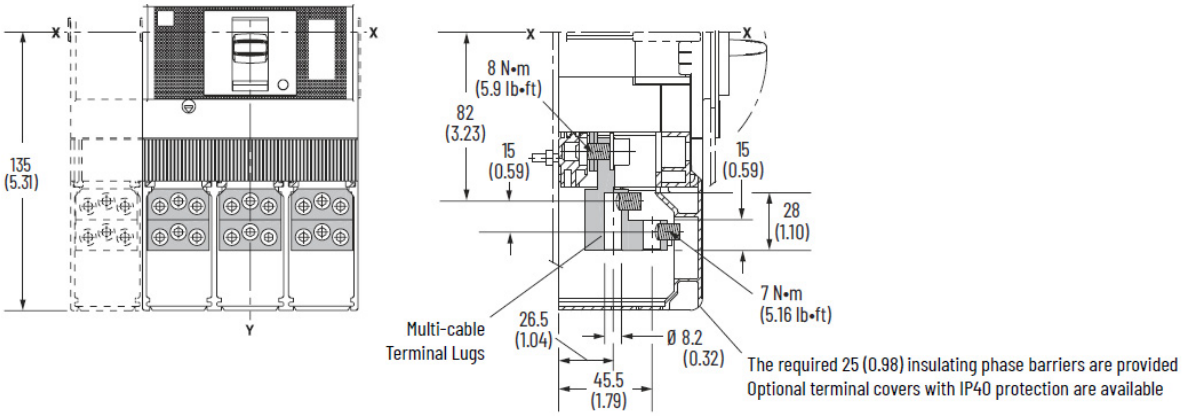


Figure 197 - Direct Rotary Operating Handle: Cat. No. 140G-I-RMY

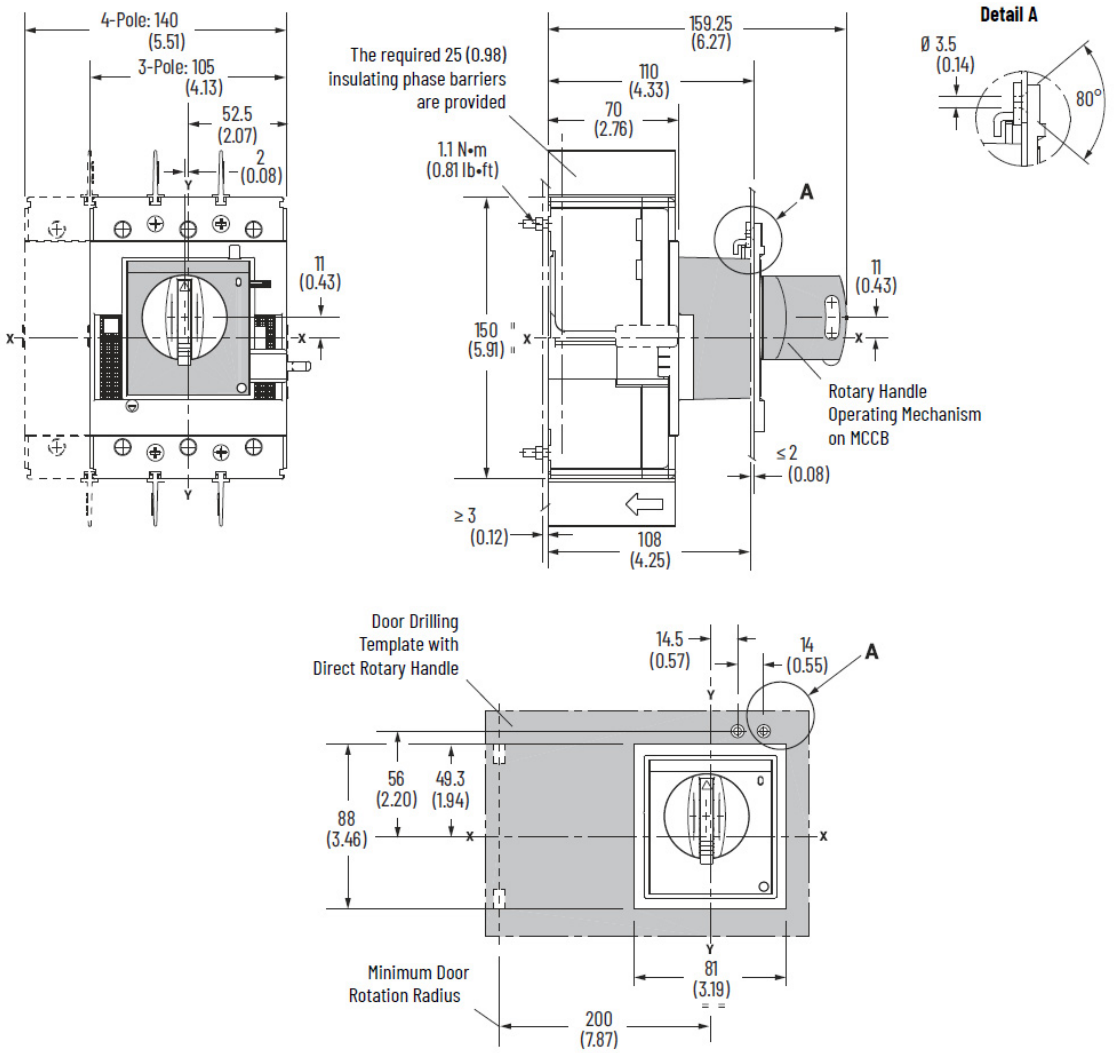
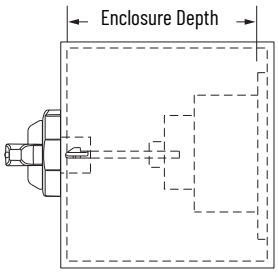


Figure 198 - Minimum/Maximum Enclosure Depth: Cat. No. 140G-I-RVM...

This figure depicts the minimum and maximum enclosure sizes that accommodate the MCCB, operator, and handle. See Figure 199 for overall assembly dimensions and handle cutout.



Description	Enclosure Size [mm (in.)]	
	Minimum	Maximum
12 in. shaft	191 (7.25)	451 (17.75)
21 in. shaft		679 (26.75)
12 in. shaft with NFPA	229 (9)	451 (17.75)
21 in. shaft with NFPA		679 (26.75)

Figure 199 - Variable Depth Rotary Handle Operating Mechanism: Frame Size I, Cat. No. 140G-G-RVM

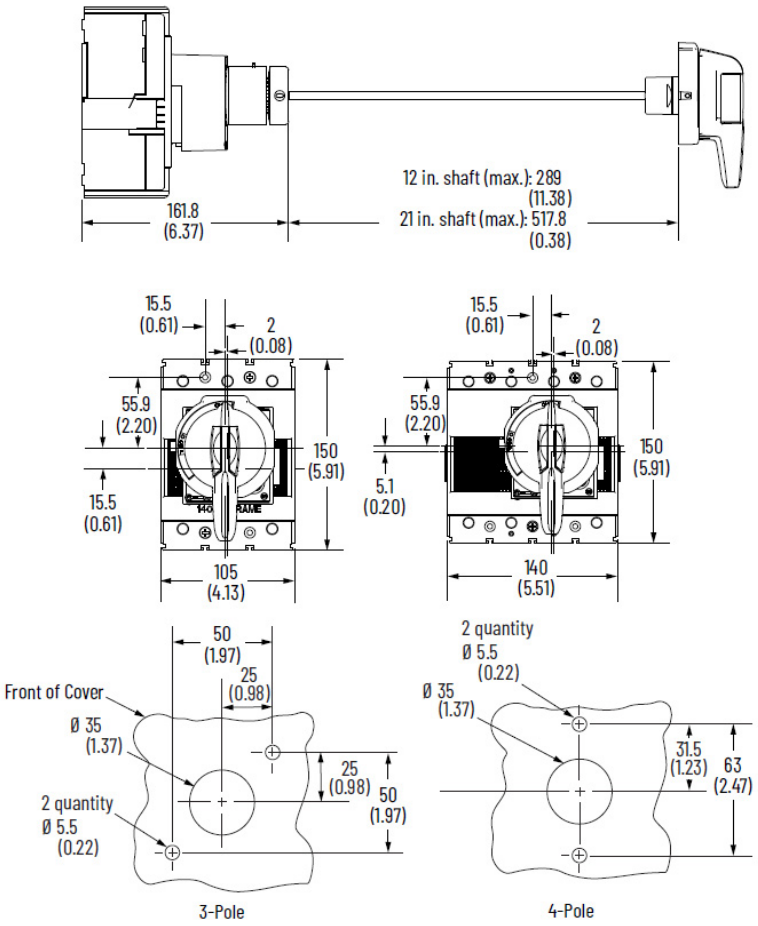


Figure 200 - Motor Operator: Frame Size I, Cat. No. 140G-I-EOP...

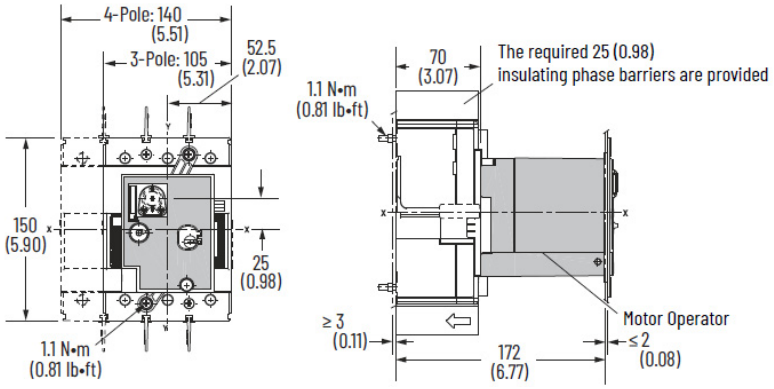


Figure 201 - Door Drilling Template: Frame Size I

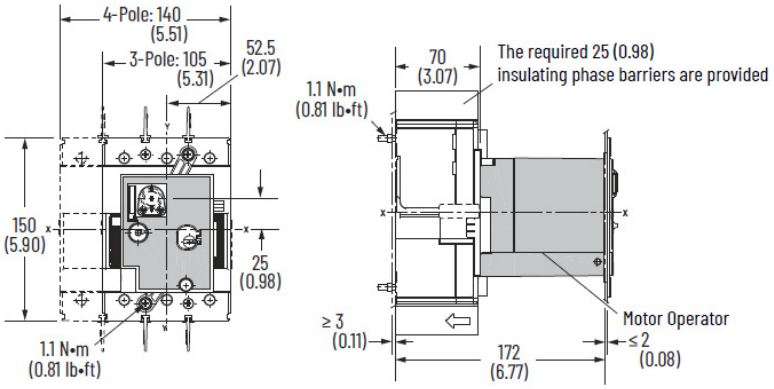


Figure 202 - Residual Current Release Module: Cat. No. 140G-I-ELP2503

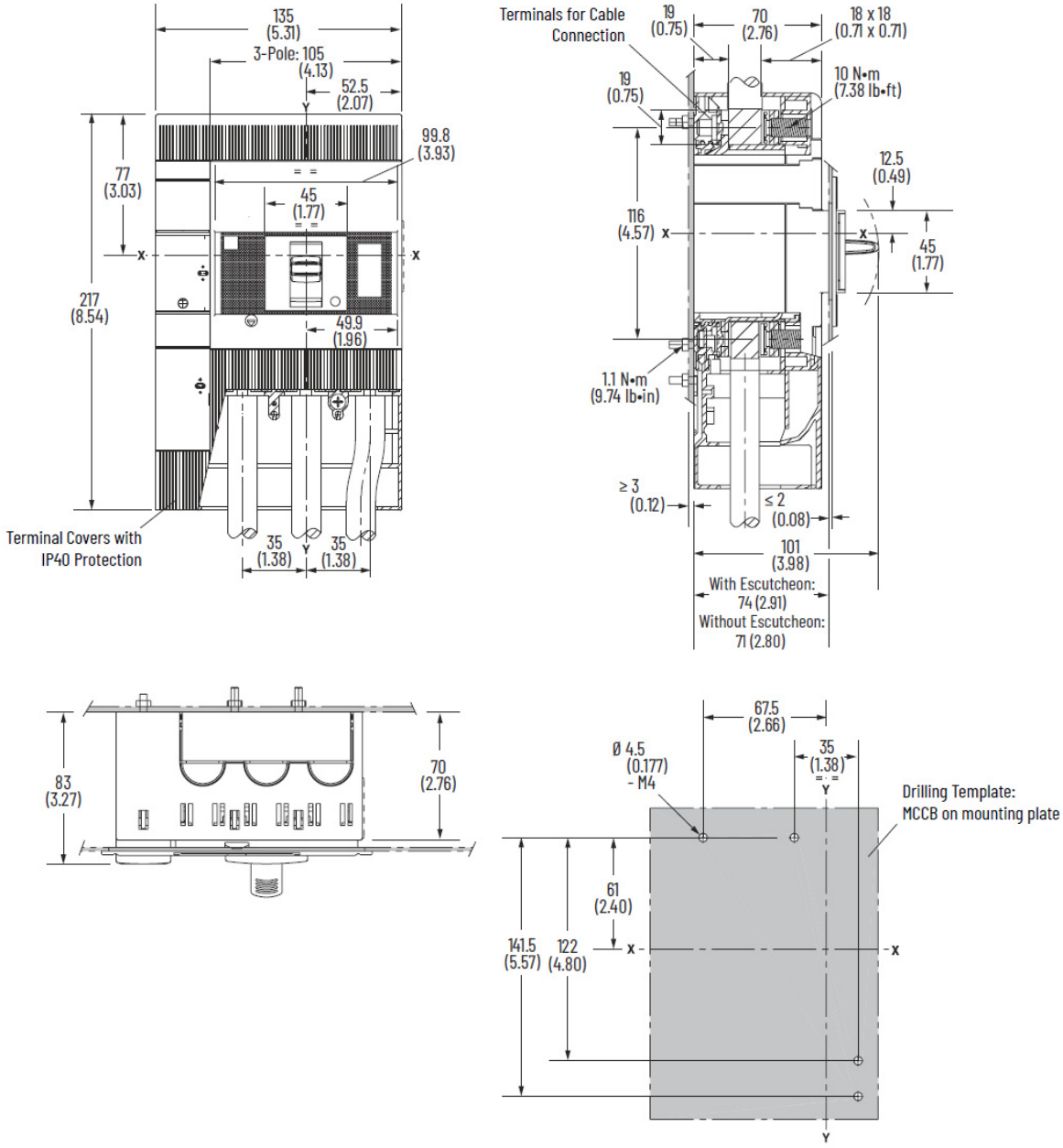


Figure 203 - Residual Current Release Module for 4-Pole MCCBs: Cat. No. 140G-I-ELP2504

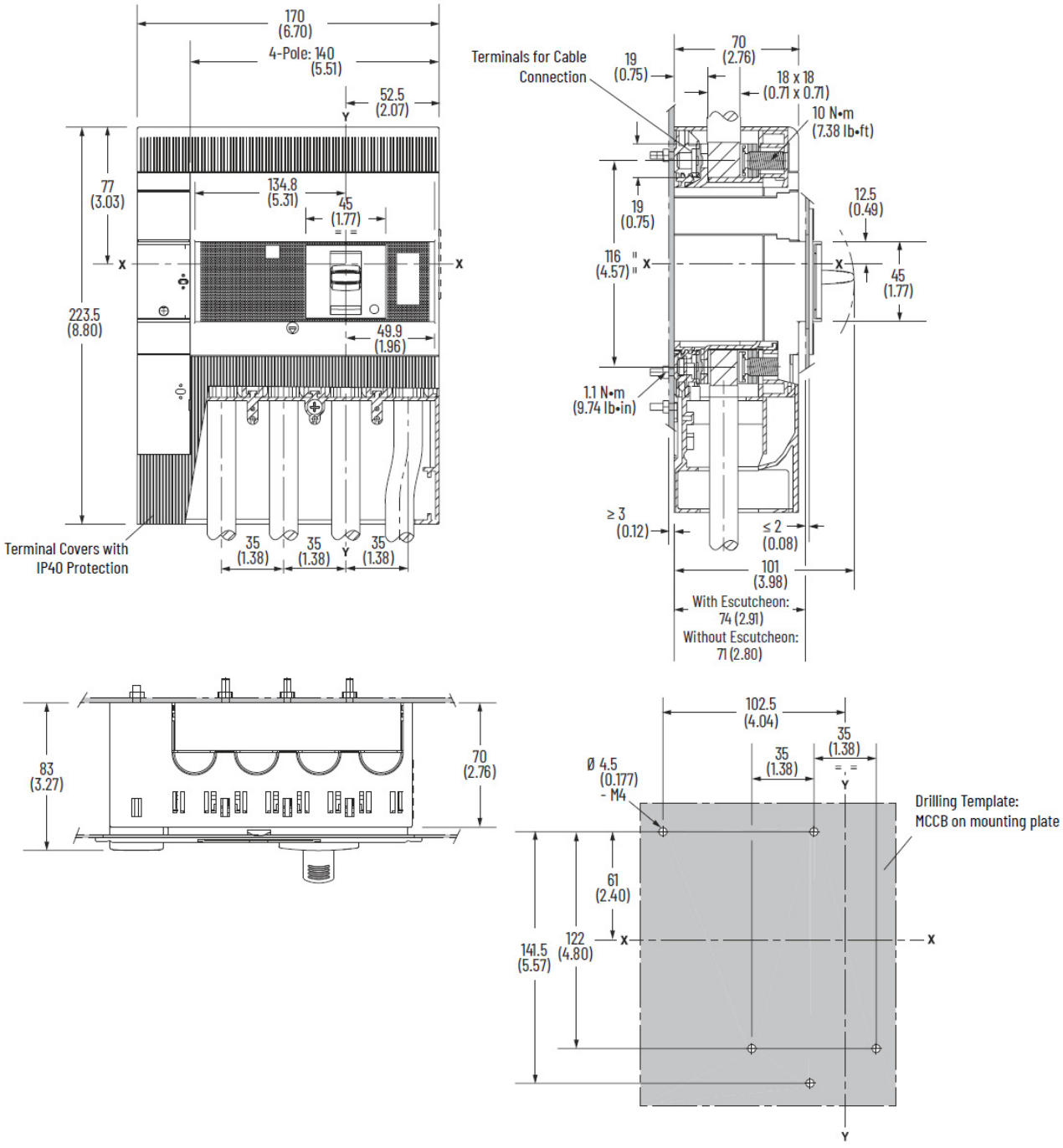


Figure 204 - Metal Bail Flex Cable Operator and Actuator: Cat. No. 140G-I-FCXB...

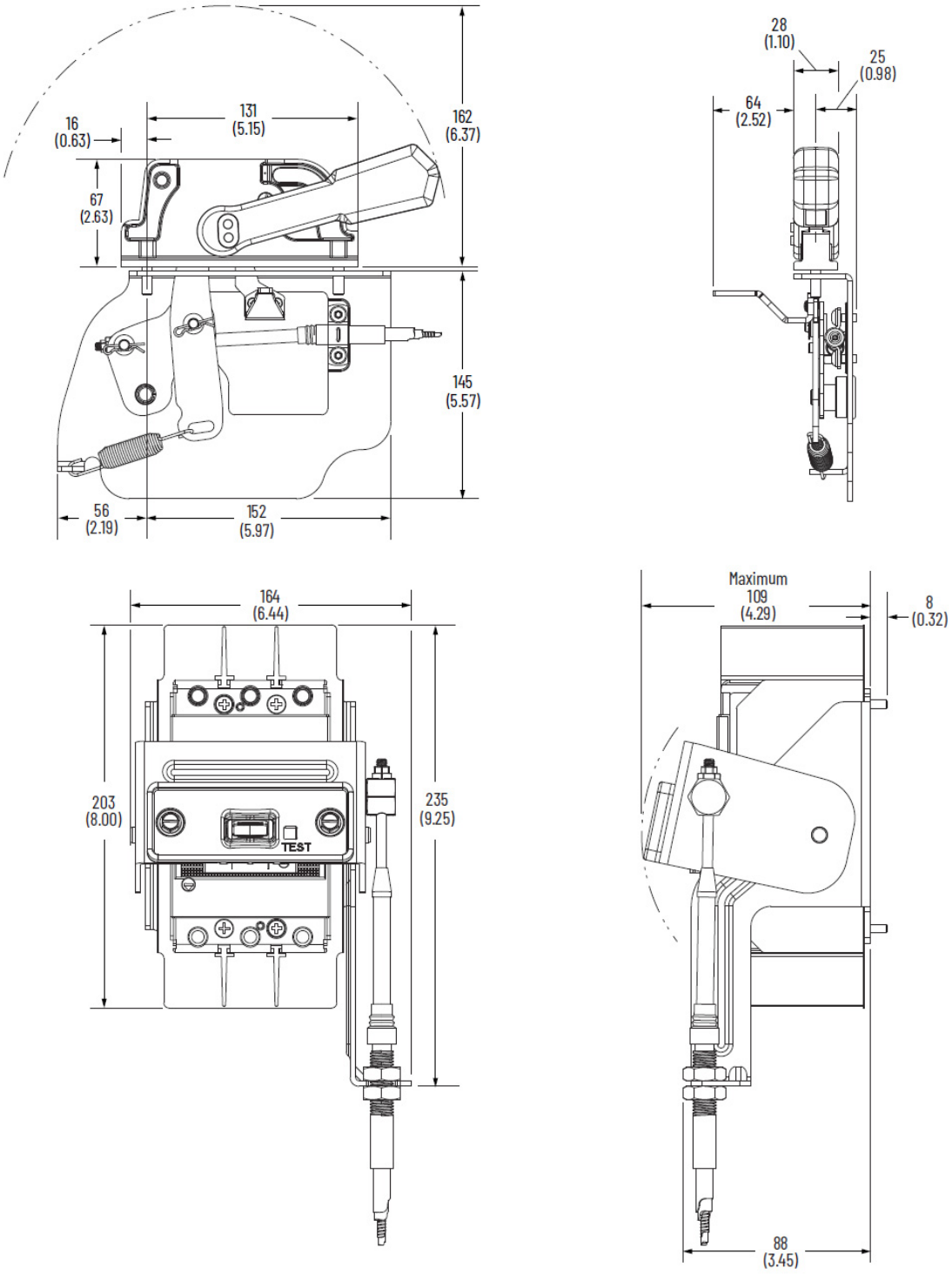


Figure 205 - Replacement Flex Cable Operator and Actuator: Frame Size I, Cat. No. 140G-I-FCX

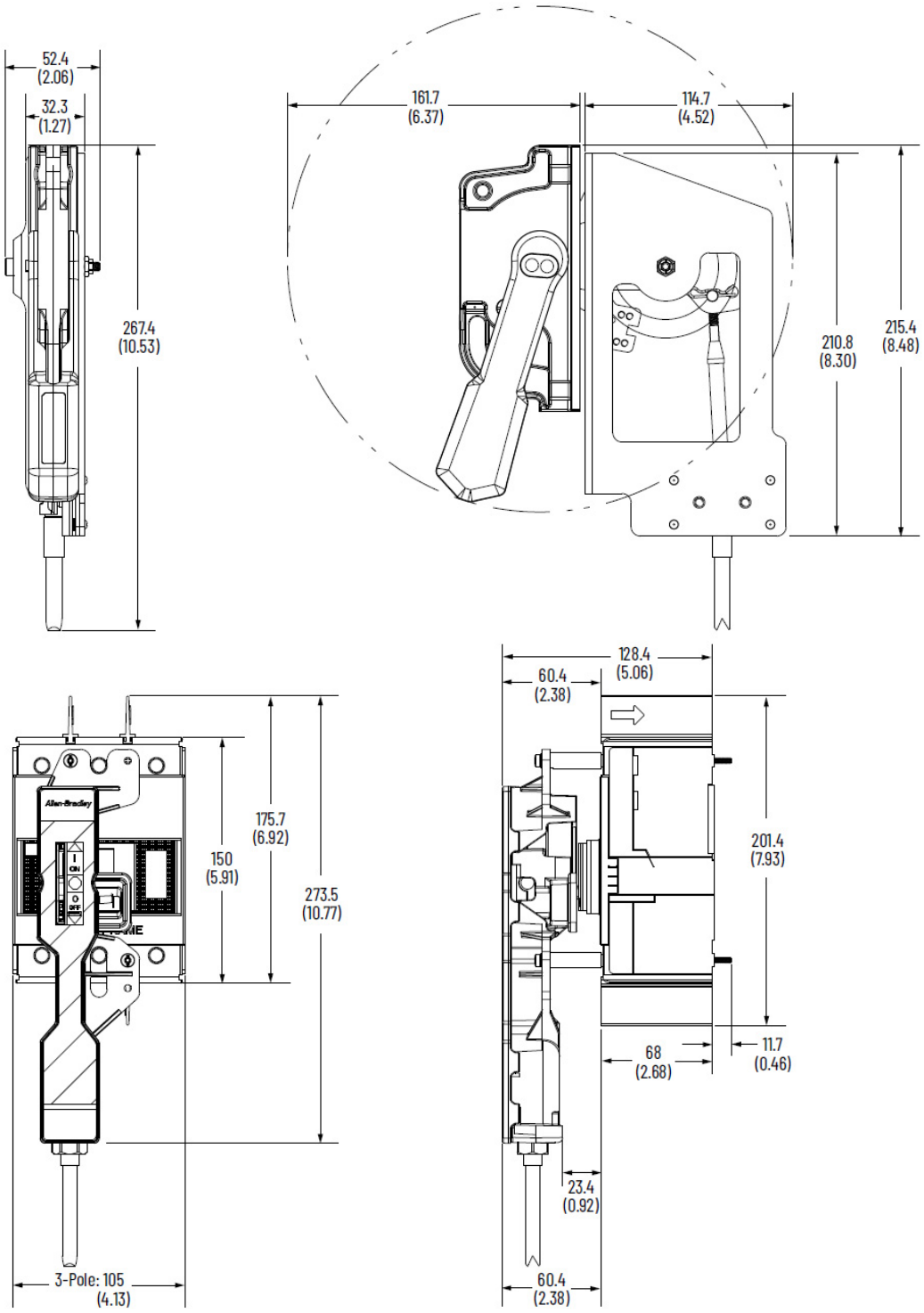
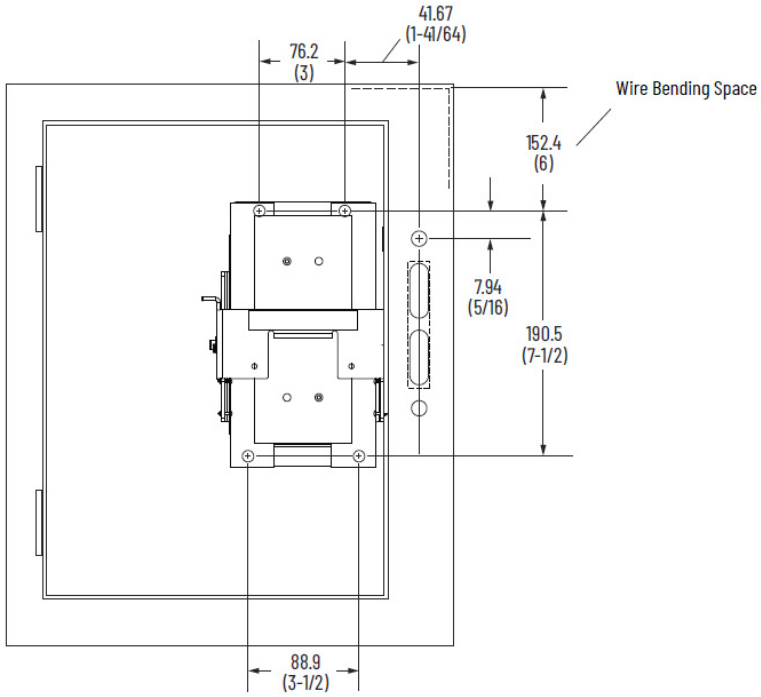


Figure 206 - Enclosure with Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism



Bulletin 140G and Bulletin 140MG, Frame Size J

Figure 207 - Panel-mount: 140G and 140MG Frame Size J MCCBs

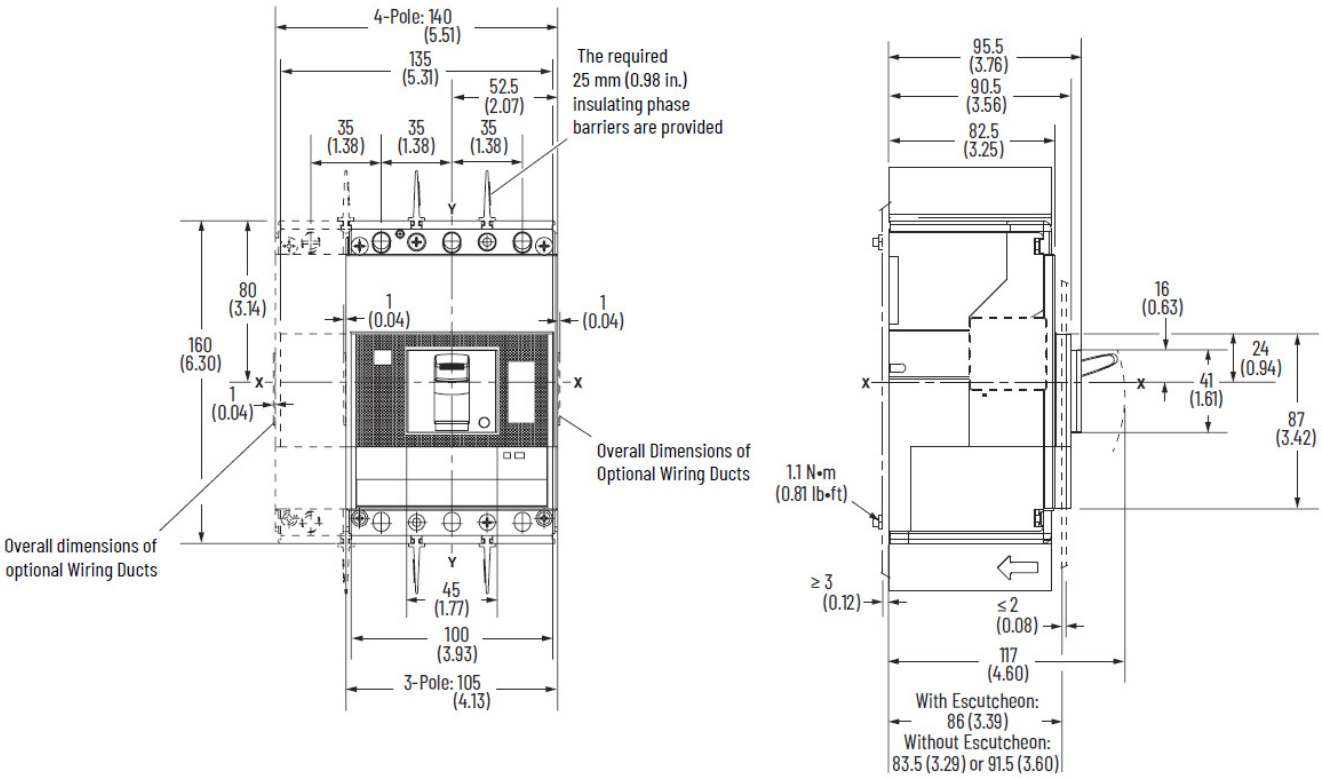


Figure 208 - DIN Rail Mount: 140G-J and 140MG-J MCCBs (Series A)

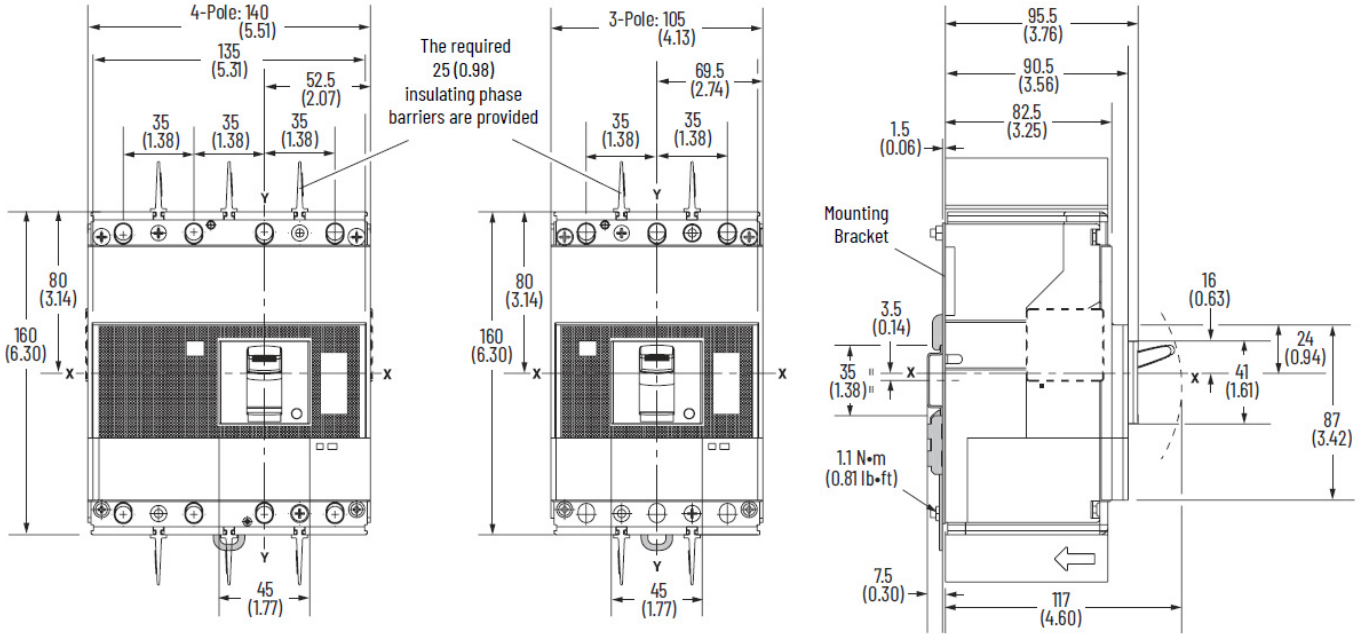


Figure 209 - Drilling Template for Mounting: 140G-J and 140MG-J MCCBs

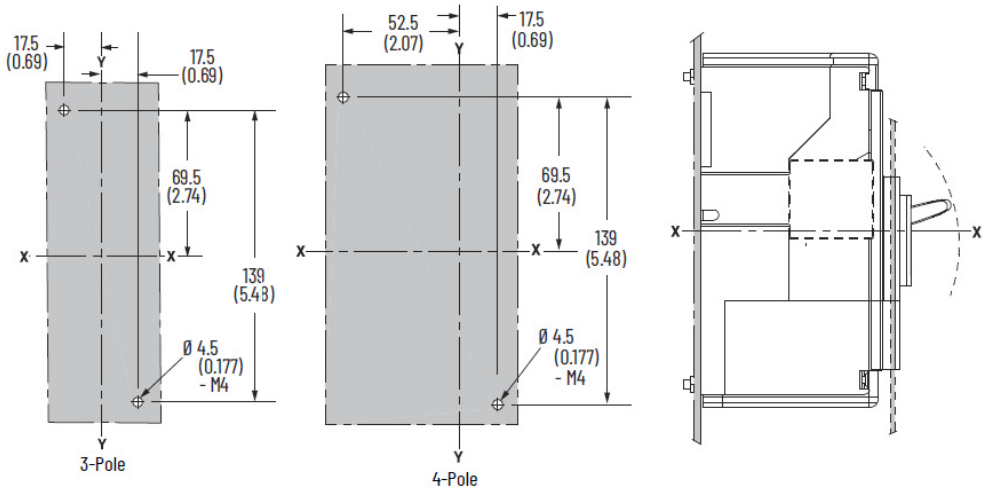


Figure 210 - Terminals: Cat. No. 140G-J-ECM and Cat. No. 140G-J-ECM4

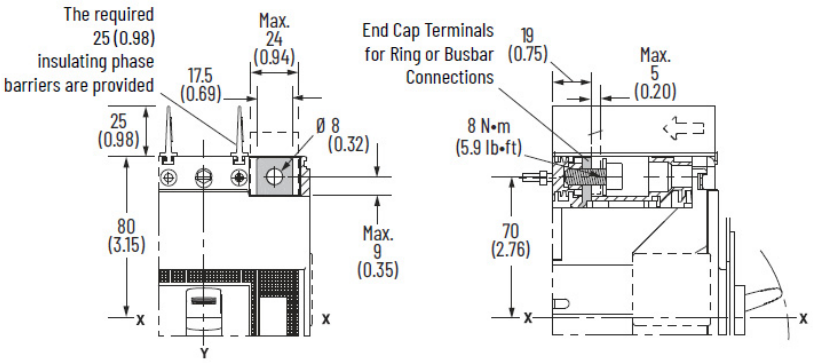
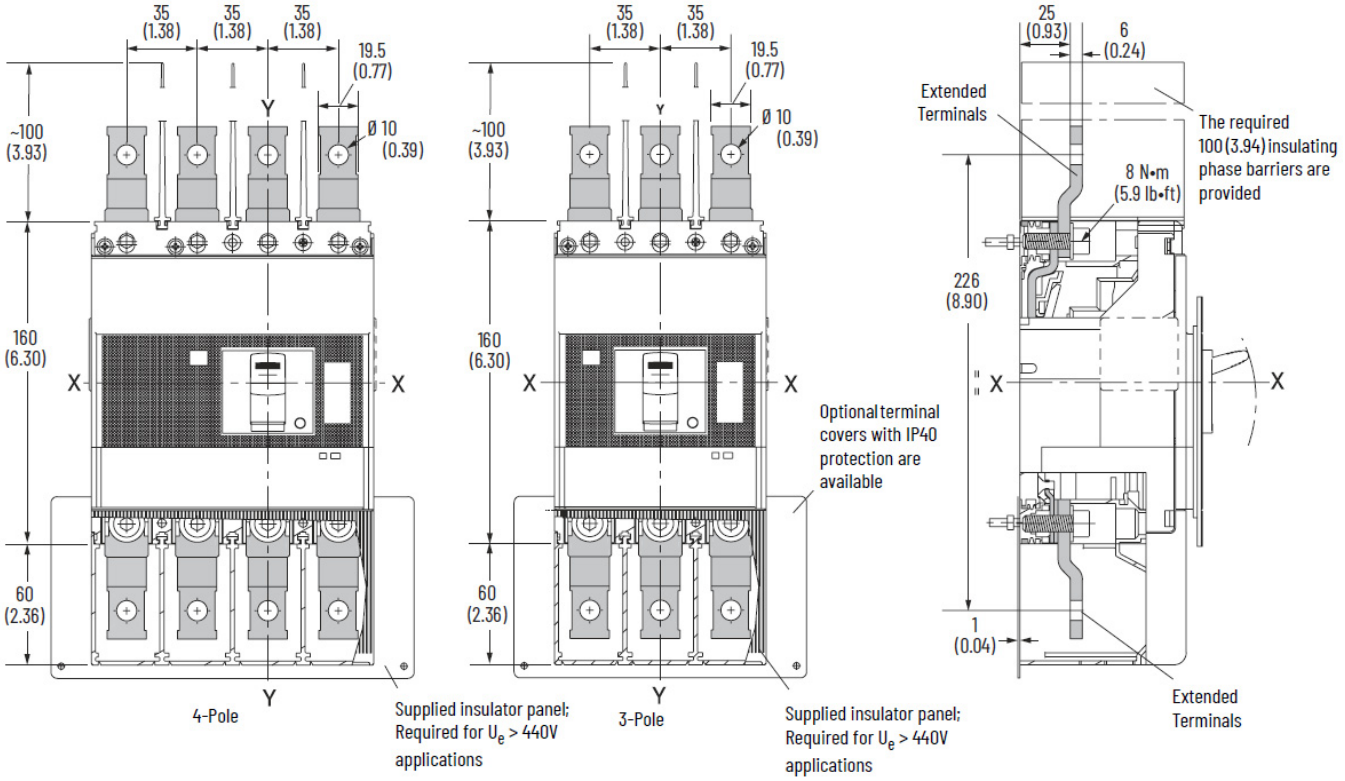
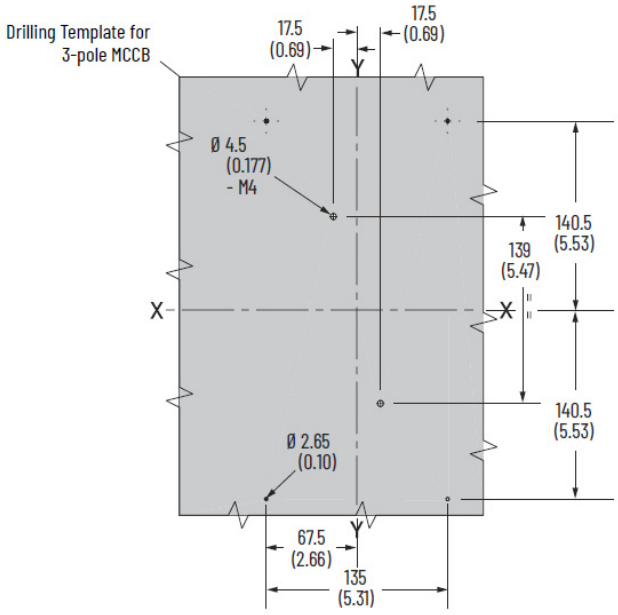


Figure 211 - Extended Terminals: Cat. No. 140G-J-EXT3 and Cat. No. 140G-J-EXT4





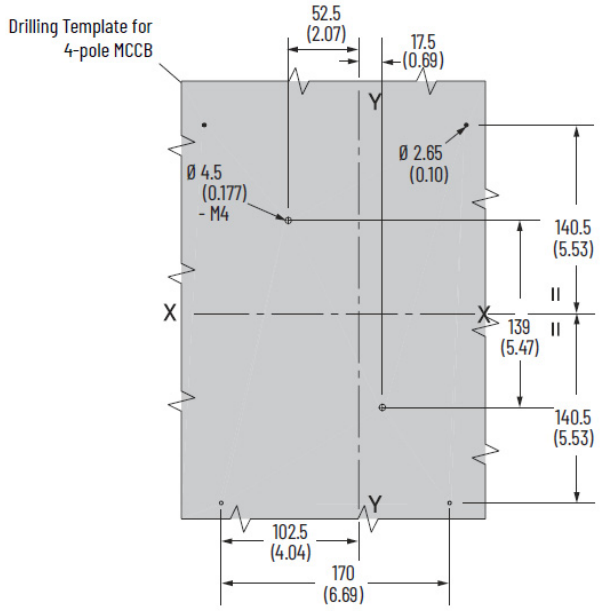


Figure 212 - Spreader Terminals: Cat. No. 140G-J-EXS3 and Cat. No. 140G-J-EXS4

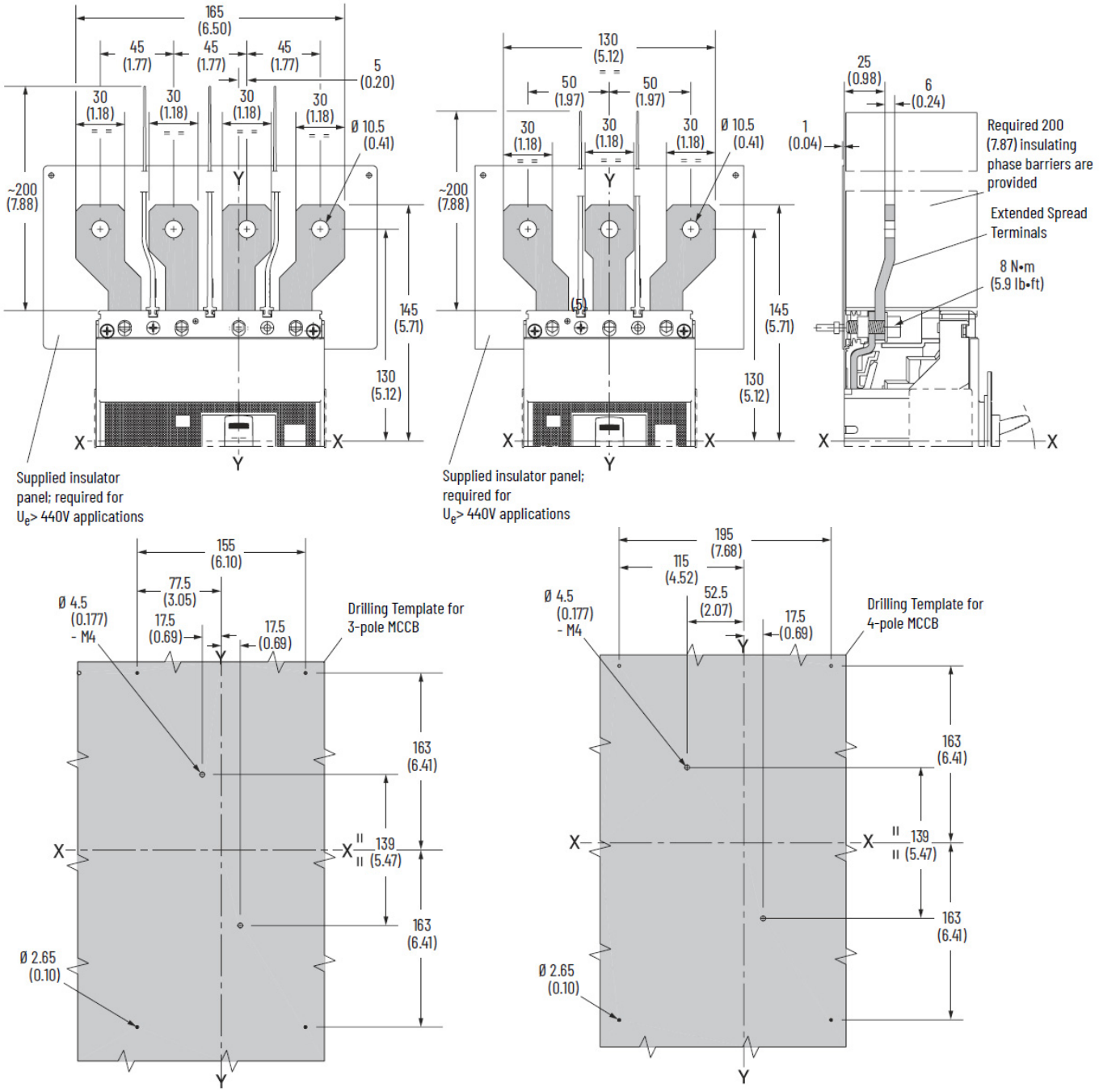


Figure 213 - Terminal Lugs: Cat. No. 140G-J-TLA13 and Cat. No. 140G-J-TLA14

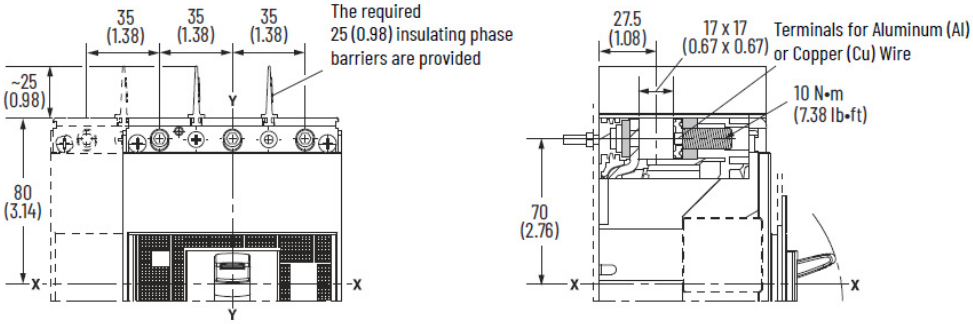


Figure 214 - Terminal Lugs: Cat. No. 140G-J-TLC13 and Cat. No. 140G-J-TLC14

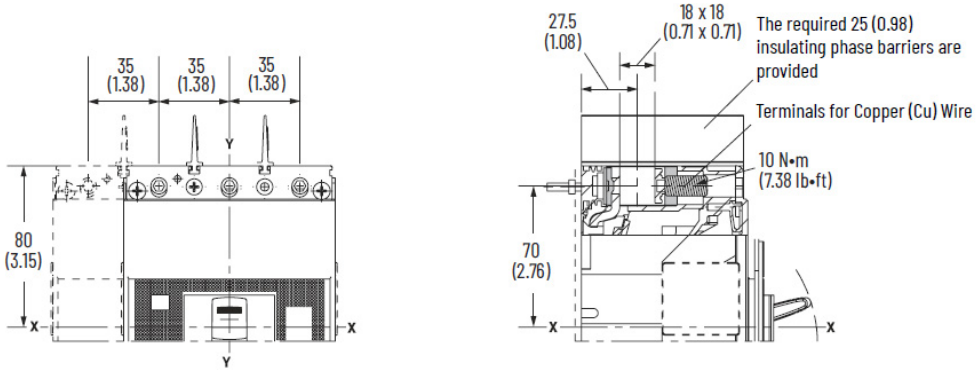


Figure 215 - Terminals: Cat. No. 140G-J-MTL63 and Cat. No. 140G-J-MTL64

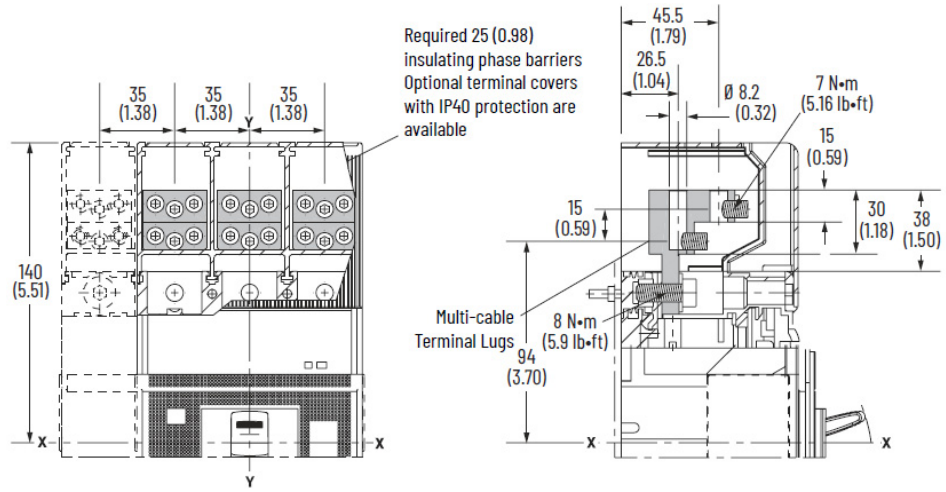


Figure 216 - Direct Rotary Operating Handle: Cat. No. 140G-J-RMB and Cat. No. 140G-J-RMY

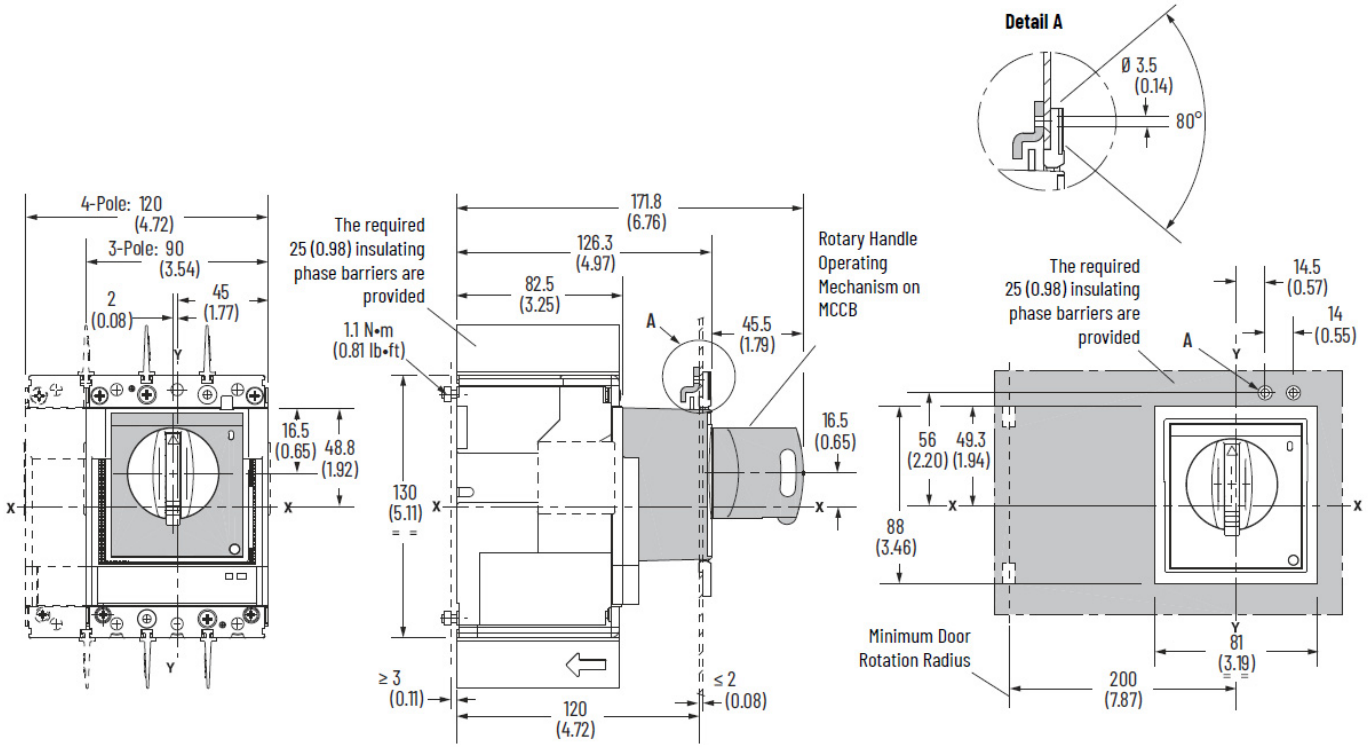


Figure 217 - Escutcheon Mount Drill Template: Frame Size J

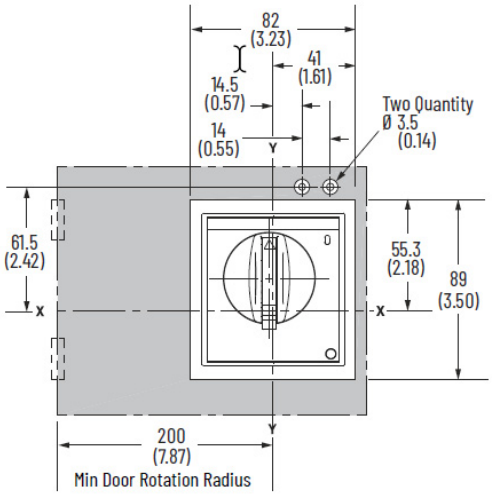
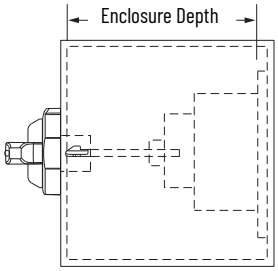


Figure 218 - Minimum/Maximum Enclosure Depth for Frame Size J: Cat. No. 140G-H-RVM...

This figure depicts the minimum and maximum enclosure sizes that accommodate the MCCB, operator, and handle. See Figure 219 for overall assembly dimensions and handle cutout.



Description	Enclosure Size [mm (in.)]	
	Minimum	Maximum
12 in. shaft	205 (8)	464 (18.25)
21 in. shaft		692 (27.25)
12 in. shaft with NFPA	235 (9.25)	464 (18.25)
21 in. shaft with NFPA		692 (27.25)

Figure 219 - Variable Depth Rotary Handle Operating Mechanism for Frame Size J: Cat. No. 140G-H-RVM...

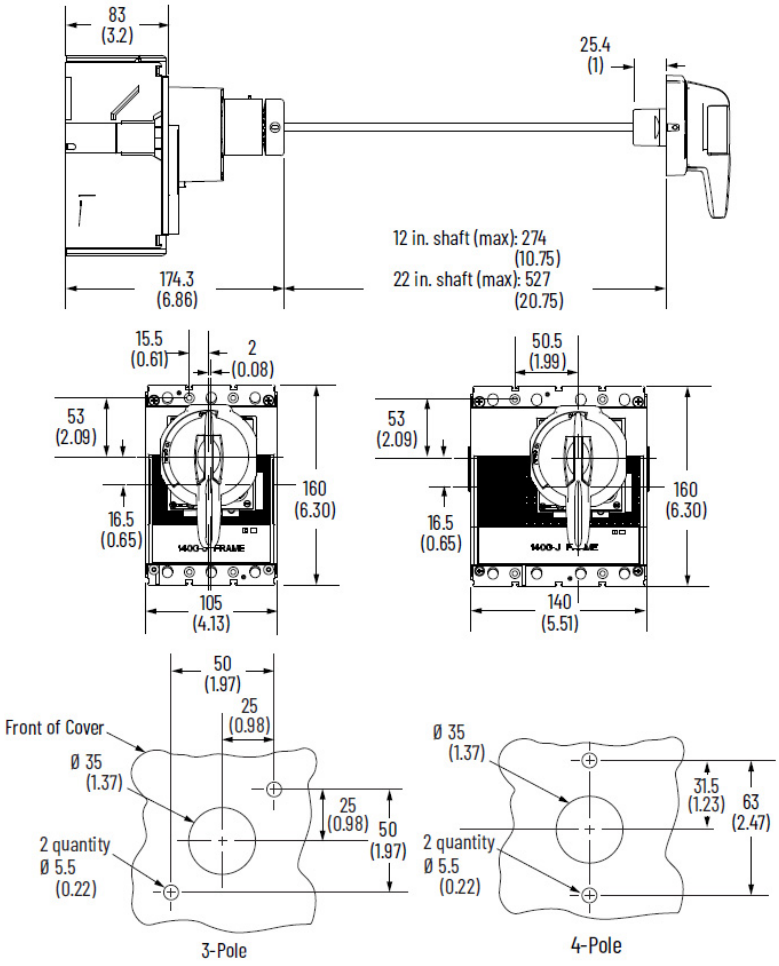


Figure 220 - Motor Operator for Frame Size J: Cat. No. 140G-H-EOP...

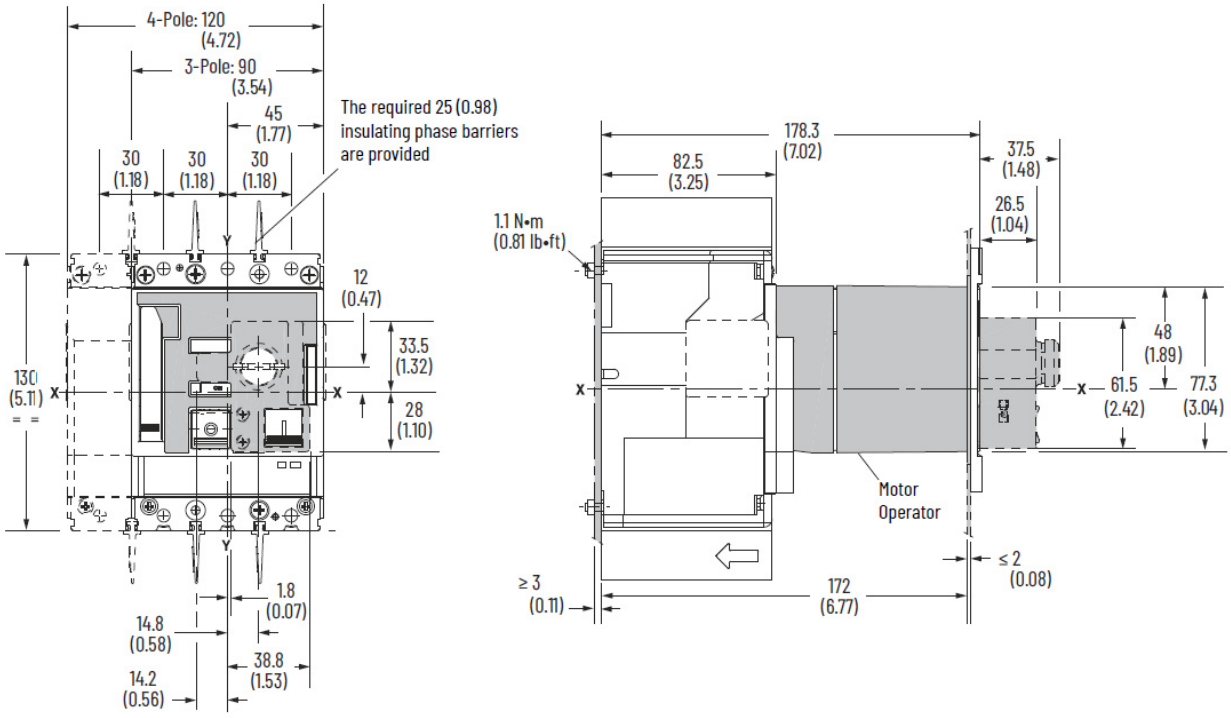


Figure 221 - Door Drilling Template: Frame Size J

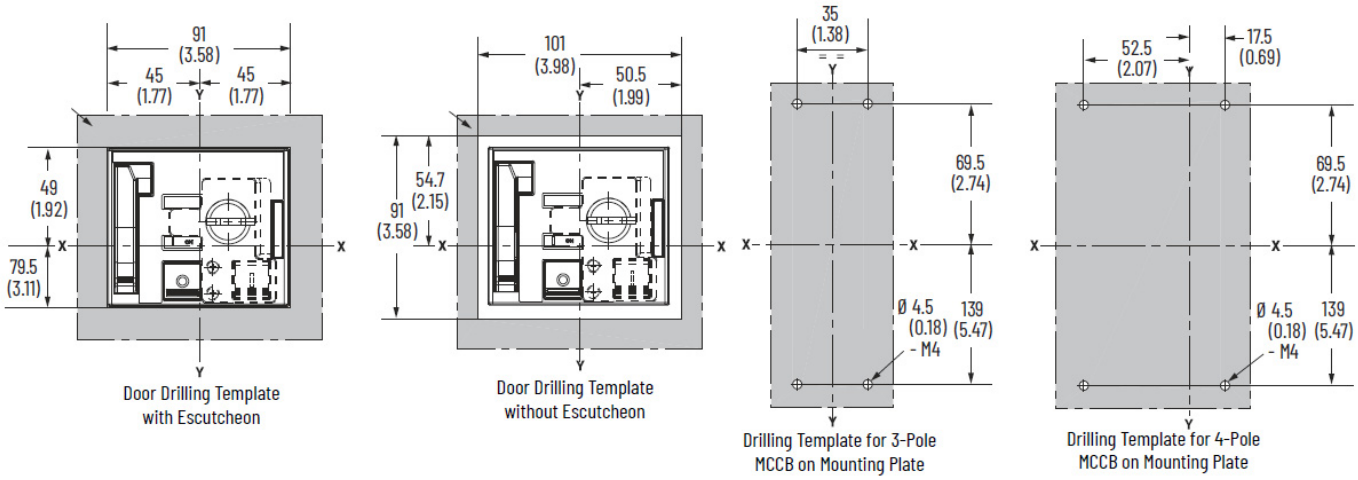


Figure 222 - Residual Current Release Module for 4-Pole MCCBs: Cat. No. 140G-J-EP2504

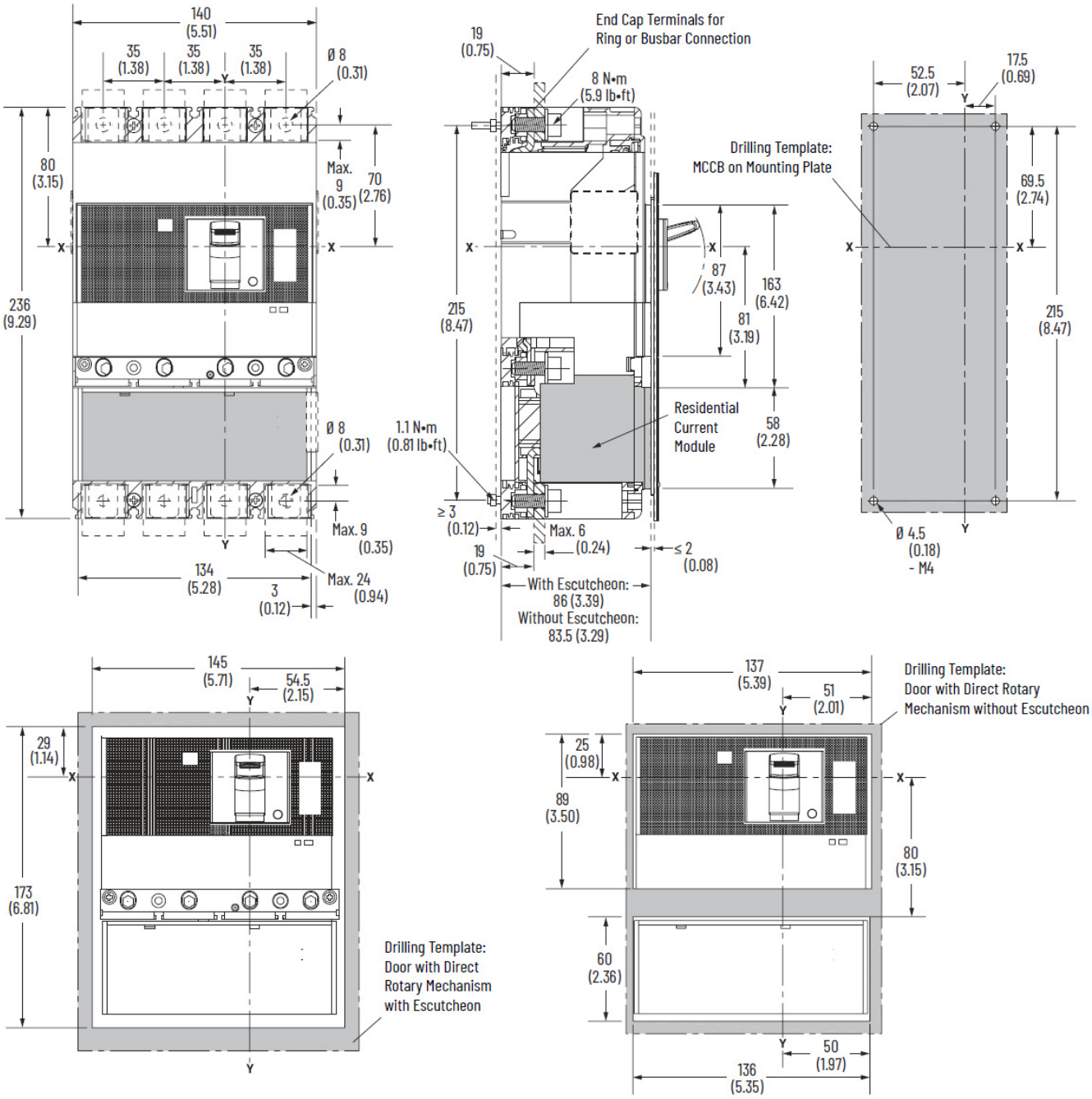


Figure 223 - Metal Bail Flex Cable Operator and Actuator: Cat. No. 140G-J-FCXB...

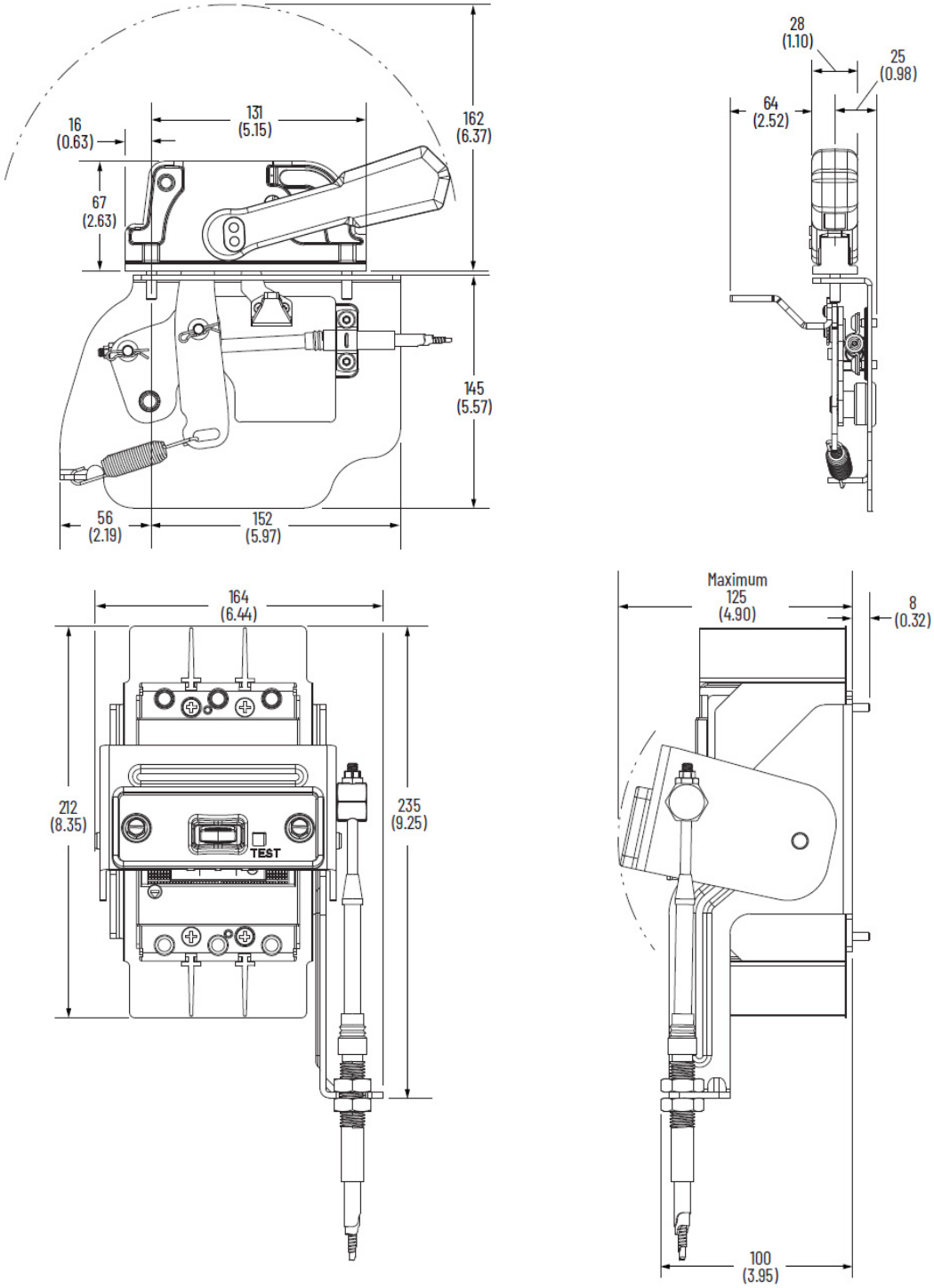


Figure 224 - Replacement Flex Cable Operator and Actuator: Cat. No. 140G-J-FCX...

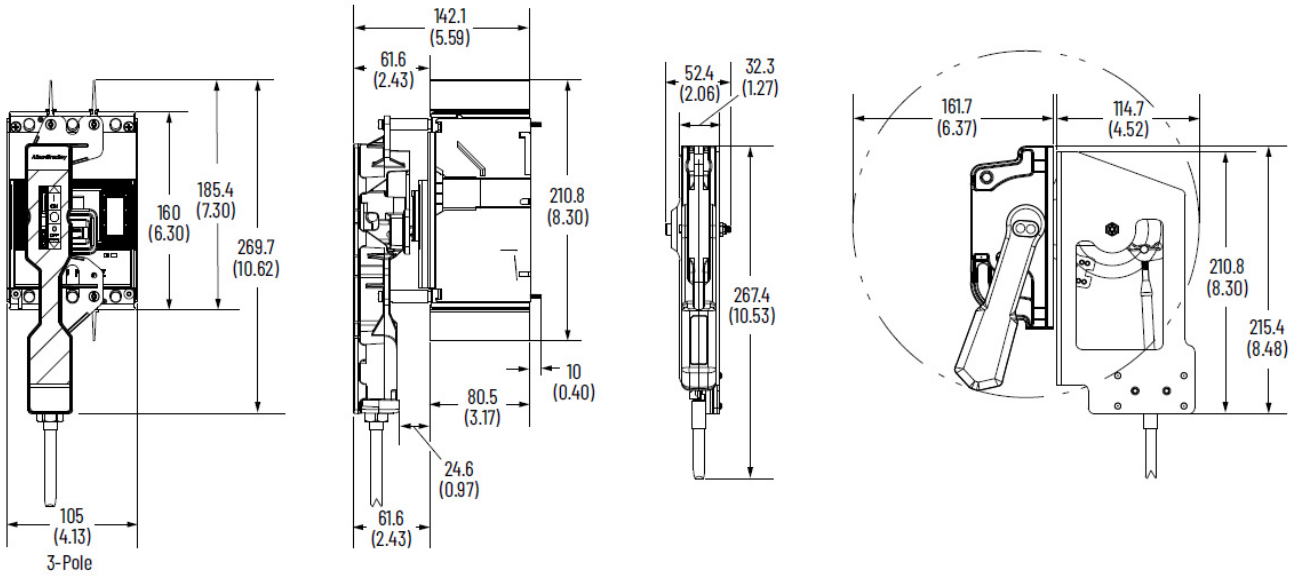


Figure 225 - Enclosure with Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism

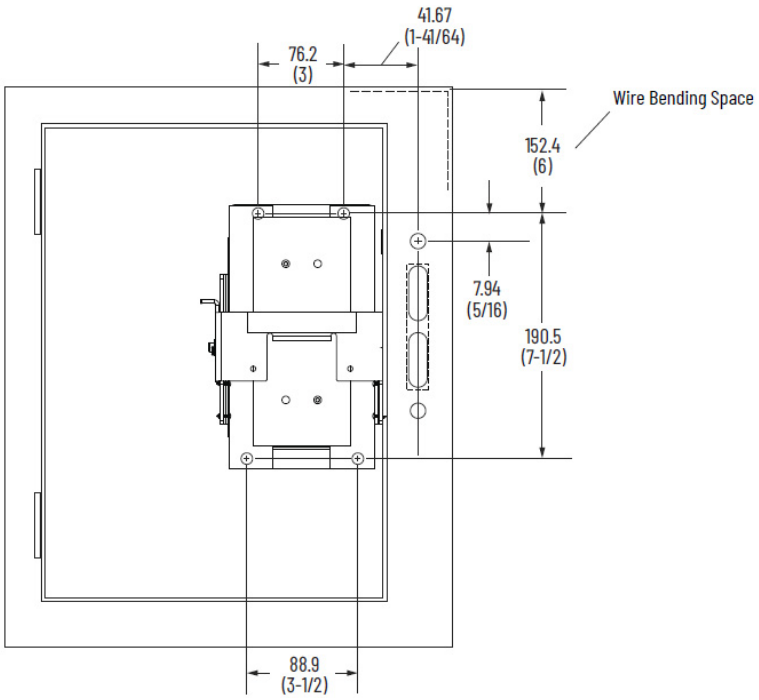
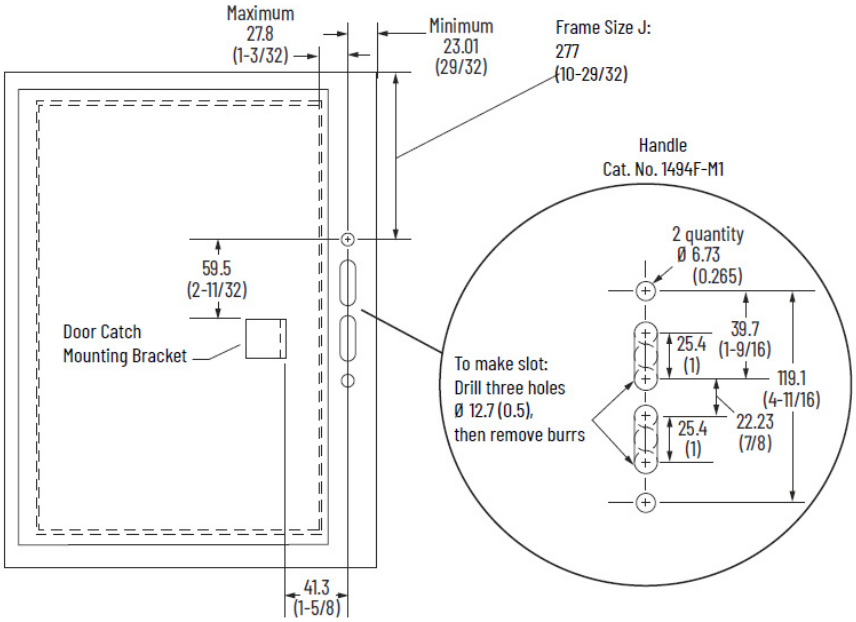


Figure 226 - Enclosure without Handle Cutout: Bulletin 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanisms



Bulletin 140G2 and Bulletin 140MG2 MCCBs: Frame Size K and L

Figure 227 - Panel-mount: 3-Pole Frame Size K and L

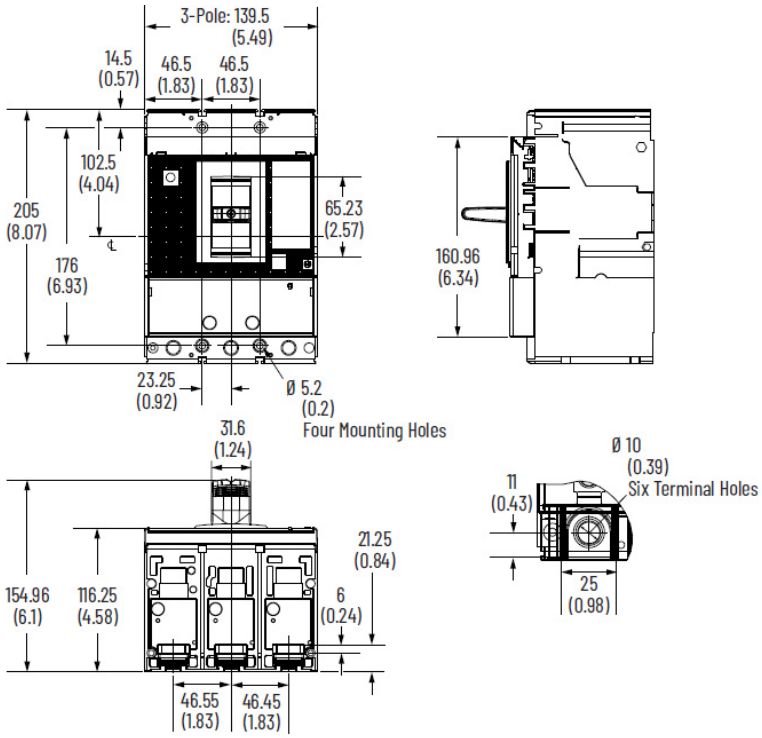


Figure 228 - Panel-mount: 4-Pole, Frame Size K and L

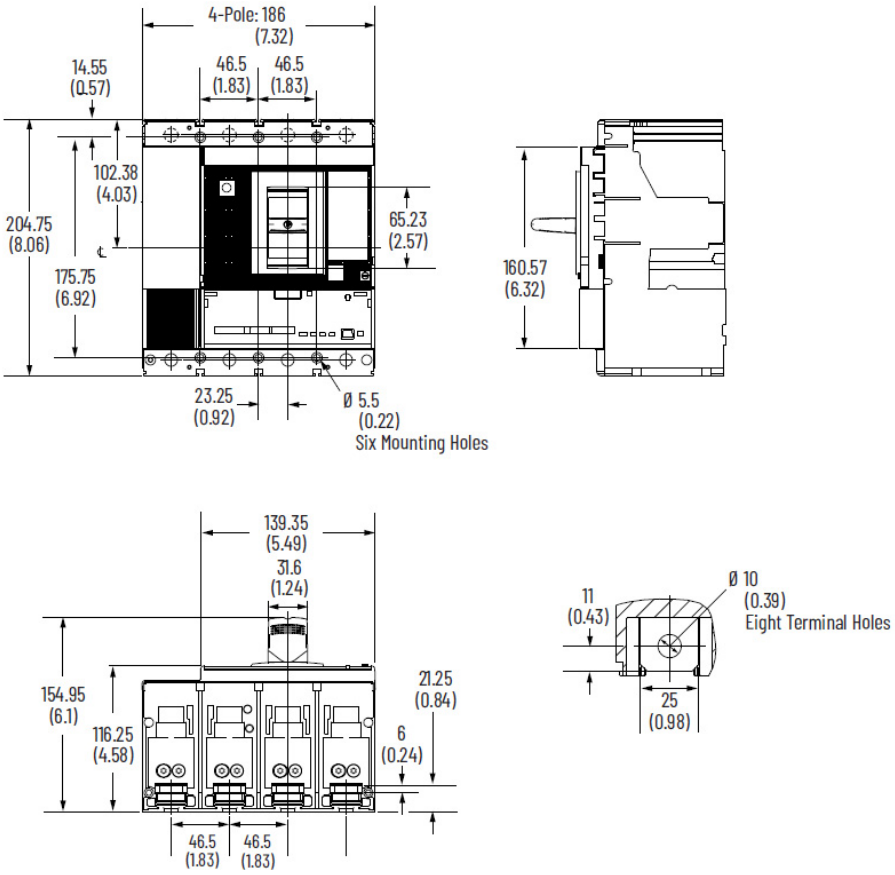


Figure 229 - Cutout Template for Mounting: Frame Size K and L

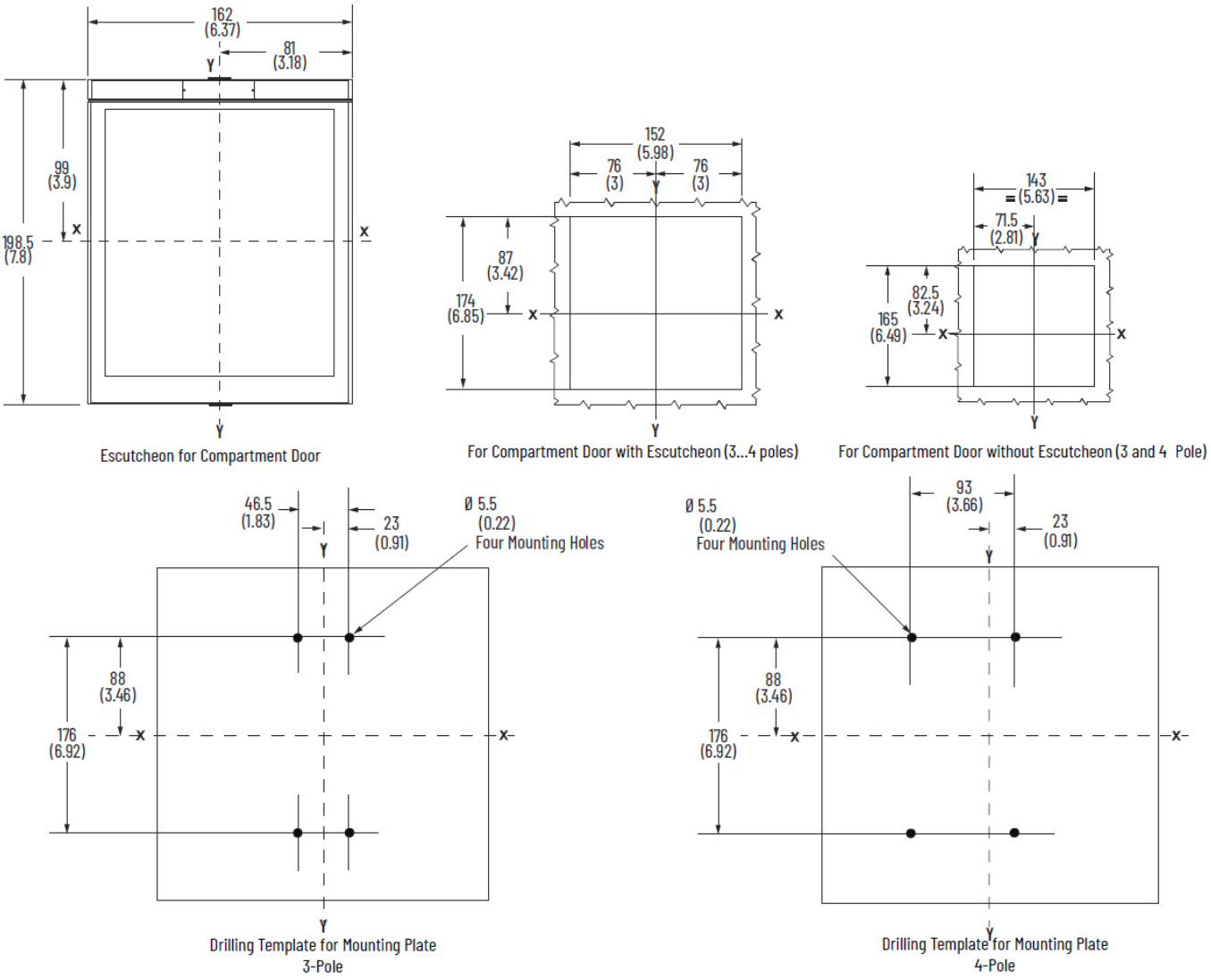


Figure 230 - Terminals: Cat. No. 140G-K-ECM and Cat. No. 140G-K-ECM4

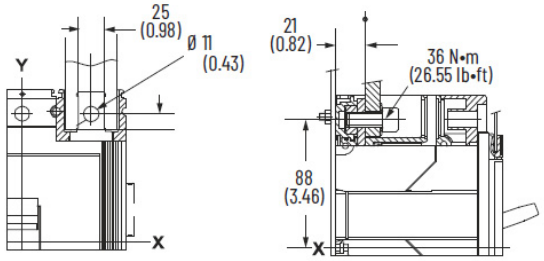


Figure 231 - Terminals: Cat. No. 140G2-K-TLC13 and Cat. No. 140G2-K-TLC14

Wires: Two 2/0...250 MCM (95...120 mm^2)

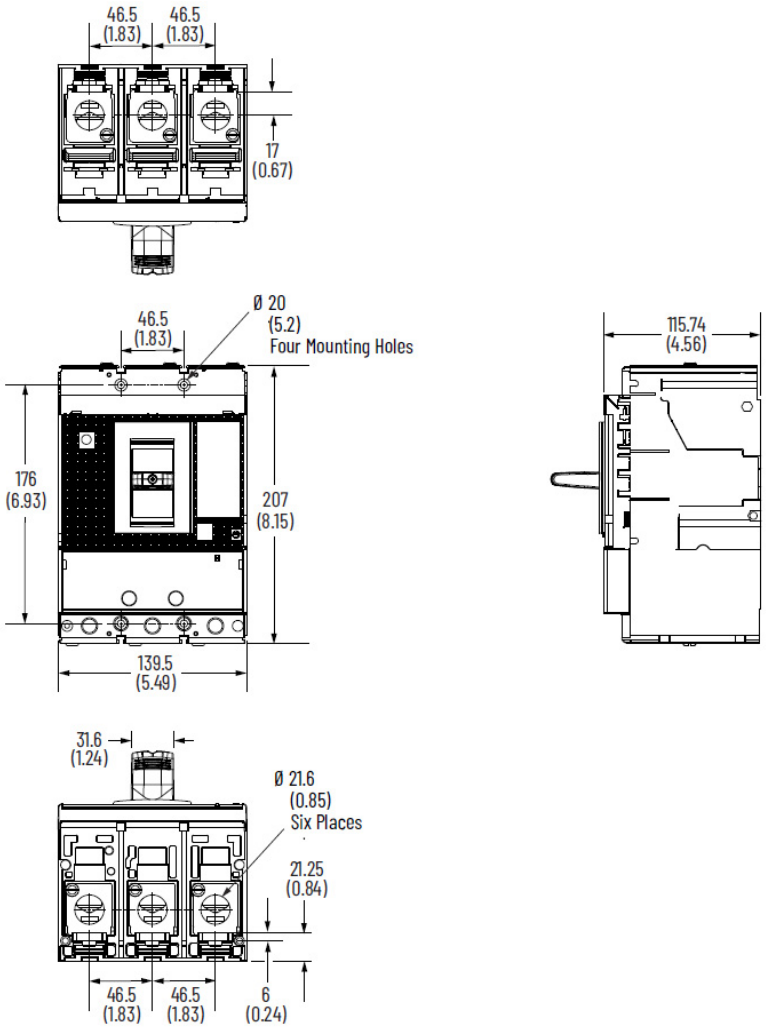


Figure 232 - Terminals: Cat. No. 140G2-K-TLC23 and Cat. No. 140G2-K-TLC24

Wires: Two 2/0...250 MCM (95...120 mm^2)

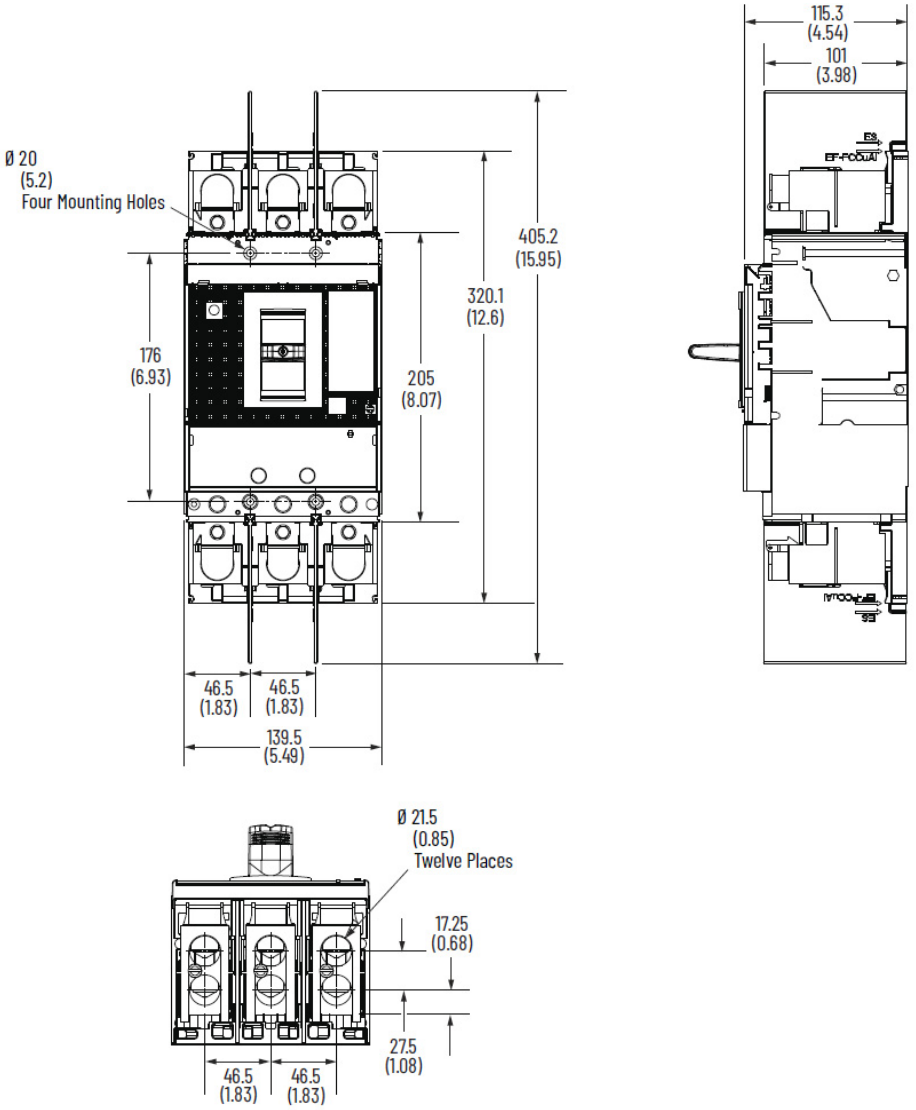


Figure 233 - Terminals: Cat. No. 140G2-K-TLA13 and Cat. No. 140G2-K-TLA14

Wires: 4/0...500 MCM (120...240 mm^2)

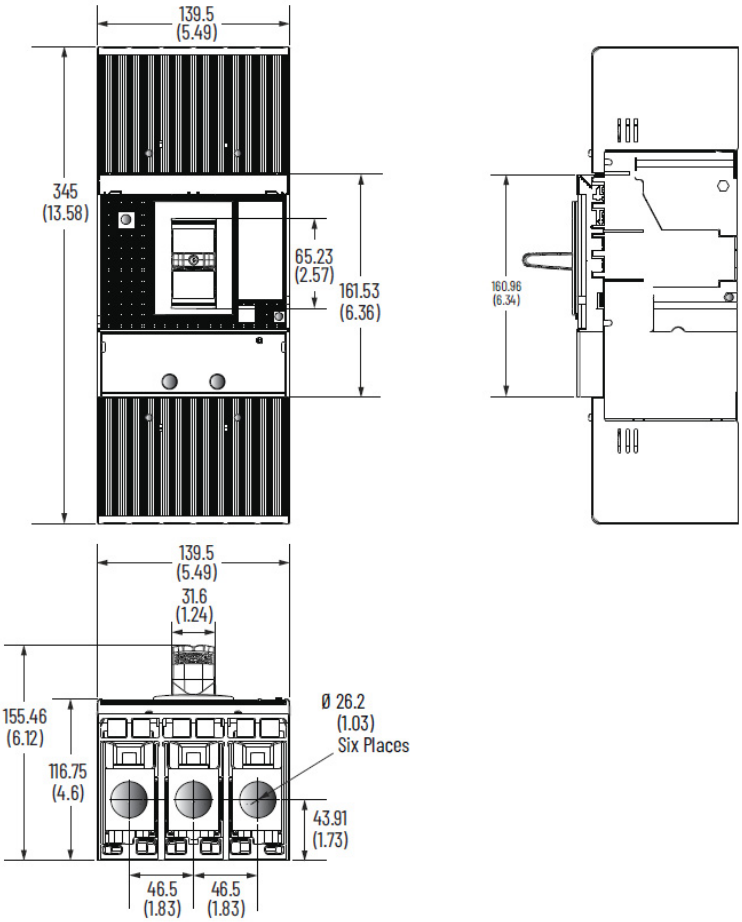


Figure 234 - Terminals: Cat. No. 140G-K-TLA2A3

Wires: 2x2/0...95 MCM (120...240 mm^2)

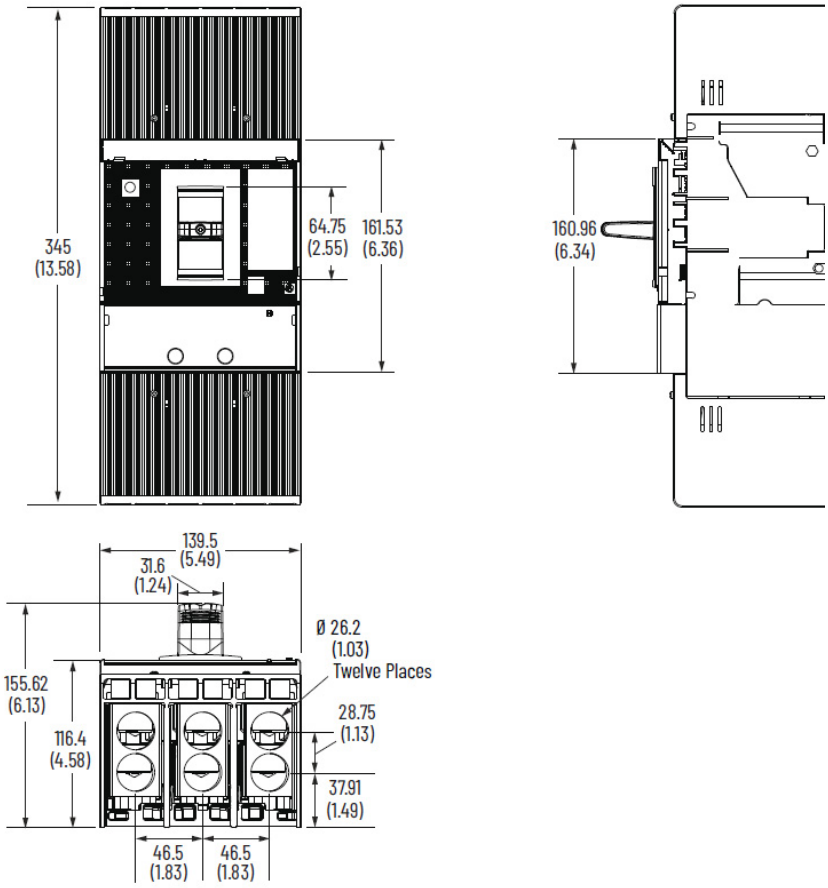


Figure 235 - Extended Terminals: Cat. No. 140G2-K-EXT3 and Cat. No. 140G2-K-EXT4

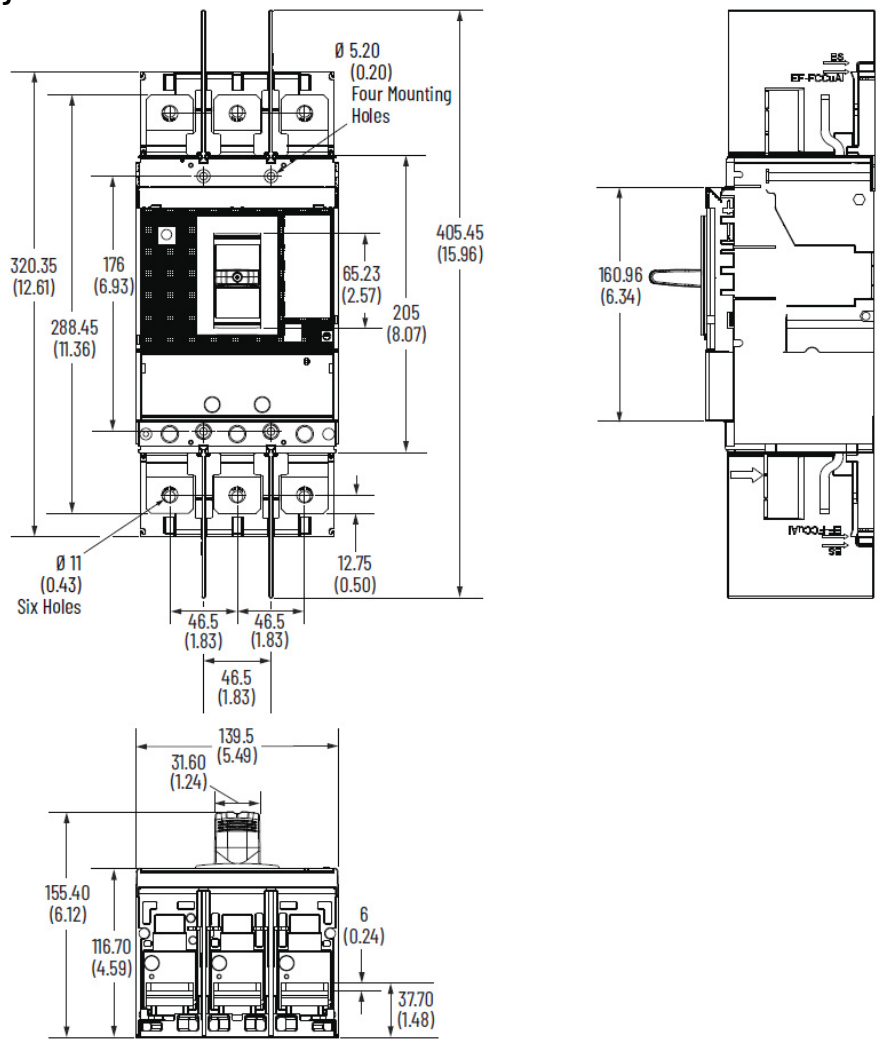
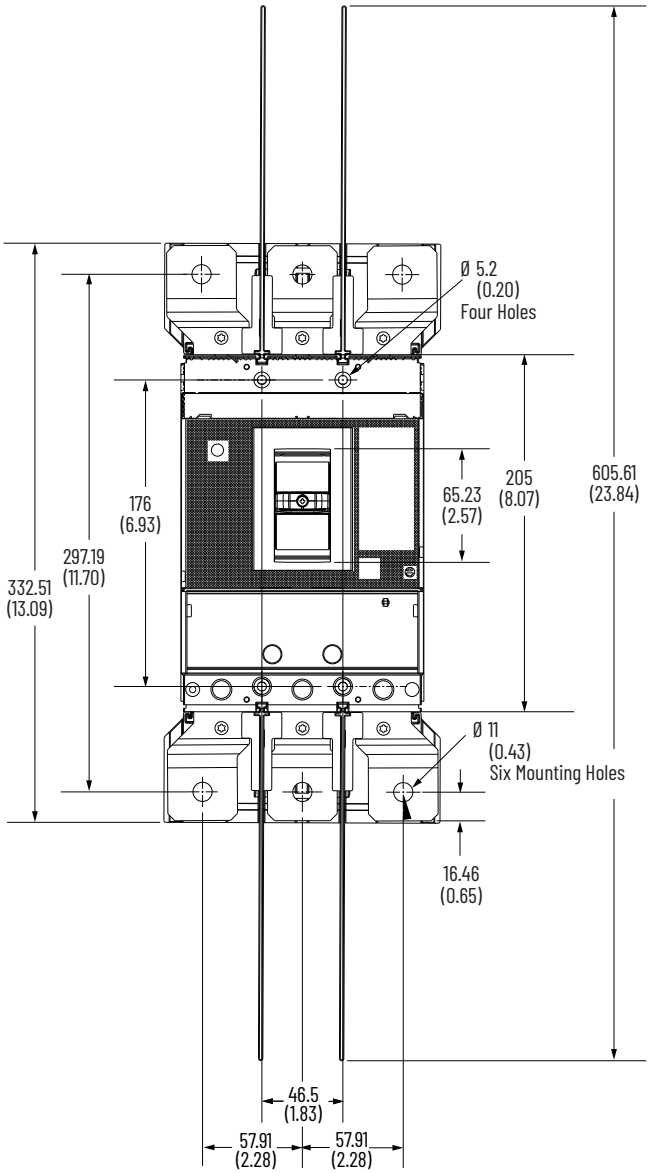
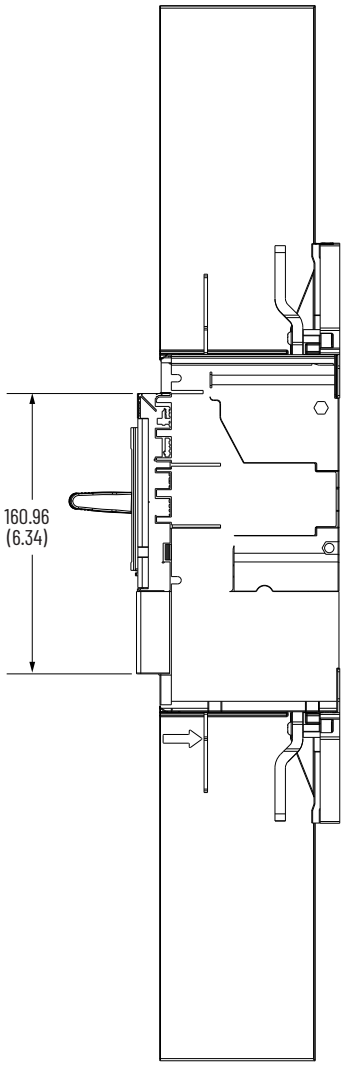


Figure 236 - Spreader Terminals: 3 pole, Cat. No. 140G2-K-EXS3





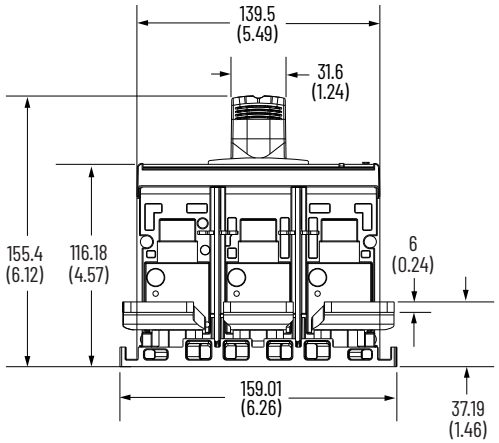
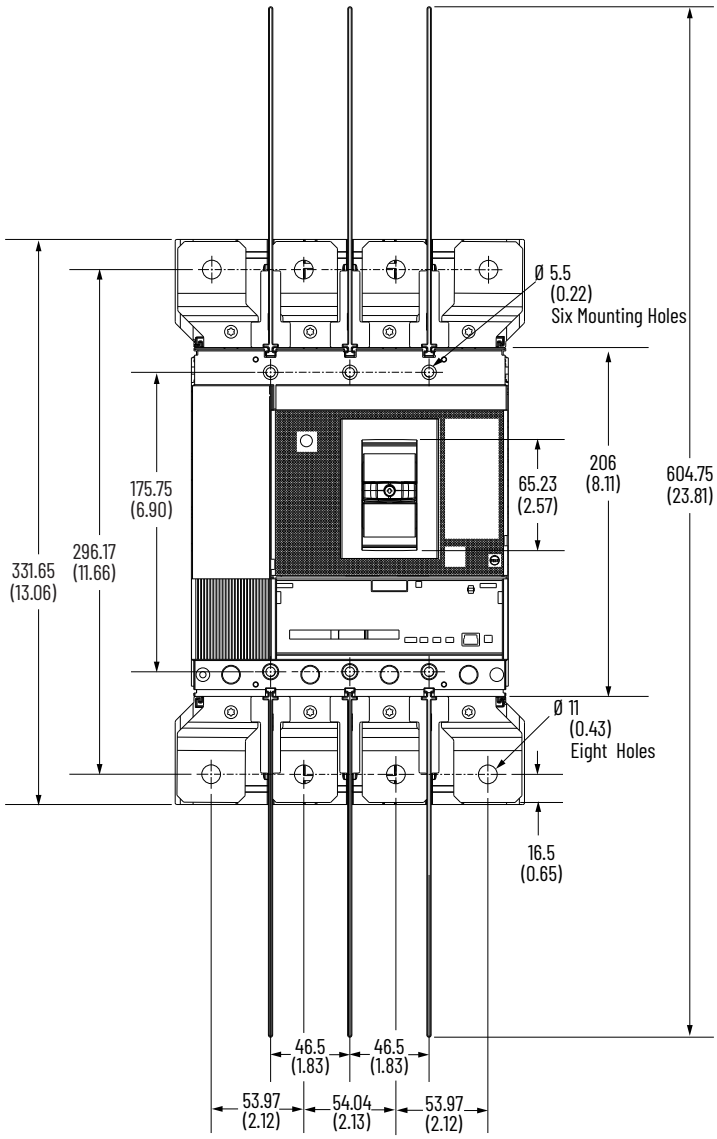
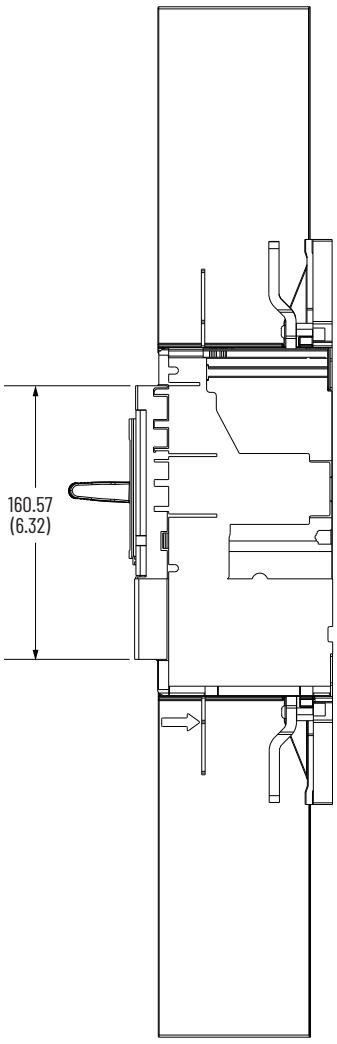


Figure 237 - Spreader Terminals: 4-Pole, Cat. No. 140G2-K-EXS4





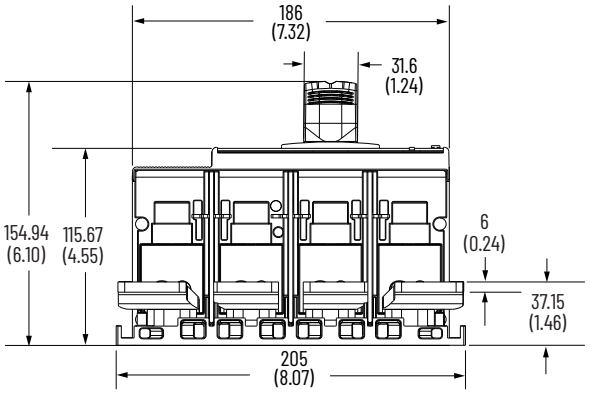


Figure 238 - Door Mounted Rotary Handle Operating Mechanism: Cat. No. 140G2-K-RMB and Cat. No. 140G2-K-RMY

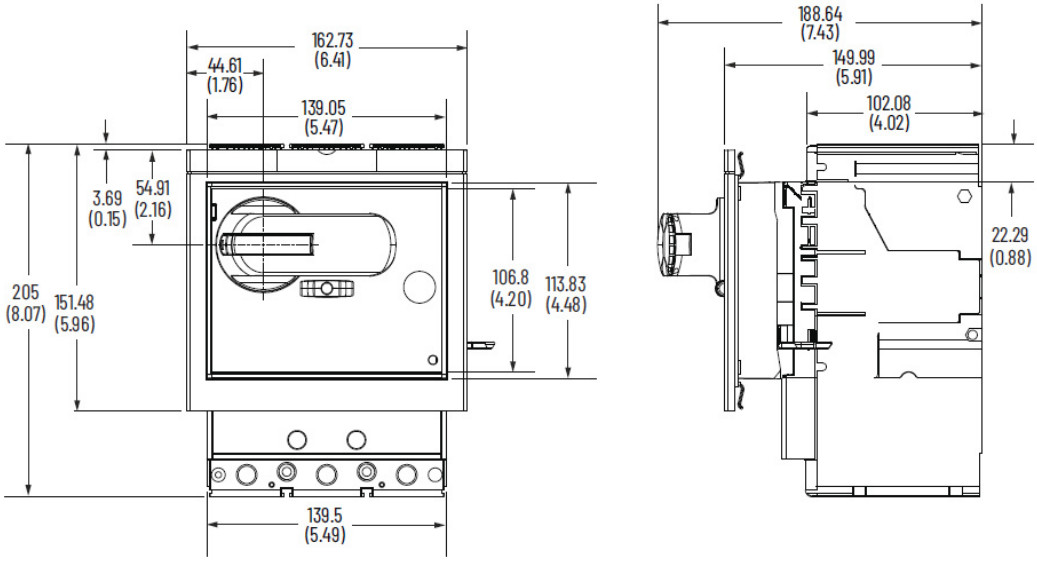
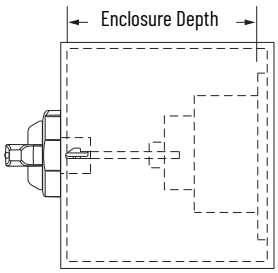


Figure 239 - Minimum/Maximum Enclosure Depth: Cat. No. 140G2-K-RVM...

This figure depicts the minimum and maximum enclosure sizes that accommodate the MCCB, operator, and handle. See Figure 240 for overall assembly dimensions and handle cutout.



Description	Enclosure Size [mm (in.)]	
	Minimum	Maximum
12 in. shaft	216 (8.5)	444.5 (17.5)
21 in. shaft		698.5 (27.5)
12 in. shaft with NFPA	273 (10.75)	444.5 (17.5)
21 in. shaft with NFPA		698.5 (27.5)

Figure 240 - Variable Depth Rotary Handle Operating Mechanism: 3 Pole, Cat. No. 140G2-K-RVM...

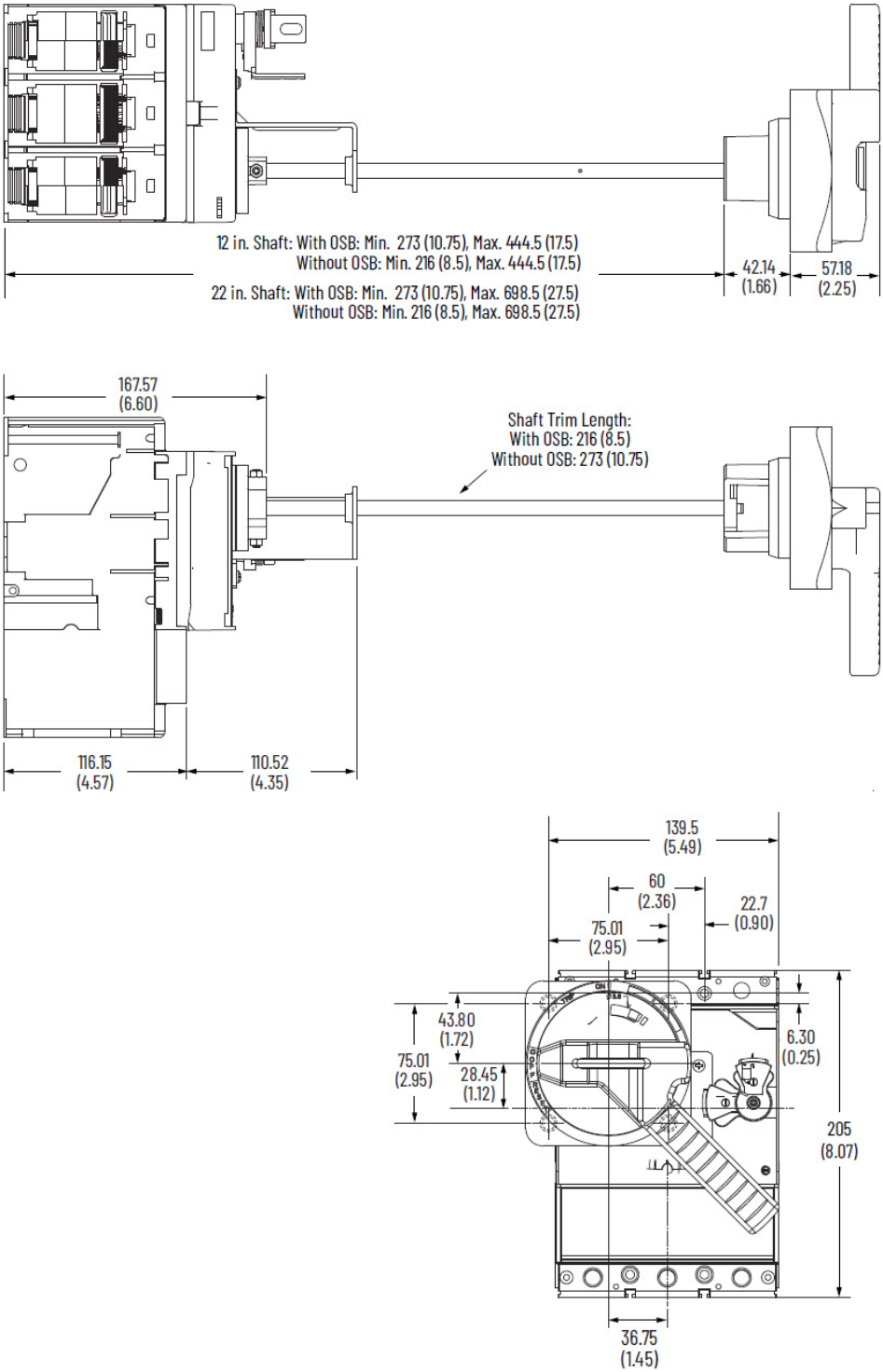


Figure 241 - Variable Depth Rotary Handle Operating Mechanism: 4 Pole, Cat. No. 140G2-K-RVM...

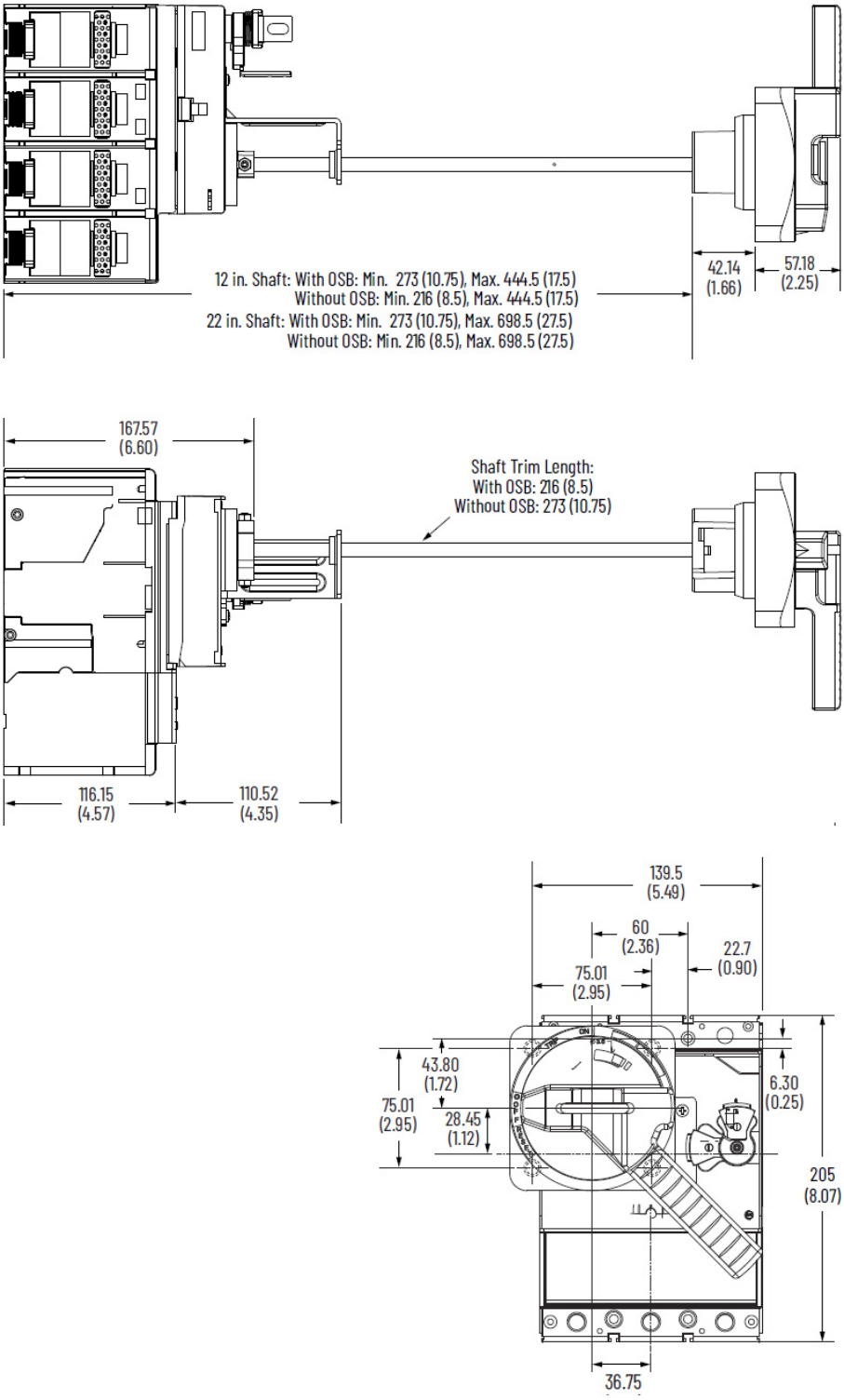


Figure 242 - Motor Operator: Cat No. 140G2-K-EOP...

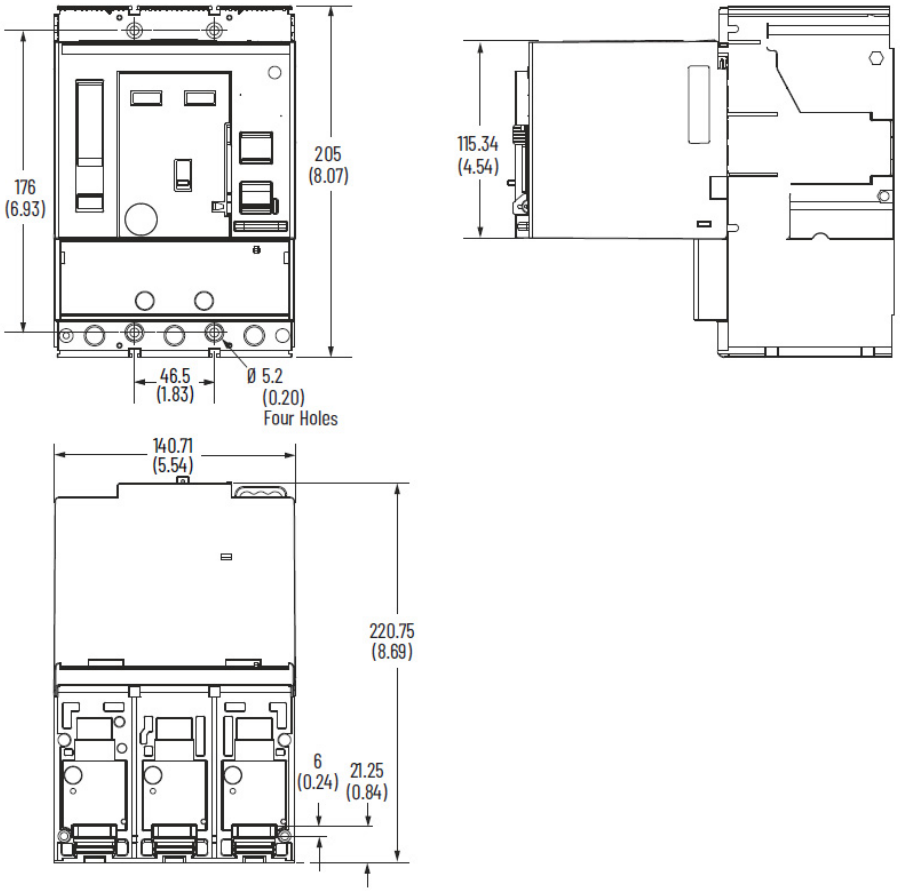


Figure 243 - Residual Current Release Module for Frame Size K: Cat. No. 140G2-K-ELP, 4-Pole MCCBs

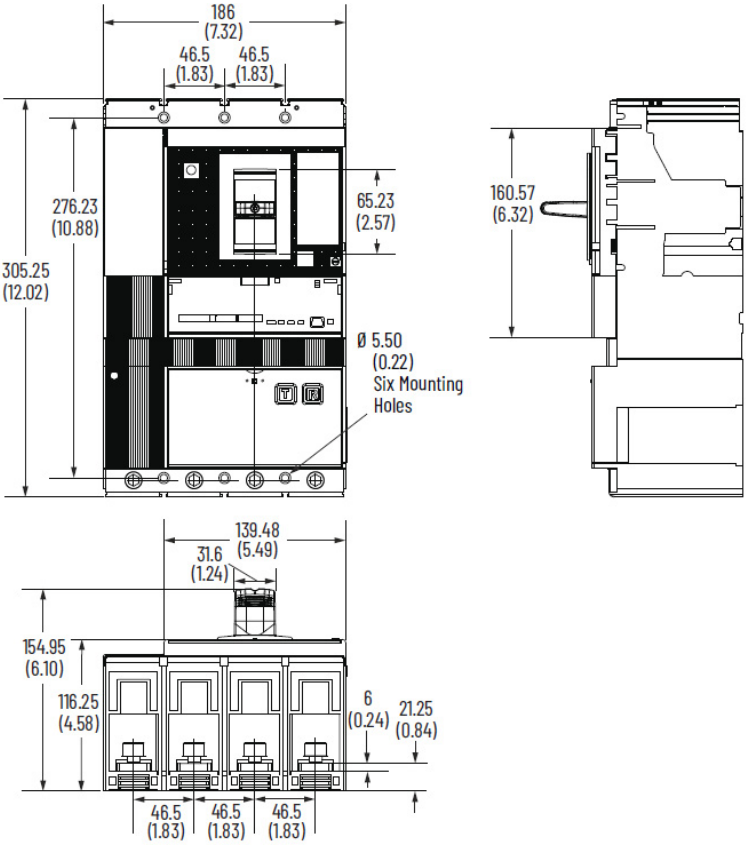


Figure 244 - Metal Bail Flex Cable Operator and Actuator: Cat. No. 140G-K-F_...

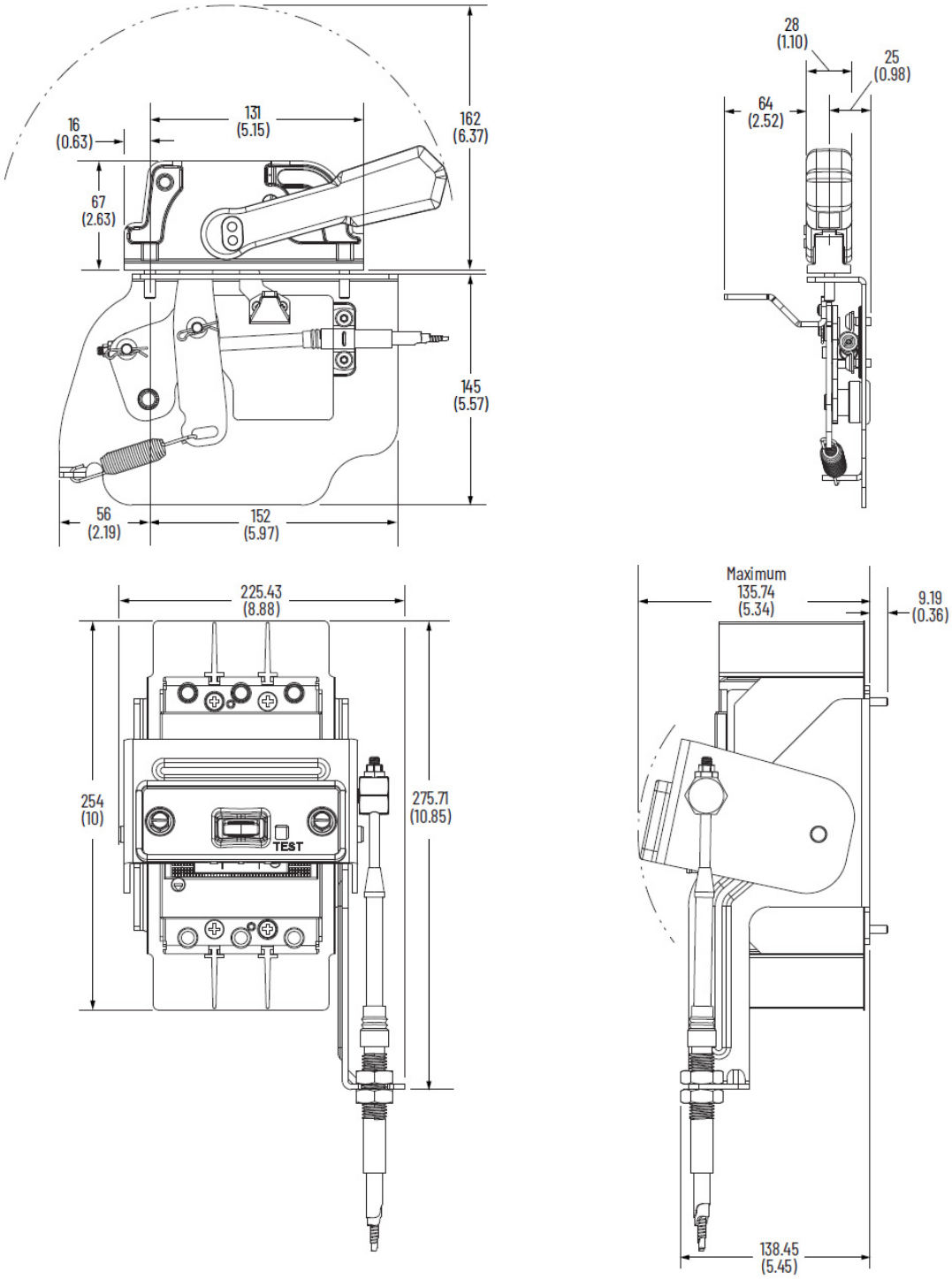
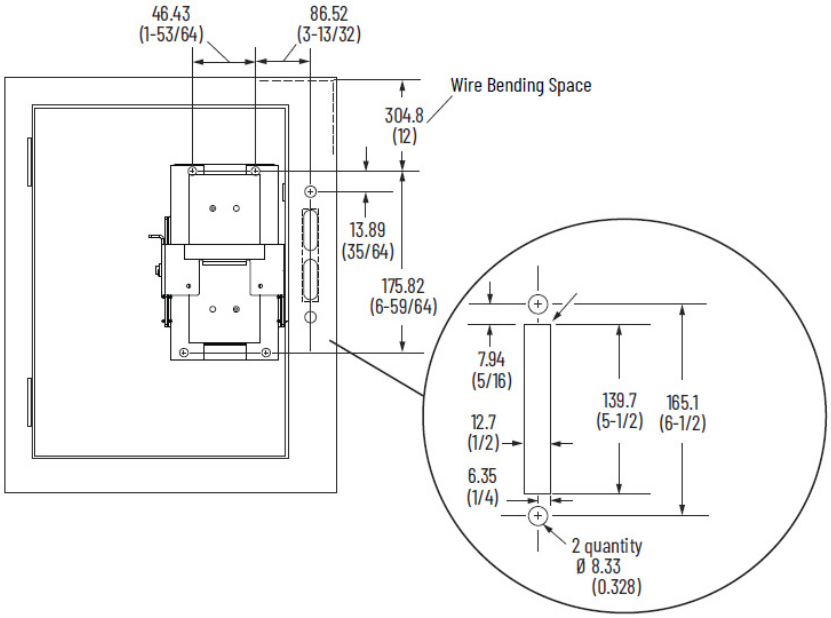


Figure 245 - Enclosure with Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism



Bulletin 140G and 140MG MCCBs: Frame Size N

Figure 246 - Panel-mount: 140G and 140MG Frame Size N MCCBs

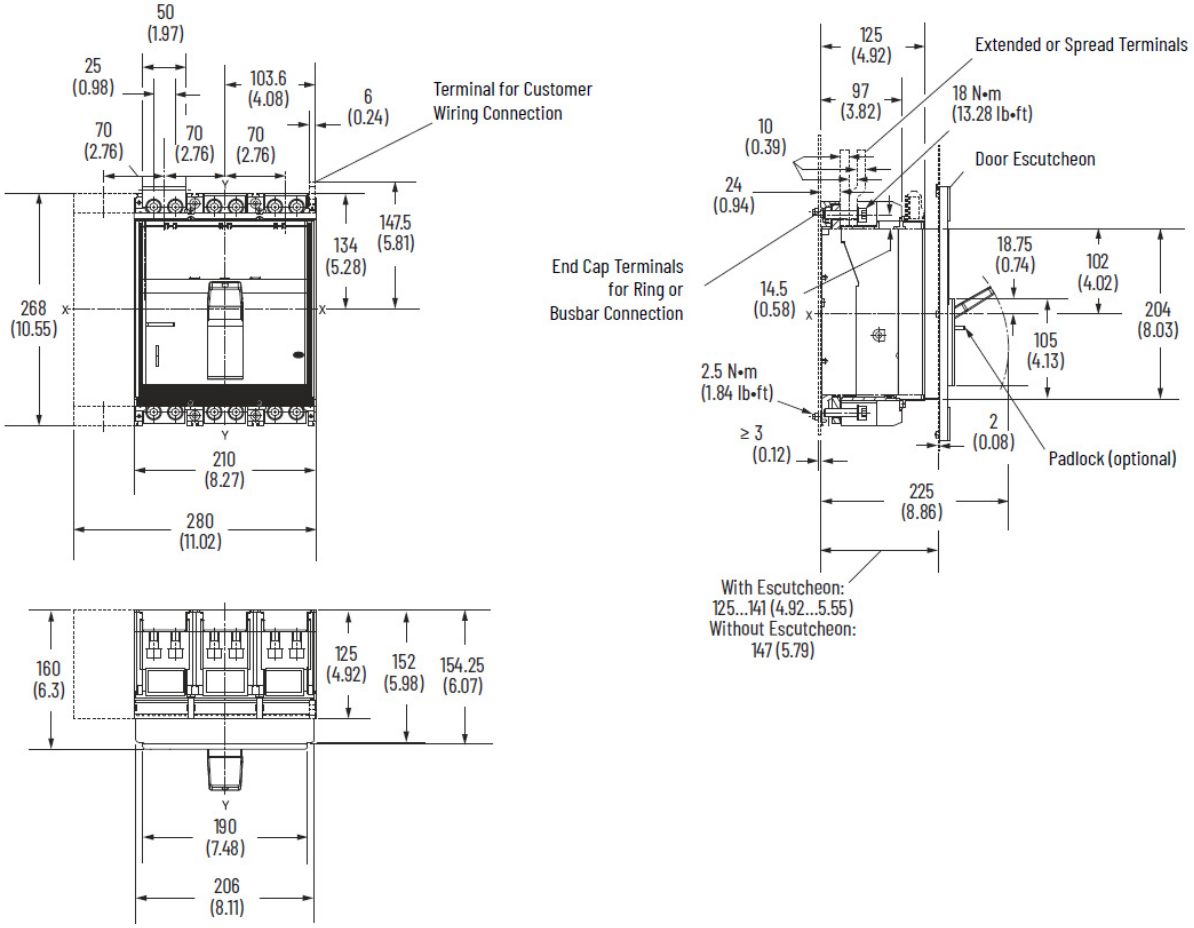


Figure 247 - Drilling Templates for Mounting: 140G-N and 140MG-N MCCBs

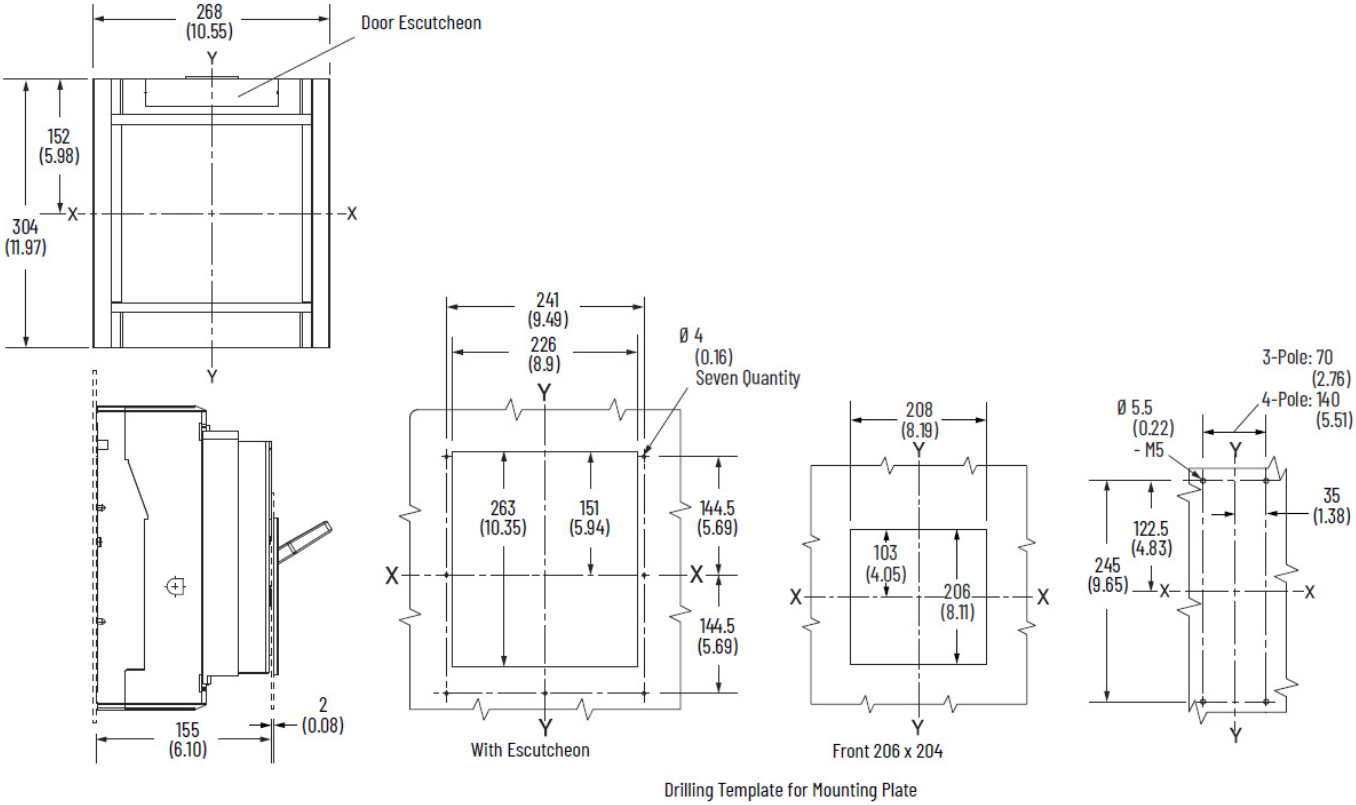
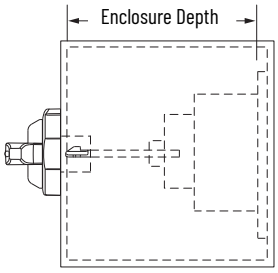


Figure 248 - Minimum/Maximum Enclosure Depth: Cat. No. 140G-N-RVM...

This figure depicts the minimum and maximum enclosure sizes that accommodate the MCCB, operator, and handle. See Figure 249 for operator dimensions.



Description	Enclosure Size [mm (in.)]	
	Minimum	Maximum
12 in. shaft	196 (7.75)	450 (17.75)
21 in. shaft		679 (26.75)

Figure 249 - Variable Depth Rotary Handle Operating Mechanism: Cat. No. 140G-N-RVM...

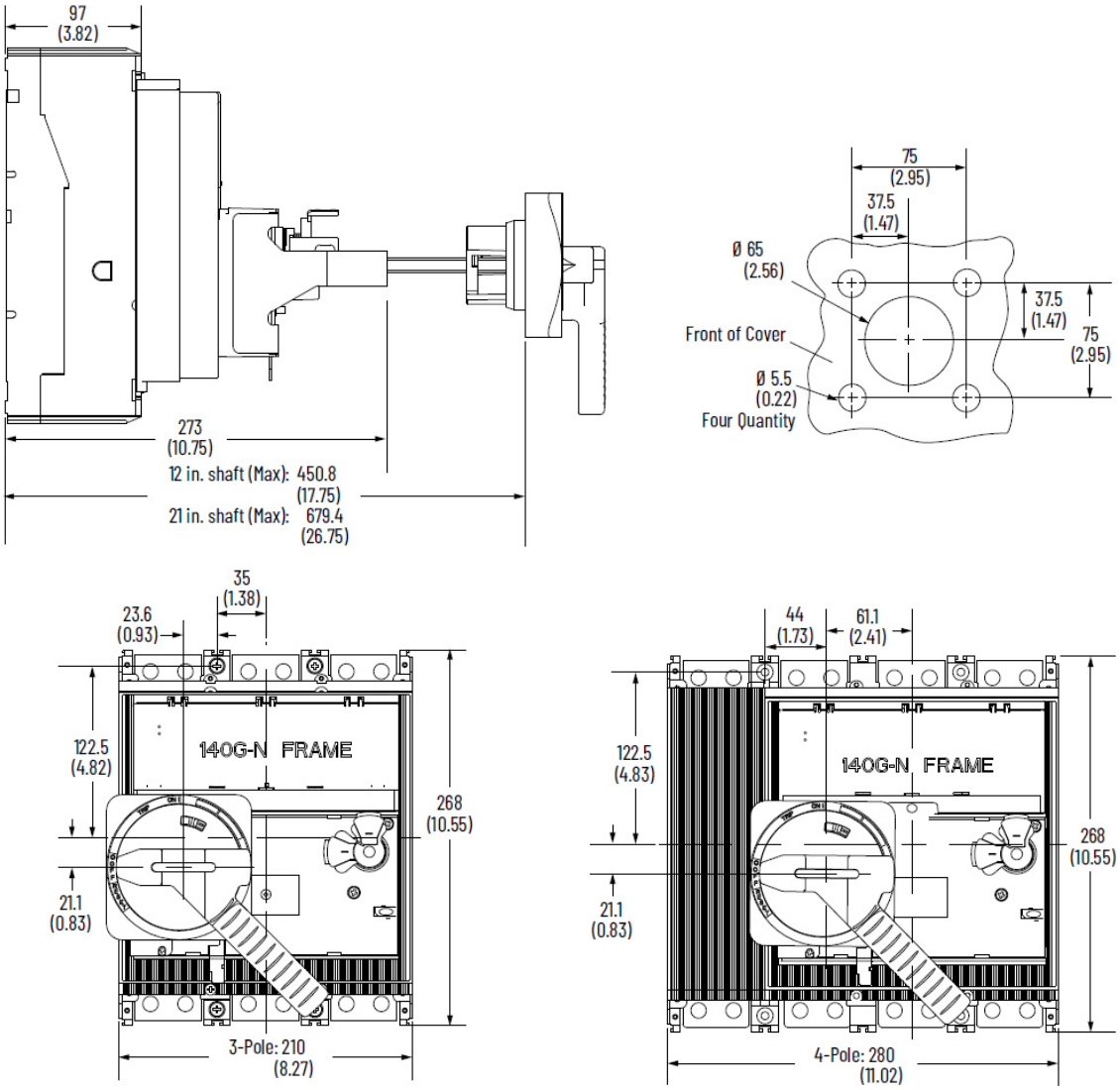
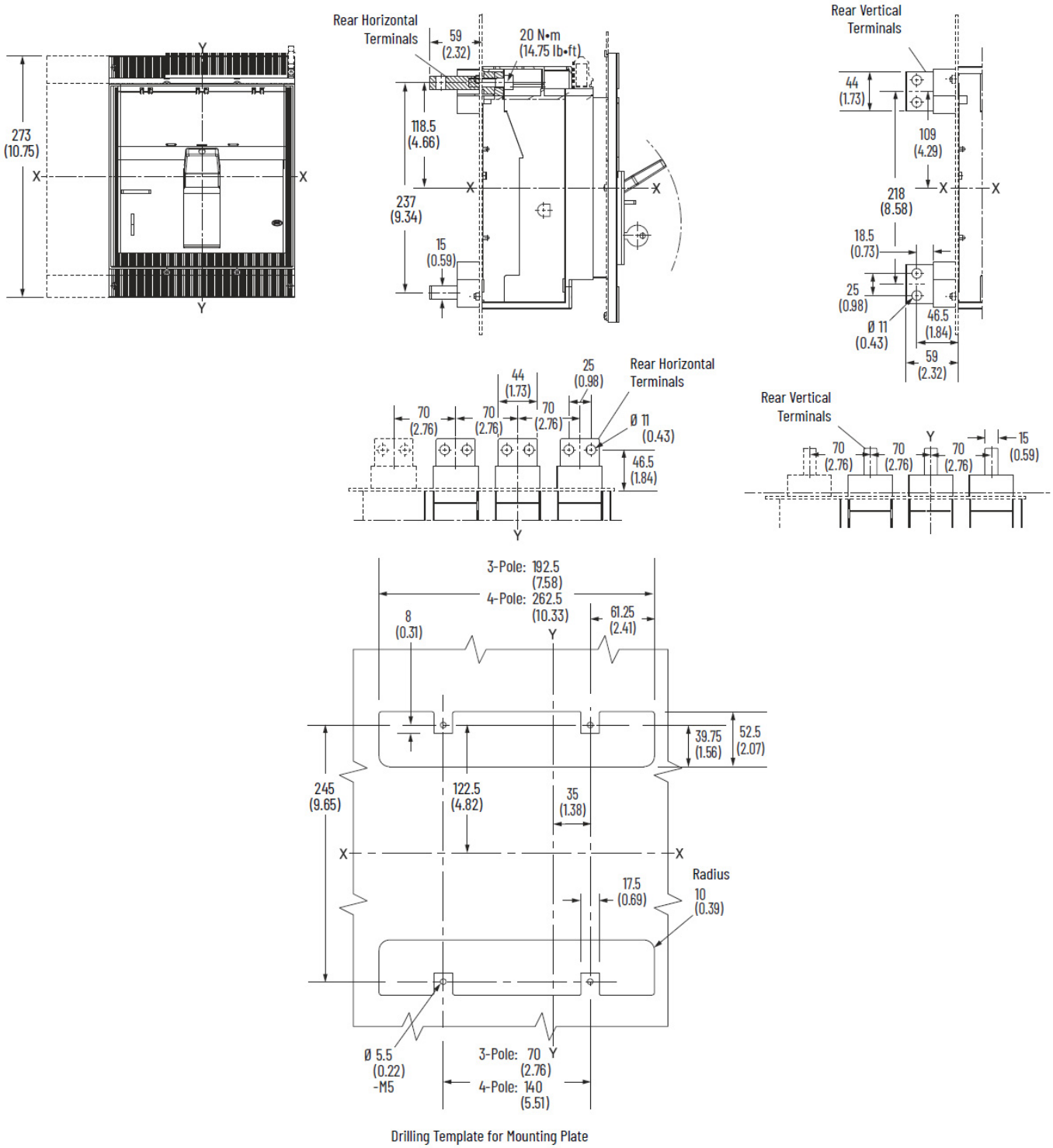


Figure 250 - Terminals: Cat. No. 140G-N-TLH3, Cat. No. 140G-N-TLV3, Cat. No. 140G-N-TLH4, and Cat. No. 140G-N-TLV4



Drilling Template for Mounting Plate

Figure 251 - Extended Front Terminals: Cat. No. 140G-N-EXT3 and Cat. No. 140G-N-EXT4

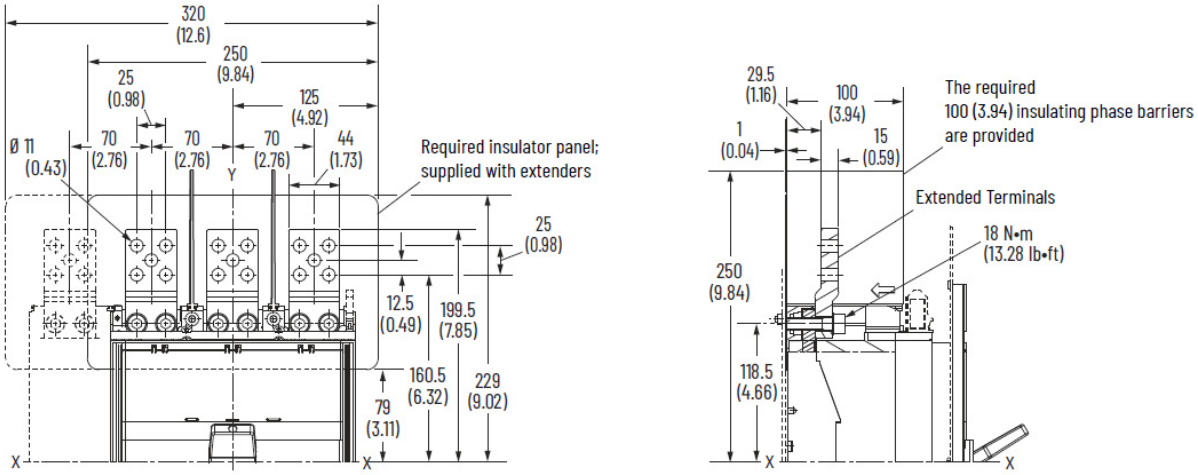


Figure 252 - Rear Spread Terminals (IEC only): Cat. No. 140G-N-EXSL13 Top (3-Pole) and Cat. No. 140G-N-EXS4 (4-Pole)

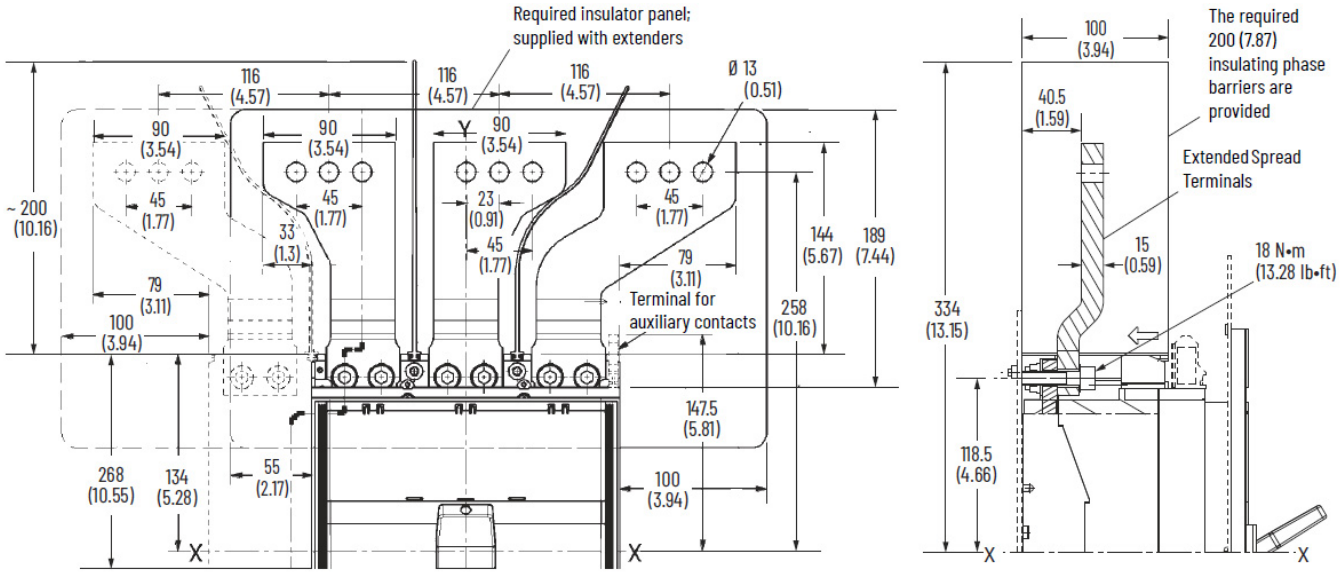


Figure 253 - Rotary Handle Operating Mechanism: Cat. No. 140G-N-RMB and Cat. No. 140G-N-RMY

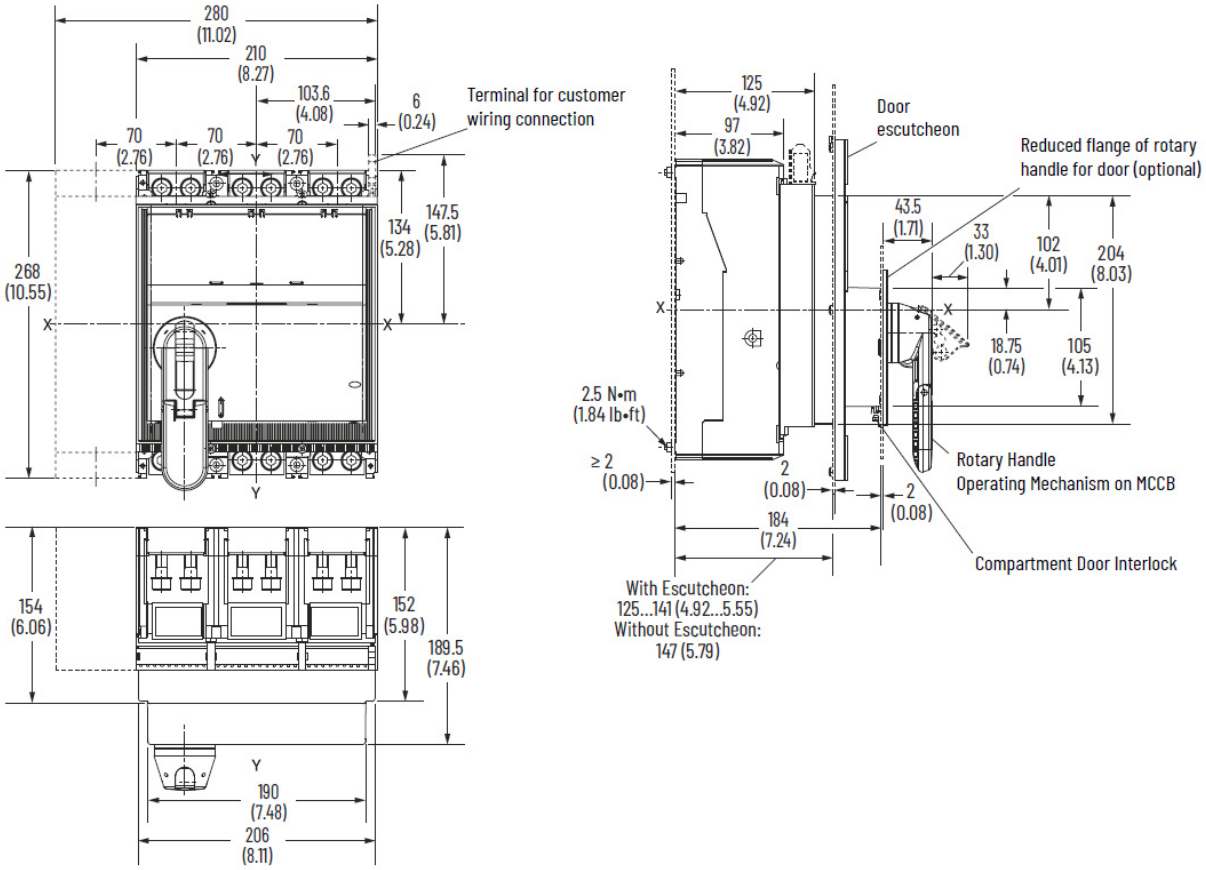


Figure 254 - Terminals: Cat. No. 140G-N-TLA43, Cat. No. 140G-N-TLA44, Cat. No. 140G-N-TLC43, and Cat. No. 140G-N-TLC44

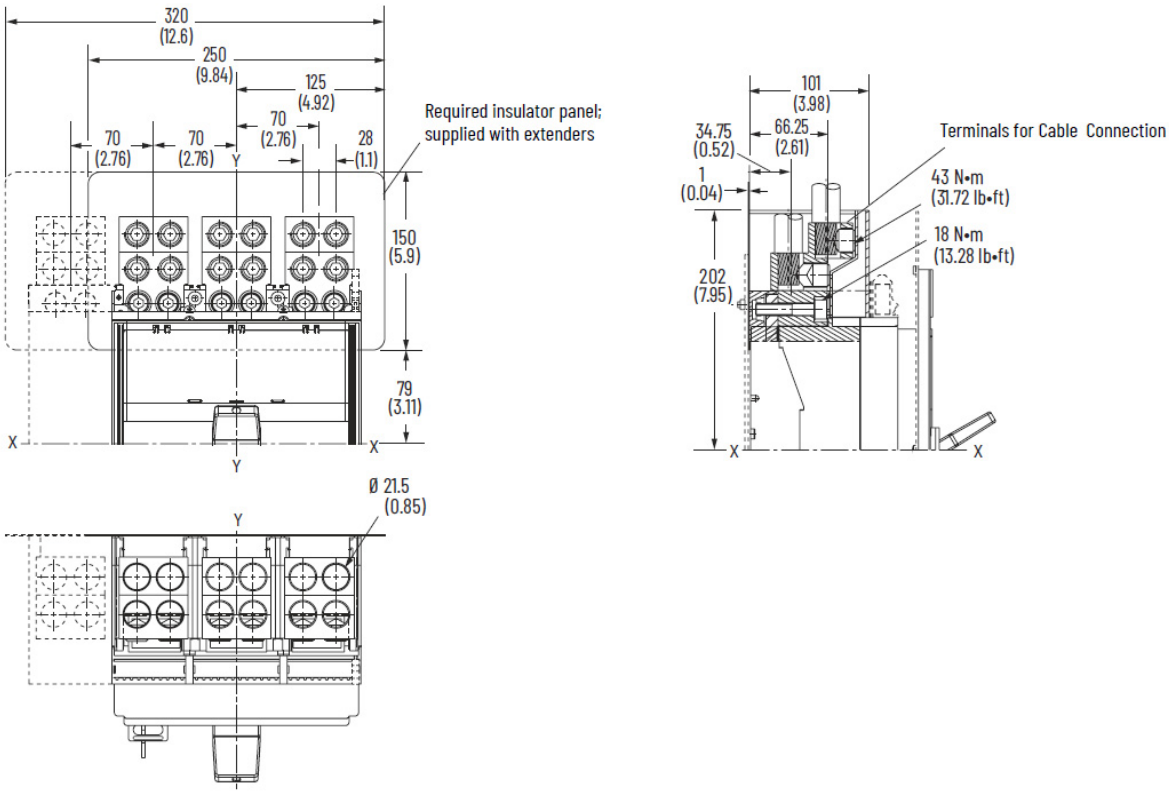


Figure 255 - Flex Cable Operator and Actuator, Right Hand for Frame Size N

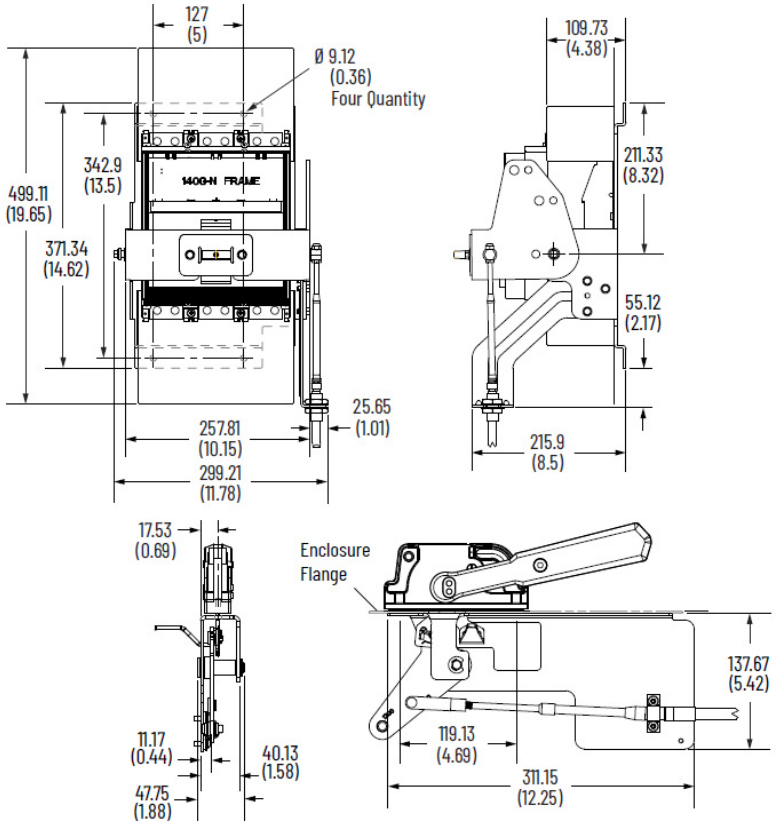


Figure 256 - Flex Cable Operator and Actuator, Left Hand (requires Cat. No. 140G-BML, sold separately) for Frame Size N

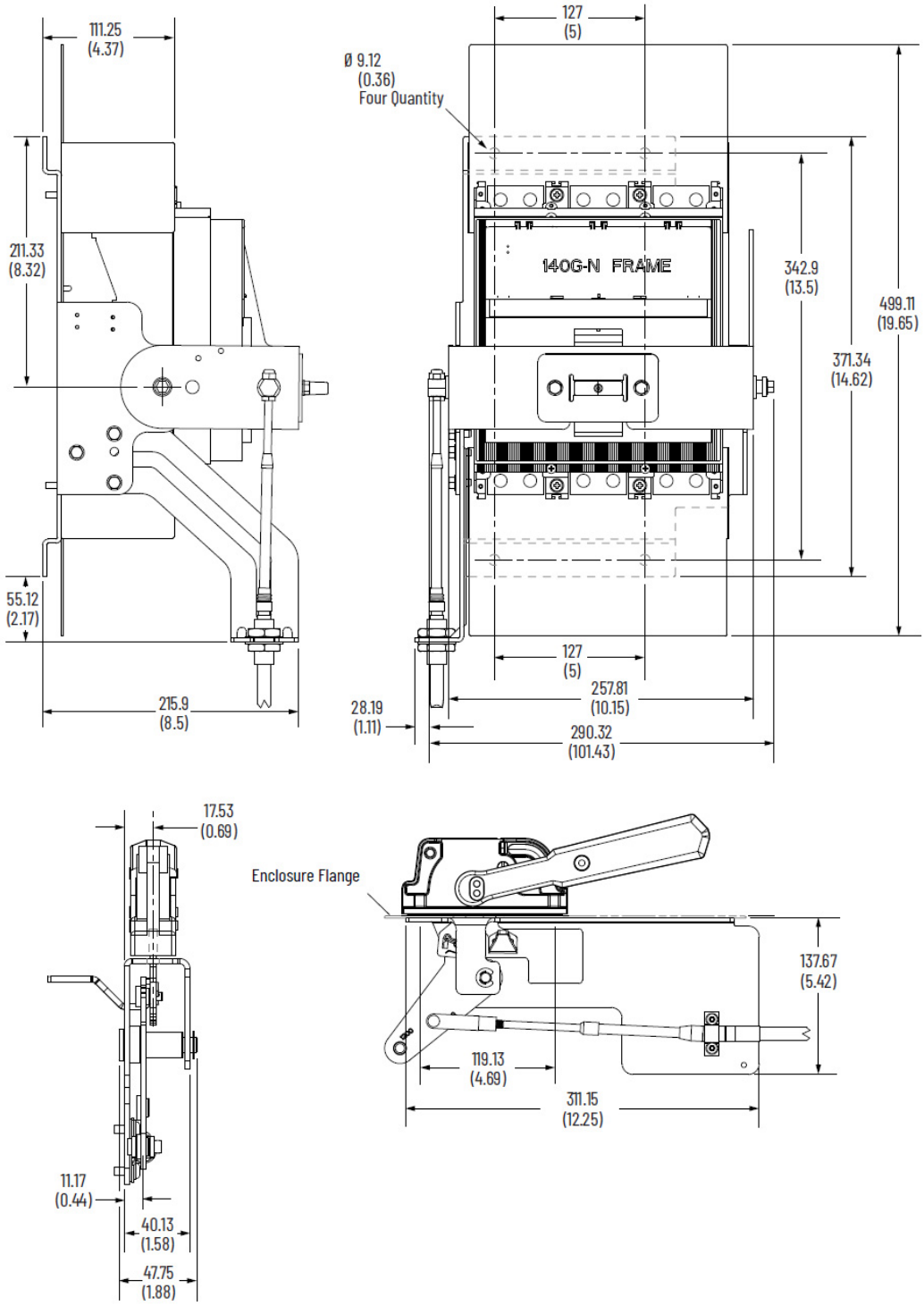


Figure 257 - Enclosure with Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism

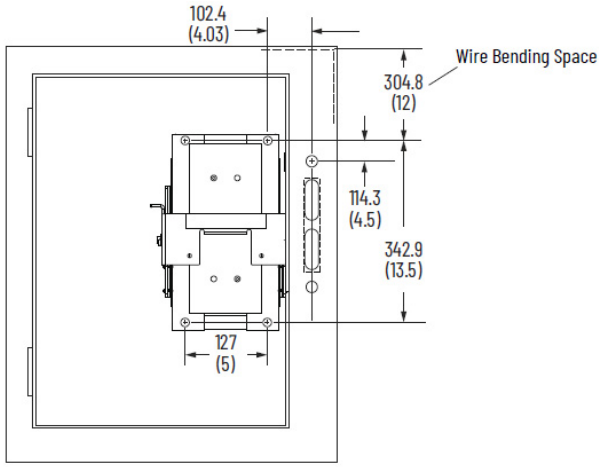
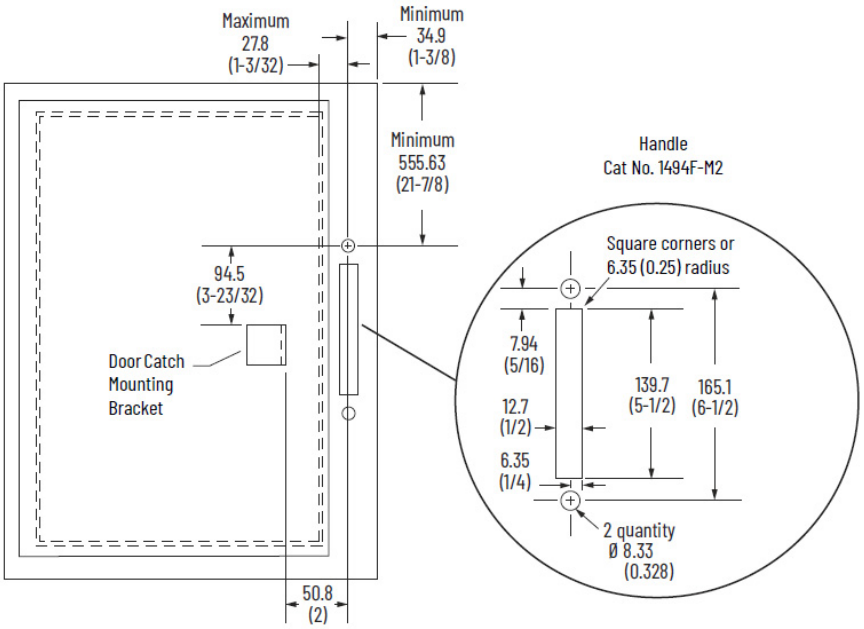


Figure 258 - Enclosure without Handle Cutout: 1494V Variable Depth, Flange-operated Circuit Breaker Operating Mechanism



Bulletin 140G MCCBs, Frame Size NS

Figure 259 - Panel-mount: 140G and 140MG Frame Size NS MCCBs

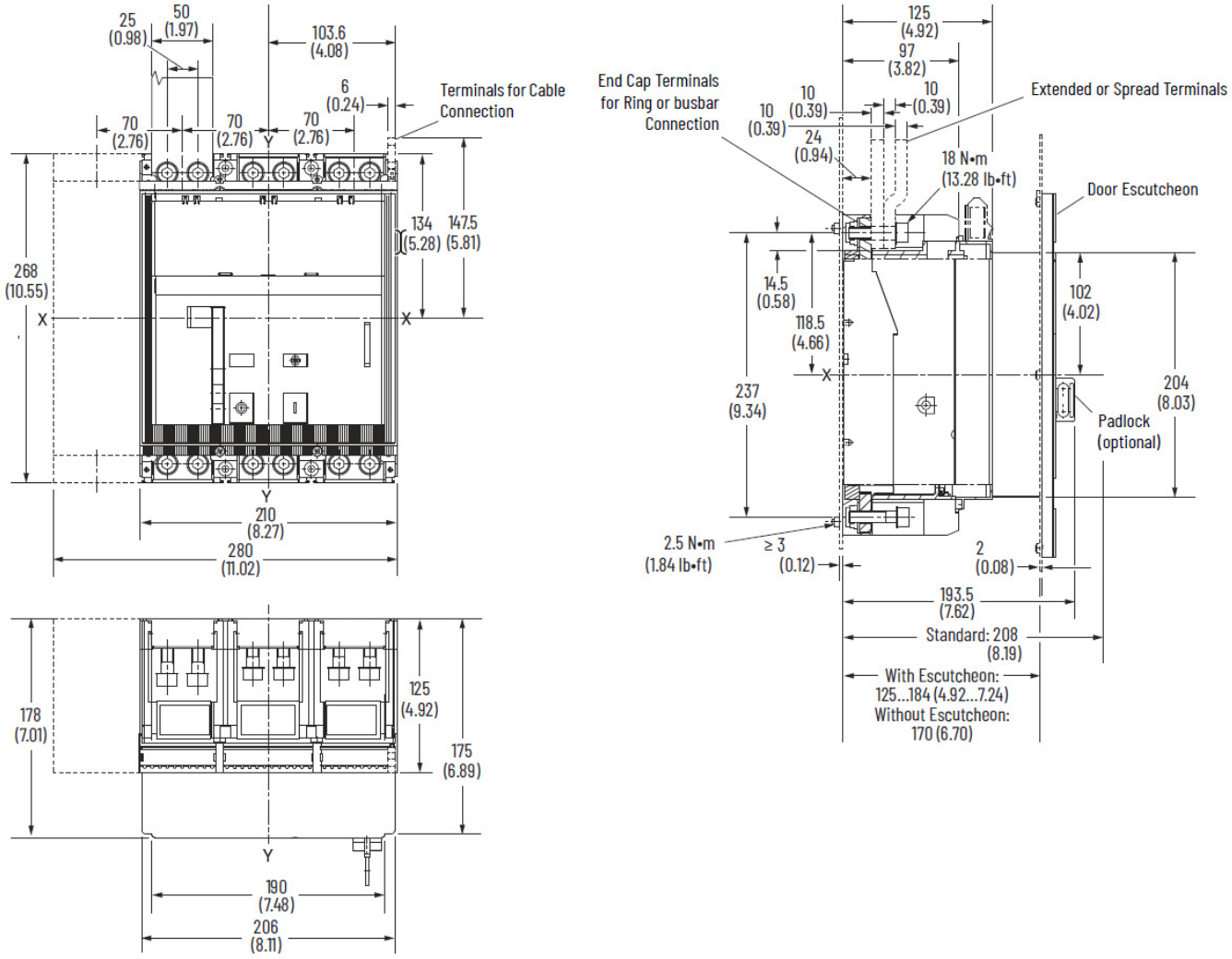


Figure 260 - Drilling Templates for Mounting: 140G-NS and 140MG-NS MCCBs

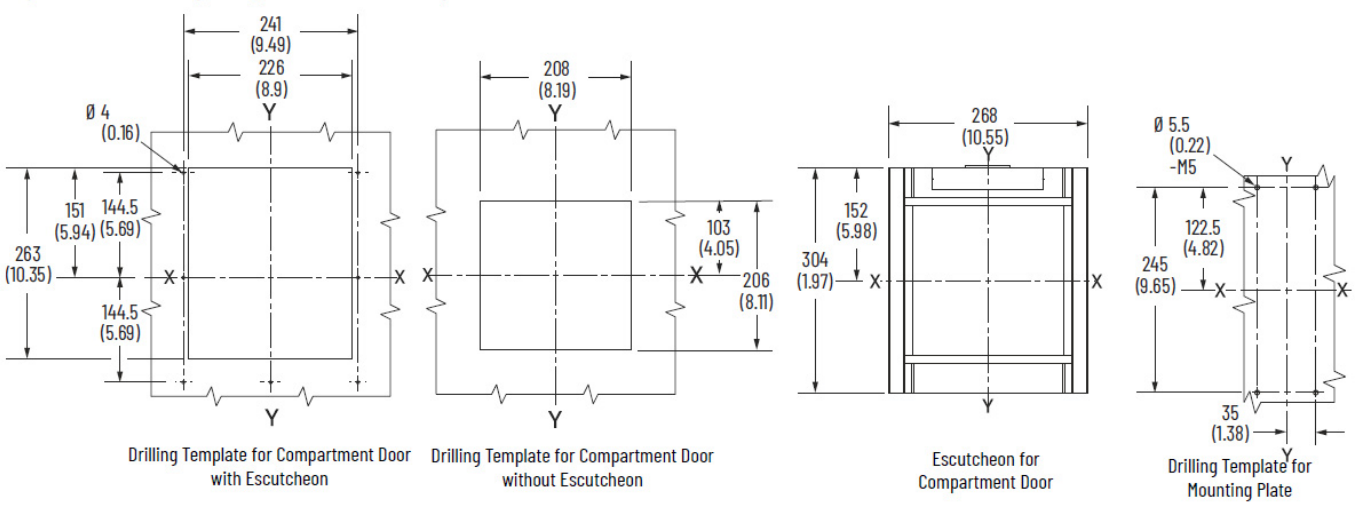


Figure 261 - Terminals: Cat. No. 140G-N-TLA63, Cat. No. 140G-N-TLA64, Cat. No. 140G-N-TLC63, and Cat. No. 140G-N-TLC64

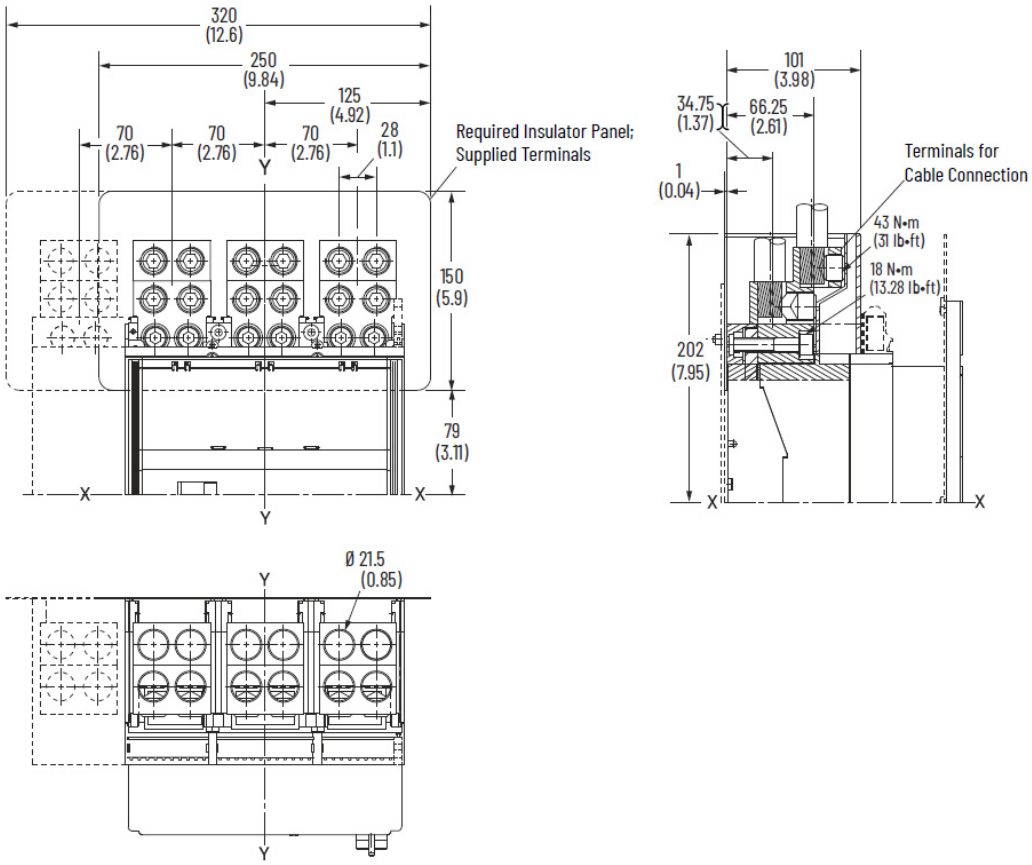


Figure 262 - Rear Terminals: Cat. No. 140G-N-TLV3, Cat. No. 140G-N-TLV4, Cat. No. 140G-N-TLH3, and Cat. No. 140G-N-TLH4

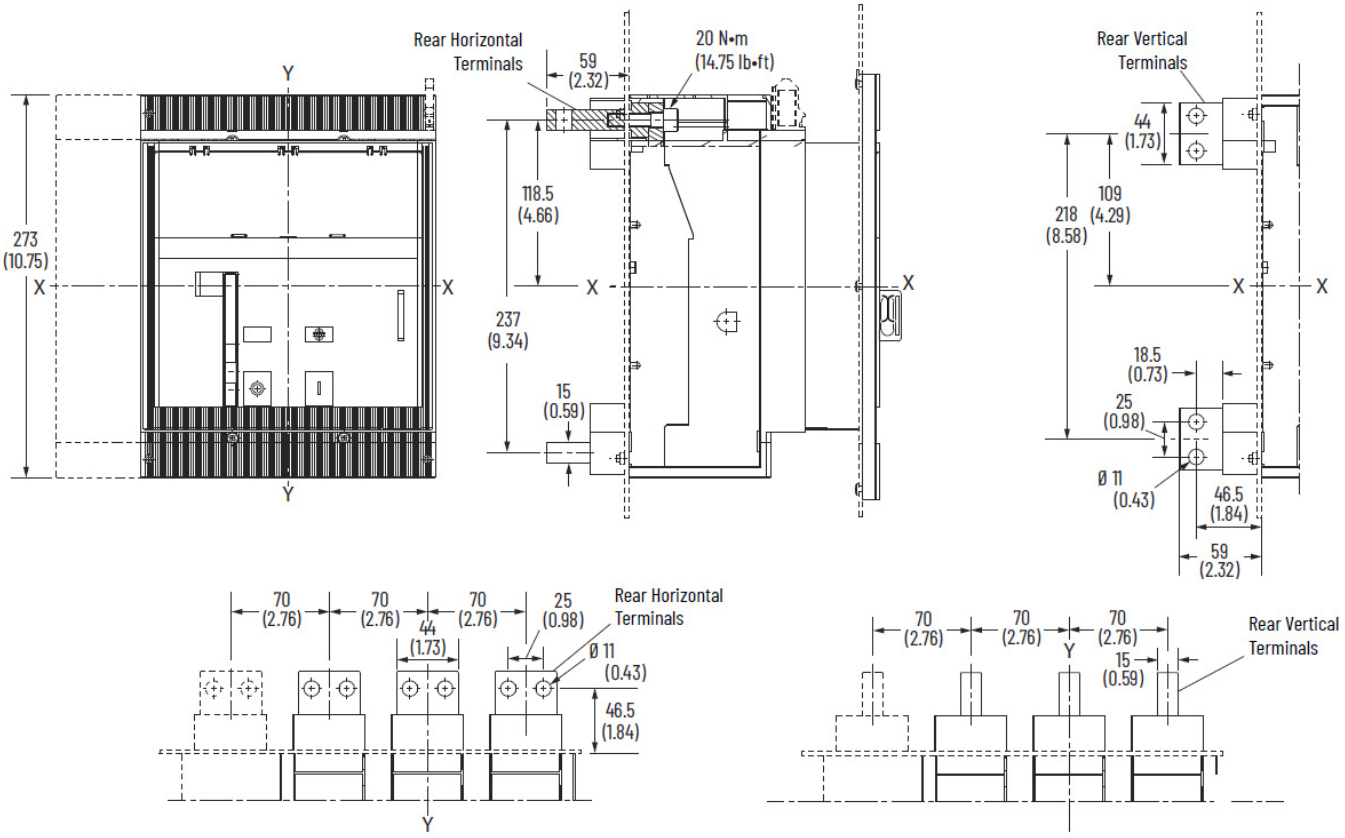


Figure 263 - Drilling Template for Mounting Plate for Frame Size NS

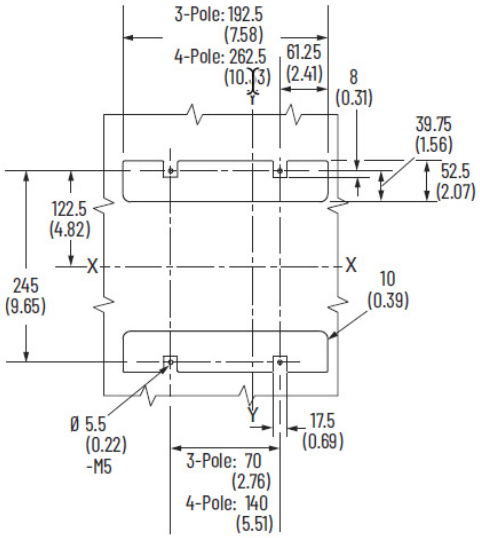


Figure 264 - Extended Front Spreader Terminals (IEC only): Cat. No. 140G-N-EXSLI3, Cat. No. 140G-N-EXSL03, and Cat. No. 140G-N-EXS4

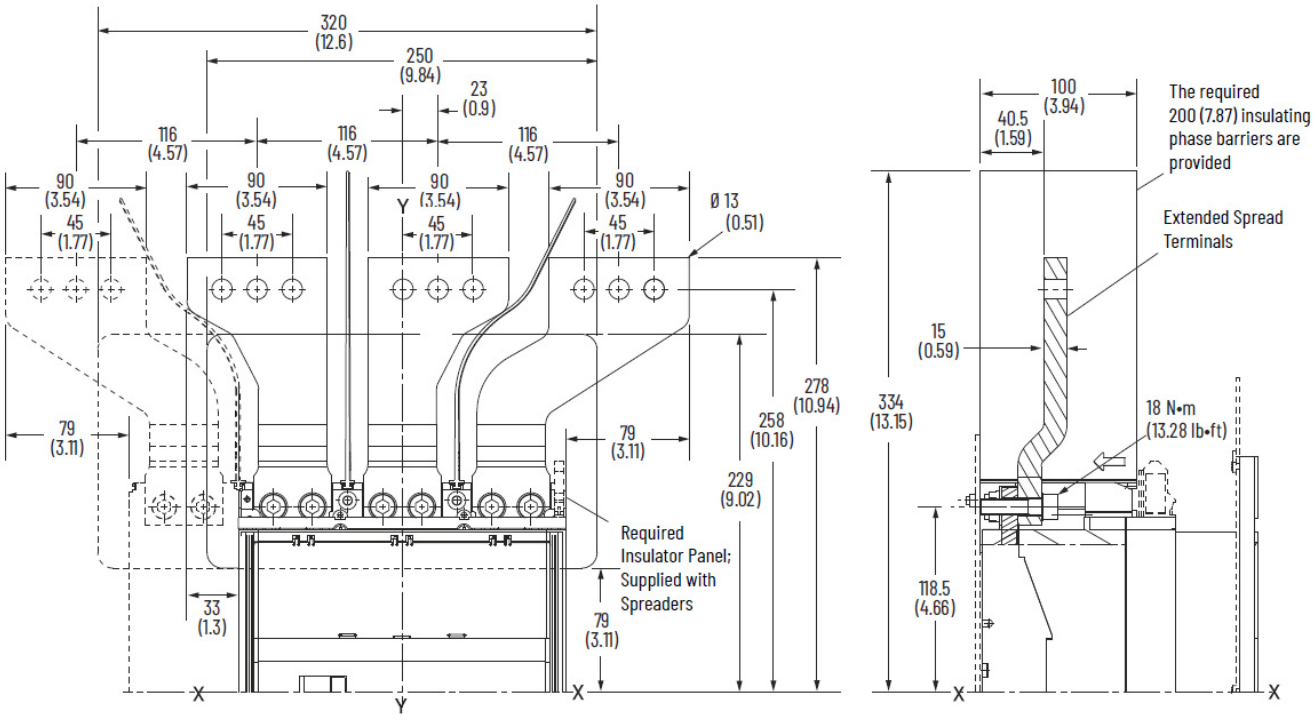
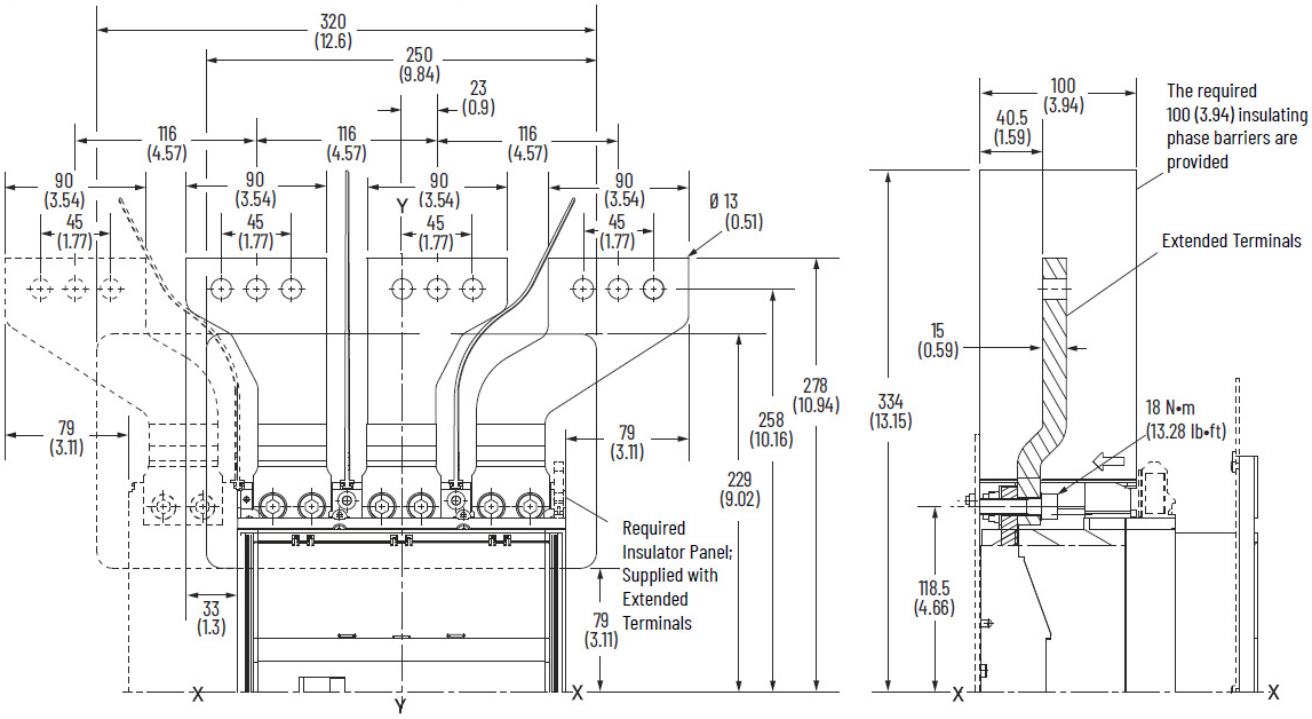


Figure 265 - Extended Front Terminals (IEC only): Cat. No. 140G-N-EXT3 and Cat. No. 140G-N-EXT4



Bulletin 140G Panel-mounted Circuit Breakers: Frame Size R

Figure 266 - Panel-mounted Circuit Breakers, 2000 A (80/100%)...2500 A (80%) for Frame Size R

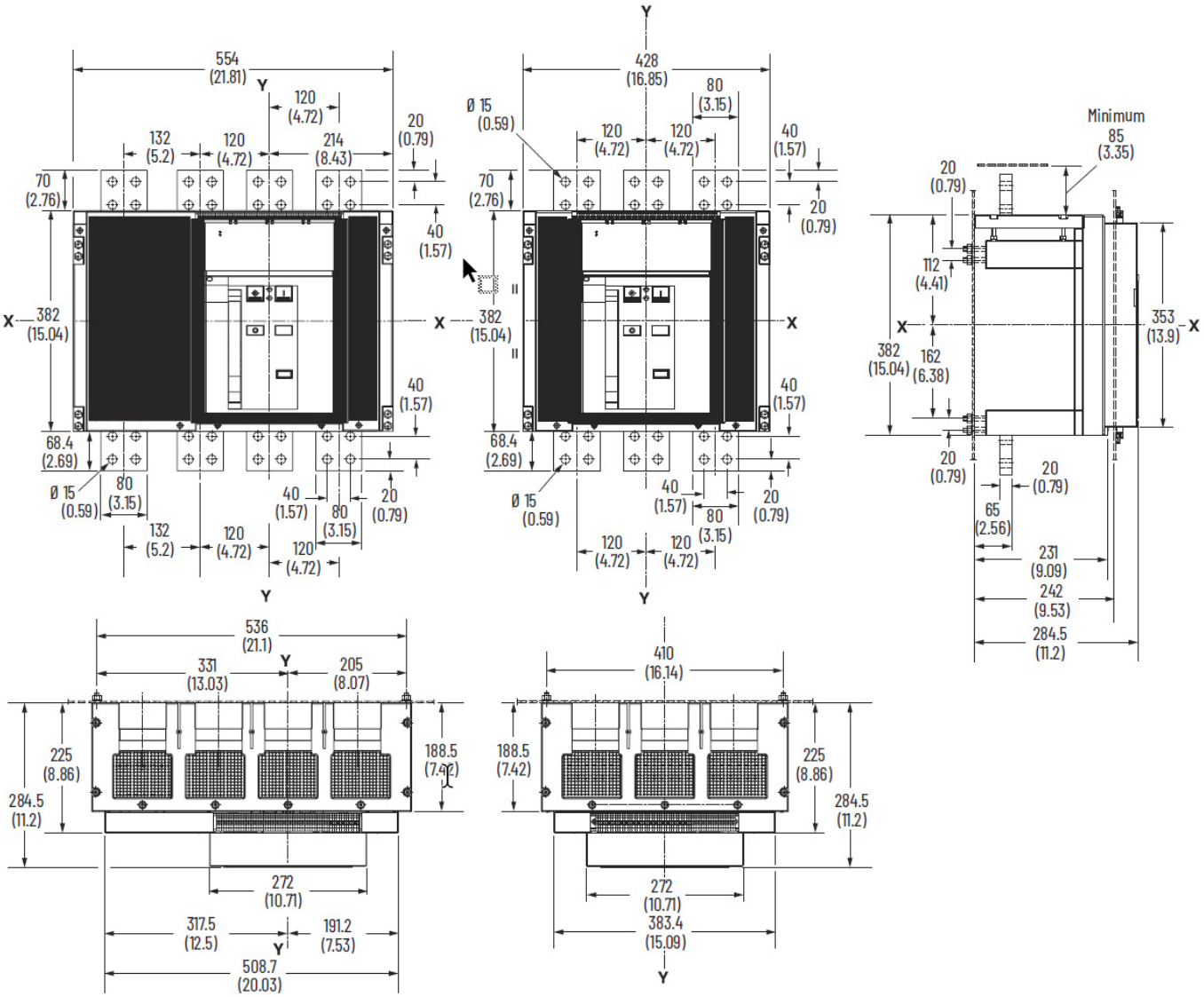
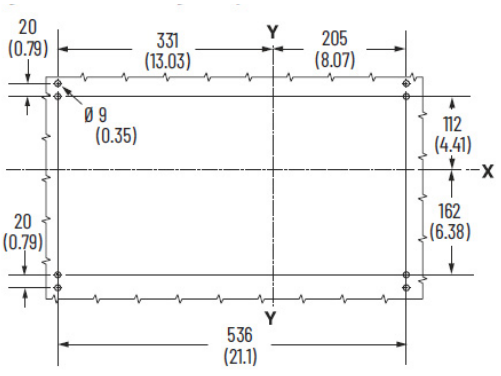
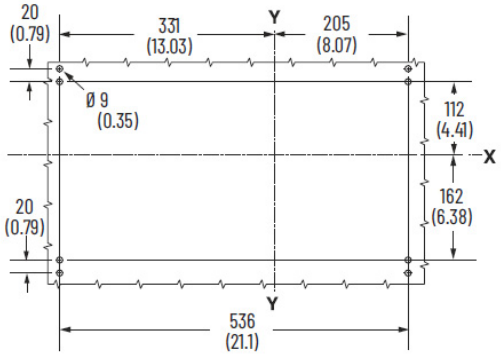


Figure 267 - Drilling Templates for Frame Size R



Mounting Plate, 4-Pole



Mounting Plate, 3-Pole

Figure 268 - Version with Vertical Rear Terminals, 2500 A (100% Rated)/3000 A (80% Rated) for Frame Size R

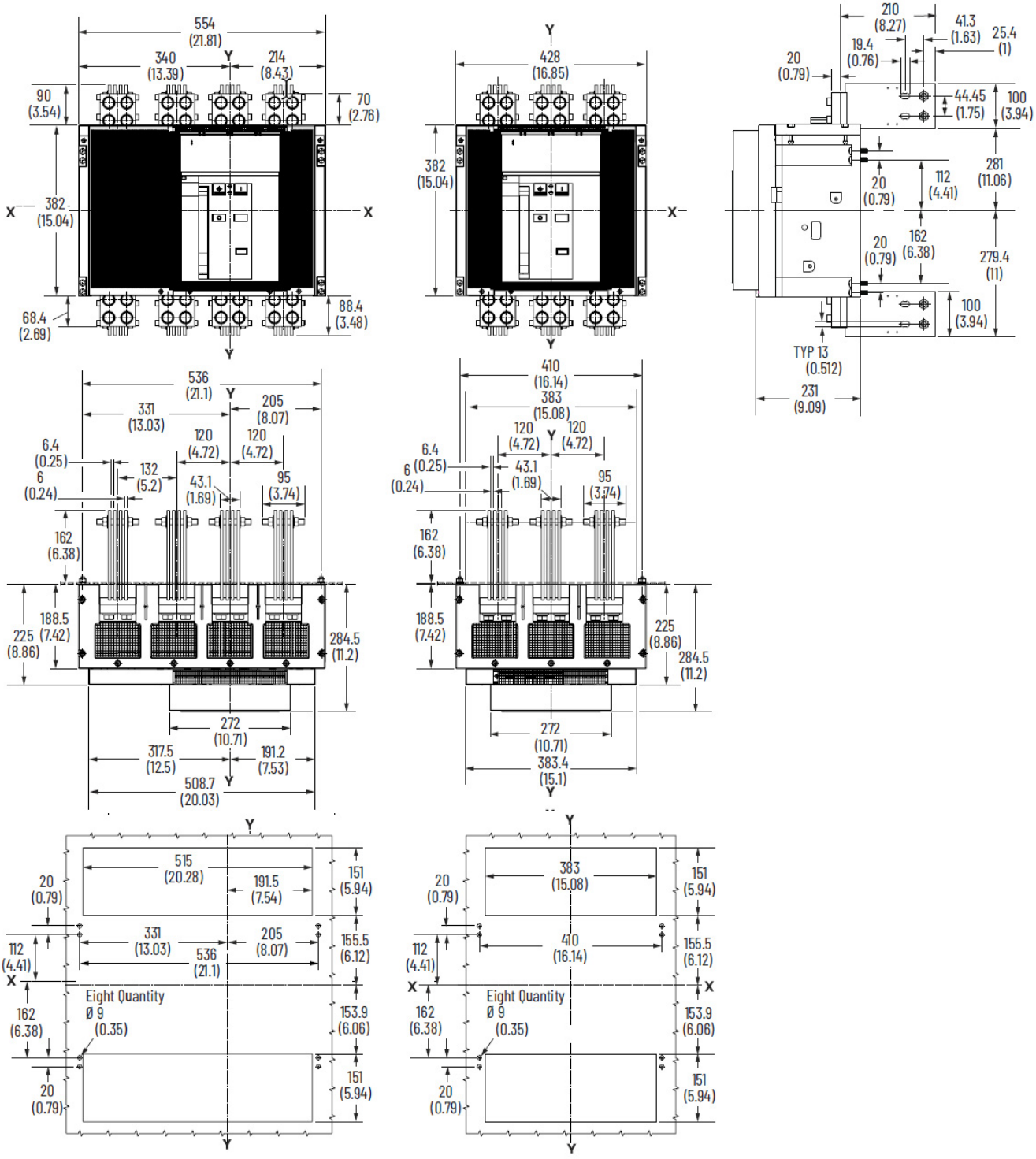


Figure 269 - Panel-mounted Circuit Breakers (100% Rated), 3000 A for Frame Size R

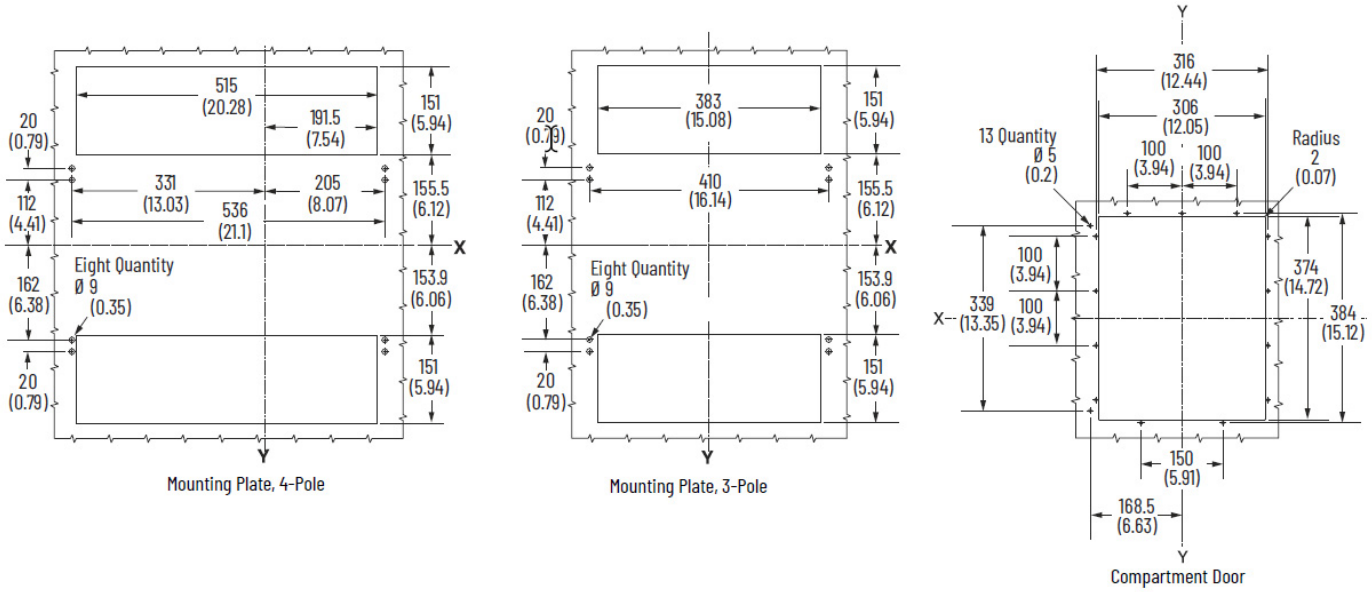
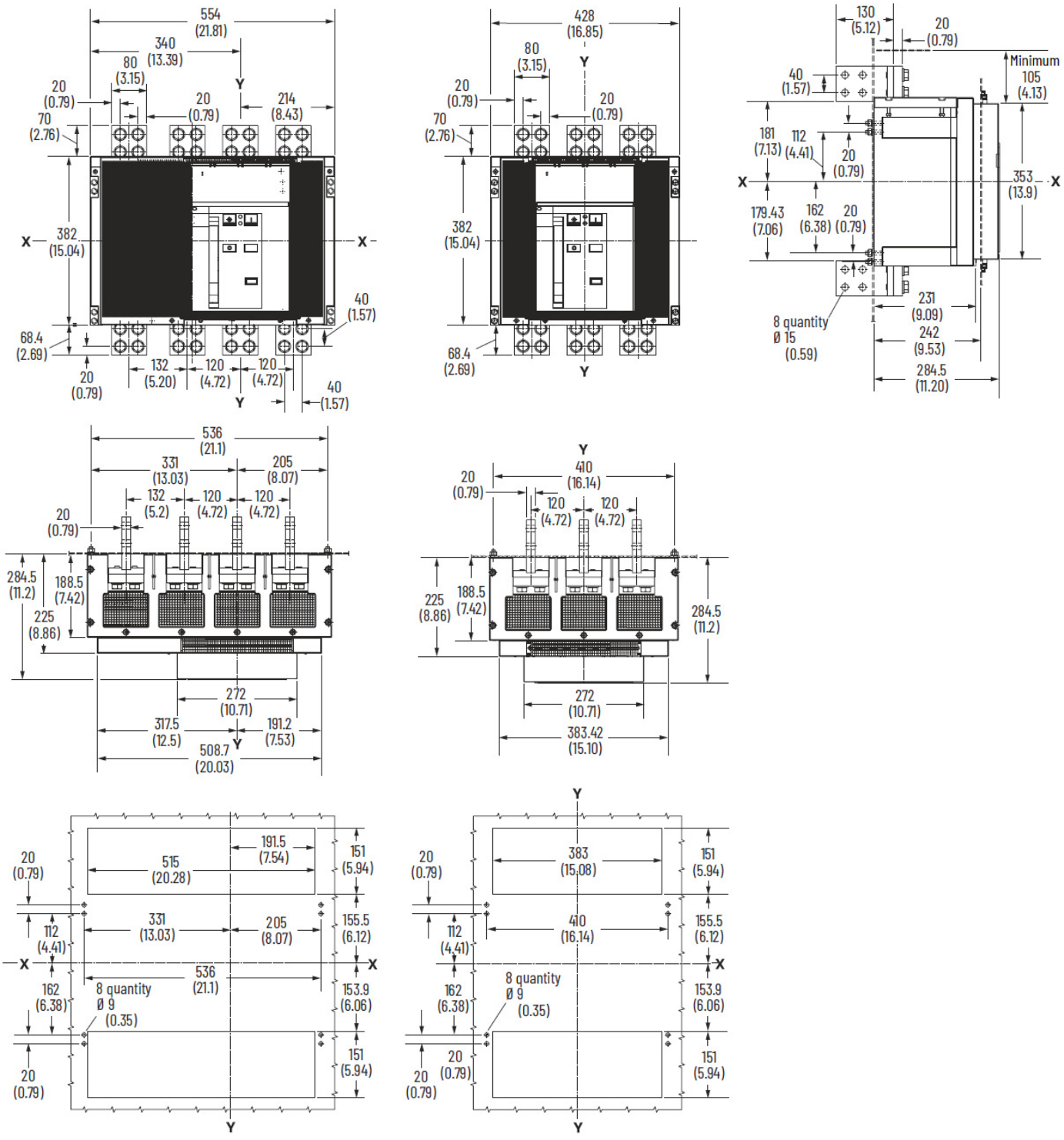


Figure 270 - Terminals, 2000 A (80/100%)...2500 A (80%): Cat. No. 140G-R-TLV3 and Cat. No. 140G-R-TLV4



Additional Resources

These documents contain additional information concerning related products from Rockwell Automation. You can view or download publications at rok.auto/literature.

Resource	Description
Legacy Molded Case Circuit Breaker Technical Data, publication 140G-TD102	Provides technical data for Bulletin 140G Frame Size K, M, N, and NS legacy products.
Molded Case Circuit Breaker Selectivity Guide, publication 140G-TD050	Aids in selecting circuit breaker pairs for line and load side protection.
Bulletin 140G Maintenance Installation Instructions, publication 140G-IN108	Provides general installation and maintenance instructions for Bulletin 140G/MG devices.
Bulletin 140G Servicing Installation Instructions, publication 140G-IN075	Provides servicing and maintenance instructions for Bulletin 140G Frame Size N and NS.
Bulletin 140G/140MG Frame Size G Installation Instructions, publication 140G-IN076	Provides installation instructions for Bulletin 140G and 140MG Frame Size G.
Bulletin 140G/140MG Frame Size H Installation Instructions, publication 140G-IN097	Provides installation instructions for Bulletin 140G/MG Frame Size H.
Bulletin 140G/MG Frame Size I Installation Instructions, publication 140G-IN095	Provides installation instructions for Bulletin 140G/MG Frame Size I.
Bulletin 140G/140MG Frame Size J Installation Instructions, publication 140G-IN106	Provides installation instructions for Bulletin 140G/MG Frame Size J.
Bulletin 140G/140MG Frame Size K Installation Instructions, publication 140G-IN021	Provides installation instructions for Bulletin 140G/MG Frame Size K.
Bulletin 140G/140MG Frame Size M Installation Instructions, publication 140G-IN042	Provides installation instructions for Bulletin 140G/MG Frame Size M.
Bulletin 140G/140G Frame Size N and NS Installation Instructions, publication 140G-IN070	Provides installation instructions for Bulletin 140G/MG Frame Size N and NS.
Bulletin 140G Frame Size R Installation Instructions, publication 140G-IN074	Provides installation instructions for Bulletin 140G and 140MG Frame Size R.
Bulletin 140G2/140MG2 Frame Size K, L, and M Circuit Breaker Installation Instructions, publication 140G-IN273	Provides installation instructions for Bulletin 140G2/140MG2 Frame Size K, L, and M.
Bulletin 140G2/140MG2 Frame Size K, L, and M Shunt Opening Release Installation Instructions, publication 140G-IN236	Provides shunt opening release installation instructions for Bulletin 140G2/140MG2 Frame Size K, L, and M.
Bulletin 140G2/140MG2- Frame Size K, L, and M Undervoltage Release Installation Instructions, publication 140G-IN237	Provides undervoltage release installation instructions for Bulletin 140G2/140MG2 Frame Size K, L, and M.
Bulletin 140G Frame Size H and J LSI-LSIG Adjustment Instructions, publication 140G-IN100	Provides setup instructions for DIP switch trip units for Frame Size H and J MCCBs.
Bulletin 140MG Frame Size H and J Adjustment Instructions, publication 140G-IN101	Provides setup instructions for DIP switch trip units for Frame Size H and J MPCBs.
Bulletin 140G Frame Size J 15 A LSI-LSIG Adjustment, publication 140G-IN142	Provides setup instructions for DIP switch trip units for Frame Size J MCCBs.
Trip Unit Battery Replacement for 140G, 140G2, 140MG, and 140-MG2, publication 140G-IN243	Provides instructions to replace the trip unit battery for Bulletin 140G/140G2/140MG/140MG2 circuit breakers.
LSIG, LSI, LSIG-MM for 140GM Frame Size K and M Adjustment Instructions, publication 140G-IN066	Provides setup instructions for DIP switch trip units for Frame Size K and M MCCBs.
Bulletin 140G Frame Size N and NS LSI Getting Started, publication 140G-IN118	Provides setup instructions for DIP switch trip units for Frame Size N and NS.
Bulletin 140G/140MG Frame Size N, NS, and R LSIG and LSIG-MM Release Installation Instructions, publication 140G-IN067	Provides setup instructions for DIP switch trip units for Frame Size N, NS, and R MCCBs.
Bulletin 140G Frame Size N, NS, and R LSIG Getting Started, publication 140G-IN068	Provides setup instructions for DIP switch trip units for Frame Size N, NS, and R MCCBs.
Bulletin 140G Frame Size N, NS, and R LSIG-MM Getting Started, publication 140G-IN069	Provides quick-start instructions for LCD trip units for Bulletin 140G Frame Size N, NS, and R MCCBs.
Selecting 80% or 100%-Rated MCCBs, publication 140G-AT001	Defines terms applicable to circuit breakers, explains the ratings for 100% versus 80% operation, and provides cases where 100% rated MCCBs could be beneficial.
Short-circuit Current Ratings and Your Industrial Control Panel, publication SCCR-AT002	Provides examples for short-circuit current ratings of panels based on the methods stated in UL 508A Supplement B.
UL Standards Listing for Industrial Control Products, publication CMPNTS-SR002	Assists original equipment manufacturers (OEMs) with construction of panels, to help ensure that they conform to the requirements of Underwriters Laboratories.
American Standards, Configurations, and Ratings: Introduction to Motor Circuit Design, publication IC-AT001	Provides an overview of American motor circuit design based on methods that are outlined in the NEC.
Industrial Components Preventive Maintenance, Enclosures, and Contact Ratings Specifications, publication IC-TD002	Provides a quick reference tool for Allen-Bradley industrial automation controls and assemblies.
Global Short-circuit Rating Tool, rok.auto/sccr	Provides coordinated high-fault branch circuit solutions for motor starters, soft starters, and component drives.
Safety Guidelines for the Application, Installation, and Maintenance of Solid-state Control, publication SGI-1.1	Designed to harmonize with NEMA Standards Publication No. ICS 1.1-1987 and provides general guidelines for the application, installation, and maintenance of solid-state control in the form of individual devices or packaged assemblies incorporating solid-state components.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, rok.auto/certifications	Provides declarations of conformity, certificates, and other certification details.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, Knowledgebase, and product notification updates.	rok.auto/support
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Technical Documentation Center	Quickly access and download technical specifications, installation instructions, and user manuals.	rok.auto/techdocs
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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