G-Series

DIN-RAIL CIRCUIT BREAKER

The G-Series hydraulic-magnetic circuit breaker insures maximum protection by integrating wiping contacts for longevity; a common trip linkage between poles; a unique terminal bus connection system; and optional integrated auxiliary contacts. It is also suitable for reverse feed and provides finger safe terminals. This DIN rail mount circuit breaker accommodates either a 35mm x 7.5mm, or a 35mm x 15mm symmetrical din rails.

G-Series DIN Rail Circuit Breaker:
UL 489 Listed: 1 to 3 poles; 1-50 Amps; 125 VDC, 240 VAC;
UL Recognized: 1 to 4 poles; 0.1-63 Amps; 80 VDC, 240 VAC/480VAC; cUL, TUV & CCC.

Eco-Friendly

Resources:

Download 3D CAD Files

IGS > STP >

Product Highlights:

- DIN Rail Mounting
- UL 489 Listed
- UL Recognized, cUL, TUV & CCC
- Wiping Contacts
- Common Trip Linkage Between Poles

Typical Applications:

- Renewable Energy
- Telecom
- Control Panels
- Industrial Automation Controls

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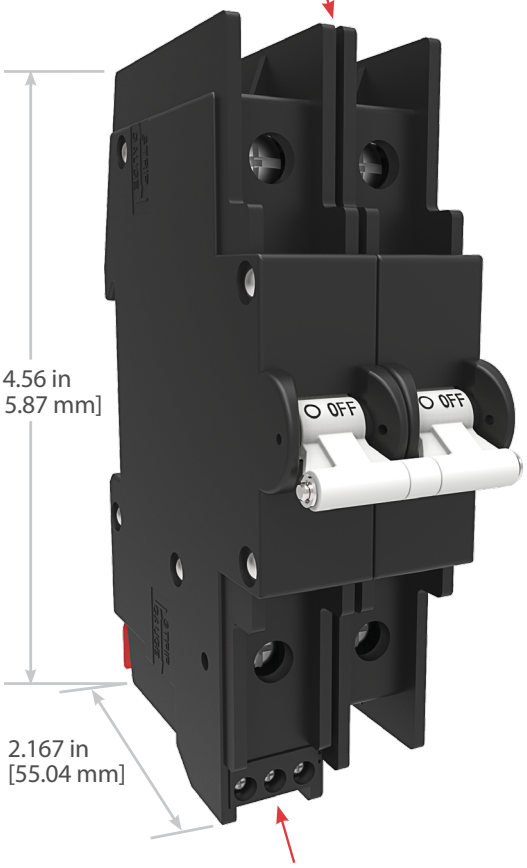
G-Series
DESIGN FEATURES

TERMINAL BARRIERS
Meet UL 489 Spacing Requirements



OPTIONAL AUXILIARY SWITCH (PENDING*)
Provides Breaker Status Indication

DIN RAIL MOUNTING
Snap on Back Panel Rail Mounting for either 35 x 7.5 mm or 35 x 15 mm

DIN RAIL LOCK
Secures Circuit Breaker to the DIN Rail

*Pending on UL489 version - available on UL1077 version

Electrical Tables

Table A: Lists UL Recognized, CSA Accepted and TUV Certified capabilities as a Component Supplementary Protector.

G-SERIES TABLE A: COMPONENT SUPPLEMENTARY PROTECTORS									
Circuit Configuration	Voltage				Current Rating	Short Circuit Capacity (Amps)			
	Max Rating	Frequency	Phase	Minimum Poles	Full Load Amps	Without Backup Fuse		Application Codes	
						UL/CSA	TUV	UL	CSA
Series	80	DC	---	1	.1 - 63	3000	1500	TC1, OL1, U1	TC1, OL1, U1
	240	50 / 60	1	1	.1 - 63	3000	1500	TC1, OL1, U1	TC1, OL1, U1
	240	50 / 60	1	2	.1 - 63	3000	1500	TC1, OL1, U1	TC1, OL1, U1
	480	50 / 60	3	3	.1 - 63	1500	415V, 1000	TC1, OL1, U1	TC1, OL1, U1

Table B: Lists UL Listed (489) configuration and performance capabilities.

G-SERIES TABLE B: UL 489 LISTED BRANCH CIRCUIT BREAKERS						
Circuit Configuration	Voltage				Current Rating	Interrupting Capacity (Amps RMS)
	Max Rating	Frequency	Phase	Poles	Full Load Amps	
Series	80	DC	---	1	1 - 50	5000
	125	DC	---	2	1 - 50	5000
	120	50 / 60	1	1	1 - 50	5000
	120 / 240	50 / 60	1	1 - 3[1]	1 - 50	5000
	240	50 / 60	1	1	1 - 25	5000

1 One pole out of the three poles must be a neutral break.

Electrical

Maximum Voltage — AC: 240VAC (single pole), 480VAC (3 poles, additional pole shall be dedicated for neutral break) DC: 80VDC (single pole & multipole)

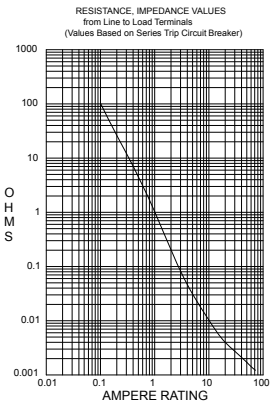
Current Rating — 0.1 – 63A. Other ratings available, see Ordering Scheme.

Auxiliary Switch Rating — (optional) Integrated, load side. SPST, 3A – 125VAC, 2A – 30VDC. Auxiliary switch senses the on & off position of circuit breaker handle, as well as contact arm position. Switch connections are screw terminals.

Insulation Resistance — Minimum of 100 Megohms at 500 VDC

Dielectric Strength — UL, CSA: 1960 V 50/60 Hz for one minute between all electrically isolated terminals. G-Series circuit breakers comply with the 8mm spacing and 3750V 50/60 Hz dielectric requirements from hazardous voltage to operator accessible surfaces, between adjacent poles and from main circuits to auxiliary circuits per Publications EN 60950 and VDE 0805.

Resistance, Impedance — Values from Line to Load Terminal - based on series trip circuit breaker.



CURRENT (AMPS)	TOLERANCE (%)
0.1 - 5.0	15%
5.1 - 20.0	25%
20.1 - 63.0	35%

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

Mechanical

Endurance — 10,000 ON-OFF operations @ 6 per minute; with rated current & voltage.

Trip Free — All G-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 OFF position when an overload causes the breaker to trip. With mid-trip, the handle moves to the mid position on electrical trip of the circuit breaker. With mid trip handle with alarm switch, handle moves to the mid position and the alarm switch actuates when the circuit breaker is electrically tripped.

Physical

Number of Poles — 1 pole ≤ 63A, 2 poles ≤ 63A per pole

Weight — Approx.172 grams/pole (4.13 oz).

Standard Colors — Housing: Black

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 — Withstands 0.060" excursion from 10-55 Hz & 10 Gs 55-500 Hz, @ rated current per Method 204C, Test Cond. A. Instantaneous & 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

G	A	1	–	B	0	–	24	–	620	–	1	1	–	D	C
1 Series	*2 Actuator*	*3 Poles*		*4 Circuit*	*5 Aux/Alarm Switch*		*6 Frequency & Delay*		*7 Current Rating*		*8 Terminal*	*9 Actuator Color & Legend*		*10 Rating*	*11 Agency Approval*

1 SERIES
G

2 ACTUATOR
A Handle, one per pole
S Mid-Trip Handle, one per pole

3 POLES
1 One
2 Two
3 Three
4 Four

4 CIRCUIT
A[1] Switch Only (no coil)
B Series Trip (current)

5 AUXILIARY SWITCH[3]
0 without Aux Switch
1 S.P.D.T., Screw Terminal
3 S.P.D.T. Screw Terminal (Gold Contacts)
5 Plug-in Terminal
6 Plug-in Terminal (Gold Contacts)

6 FREQUENCY & DELAY
03 Switch Only
10 DC, Instantaneous
11 DC, Ultra Short
12 DC, Short
14 DC, Medium
16 DC, Long
20 50/60 Hz Instantaneous
21 50/60 Ultra Short
22 50/60 Hz Short
24 50/60 Hz Medium
26 50/60 Hz Long
42 50/60 Hz Hi-Inrush Short[2]
44 50/60 Hz Hi-Inrush Medium
46 50/60 Hz Hi-Inrush Long
52 DC Hi-Inrush Short
54 DC Hi-Inrush Medium
56 DC Hi-Inrush Long

6 CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
210	0.100	**410**	1.000	**450**	5.000	**613**	13.000
220	0.200	**512**	1.250	**455**	5.500	**614**	14.000
225	0.250	**415**	1.500	**460**	6.000	**615**	15.000
230	0.300	**517**	1.750	**465**	6.500	**616**	16.000
235	0.350	**410**	1.000	**470**	7.000	**617**	17.000
240	0.400	**512**	1.250	**475**	7.500	**618**	18.000
245	0.450	**415**	1.500	**480**	8.000	**620**	20.000
250	0.500	**517**	1.750	**485**	8.500	**622**	22.000
255	0.550	**420**	2.000	**490**	9.000	**624**	24.000
260	0.600	**522**	2.250	**495**	9.500	**625**	25.000
265	0.650	**425**	2.500	**610**	10.000	**630**	30.000
270	0.700	**527**	2.750	**710**	10.500	**635**	35.000
275	0.750	**430**	3.000	**611**	11.000	**640**	40.000
280	0.800	**435**	3.500	**711**	11.500	**650**	50.000
285	0.850	**440**	4.000	**612**	12.000		
290	0.900	**445**	4.500	**712**	12.500		

8 TERMINAL
1 Screw Terminal

9 ACTUATOR COLOR & LEGEND

Actuator Color	I-O	ON-OFF	Dual	Legend Color
White	**A**	**B**	**1**	Black
Black	**C**	**D**	**2**	White
Red	**F**	**G**	**3**	White
Green	**H**	**J**	**4**	White
Blue	**K**	**L**	**5**	White
Yellow	**M**	**N**	**6**	Black
Gray	**P**	**Q**	**7**	Black
Orange	**R**	**S**	**8**	Black

10 APPLICATION RATING
B 125 VDC[5]
D 240 VAC
H 480 VAC[4]
M 80 VDC

11 AGENCY APPROVAL
A Without Approvals
C UL Recognized
E TUV Certified, UL Recognized

Notes:
1 Switch only circuit only available when tied to a protected pole (Circuit code B)
- for .2 to 30 amps select current code 630
- for 31 to 50 amps select current code 650
- for 51 to 63 amps select current code 663
- Use delay 03 for all switch only poles

2 Hi Inrush Delays limited to 50A max
3 On multi-pole breakers one auxiliary switch is supplied, mounted in the extreme left pole when viewed from front of panel.
4 480 VAC rating requires 3 or 4 pole break 3Φ and 2 pole break 1Φ
5 This construction is polarity sensitive when constructed as a single pole unit, 125 VDC is only available without agency approvals

G	A	1	–	B	0	–	24	–	620	–	1	1	–	D	G
1 Series	*2 Actuator*	*3 Poles*		*4 Circuit*	*5 Aux/Alarm Switch*		*6 Frequency & Delay*		*7 Current Rating*		*8 Terminal*	*9 Actuator Color & Legend*		*10 Rating*	*11 Agency Approval*

1 SERIES
G

2 ACTUATOR
A Handle, one per pole
S[1] Mid-Trip Handle, one per pole

3 POLES
1 One
2 Two
3 Three

4 CIRCUIT
B Series Trip (current)

5 AUXILIARY SWITCH[3]
0 without Aux Switch
1 S.P.D.T., Screw Terminal *(Pending)*
3 S.P.D.T. Screw Terminal (Gold Contacts) *(Pending)*
5 Plug-in Terminal *(Pending)*
6 Plug-in Terminal (Gold Contacts) *(Pending)*

6 FREQUENCY & DELAY
11 DC, Ultra Short
12 DC, Short
14 DC, Medium
16 DC, Long
21 50/60 Ultra Short
22 50/60 Hz Short
24 50/60 Hz Medium
26 50/60 Hz Long
42 50/60 Hz Hi-Inrush Short[4]
44 50/60 Hz Hi-Inrush Medium[4]
46 50/60 Hz Hi-Inrush Long[4]
52 DC Hi-Inrush Short[4]
54 DC Hi-Inrush Medium[4]
56 DC Hi-Inrush Long[4]

6 CURRENT RATING (AMPERES)

CODE	AMPERES	CODE	AMPERES	CODE	AMPERES	CODE	AMPERES
410	1.000	**450**	5.000	**611**	11.000	**624**	24.000
512	1.250	**455**	5.500	**711**	11.500	**625**	25.000
415	1.500	**460**	6.000	**612**	12.000	**630**	30.000
517	1.750	**465**	6.500	**712**	12.500	**635**	35.000
420	2.000	**470**	7.000	**613**	13.000	**640**	40.000
522	2.250	**475**	7.500	**614**	14.000	**650**	50.000
425	2.500	**480**	8.000	**615**	15.000		
527	2.750	**485**	8.500	**616**	16.000		
430	3.000	**490**	9.000	**617**	17.000		
435	3.500	**495**	9.500	**618**	18.000		
440	4.000	**610**	10.000	**620**	20.000		
445	4.500	**710**	10.500	**622**	22.000		

8 TERMINAL
1 Screw Terminal

9 ACTUATOR COLOR & LEGEND

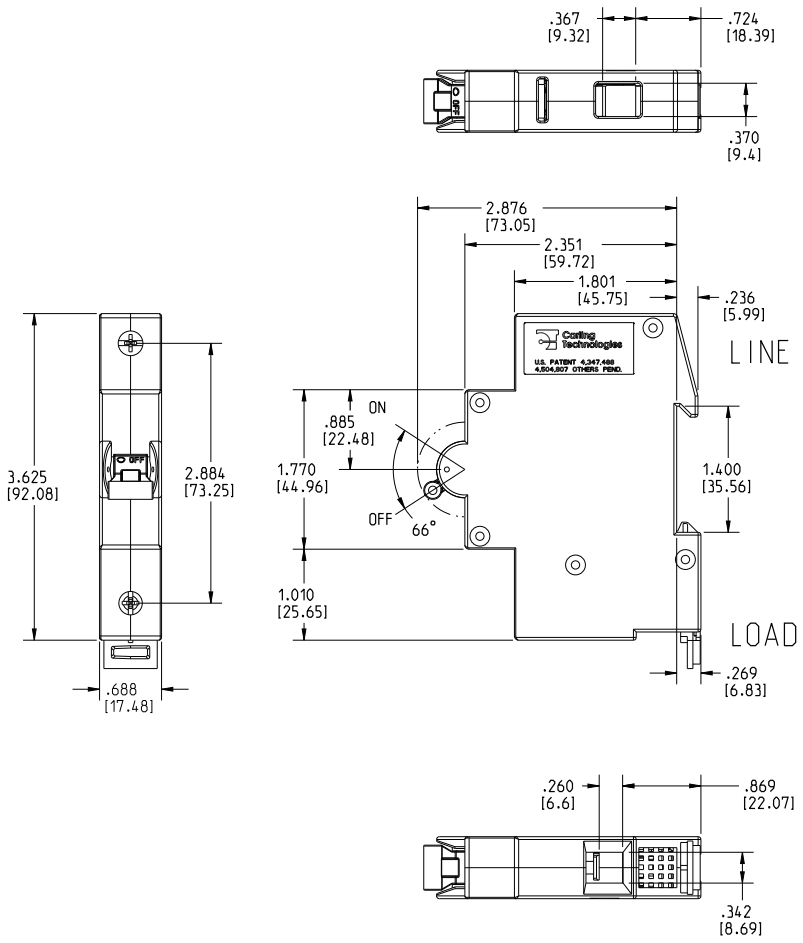
Actuator Color	ON-OFF	Dual	Legend Color
White	**B**	**1**	Black
Black	**D**	**2**	White
Red	**G**	**3**	White
Green	**J**	**4**	White
Blue	**L**	**5**	White
Yellow	**N**	**6**	Black
Gray	**Q**	**7**	Black
Orange	**S**	**8**	Black

10 APPLICATION RATING
B 125 VDC[5]
C 120/240 VAC[6]
D 240 VAC[7]
K 120 VAC[8]
M 80 VDC[9]

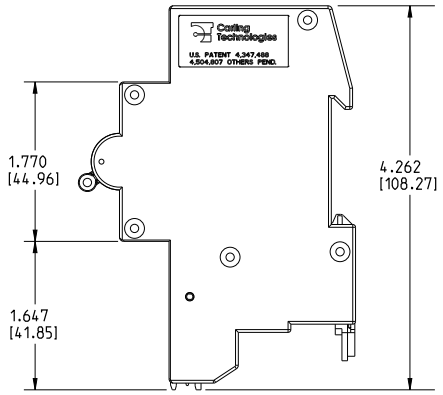
11 AGENCY APPROVAL
G UL489 Listed

Notes:
1 Mid-trip Handle(s) available at 1 pole unit and 2 pole unit only.
2 Third pole of a 3 pole unit is switch only pole.
3 On multi-pole breakers one auxiliary switch is supplied, mounted in the extreme left pole when viewed from front of panel. *(Pending)*
4 Hi Inrush Delays limited to 50A maximum.
5 125VDC for 2 pole unit only.
6 120/240VAC for 2 pole and 3 pole unit only. Limited to 50A maximum, and third pole of a 3-pole unit is switch only pole.
7 240VAC for 1 pole unit only, limited to 25A maximum
8 120VAC for 1 pole unit only, limited to 50A maximum.
9 80VDC for 1 pole unit only

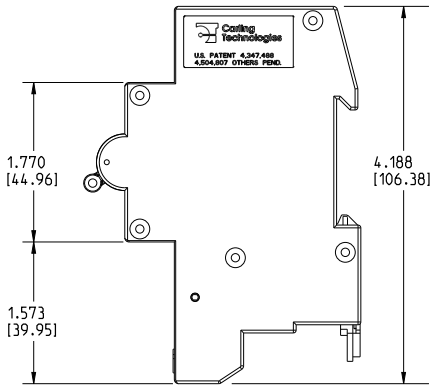
1 POLE WITHOUT AUXILIARY SWITCH



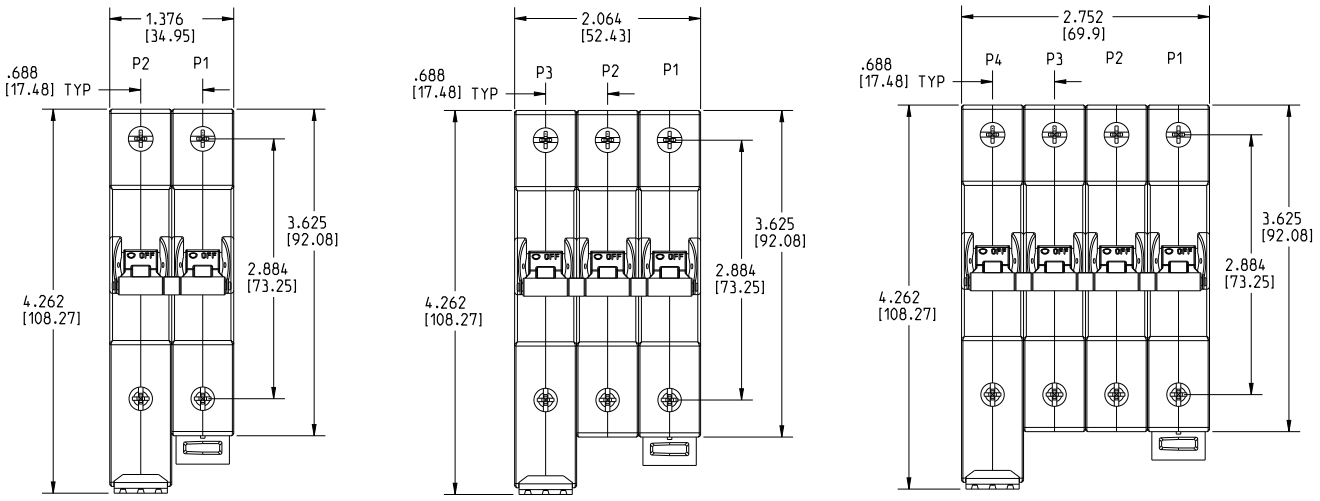
1 POLE WITH AUXILIARY SWITCH (PLUG-IN TERMINAL BLOCK)



1 POLE WITH AUXILIARY SWITCH (SCREW TERMINAL BLOCK)

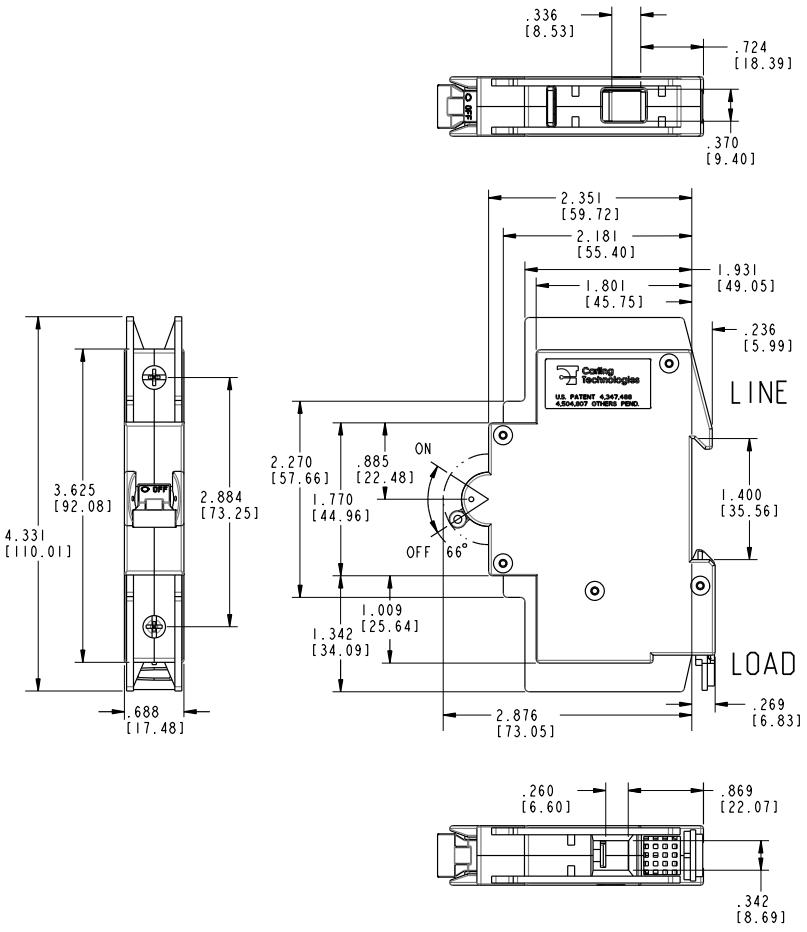


MULTIPLE POLES WITH AUXILIARY SWITCH (PLUG-IN TERMINAL BLOCK)

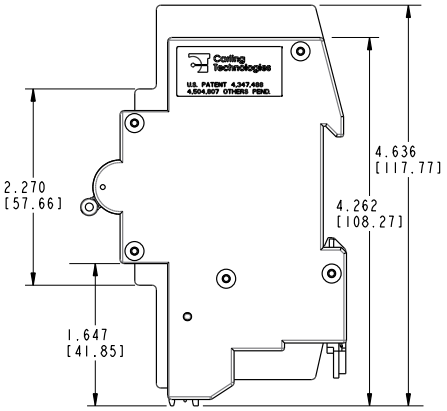


Notes:
1 All dimensions are in inches [millimeters].
2 Tolerance ±.020 [.51] unless otherwise specified.

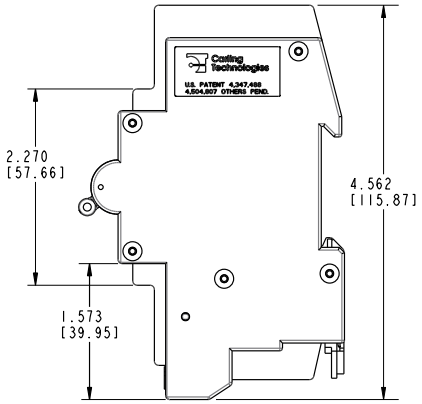
1 POLE WITHOUT AUXILIARY SWITCH



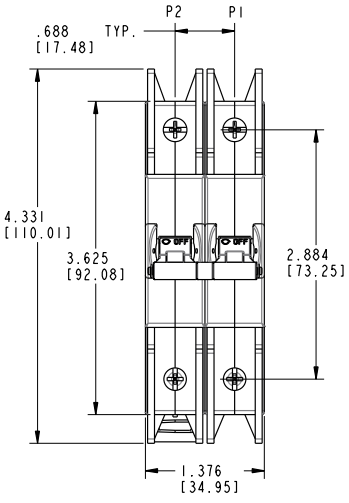
1 POLE WITH AUXILIARY SWITCH *(PENDING)* (PLUG-IN TERMINAL BLOCK)

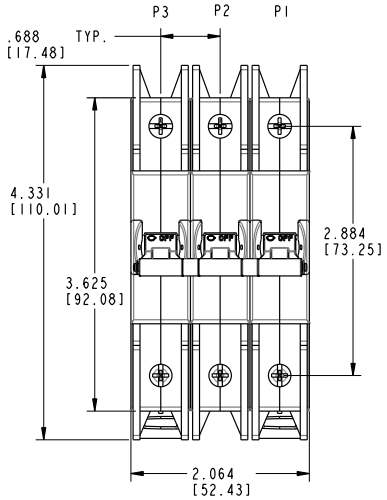


1 POLE WITH AUXILIARY SWITCH *(PENDING)* (SCREW TERMINAL BLOCK)



MULTIPLE POLES WITH AUXILIARY SWITCH *(PENDING)* (PLUG-IN TERMINAL BLOCK)





Notes:
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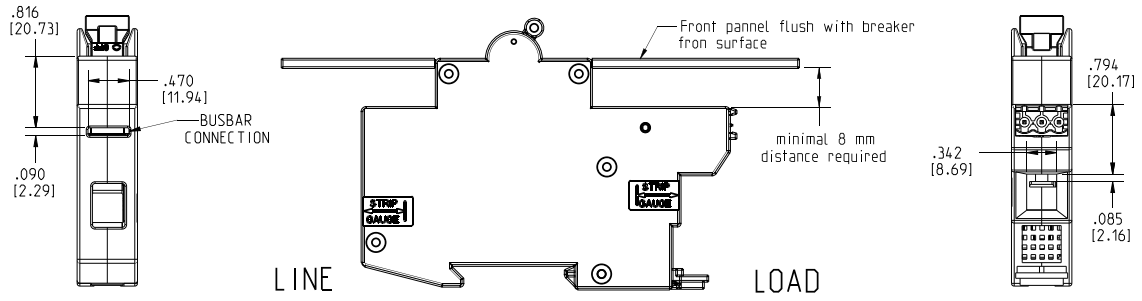
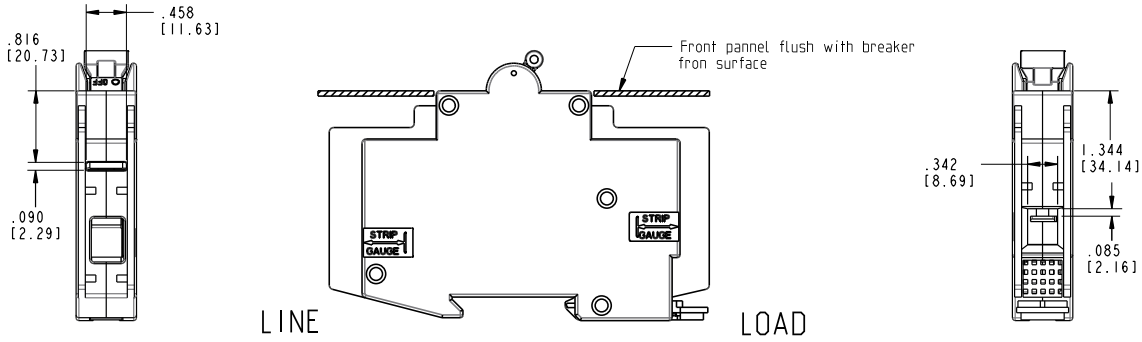
UL RECOGNIZED



UL489



Notes:
1 All dimensions are in inches [millimeters].
2 Tolerance ±.020 [.51] unless otherwise specified.

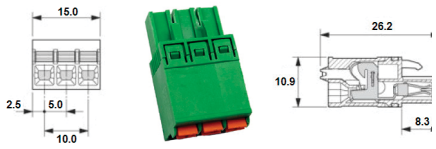
Auxiliary contact with internal connector

Internal connector

Advantages:
- Pre-wiring is possible
- Easy interchangeable
- Time saving solution
- Various connection methods possible
- Many different plugs available

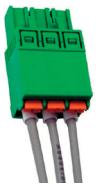
Example plugs:

Spring clamp terminals

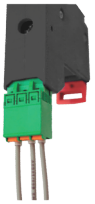


Dimensions in mm

Screw terminals



Screw terminals 45° angle



Wire size solid wire	0.2 - 1.5 mm
Wire size stranded wire	0.2 - 2.5 mm^2
Wire size stranded wire with ferrule	0.25 - 1.5 mm^2
Wire stripping length	10 mm

The auxiliary contact with internal connector can be used with Phoenix Combicon plugs.
Phoenix item number internal connector: 1753453.
The circuit breaker is standard delivered without plugs.

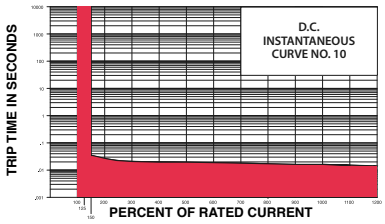
Time Delay Values

G-SERIES TIME DELAY VALUES											
	PERCENT OF RATE CURRENT										
	Delay	100%	125%	135%	150%	200%	400%	600%	800%	1000%	1200%
Trip Time (Seconds)	10	No Trip	May Trip	---	.032 MAX	.024 MAX	.020 MAX	.018 MAX	.016 MAX	.015 MAX	.013 MAX
	11	No Trip	.013 - .125	---	.010 - .070	.008 - .032	.006 - .020	.005 - .020	.004 - .020	.004 - .020	.004 - .020
	12	No Trip	.500 - 6.50	---	.300 - 3.00	.130 - 1.20	.031 - .220	.011 - .120	.004 - .090	.004 - .060	.004 - .040
	14	No Trip	2.00 - 60.0	---	1.20 - 40.0	.600 - 20.0	.150 - 3.00	.030 - 1.30	.004 - .600	.004 - .100	.004 - .100
	16	No Trip	45.0 - 345	---	20.0 - 150	9.00 - 60.0	1.40 - 11.4	.150 - 5.80	.009 - 3.70	.005 - 1.70	.005 - .500
	20	No Trip	May Trip	---	.040 MAX	.035 MAX	.030 MAX	.025 MAX	.020 MAX	.017 MAX	.015 MAX
	21	No Trip	.014 - .150	---	.011 - .095	.008 - .055	.006 - .035	.005 - .027	.005 - .021	.004 - .018	.004 - .017
	22	No Trip	.700 - 12.0	---	.350 - 4.00	.130 - 1.30	.027 - .220	.008 - .130	.004 - .090	.004 - .045	.004 - .040
	24	No Trip	10.0 - 160	---	6.00 - 60.0	2.20 - 20.0	.300 - 3.00	.050 - 1.30	.007 - .500	.005 - 0.60	.005 - .040
	26	No Trip	50.0 - 700	---	32.0 - 350	10.0 - 90.0	1.50 - 15.0	.550 - 7.00	.020 - 3.00	.006 - 2.00	.005 - 1.00
	42	No Trip	.700 - 12.0	---	.400 - 6.00	.180 - 2.30	.050 - .600	.26 - .300	.018 - .200	.014 - .150	.012 - .130
	44	No Trip	7.00 - 100	---	3.00 - 50.0	1.10 - 18.0	.220 - 3.00	.120 - 1.70	.075 - 1.20	.050 - .850	.042 - .720
	46	No Trip	50.0 - 700	---	31.0 - 350	12.0 - 150	1.50 - 20.0	.700 - 10.0	.404 - 7.90	.260 - 6.50	.198 - 5.80
	52	No Trip	.500 - 6.50	---	.340 - 4.50	.180 - 2.30	.051 - .600	.030 - .320	.018 - .220	.014 - .200	.012 - .130
	54	No Trip	1.50 - 50.0	---	.750 - 35.0	.350 - 18.0	.110 - 3.00	.070 - 1.70	.045 - 1.40	.039 - 1.30	.035 - 1.30
	56	No Trip	45.0 - 345	---	19.0 - 170	8.50 - 100	1.24 - 15.0	.410 - 9.00	.256 - 8.00	.210 - 5.50	.198 - 2.90

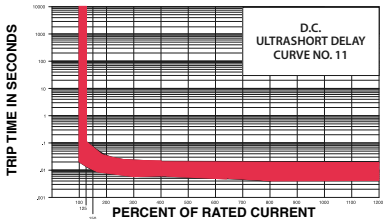
Notes:

Delay Curves 11,12,14,16,21,22,24,26,42,44,46,52,54,56: Breakers to hold 100% and must trip at 125% of rated current and greater within the time limit shown in this curve.
Delay Curves 10,20: Breakers to hold 100% and must trip at 150% of rated current and greater within the time limit shown in this curve.
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.
On 50 amp and less current ratings, the minimum inrush pulse tolerance handling capability is 12 times the rated current on standard delays and 25 times the rated current on high inrush delays. These values are based on a 60 Hz 1/2 cycle, 8.33 ms pulse. High inrush delays should be specified for applications with high initial surge currents of short duration such as switching power supplies, highly capacitive loads and transformer loads.

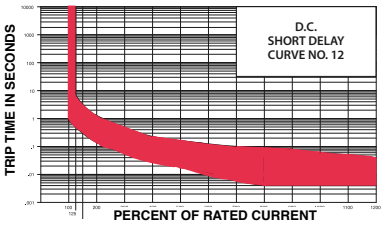
Instantaneous - DC 10



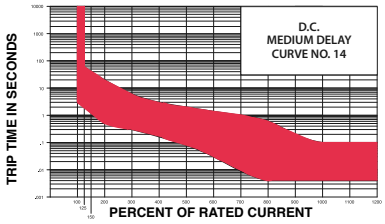
Ultrashort - DC 11



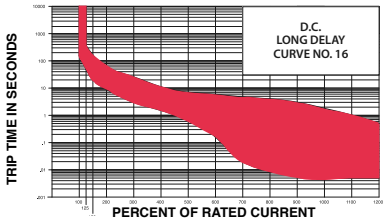
Short - DC 12



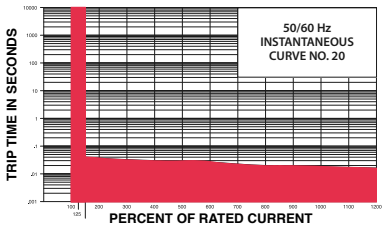
Medium - DC 14



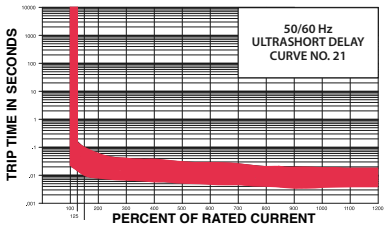
Long - DC 16



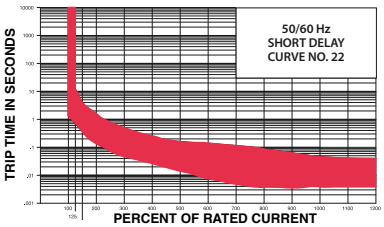
Instantaneous - AC 20



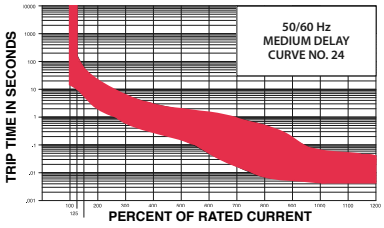
Ultrashort - AC 21



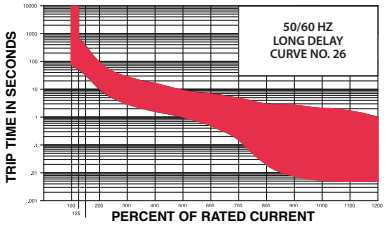
Short - AC 22



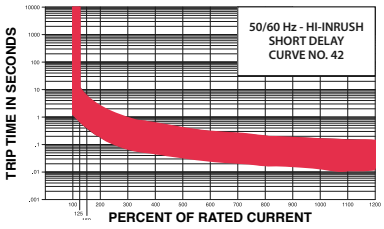
Medium - AC 24



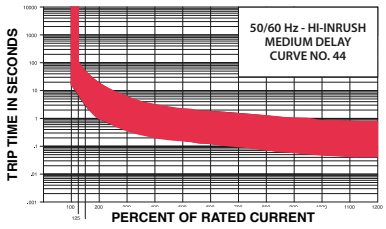
Long - AC 26



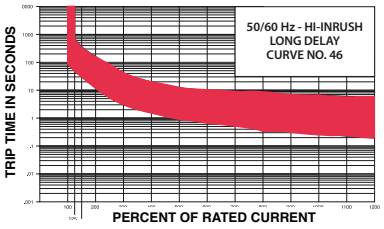
Short - High Inrush AC 42



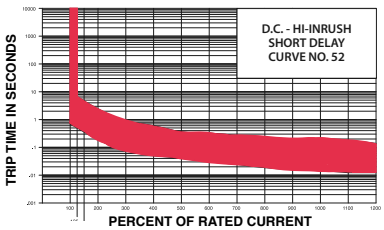
Medium - High Inrush AC 44



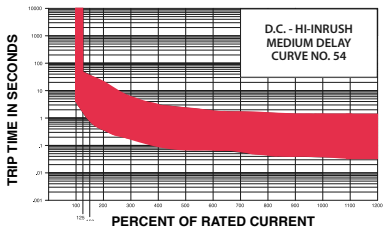
Long - High Inrush AC 46



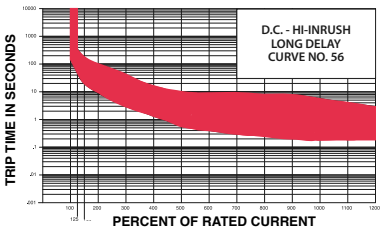
Short - High Inrush DC 52



Medium - High Inrush DC 54



Long - High Inrush DC 56



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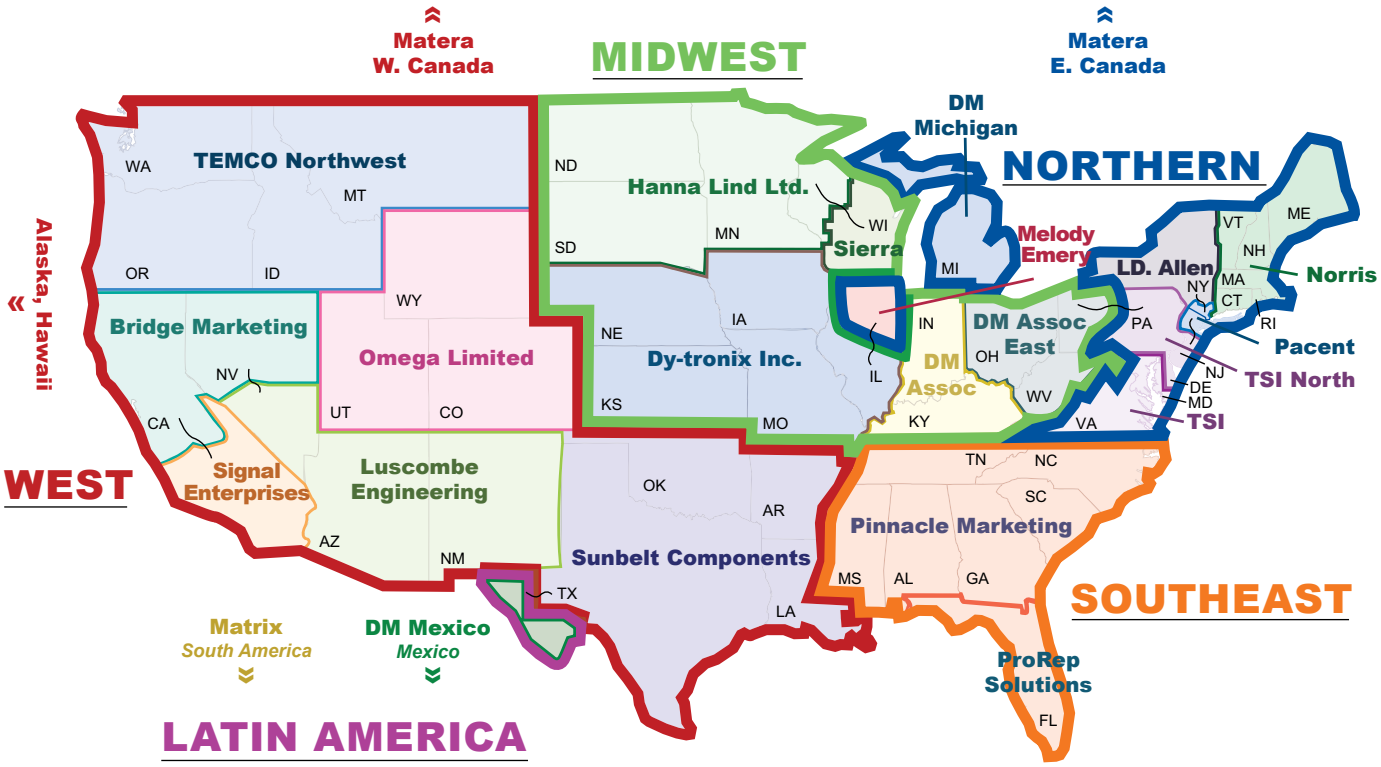

Americas

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Asia-Pacific
Oceania

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Founded in 1920, Carling Technologies is a leading manufacturer of electrical and electronic switches and assemblies, circuit breakers, electronic controls, power distribution units, and multiplexed power distribution systems. With four ISO registered manufacturing facilities and technical sales offices worldwide, Carling Technologies Sales, Service and Engineering teams do much more than manufacture electrical components, they engineer powerful solutions! To learn more about Carling please visit **www.carlingtech.com/company-profile.**

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