



➔ **Product Type**
Miniature Hydraulic/Magnetic Circuit Breaker

➔ **Product Series**
M-Series

➔ **Description**
[M-Series PDF eLibrary](#) ↓

The M-Series miniature hydraulic/magnetic circuit breakers are designed for those demanding applications where space, aesthetics and snap-in front panel mounting are important. These circuit breakers are available in a choice of rocker actuator

styles and colors, including paddle and baton style handle actuators, push-to-reset and push-pull pushbutton actuators, Visi-Rocker two color actuators as well as non-illuminated or illuminated rocker versions with LED or neon bulbs. The exclusive Rockerguard bezel helps prevent inadvertent actuation. Wiping contact design insures long term reliability. Various styling options allow design flexibility. M Series circuit breakers are offered in 1 & 2 poles, 0.02 to 30 amps, up to 250VAC or 80VDC. They are available with a choice of time delays, terminals, panel hardware, actuator styles, colors, & imprinting.

Series PDF eLibrary	<ul style="list-style-type: none"> ● M-Series Cir. Breaker PDF (3.0 MB) ● Cir. Breaker Time Delays for M-Series (2.3 MB) ● Cir. Breaker Accessories PDF (49.5 KB)
Certifications	UL recognized, CSA, VDE, TUV, UL489A Listed (Telecom)
Number of Poles	1 & 2 poles
Available Delays	Instant, Short, Medium - AC/DC, Hi-Inrush
Maximum Current and Voltage Ratings	0.02-15FLA, 32VDC, 125VAC, 1 pole 15.1-25GPA, 32VDC, 125VAC, 1-pole 0.02-15FLA, 65VDC, 250VAC, 2-pole 15.1-25GPA, 65VDC, 250VAC, 2-pole 0.02-12FLA, 250VAC, 1-pole 0.02-7.5GPA, 50VDC, 1-pole 0.02-30GPA, 65VDC, 80VDC, 1 pole
Maximum Interrupting Capacity	1,000A @ 65VDC, 2-pole 1,000A @ 32VDC, 1-pole 1,000A @ 250VAC, 2-pole 1,000A @ 125VAC, 1-pole 600A @ 80VDC
Auxiliary Switch Ratings	7A @ 250VAC 0.1A @ 125VAC (gold contacts) 7A (Res.) @ 28VDC 4A (Ind.) @ 28VDC 0.25A @ 80VDC
Available Circuits	Series and Switch Only

Actuator Style	<ul style="list-style-type: none"> Solid Color Angled Rocker Solid Color Flat Rocker Two Color Visi-Rocker Illuminated Angled Rocker Illuminated Flat Rocker Solid Color Paddle Solid Color Baton Solid Color Push-to-Reset Pushbutton Solid Color Push-Pull Pushbutton
Terminal Options	<ul style="list-style-type: none"> .250 QC Tabs 8-32 Screw w/ Upturned Lugs 8-32 Screw (Bus Type) Push in Stud Terminals
Mounting Method	Snap-in Front Panel
Value Added	<ul style="list-style-type: none"> Custom colors Non-standard current ratings Panel hole plug available Amp markings for pushbutton actuators and more



The low cost M-Series utilizes the hydraulic magnetic principle which provides accurate and reliable circuit protection even when exposed to extremely hot and/or cold application environments.

Available in a choice of rocker actuator styles and colors, push button, push-pull, paddle, and baton style handle actuators, the Visi-Rocker® two-color actuators as well as non-illuminated or illuminated rocker versions with LED or neon bulbs. The exclusive Rockerguard® bezel helps prevent inadvertent actuation. "Wiping" contact design insures long term reliability. Various styling options allow design flexibility.

Typical applications include power supplies, medical equipment, and telecommunications equipment. In addition, these breakers meet CSA Standard 22.2 No. 100 for the Generator & Welder markets.

Agency Certifications

UL Recognized

UL Standard 1077



Component Recognition Program as Protectors, Supplementary (Guide CCN/QVNU2, File E75596)

CSA Accepted



Component Supplementary Protector under Class 3215 30, File 047848 0 000
CSA Standard C22.2 No. 235

UL Listed

UL Standard 489A



Communications Equipment (Guide CCN/DITT, File E189195)

VDE Certified



EN60934, VDE 0642 under File 10537

TUV Certified



EN60934, under License No. R9671109

Electrical

Table A: Lists UL Recognized and CSA Accepted configurations & performance capabilities as a Component Supplementary Protector.

M-SERIES TABLE A: COMPONENT SUPPLEMENTARY PROTECTORS										
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING		POLES BREAKING	SHORT CIRCUIT CAPACITY (AMPS)		APPLICATION CODES	
	MAX. RATING	FREQUENCY	PHASE	FULL LOAD AMPS	GENERAL PURPOSE AMPS		U / CSA		UL	CSA
							WITH BACKUP FUSE	WITHOUT BACKUP FUSE		
SERIES	32	DC	--	0.02 - 15	--	1	--	1000	TC1.2, OL1, U1	TC1.2, OL1, U1
				--	15.1 - 25	1	--	1000	TC1.2, OL0, U1	TC1.2, OL0, U1
	50 ²	DC	--	0.02 - 7.5	--	1	--	1000	TC1.2, OL0, U1	TC1.2, OL0, U1
				0.02 - 15	--	2	--	1000	TC1.2, OL1, U1	TC1.2, OL1, U1
	65	DC	--	0.02 - 15	--	1	--	1000	TC1.2, OL1, U1	TC1.2, OL1, U1
				--	15.1 - 25	2	--	1000	TC1.2, OL0, U1	TC1.2, OL0, U1
	65 ^{1,2}	DC	--	0.02 - 15	--	1	--	1000	TC1.2, OL1, U1	TC1.2, OL1, U1
				--	15.1 - 30	1	--	1000	TC1.2, OL0, U1	TC1.2, OL0, U1
	65	DC	--	0.02 - 15	--	2	5000 ³	--	TC1.2, OL1, C1	TC1.2, OL1, C1
				--	15.1 - 25	2	5000 ³	--	TC1.2, OL0, C1	TC1.2, OL0, C1
	80 ¹	DC	--	0.02 - 15	--	1	--	600	TC1.2, OL1, U1	TC1.2, OL1, U1
				--	15.1 - 30	1	--	600	TC1.2, OL0, U1	TC1.2, OL0, U1
	125	50 / 60	1	0.02 - 15	--	1	--	1000	TC1.2, OL1, U1	TC1.2, OL1, U1
				--	15.1 - 30	1	--	1000	TC1.2, OL0, U1	TC1.2, OL0, U1
				1 - 30	--	1	--	360	TC1,OL1,U2	TC3, OL1, U3
	250	50 / 60	1	0.02 - 12	--	1	--	1000	TC1.2, OL1, U1	TC1.2, OL1, U1
	250 ²	50 / 60	1	--	12.1 - 18	1	1000 ⁴	--	TC1.2, OL0, C1	TC1.2, OL0, C1
				0.02 - 15	--	2	--	1000	TC1.2, OL1, U1	TC1.2, OL1, U1
250	50 / 60	1	--	15.1 - 30	2	--	1000	TC1.2, OL0, U1	TC1.2, OL0, U1	
			1 - 30	--	1	--	360	TC1,OL1,U2	TC3, OL1, U3	

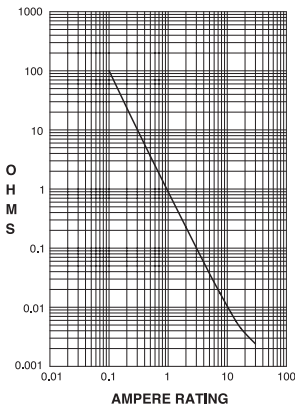
NOTES FOR TABLE A

- 1 Polarity Sensitive
- 2 Available only with Special Catalog Number. Consult Factory.
- 3 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 30 Amps maximum
- 4 Requires Branch Circuit Backup with a UL Listed type K-5 or RK-5 fuse rated 60 Amps maximum

Electrical

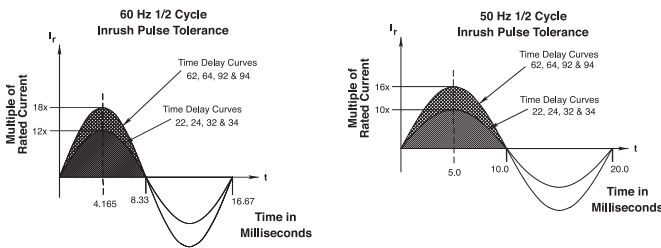
Maximum Voltage	125/250 VAC 50/60 Hz, 80 VDC (See Rating Tables.)
Current Ratings	Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00 thru 15.0 in 1 amp increments, 18.0, 20.0, 25.0, 30.0. Other ratings available - see Ordering Scheme.
Auxiliary Switch Rating	SPDT; 7A 250VAC, 7A (Res) 28VDC, 4A (Ind.) 28VDC, 0.25A 80VDC (Res) (silver contacts), 0.1A 125VAC (gold contacts).
Insulation Resistance	Minimum of 100 Megohms at 500 VDC.
Dielectric Strength	UL, CSA 1500V, 50/60 Hz for one minute between all electrically isolated terminals. M-Series Circuit Breakers comply with the 8mm spacing and 3750 V 50/60Hz dielectric requirements from hazardous voltage to operator accessible surfaces, per Publications IEC 380, 435, 950, EN 60950 and VDE 0805.
Resistance, Impedance	Values from Line to Load Terminal - based on Series Trip Circuit Breaker.

RESISTANCE, IMPEDANCE VALUES
from Line to Load Terminals
(Values Based on Series Trip Circuit Breaker)



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 20.0	25%
20.1 - 30.0	35%

Pulse Tolerance Curves



Mechanical

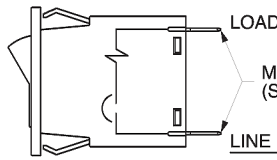
Endurance	10,000 ON-OFF operations @ 6 per minute with rated Current and Voltage.
Trip Free	All M-Series Circuit Breakers will trip on overload, even when actuator is forcibly held in the ON position.
Trip Indication	The actuator moves positively to the OFF position when an overload causes the circuit breaker to trip.
Physical	
Number of Poles	1 or 2
Internal Circuit Configurations	Series with or without Auxiliary Switch. Switch Only with or without Auxiliary Switch.
Weight	Approximately 30 grams/pole (Approximately 1.07 ounces/pole)
Standard Colors	See Ordering Scheme.

Environmental

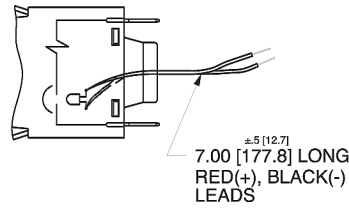
Designed and tested in accordance with requirements of specification MIL-PRF-55629 & MIL-STD-202 as follows:

Shock	Withstands 100 Gs, 6ms, sawtooth while carrying rated current per Method 213, Cond. I. Instantaneous curves tested at 80% of rated current.
Vibration	Withstands 0.060" excursion from 10-55 Hz, and 10 Gs 55-500 Hz, at rated current per Method 204C, Test Condition A. Instantaneous curves tested at 80% of rated current.
Moisture Resistance	Method 106D, i.e., ten 24-hour cycles @ +25°C to +65°C, 80-98% RH.
Salt Spray	Method 101, Condition A (90-95% RH @ 5% NaCl Solution, 96 hrs).
Thermal Shock	Method 107D, Condition A (Five cycles @ -55°C to +25°C to +85°C to +25°C).
Operating Temperature	-40° C to +85° C
Chemical Resistance	Only the outside surfaces of the case and the handles may be cleaned with detergents or alcohol. Organic (hydrocarbon based) solvents are not recommended because they attack plastics. Caution should be taken when solvents are used to clean and remove flux from terminals. Lubricants should not be introduced into the handle/bushing openings.

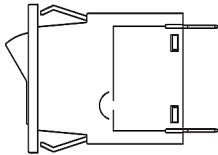
SERIES TRIP



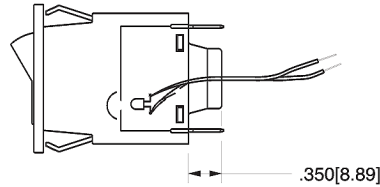
**SERIES TRIP W/
ILLUMINATED ROCKER**



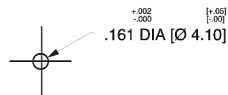
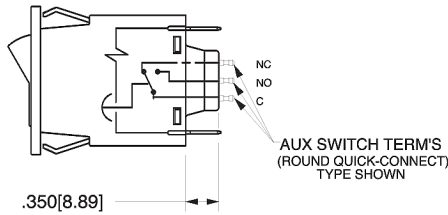
SWITCH ONLY



**SWITCH ONLY W/
ILLUMINATED ROCKER**



**SERIES TRIP W/
AUXILIARY SWITCH**



PUSH-IN STUD MATING HOLE

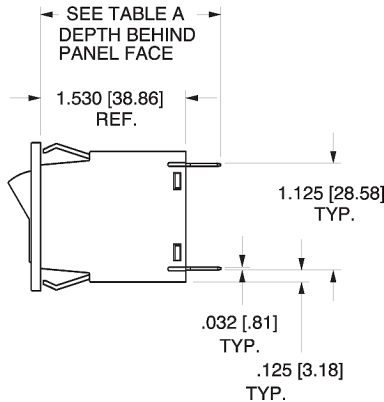


TABLE - A		
TERMINAL DESCRIPTION		DEPTH BEHIND PANEL FACE
MAIN	TAB (Q.C.)	1.900 [48.26]
	SCREW #8-32**	1.940 [49.28]
	PUSH-IN STUD	2.530 [64.26]
*AUX. SWITCH	DOUBLE SOLDER TURRET TYPE	2.045 [51.94]
	ROUND Q.C. TYPE	2.035 [51.69]
	FLAT QUICK CONNECT	2.139 [54.33]
	FLAT SOLDER LUG	2.022 [51.36]

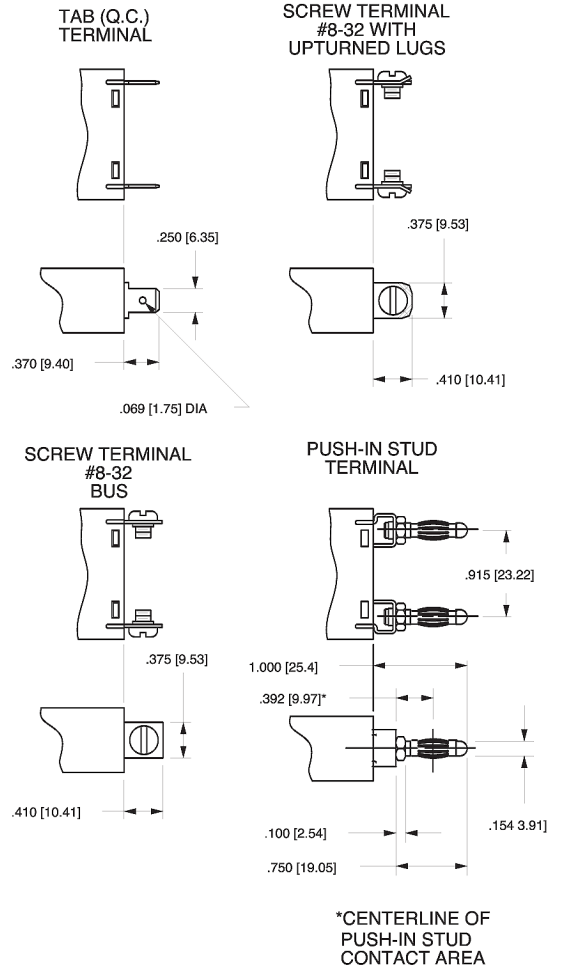
* AUX. SWITCH IS NOT AVAILABLE ON SINGLE POLE ILLUMINATED UNITS. WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, MOUNTED AS SHOWN ON CLA-8003.

** RECOMMENDED TIGHTENING TORQUE 12-15 IN LBS [1.4-2.7 NM]

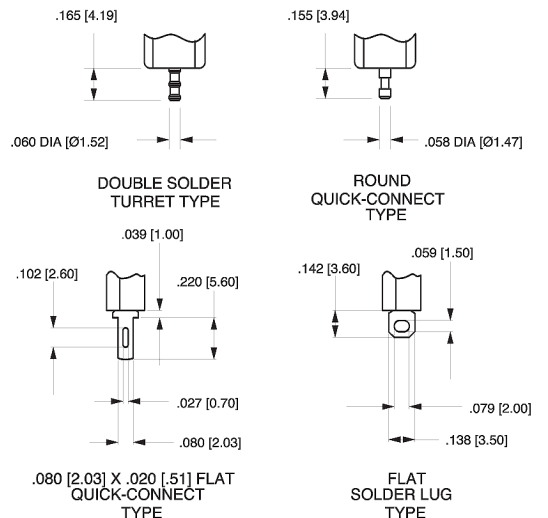
Notes:

- 1 All dimensions are in inches [millimeters].
- 2 Tolerance ±.020 [.51] unless otherwise specified.
- 3 Schematic shown represents current trip circuit.

TERMINAL DIMENSIONAL DETAIL



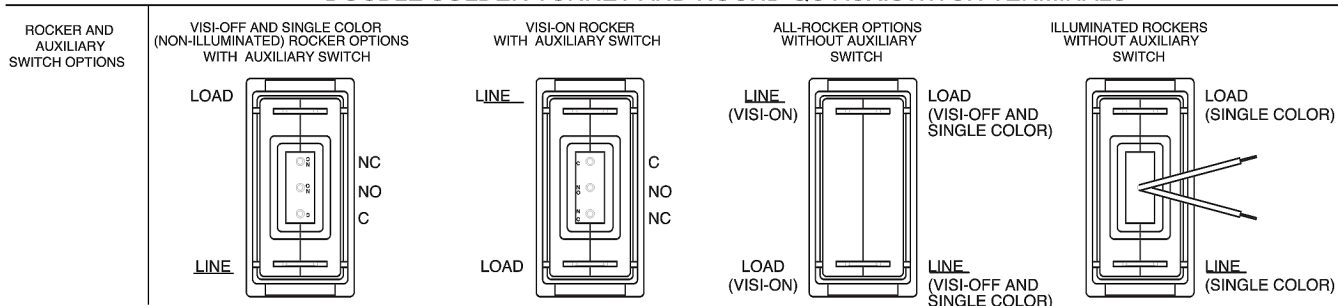
AUXILIARY SWITCH TERMINALS



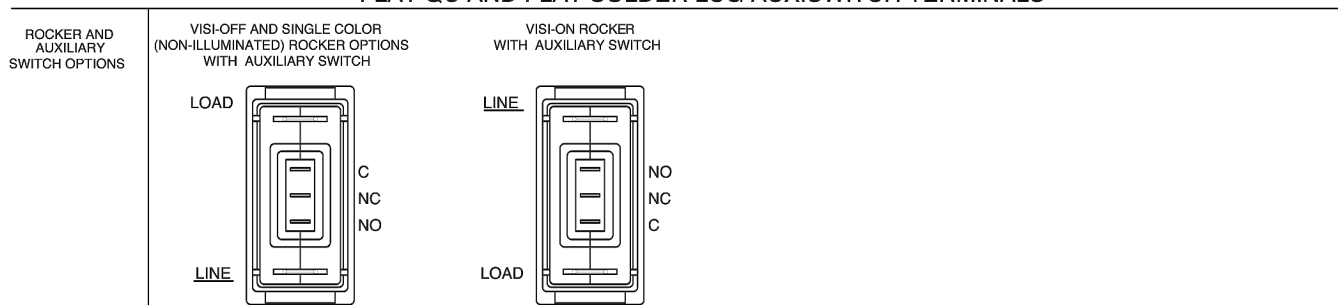
*AVAILABLE THROUGH SPECIAL CATALOG PART NUMBER

ONE POLE

SINGLE POLE / ROCKER BREAKERS SHOWN WITH DOUBLE SOLDER TURRET AND ROUND QC AUX. SWITCH TERMINALS

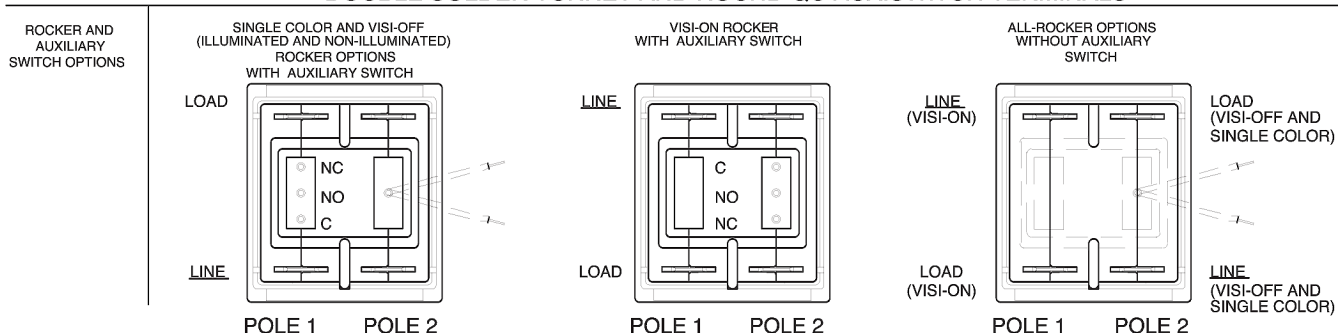


SINGLE POLE / ROCKER BREAKERS SHOWN WITH FLAT QC AND FLAT SOLDER LUG AUX. SWITCH TERMINALS



TWO POLE

DOUBLE POLE / ROCKER BREAKERS SHOWN WITH DOUBLE SOLDER TURRET AND ROUND QC AUX. SWITCH TERMINALS



DOUBLE POLE / ROCKER BREAKERS SHOWN WITH FLAT QC AND FLAT SOLDER LUG AUX. SWITCH TERMINALS

