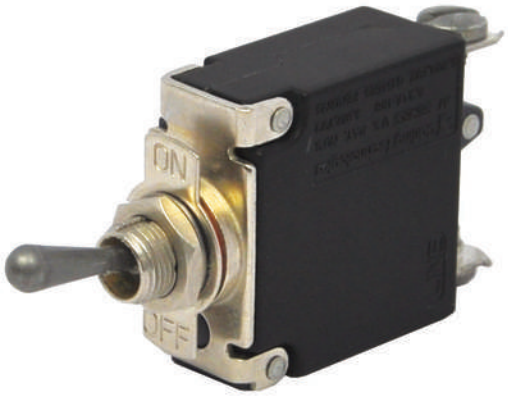
MS-Series
Circuit Breaker

Carling Technologies' MS-Series Sealed Toggle Circuit Breaker was designed and tested to operate flawlessly in the harshest of environments.

Ideally suited for COTS (commercial off the shelf) military applications, the MS-Series features a durable metal and sealed mounting bushing with MIL-PRF-39019F ingress protection when mounted in a panel.

This class-leading, affordable circuit breaker was also designed in accordance with the requirements of MIL-PRF-55629 and MIL STD 202, making it the best choice when the application consideration includes shock, vibration, moisture resistance, salt spray and thermal shock.

The MS-Series' compact size and reliability make it ideal for ruggedized communication equipment and other mission critical equipment.



Features:

- Sealed toggle actuator
- MIL-PRF-39019F ingress protection
- MIL-PRF-55629 and MIL STD 202 compliant
- Compact design

COTS Military Applications:

- Vehicles
- Communication equipment
- Generators
- Power supplies

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Innovative Designs. Powerful Solutions.

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Electrical

Current Rating	.20 - 30 Amps
Voltage Rating	50VDC
Short Circuit Rating	See Table A
Dielectric Strength	UL,CSA 1500V, 50/60 Hz for one minute between all electrically isolated terminals
Insultation Resistance	Minimum of 100 Megohms @ 500VDC
Resistance	See reverse side
Time Delay	See reverse side

Mechanical

Endurance	10,000 On-Off operations @ 6 per minute with rated current and voltage
Trip Free	Trips on short circuit and overload, even when the actuator is forcibly held in the “On” position
Trip Indication	The operating handle moves positively to the “Off” position when a short circuit or overload causes the circuit breaker to trip.

Agency Certifications

UL Standard 1077

CUL Standard C22.2

Physical

Number of Poles	1 pole
Weight	Approximately 1.8 oz (50 G) per pole
Dimensions	See reverse side

Environmental

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

Shock	Withstands 100G’s, 6ms, saw tooth while carrying rated current per Method 213, Condition I. Instantaneous curves tested at 80% of rated current.
Vibration	Withstands 0.060” excursion from 10-55 Hz, and 10G’s 55-500 Hz, at rated current per Method 204C, Test Condition A. Instantaneous curves tested at 80% of rated current.
Salt Spray	Method 101, Condition A (90-95% RH @ 5% NaCl Solution, 96 hrs)
Moisture Resistance	Moisture Resistance Method 106G
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
Ingress Protection Level	MIL-PRF-55629C when mounted in panel.
Other	Materials used in this product shall be non-nutrient to fungus growth

Electrical Tables

Table A: Lists UL & CSA Configuration & Performance Capabilities

MS-SERIES TABLE A: COMPONENT SUPPLEMENTARY PROTECTORS										
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING		POLES BREAKING	SHORT CIRCUIT CAPACITY (AMPS)		APPLICATION CODES	
	MAX. RATING	FREQ	PHASE	FULL LOAD AMPS	GENERAL PURPOSE AMPS		UL/CSA		UL	CSA
							WITH BACKUP FUSE	WITHOUT BACKUP FUSE		
	50	DC	---	---	0.02 - 30	1	---	3000	TC1,2,OL0,U3	TC1,2,OL0,U3
	50	DC	---	---	0.02 - 30	1	---	8000	TC1,2,OL0,U1	TC1,2,OL0,U1

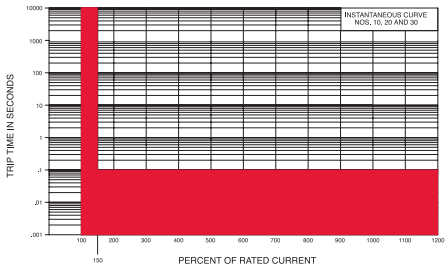
*Manufacturer reserves the right to change product specification without prior notice.

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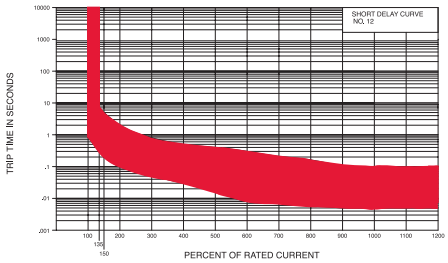
Delay Curve

Dual Rated AC/DC

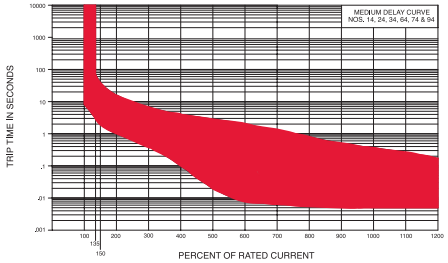
Instantaneous



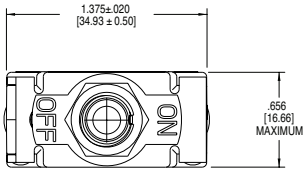
Short

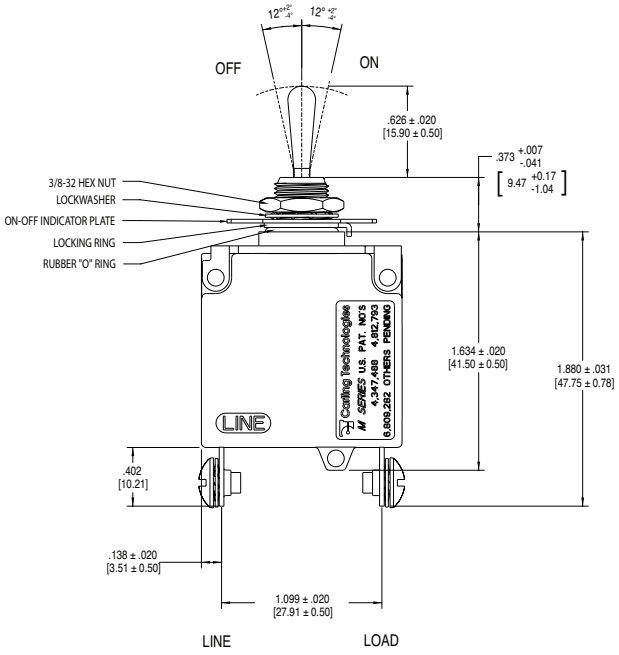


Medium



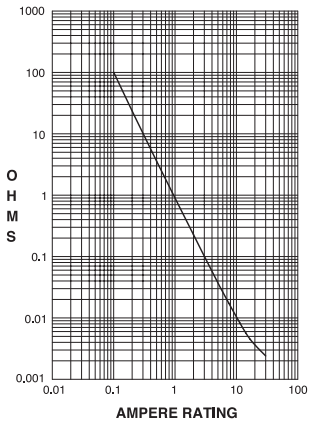
Form & Fit



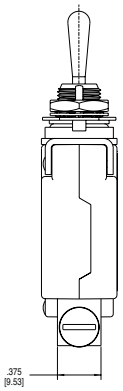


Resistance, Impedance Values

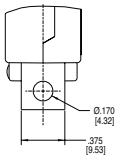
RESISTANCE, IMPEDANCE VALUES
from Line to Load Terminals
(Values Based on Series Trip Circuit Breaker)



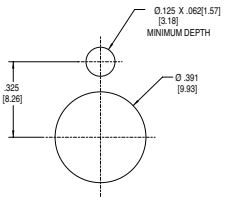
CURRENT (AMPS)	TOLERANCE (%)
0.20 - 30.0	25%



#8 SCREW TERMINAL



SOLDER LUG TERMINAL



PANEL MOUNTING DETAIL

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M	S	1	–	B	–	14	–	615	–	3	–	1	C	B	–	A	–	C
1 Series	*2 Actuator*	*3 Poles*		*4 Circuit*		*5 Frequency & Delay*		*6 Current Rating*		*7 Terminal*		*8 Actuator Color*	*9 Front Panel Hardware*	*10 Legend Plate*		*11 Brushing Color*		*12 Agency Approval*

1 SERIES
M

2 ACTUATOR
S Sealed Toggle

3 POLES
1 One

4 CIRCUIT
B Series Trip (current)

5 FREQUENCY & DELAY
10 DC Instantaneous
12 DC Short
14 DC Medium

6 CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
220	0.200	**295**	0.950	**460**	6.00	**614**	14.00
225	0.250	**410**	1.00	**465**	6.50	**615**	15.00
230	0.300	**512**	1.25	**470**	7.00	**616**	16.00
235	0.350	**415**	1.50	**475**	7.50	**617**	17.00
240	0.400	**517**	1.75	**480**	8.00	**717**	17.50
245	0.450	**420**	2.00	**485**	8.50	**618**	18.00
250	0.500	**522**	2.25	**490**	9.00	**619**	19.00
255	0.550	**425**	2.50	**495**	9.50	**620**	20.00
260	0.600	**527**	2.75	**610**	10.00	**622**	22.00
265	0.650	**430**	3.00	**710**	10.50	**624**	24.00
270	0.700	**435**	3.50	**611**	11.00	**625**	25.00
275	0.750	**440**	4.00	**711**	11.50	**630**	30.00
280	0.800	**445**	4.50	**612**	12.00		
285	0.850	**450**	5.00	**712**	12.50		
290	0.900	**455**	5.50	**613**	13.00		

7 TERMINAL
1 Push-On 0.250 Tab (QC)
2 Screw 8-32 w/upturned lugs
3 Screw 8-32 (Bus Type)
L Solder Lug

8 ACTUATOR COLOR
1 Dull Metallic

9 FRONT PANEL HARDWARE
A No Outer Panel Hardware
B Hex Nut, Nickel Plated
C Hex Nut, Nickel Plated with Locking Ring
F Panel Dress Nut, Nickel Plated
G Panel Dress Nut, Nickel Plated with Locking Ring

10 LEGEND PLATE
A No Legend Plate
B On-Off Vertical
C On-Off Horizontal
D I-O Vertical
E I-O Horizontal

11 BUSHING COLOR
A Nickel Plated

12 AGENCY APPROVAL
A Without approvals
C UL & CUL Recognized

REV_CB_MS_0612

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