			
Bulletin	**1492-MC**	**1492-MCGA, -MCEA**	**1492-SP**
Type	**Branch Circuit Breaker**	**Ground Fault Detection**	**Miniature Circuit Breaker Supplementary Protector**
Features	• 120/240V, 240V & 480Y/277V rating • 1/2 in. per pole wide 10...60 A @ 120/240V AC & 15...30 A @ 240V AC • IP2X finger-safe, built-in with 1/2 in. wide, add protectors for 1 in. wide • Ratings to 480Y/277V AC, 10 000 A interrupt ratings • Mounts on DIN Rail	• 10 000 A interrupt • UL 489 Circuit breaker with ground fault circuit interrupter and ground fault equipment protector • Mounts on DIN Rail or panel mount	• True IP2X finger-safe design (front) • Field mountable options for selective applications • AC and DC voltage ratings in one convenient device • Superior shock and vibration resistance capabilities • Mounts on DIN Rail
Number of Poles	1-, 2-, 3-pole	1- and 2-pole with Neutral	1-, 2-, 3-pole 1-pole + neutral, 3-pole + neutral
Maximum Voltage	120/240V AC 240V AC	120/240V AC 60 Hz	480Y/277V AC 1-pole — 48V DC 2-pole — 96V DC
Tripping Characteristic Reference Temperature	104 °F (40 °C)	104 °F (40 °C)	86 °F (30 °C)
Tripping Characteristic	UL 489 Standard (CSA 22.2 No. 5.1)	UL/CSA Standard	B Curve 3...5 In C Curve 5...10 In D Cruve 10...20 In
Certifications	UL 489 Listed Circuit Breaker (CSA 22.2 No. 5.1) UL File Number E197878	UL 489, 943 and 1053 CSA 22.2 No. 5.1	UL 1077 CSA 22.2 No. 235 VDE (IEC 60898) GL (60 947-2)
Dielectric Strength	1960V AC	1960V AC	1960V AC
Shock	25 G half sine wave for 11 ms (3 axes)		
Vibration	100...500 Hz for 1 hour	100...500 Hz for 1 hour	100...500 Hz for 1 hour
Wire Size	#14...1/0 AWG	#14...4 AWG 75°C (Cu only)	#18...4 AWG (1.0...25 mm^2)
Electromechanical Life	UL 489 specifications	UL 489 specifications	≥6000 operations
Interrupt Rating	10 kA @ 240V AC	10 kA @ 120/240V AC	IEC 60898 10 kA @ 415V AC IEC 60947-2 15 kA @ 415V AC UL/CSA 10 kA U2
Operating Temperature (non-condensing)	32...140 °F (0…+60 °C)	32...140 °F (0…+60 °C)	-22...+158 °F (-30…+70 °C)
Product Selection	**Page 7-6**	**Page 7-11**	**Page 7-46**

General Information

Allen-Bradley offers two lines of Miniature Circuit Breakers with UL 489 (CSA 22.2 No. 5) certification, four different lines of Supplementary Protectors (Miniature Circuit Breakers), and a line of fuse holders for branch circuit fuses and supplementary fuses.

Product Selection

Bulletin 1492-FB Fuse Holders

- EN/IEC 60529 finger protection — dead front construction
- Compact size requiring less panel space than open-style fuse holders
- Optional blown fuse indicator
- Branch circuit protection with Class CC and J fuses
- UL Listed, CSA Certified
- DIN Rail (35 mm), mounted

Bulletin 1492 Circuit Breakers

Potential applications include protection of:

- Solenoids
- Transformers
- Computers
- Power Supplies
- Relay/contactor coils
- PLCs
- Medical Equipment
- PLC I/O Points

UL1077, CSA C22.2 No. 235 — In North America, miniature circuit breakers are recognized as supplementary protectors and are intended for use as overcurrent protection within an appliance or other electrical equipment where branch circuit protection is already provided or not required. Internationally, these products are rated to IEC standards as miniature circuit breakers or circuit breakers for equipment.
UL508, CSA 22.2 No.14 — In North America, some miniature circuit breakers, meeting specific requirements, may be used as Manual Motor Controllers for direct control of motors connected across-the-line equipment where branch circuit protection is already provided or not required. Internationally, these products are rated to IEC standards as miniature circuit breakers and applied for motor controller applications within those standards.
UL489, CSA 22.2 No. 5.1 — In North America, some miniature circuit breakers, meeting specific requirements, may be used as Branch Circuit Protection devices for the protection of electric wiring as well as load protection.

Type		1492-GH	1492-GS	1492-SP	1492-MC	1489
Certifications	UL	1077	1077	1077	489	489
	CSA	22.2 No. 235	22.2 No. 235	22.2 No. 235	22.2 No. 5	22.2 No. 5
	EN/IEC	IEC 60934	IEC 60934	IEC 60898 IEC 60947-2	—	IEC 60947-2
	CE Marked	Yes	Yes	Yes	No	Yes
No. of Poles		1	1, 2, 3	1, 2, 3 – 1+N, 3+N	1, 2, 3	1, 2, 3
Volts AC		250 V	480Y/277 V	480Y/277 V	120/240V AC 240V AC	480Y/277 V
Volts DC		65 V	65 V	1p 48V 2p (series) 125V	—	up to 500V DC
Current Range		0.2…15A	0.2…25A	0.5…63A	15…100 A	0.5…40 A
Trip Characteristics (*In*)		G 6…12	G 6…10	B 3…5 C 5…10 D 10…20	UL 489 Standard (CSA 22.2 No. 5.1)	B 3…5 C, 5…10 D 10…20
Energy Limiting		No	No	Yes	No	Yes
No. of Pole/foot		24	24	17	Varies	17
Mounting Method		DIN Rail & A-B Rail	DIN Rail & A-B Rail	DIN Rail	DIN Rail	DIN Rail
IEC 529 and 60947 Finger Protection		Yes	Yes	Yes	Varies	Yes
Optional	Auxiliary Contacts	No	Yes	Yes	No	Yes
	Shunt Trip	No	No	Yes	No	Yes
	Undervoltage Trip	No	No	Yes	No	Yes

Technical Information: The Benefits of Limiting Let-Through Energy

Energy Limiting Circuit Breakers Versus Conventional Breakers

The Bulletin 1492-SP line features the unique ability to achieve short circuit interruptions far more effectively than conventional circuit breakers. In *conventional circuit breakers,* the short circuit interruption time required is approximately one or two half cycles of an AC sine wave. When the contacts are open, the resulting arc continues to burn until the current level passes through zero. The arc may re-ignite because of the insufficient width of the contact gap. The current that flows until the arc is extinguished produces a heating effect proportional to the I^2t value (let-through-energy) of the fault current.

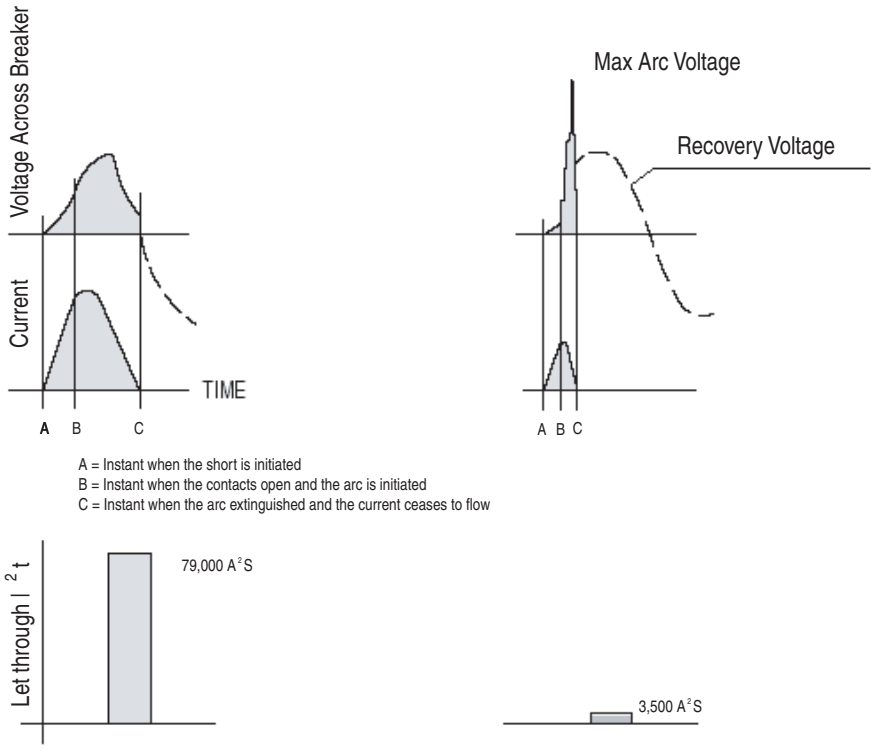
These devices are designed to substantially reduce the amount of *let-through-current* and the resulting let-through-energy that can damage protected components. They have the ability to interrupt short circuit current within the first half cycle of the fault. Limiting let-through-energy will protect against the harmful effects of over-current and is focused primarily on avoiding the following:

- Excessive heat
- Mechanical damage

Both of these factors are proportional to the square of the current. Thermal energy is proportional to the square of the RMS value and magnetic forces are proportional to the square of the peak value. The most effective way to provide protection is to subtantially limit *let-through-energy.*This provides the following advantages:

- Far less damage at the location of the short circuit.
- Fast electric separation of a faulty unit from the system, especially power supplies connected in parallel that are switched off when the voltage of the power bus drops below a certain level.
- Far less wear on the miniature circuit breaker itself. This means more safe interruptions.
- Better protection of all components in the short circuit path.
- Far wider range of selective action when used with an upstream protective device. (No nuisance shut downs from feeder line interruptions causing a blackout in all connected branches.)

Short Circuit Interruption 10 kA - 120V AC
Instant of initiation: 15˚ after voltage zero



7

Bulletin 1492-MC Circuit Breakers

Industrial Circuit Breakers for North American Applications

The Bulletin 1492-MC line includes:

- 1/2 in. wide circuit breakers
- 1 in. wide circuit breakers
- Ground Fault Circuit Interrupters (GFCIs)
- Ground Fault Equipment Protector (GFEPs)

Features

- Designed, manufactured and listed to UL 489 (CSA C22.2, No. 5)
- Thermal-magnetic protection
- All Ratings (10…100 A) are HACR rated
- 10 kAIC (10…100 A)
- Finger-safe design (front) (1/2 in. wide)
- DIN Rail mounting (120/240 & 240V AC)
- Three-position handle (ON, Tripped (Middle), OFF)
- (Line and load) wire connections

Table of Contents

Certifications

UL Listed
CSA Certified

Standards Compliance for Bul. 1492-MC

- UL 489
- CSA C22.2 No. 5
- HACR (10...100 A)
- SWD (15 and 20 A) for Switching Duty for flourescent lighting applications

Standards Compliance for GFCI (5 mA trip sensitivity)

- UL 943
- CSA C22.2 No. 144

Standards Compliance for GFEP (30 mA trip sensitivity)

- UL 1053
- CSA C22.2 No. 144

Bulletin 1492-MC Thermal Magnetic Description

Thermal Magnetic Circuit Breakers

Bulletin 1492-MC Circuit Breakers for Branch Circuit protection are available in one (1)-, two (2)-, and three (3)-pole construction in 120/240 volt rating, 240 volt rating and as one (1)-pole and two (2)-pole devices in 480/277 volt rating. Versions are available as Ground Fault Circuit Interrupters and as Ground Fault Equipment Protectors.

The 1492-MC product line consists of Thermal Magnetic Circuit Breakers and Ground Fault Sensing Breakers that are designed, manufactured, and certified to North American standards, UL 489, UL 943, UL1093, and the equivalent CSA standards, CSA 22.2 No. 5.1, 22.2 No. 144.

Bul. 1492-MC Thermal Magnetic Circuit Breakers are general-purpose devices suitable for the majority of industrial, inverse time circuit breaker applications.

They combine thermal and magnetic trip actions and provide accurate overload and short-circuit protection for conductors and connected equipment.

Circuit Breaker Application Information

Selection of a Bul. 1492-MC circuit breaker with appropriate circuit protection includes consideration of:

- Circuit voltage
- Circuit frequency
- Available short circuit current
- Continuous current rating
- Application considerations
- Special operating conditions

The following discussion is based upon National Electric Code and UL requirements. Similar considerations are appropriate for Canadian applications.

Circuit Voltage

Bul. 1492-MC circuit breakers are rated by voltage class. Applications should not exceed the listed voltage range (see Table 1).

Circuit Frequency

Bul. 1492-MC circuit breakers may be applied to frequencies from DC up to 60 Hz without derating. For applications above 60…400 Hz, contact Rockwell Automation with specific application information for the derating of the circuit breakers.

Available Short Circuit Current

Bul. 1492-MC circuit breakers should only be applied in those applications in which the available short-circuit (or fault) current is less than or equal to the interrupting rating shown in the Voltage and Interrupting Ratings table.

Table 1. Voltage and Interrupting Ratings

AC Voltage	DC Voltage ∗	Interrupting Ratings (rms Symmetrical Amperes) AC Rating	Interrupting Ratings (rms Symmetrical Amperes) DC Rating ∗	Cat. No.
120/240	24, 48, 62.5	10,000	3,000	1492-MCAA1xx
				1492-MCAA2xx
240	24, 48, 62.5		3,000	1492-MCAA2Hxx
				1492-MCAA3xx
120/240	❄		❄	1492-MCBA1xx
				1492-MCBA2xx
240	❄		❄	1492-MCBA2Hxx
				1492-MCBA3xx
120	❄	10,000	❄	1492-MCEA1xx
120/240				1492-MCEA2xx
120				1492-MCGA1xx
120/240				1492-MCGA2xx

∗ Rating as supplementary protector.
❄ Consult your local Rockwell Automation sales office or Allen-Bradley distributor for specific rating.

Continuous Current Rating

Bul. 1492-MC circuit breakers are rated in RMS amperes at a 40 °C (104 °F) ambient temperature per UL 489 (CSA 22.2 No. 5.1). This temperature is generally used as the average temperature within an industrial enclosure. If a circuit breaker is applied in a temperature that exceeds the 40 °C (104 °F) ambient, then the circuit breaker should be derated. Contact your local Rockwell Automation sales office or Allen-Bradley distributor for derating information.

The characteristic trip curves are shown on pages 7-8…7-10. The trip bands shown for each breaker represent current tripping limits for a circuit breaker and are within the limits established by UL. For a specific current at 40 °C (104 °F), a circuit breaker will open ("clear the circuit") automatically at some total time that will be within the "Minimum" and "Maximum" time shown as the "Minimum" and "Maximum" curves. For example, page 7-8 shows that a one pole, 15 A, 1492-MC trips in not less than 10 s and not more than 150 s on a 30 A current. Because the UL standard defines this time spread, users should not specify exact tripping time. The lower current portion of the curves (upper left) depict the time to trip due to thermal action and reflect overload protection of the wire and connect load. The higher current portion of the curves (lower right) depicts the trip due to magnetic action of the circuit breaker and reflects protection due to short circuit level currents.

Standard current ratings are, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, and 100 A.

Application Considerations

The selection of a specific ampere rating for a specific application is dependent on the type of load and duty cycle and is governed by the National Electric Code (Canadian Electric Code) and UL/CSA. In general the codes require that overcurrent protection is at the current supply and at points where wire sizes are reduced. In addition the codes state that conductors be protected according to their current carrying capacity. There are specific situations that require application consideration, such as motor circuit, and guidelines for the selection for transformer protection.

Bulletin 1492-MC circuit breakders are "non-100% rated" as defined by UL 489 Part 7.1.4.2. As such the circuit breaker's rating should be loaded to no more than 80%, if used with continuous loads.

Branch Circuits:

Bulletin 1492-MC circuit breakers may be used to protect branch circuits. A branch circuit is the wiring portion of a system extending beyond the final overcurrent device protecting the circuit.

Guidelines established in NEC, CEC, UL, and CSA should be used to determine the specific device. For example:

1) Motor Branch Circuit

Bulletin 1492-MC circuit breakers are not horsepower rated because they are able to safely interrupt currents far in excess of the locked rotor value for a selected motor. This ability is recognized in the codes and standards and is also established by the UL and CSA tests described in UL 489 and CSA C22.2 No. 5.1 standards.

The size of a Bulletin 1492-MC circuit breaker should be determined following the guidelines for an Inverse Time Circuit Breaker.

References: NEC 430.51 and UL 508A. Also see CEC and appropriate Canadian Standards.

2) Transformer Protection

Bulletin 1492-MC circuit breakers may be used for transformer protection following the guidelines established.

References: NEC 450 and UL 508A. Also see CEC and appropriate Canadian Standards.

3) Heater Load, Lighting, and Other Load Protection

Bulletin 1492-MC circuit breakers may be used for protection of heater loads, lighting loads, and other loads following the guidelines established.

References: NEC Article 31 and UL 508A. Also see CEC and appropriate Canadian Standards.

Coordinated Overcurrent Protection

Where an orderly shutdown is required to minimize the hazards to personnel and equipment, a system of coordination based upon the faulted or overloaded circuit is isolated by selective operation of only the overcurrent protective device closest to the overcurrent condition.

The user should select devices that meet this requirement.

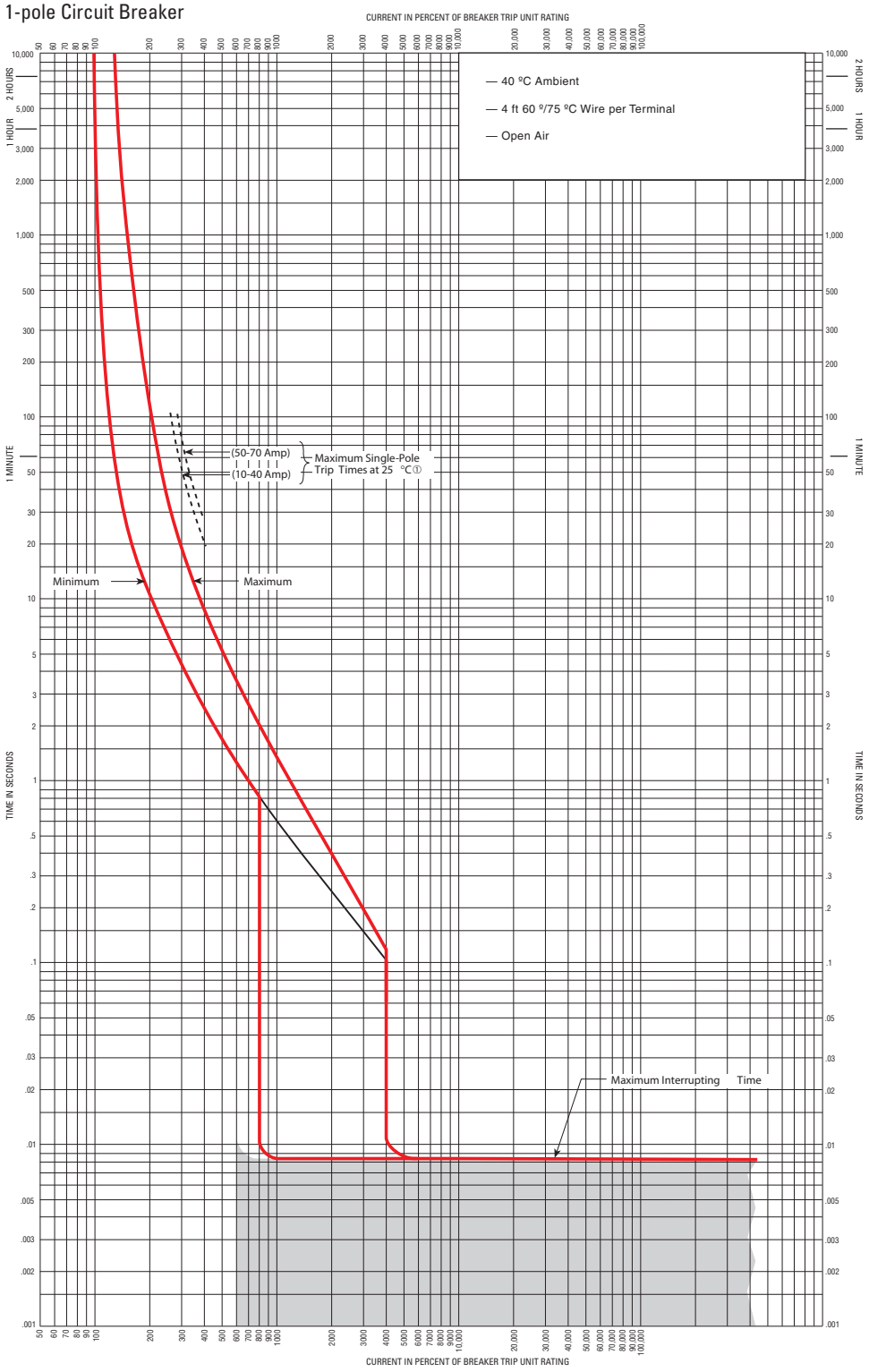
References: NEC 240.12. Also see CEC.

Time Current Curve – 1-Pole Circuit Breaker

Time Current Curve

1492-MCAA1NN 1492-MCEA1NN
1492-MCBA1NN 1492-MCGA1NN

1-pole Circuit Breaker



1492-MC Cat. No. Explanation

Examples given in this section are for reference purposes. This basic explanation should not be used for product selection; not all combinations will produce a valid catalog number.

1492-MC A A 1 15
a b c d

a

Body Style	
Code	Description
A	1/2 in. wide/pole (DIN Rail mounting)
B	1 in. wide/pole (DIN Rail mounting)
E	GFEP (30 mA)
G	GFCI (5 mA)

b

Interrupt Rating	
Code	Description
A	10 kA AIC

c

Poles	
Code	Description
1	1 pole
2	2 poles
2H	2 poles (240V AC)
3	3 poles

d

Current Rating		Size	
Code	Description	Code	Description
10	10 A	50	50 A
15	15 A	55	55 A
20	20 A	60	60 A
25	25 A	70	70 A
30	30 A	80	80 A
35	35 A	90	90 A
40	40 A	A0	100 A
45	45 A		

Bul. 1492-MC Thermal Magnetic Product Selection
120/240 and 240V AC DIN Rail Mounting

120/240 and 240V AC DIN Rail Mounting						
Continuous Ampere Rating @ 40°C (104°F)	Width per pole [in.]	Cat. No. 120/240V AC		Width per pole [in.]	Cat. No. 240V AC	
		1-pole	2-poles		2-poles	3-poles
10	1/2	**1492-MCAA110**	**1492-MCAA210**	—	—	—
15	1/2	**1492-MCAA115**	**1492-MCAA215**	1/2	**1492-MCAA2H15**	**1492-MCAA315**
20	1/2	**1492-MCAA120**	**1492-MCAA220**	1/2	**1492-MCAA2H20**	**1492-MCAA320**
25	1/2	**1492-MCAA125**	**1492-MCAA225**	1/2	1492-MCAA2H25	**1492-MCAA325**
30	1/2	**1492-MCAA130**	**1492-MCAA230**	1/2	**1492-MCAA2H30**	**1492-MCAA330**
35	1/2	1492-MCAA135	1492-MCAA235	1	1492-MCBA2H35	**1492-MCBA335**
40	1/2	**1492-MCAA140**	**1492-MCAA240**	1	1492-MCBA2H40	**1492-MCBA340**
45	1/2	**1492-MCAA145**	1492-MCAA245	1	1492-MCBA2H45	**1492-MCBA345**
50	1/2	**1492-MCAA150**	**1492-MCAA250**	1	**1492-MCBA2H50**	**1492-MCBA350**
55	1/2	**1492-MCAA155**	1492-MCAA255	1	1492-MCBA2H55	1492-MCBA355
60	1/2	**1492-MCAA160**	**1492-MCAA260**	1	**1492-MCBA2H60**	**1492-MCBA360**
70	1	**1492-MCBA170**	**1492-MCBA270**	1	1492-MCBA2H70	**1492-MCBA370**
80	1	**1492-MCBA180**	1492-MCBA280	1	1492-MCBA2H80	**1492-MCBA380**
90	1	**1492-MCBA190**	1492-MCBA290	1	1492-MCBA2H90	**1492-MCBA390**
100	1	**1492-MCBA1A0**	1492-MCBA2A0	1	1492-MCBA2HA0	**1492-MCBA3A0**

1492-MC Ground Fault Sensing

The Bulletin 1492-MC Circuit Breakers with Ground Fault protection for Branch Circuits are available in 1- and 2-pole construction in 120/240V rating. Versions are available as Ground Fault Circuit Interrupters and as Ground Fault Equipment Protectors.

When protection from low-level fault currents for North American standards is required, two versions of protection are available.

- Circuit Breakers with protection for personnel use a threshold of 5 mA sensing to provide protection for people. These are typically know as Ground Fault Circuit Interrupters or GFCIs.
- Circuit Breakers that provide protection for equipment at a sensing threshold of 30 mA are also available. These are typically known as Ground Fault Equipment Protectors or GFEPs.

The following devices are tested and listed to meet the North American standards of UL 489, UL 943 (for GFCI), UL1053 (for GFEP), and CSA 22.2 No.5.1.

It is recommended that the devices be tested monthly by using the TEST button to check for proper operation of the device.

Auxiliary Devices

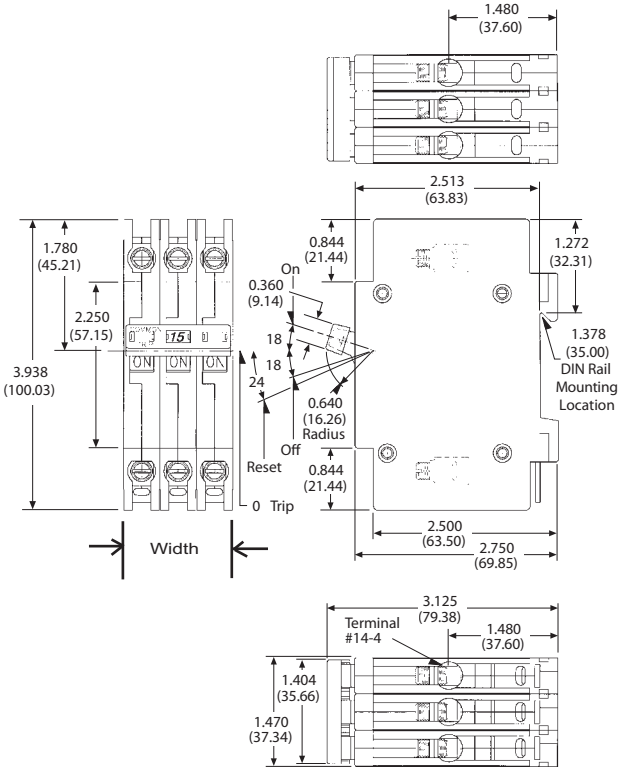
Device description		1-pole	2- and 3-poles
Locking Attachment for Circuit Breaker	1492-MCAAxxx	1492-AMCAL1	**1492-AMCALM**
	1492-MCBAxxx	1492-AMCBL1	
Finger protection cover for 1 in. wide Cat. No. 1492-MCBxxx, package of 10 (one required for line and one required for load for each pole) (not for GFCI / GFEP)		**1492-AMCBFP**	
DIN Rail adapter, per pole, DIN Rail mounting for GFCI, GFEP		**1492-AMCDIN1**	
Panel Mounting Clips for GFCI and GFEP, two required per device		**1492-AMCP1**	

1492-MC Approximate Dimensions

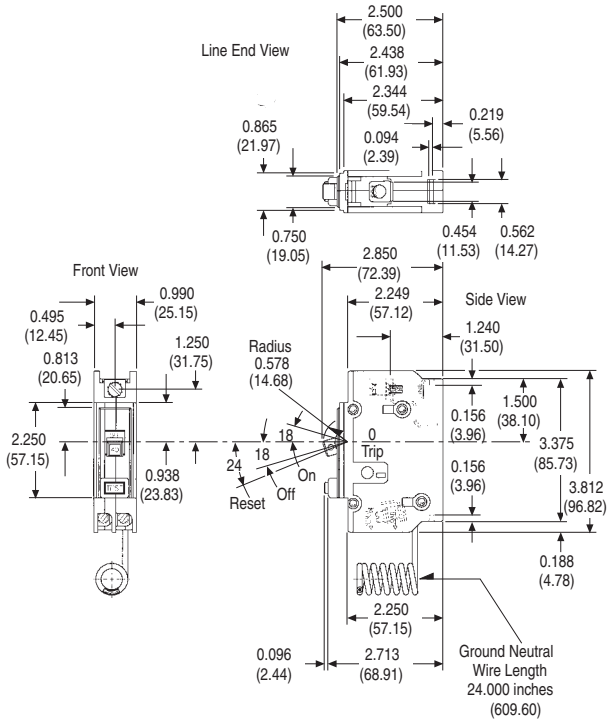
Note: Dimensions are shown in inches (millimeters). Dimensions are not intended for manufacturing purposes.

Catalog Type	No. of Poles	Continuous Current Rating [A]	Width [in.]
1492-MCAA1xx	1	10…60	0.490
1492-MCAA2xx	2	10…60	0.980
1492-MCAA2Hxx	2	15…30	0.980
1492-MCAA3xx	3	15…30	1.470
1492-MCBA1xx	1	70...100	1.000
1492-MCBA2xx	2	70...100	2.000
1492-MCBA2Hxx	2	35...100	2.000
1492-MCBA3xx	3	35...100	3.000
1492-MCEA1xx	1	15...50	0.990
1492-MCEA2xx	2	15...50	1.980
1492-MCGA1xx	1	15...50	0.990
1492-MCGA2xx	2	15...50	1.980

1492-MCAAnxx



1492-MCEA1xx
1492-MCGA1xx



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