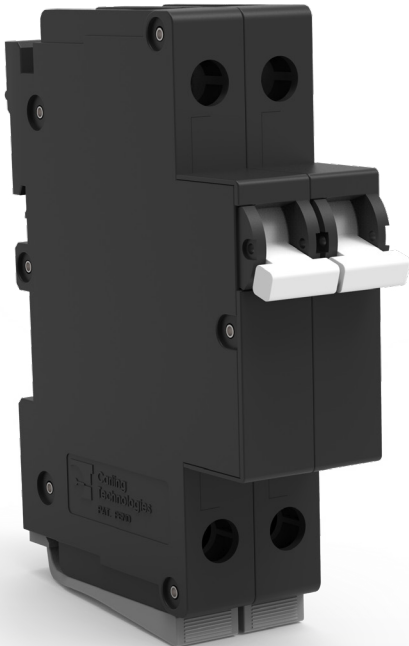
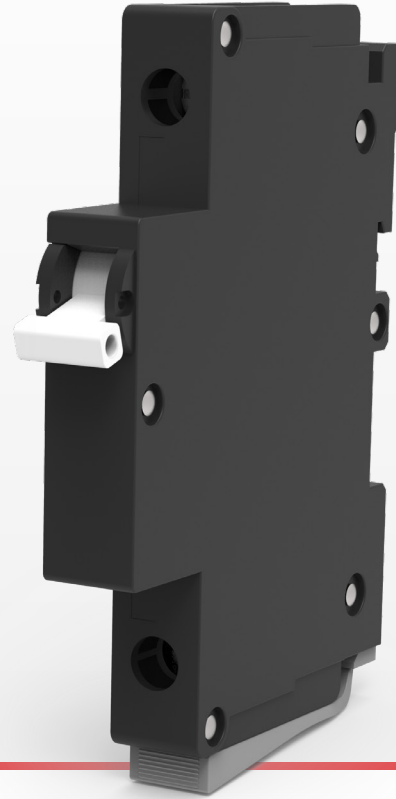


R-Series

Hydraulic Magnetic Circuit Breaker



13mm DIN Rail Mounted Circuit Breaker

The R-Series hydraulic-magnetic circuit breaker combines maximum protection with ease of use. With no hardware or front panel cutout requirements, DIN rail mounting is a breeze with an optional rail button and choice of 45 or 57 mm mounting panels. In addition, the narrow width of the R-Series saves valuable real estate while providing additional space for revenue-generating devices. Finally, recessed wire-ready terminals are touch-proof and shock-resistant, ensuring safety.

1-4
Poles

1-200
Amps

80
VDC Max

480
VAC Max

Typical Applications

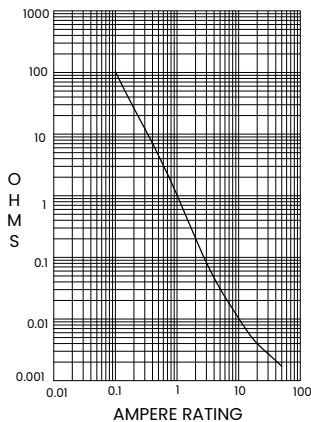
- Datacom/Telecom
- Renewable Energy
- Industrial Automation
- Railway

Tech Specs

Electrical

Maximum Voltage	AC: 240VAC (1-4 poles), 1 phase. 415VAC (2-4 poles), 3 phase. 480VAC (3 poles), 3 phase DC: 80VDC (1-4 poles)
Current Rating	1-63A 1-4 poles, 70-100A 2 poles parallel, 110-150A 3 poles parallel, 160-200A 4 poles parallel
Dielectric Strength	1500 VAC, 50/60Hz for 1 minute between all electrically isolated terminals of main circuit and between terminals of main circuit and auxiliary circuit.
Insulation Resistance	Minimum of 100 Megohms@500VDC
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 (%)
1 - 5.0	15%
5.1-20.0	25%
20.1 - 63.0	35%

Endurance	10000 cycles, UL489A (1000 ON-OFF operations @ 6 per minute at rated voltage and current and 9000 mechanical operations), TUV and CCC (1500 ON-OFF operations @ 6 per minute at rated voltage and current and 8500 mechanical operations).
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Mechanical

Trip Free	All R-Series circuit breakers will trip on overload, even when actuator is forcibly held in the ON position.
Trip Indication	The operating actuator moves positively to the middle position when an overload causes the breaker to trip. The breaker needs to be placed in the OFF position and can then be reset.

Physical

Number of Poles	1-4 poles
Termination	Cage terminal stranded conductor: Small Cage Terminal 1-4 pole series Max 63A, Wire size 25mm ² [4 AWG], torque: 2.26Nm [20 In-lbs] Medium Cage Terminal 2 pole parallel Max 100A, Wire size 55mm ² [1/0 AWG], torque: 6Nm [53.1 In-lbs] Large Cage Terminal 3 & 4 pole parallel Max 200A, Wire size 85mm ² [3/0 AWG], torque: 15Nm [132.76 In-lbs]
Mounting	DIN Rail. DIN lock is located at bottom of circuit breaker (load terminal side) when mounted vertically.
Weight	108g per pole
Width	13mm maximum per pole.

Environmental

Designed 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, Test Condition "I". Instantaneous and ultrashort curves tested @ 90% of rated current
Vibration	Standard IEC60068-2-6 (2G sinusoidal wave). Table C.1, 10Hz to 150Hz, 20m/s ² , 20 sweep cycles in each axis. Ultrashort curves tested @ 90% 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.

Approvals

UL 489A, UL 1077, CSA 22.2 No. 235, TUV IEC/EN 60947-2, CCC GB14048.2

Tech Specs

Table A: Component Supplementary Protectors

Electrical Ratings										
Circuit Configuration	Voltage				Current (Amps)	Short Circuit Capacity (Amps) Without Backup Fuse				Application Codes
	Max Rating	Frequency	Phase	Poles	Full Load	UL 489A	UL 1077 / CSA	TUV / CCC		UL 1077 / CSA
								Icu	Ics	
Series	80 ¹	DC	—	1 - 4	1 - 63	10,000	—	10,000	5,000	—
	240	50/60	1		1 - 30	—	3,000	3,000	3,000	TC1, OL0, U3
	415		3	2 - 4	1 - 50		—			
	480			3	1 - 30		3,000	—	—	
	80 ^{1,2}	DC	—	2	70 - 100	10,000	—	10,000	5,000	—
				3	110 - 150					
				4	160 - 200					

Notes:

1. Polarity Sensitive
2. Parallel Pole Construction

Ordering Scheme Handle

Sample Part Number **R S 1 - B 1 - 24-620 - 1 1 - D E**

Selection 1 2 3 4 5 6 7 8 9 10 11

1. SERIES ¹

R R-Series Circuit Breaker

2. MOUNTING PANEL

S 45mm Mounting Panel
T 57mm Mounting Panel

3. POLES

1 One
2 Two
3 Three
4 Four

4. CIRCUIT

B Series Trip (Current)

5. RAIL BUTTON ²

1 With Rail Button
2 Without Rail Button

6. FREQUENCY & DELAY

11 DC Ultra Short
12 DC Short
14 DC Medium
16 DC Long
21 50/60 Hz Ultra Short
22 50/60 Hz Short
24 50/60 Hz Medium
26 50/60 Hz Long

7. CURRENT RATING (AMPERES)

CODE	AMPERES			
410	1.00	460 6.00	618 18.00	640 40.00
420	2.00	470 7.00	620 20.00	645 45.00
425	2.50	480 8.00	622 22.00	650 50.00
430	3.00	490 9.00	624 24.00	655 55.00
435	3.50	610 10.00	625 25.00	660 60.00
440	4.00	612 12.00	630 30.00	663 63.00
445	4.50	615 15.00	632 32.00	
450	5.00	616 16.00	635 35.00	

8. TERMINAL

1 Screw Terminal

9. ACTUATOR COLOR ³

1 White

10. MAXIMUM APPLICATION RATING

D 240V AC
J 415V AC
H 480V AC
M 80V DC

11. AGENCY APPROVALS ⁴

A Without Approvals
C UL Recognized, CSA Accepted
E TUV Certified, UL Recognized, CSA Accepted, CCC
U TUV Certified, CCC
T UL 489A Listed, CCC
7 UL 489A Listed, TUV Certified, CCC

Notes:

- Mid-Trip Handle type breaker, one per pole. Handle moves to mid-position only upon electrical trip of the breaker. When the handle is in the middle position, need to move handle to the "OFF" position, then the handle can be moved to the "ON" position.
- Rail button locations are only on the most left and right of the product for multi-pole breakers.
- ON/O-I/OFF markings are indicated on half shell, no marking will be on handle.
- Agency code C is only available with 240V AC 30 Amps max, 480V AC 30 Amps max. Agency code E is only available with 240V AC 30 Amps max. Agency code U is available with 240V AC, 415V AC 50 Amps max, 80V DC (Polarity Sensitive) 63 Amps max. Agency codes T and 7 are only available with 80VDC 63 Amps max. Polarity Sensitive.

 [Configure Complete Part Number >](#)

Ordering Scheme

Handle - Parallel Pole

Sample Part Number **R S 2 - P 1 - D4 - 670 - 1 1 - M T**

Selection 1 2 3 4 5 6 7 8 9 10 11

1. SERIES ¹

R R-Series Circuit Breaker

2. MOUNTING PANEL

S 45mm Mounting Panel
T 57mm Mounting Panel

3. POLES

2 Two
3 Three
4 Four

4. CIRCUIT ²

P Series Trip (Parallel Pole)

5. RAIL BUTTON ³

1 With Rail Button
2 Without Rail Button

6. FREQUENCY & DELAY

D1 DC Ultra Short
D2 DC Short
D4 DC Medium
D6 DC Long

7. CURRENT RATING (AMPERES) ⁴

CODE		AMPERES	
670	70.00	811	110.00
680	80.00	812	120.00
690	90.00	912	125.00
810	100.00	813	130.00
		814	140.00
		815	150.00
		816	160.00
		817	170.00
		818	180.00
		819	190.00
		820	200.00

8. TERMINAL

1 Screw Terminal M5
2 Screw Terminal with Busbar & Cage Terminal

9. ACTUATOR COLOR ⁵

1 White

10. MAXIMUM APPLICATION RATING ⁶

M 80V DC

11. AGENCY APPROVALS

A Without Approvals
T UL 489A Listed, CCC
7 UL 489A Listed, TUV Certified, CCC

Notes:

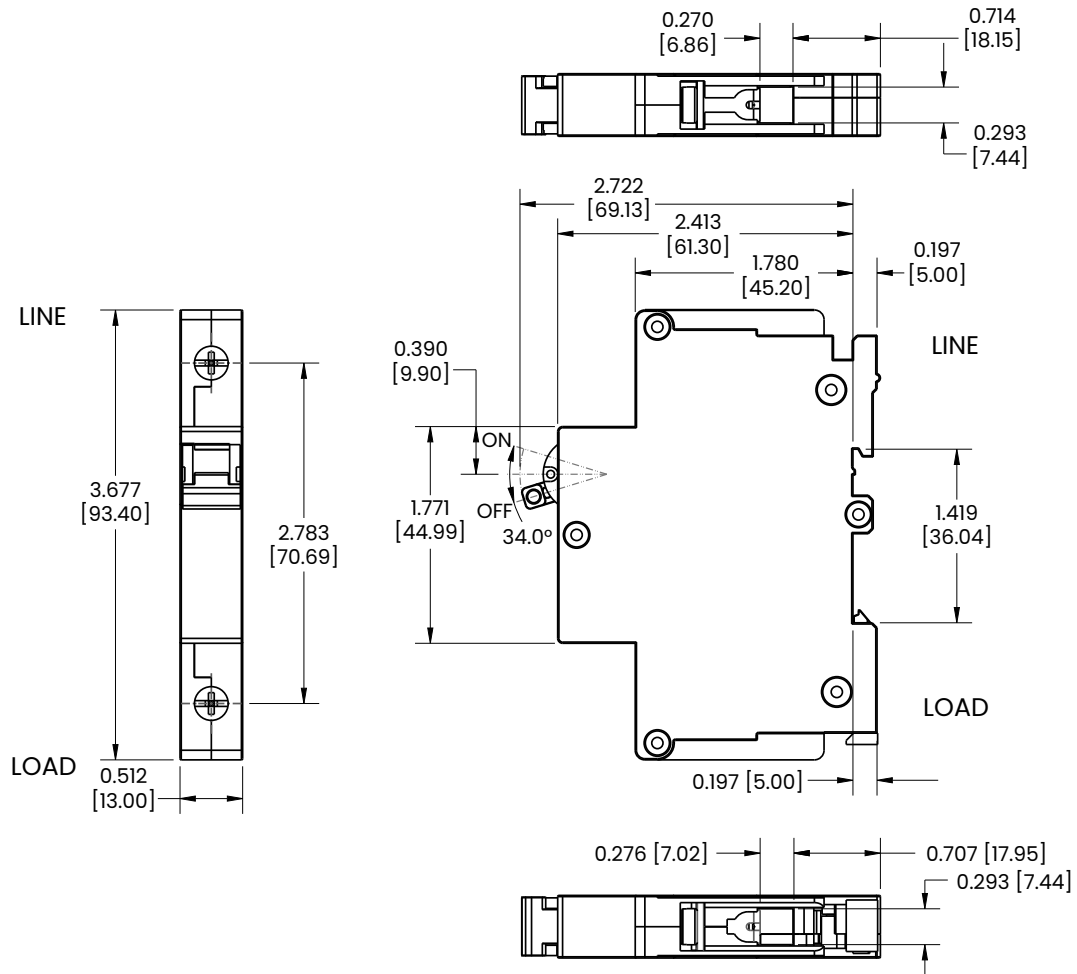
- Mid-Trip Handle type breaker, one per pole. Handle moves to mid-position only upon electrical trip of the breaker. When the handle is in the middle position, need to move handle to the "OFF" position, then the handle can be moved to the "ON" position.
- Line and Load terminals must be connected to a copper busbar having a minimum cross section of 0.078 square inches
- Rail button locations are only on the most left and right of the product for multi-pole breakers.
- Rated current code of 670-820 is only circuit "P"
Rated current 70-100 Amps must be two poles in parallel.
Rated current 110-150 Amps must be three poles in parallel.
Rated current 160-200 Amps must be four poles in parallel.
Contact Factory for special current levels.
- ON/O-I/OFF markings are indicated on half shell, no marking will be on handle
- Polarity Sensitive

 [Configure Complete Part Number >](#)

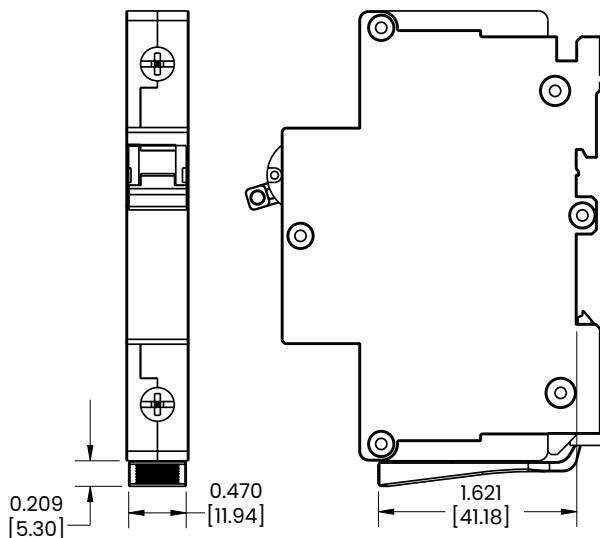
Dimensional Specs

inches [millimeters]

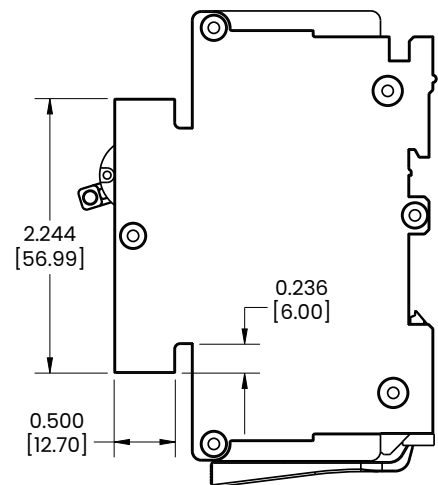
1 POLE WITHOUT RAIL BUTTON



1 POLE WTH RAIL WAY LOCK OPEN BUTTON



OPTIONAL 57MM MOUNTING PANEL



Notes:

- 1 Tolerance $\pm .010$ [0.25] unless otherwise specified
- 2 Angles $\pm 1^\circ$

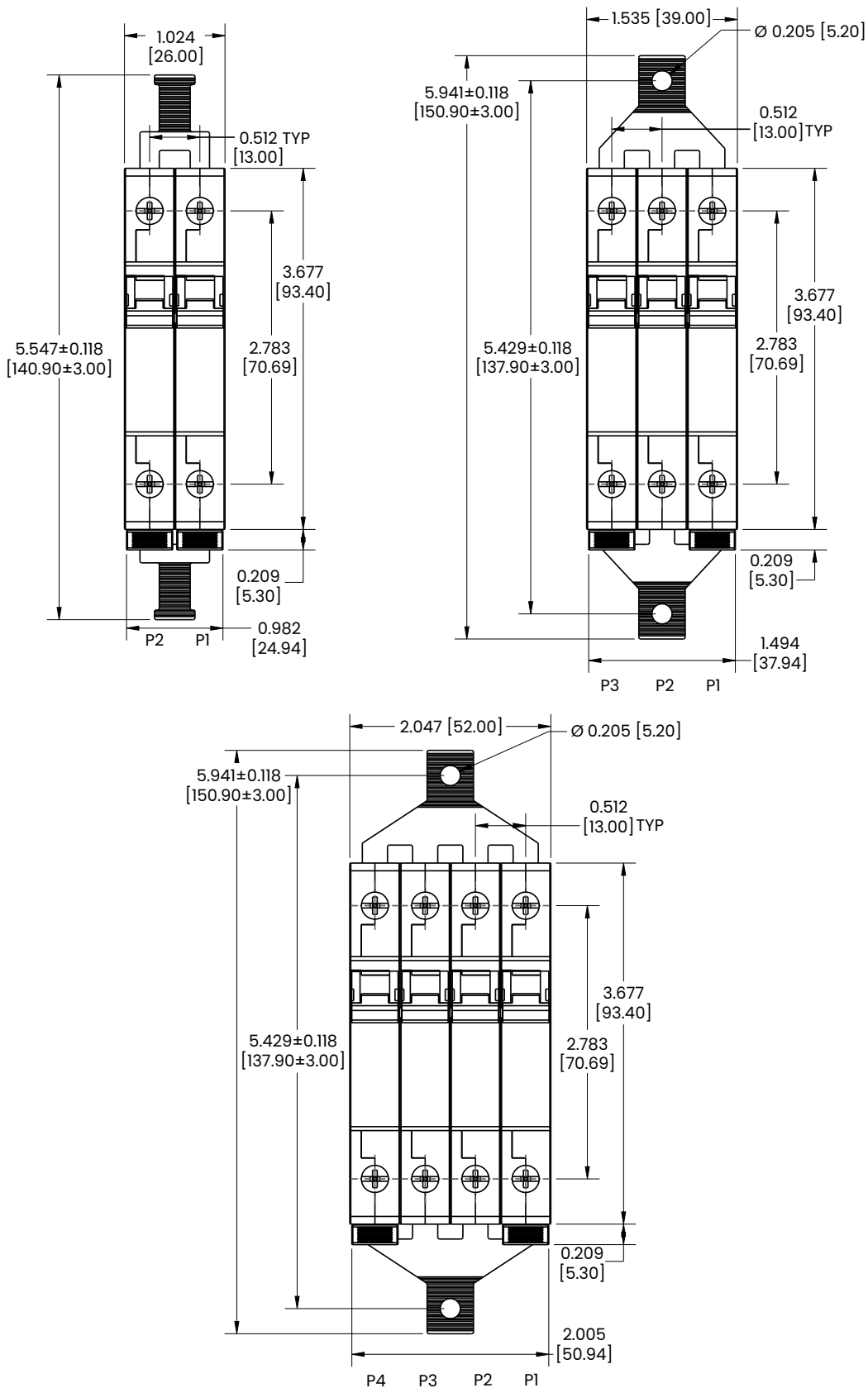
CLA-8143 Rev B

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

Dimensional Specs

inches [millimeters]

MULTIPLE POLES WITH RAIL WAY LOCK OPEN BUTTON AND BUS BAR



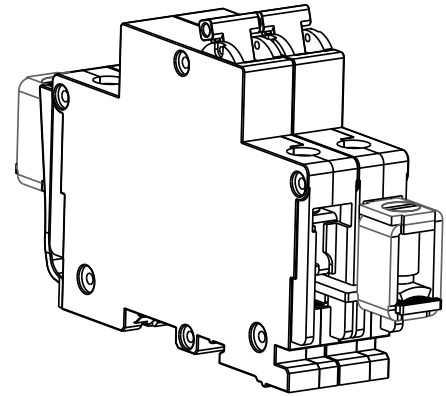
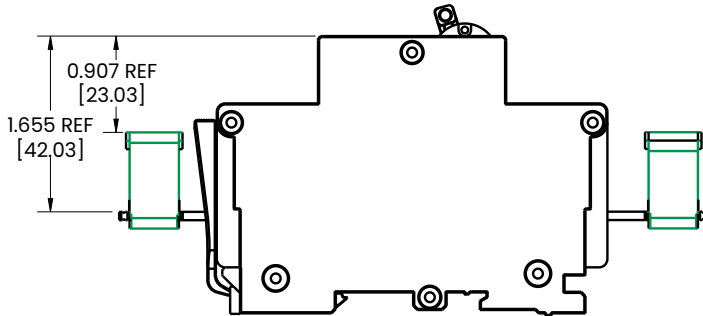
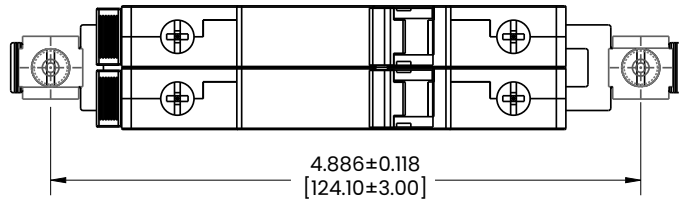
Notes:

- 1 Tolerance ± .010 [0.25] unless otherwise specified
- 2 Angles ± 1°

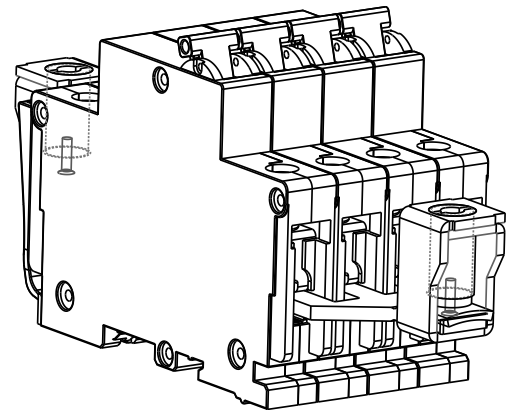
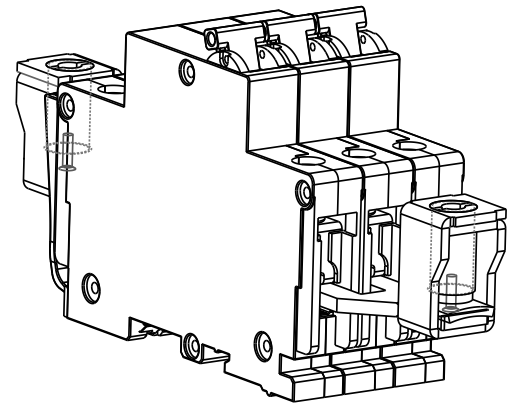
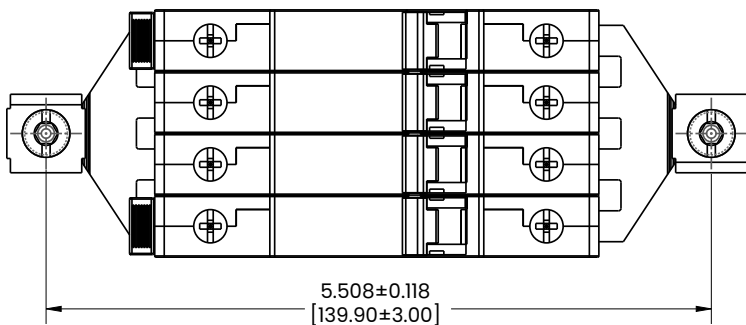
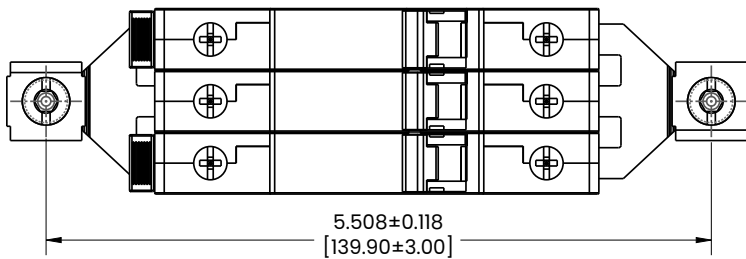
Dimensional Specs

inches [millimeters]

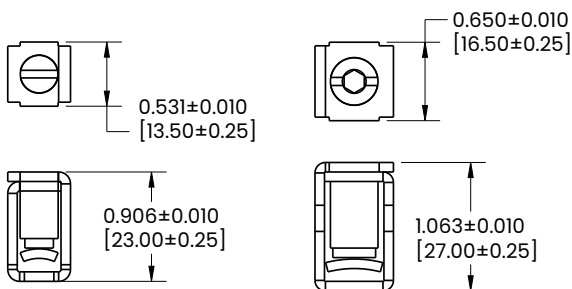
2 POLE CAGE TERMINAL MOUNTING



3 AND 4 POLE CAGE TERMINAL MOUNTING



CAGE TERMINAL FOR PARALLEL POLES



RCT-01
FOR 2 POLE BUSBAR

RCT-02
FOR 3 OR 4 POLE BUSBAR

CAGE TERMINAL

TABLE A
TIGHTENING TORQUE SPECIFICATION

APPLICATION	CAGE TERMINAL	WIRE RANGE AWG	TOQUE IN-LBS (Nm)
1-4 POLE SERIES	SMALL	4 AWG	20 (2.26)
2 POLE PARALLEL	MEDIUM	1/0 AWG	53.1 (6)
3&4 POLE PARALLEL	LARGE	3/0 AWG	132.76 (15)

Time Delay

R-SERIES TIME DELAY VALUES											
TRIP TIME (SECONDS)	Delay	PERCENT OF RATED CURRENT									
		100%	125%	135%	150%	200%	400%	600%	800%	1000%	1200%
11, D1	No Trip		.013 - .125		.010 - .070	.008 - .032	.006 - .020	.005 - .020	.004 - .020	.004 - .020	.004 - .020
12, D2			.500 - 6.50		.300 - 3.00	.130 - 1.20	.031 - .220	.011 - .120	.004 - .090	.004 - .060	.004 - .100
14, D4			2.00 - 60.0		1.20 - 40.0	.600 - 20.0	.150 - 3.00	.030 - 1.30	.004 - .600	.004 - .100	.004 - 1.00
16, D6			45.0 - 345		20.0 - 150	9.00 - 60.0	1.40 - 11.40	.150 - 5.80	.009 - 3.70	.005 - 1.70	.005 - .500
21			.014 - .150	---	.011 - .095	.008 - .055	.006 - .035	.005 - .027	.005 - .021	.004 - .018	.004 - .017
22			.700 - 12.0		.350 - 4.00	.130 - 1.30	.027 - .220	.008 - .130	.004 - .090	.004 - .045	.004 - .040
24			10.0 - 160		6.00 - 60.0	2.20 - 20.0	.300 - 3.00	.005 - 1.30	.007 - .500	.005 - .060	.005 - .040
26			50.0 - 700		32.0 - 350	10.0 - 90.0	1.50 - 15.0	.500 - 700	.020 - 3.00	.006 - 2.00	.005 - 1.00

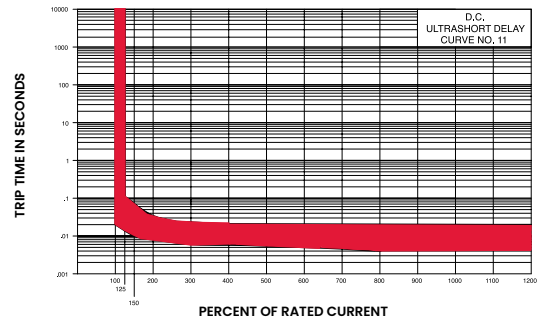
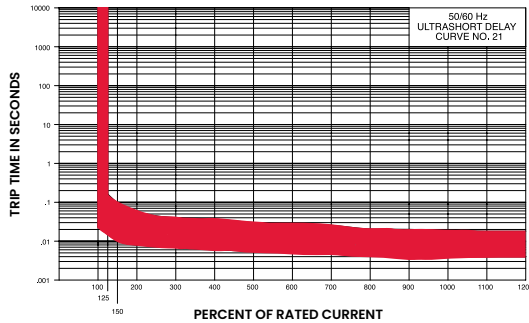
Notes:

- 1 Delay Curves 11,12,14,16,21,22,24,26: Breakers to hold 100% and must trip at 125% of rated current and greater within the time limit shown in this curve.
- 2 All Curves: Curve data shown represents breaker response at ambient temperature of 77°F (25°C) with no preloading. Breakers are mounted in standard wall-mount position.
- 3 Current ratings, the minimum inrush pulse tolerance handling capability is 12 times the rated current. These values are based on a 60 Hz 1/2 cycle, 8.33 ms pulse.

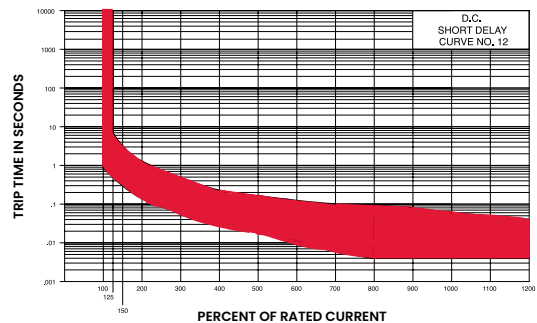
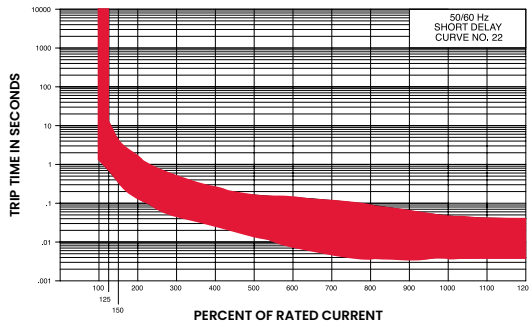
AC

DC

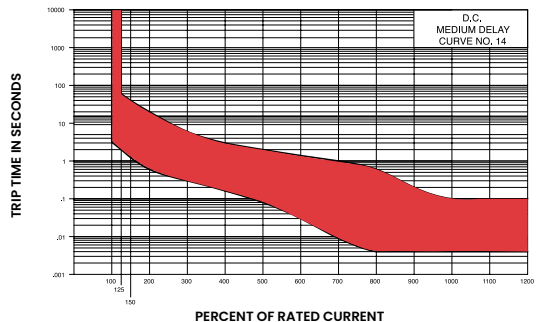
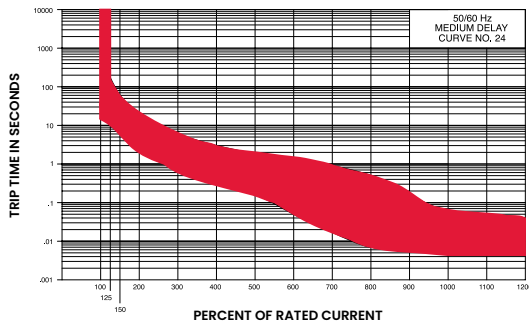
Ultrashort



Short



Medium



Long

