G-Series
Circuit Breaker

Carling Technologies' G-Series hydraulic/magnetic circuit breakers offer the highest quality solution to your circuit protection requirements. The G-Series is designed to sense over-current conditions and protect an electrical system's wires and equipment. When left unchecked over-current conditions will result in fires and costly damage. Hydraulic/magnetic circuit breakers are considered to be temperature stable and not adversely affected by temperature changes in their operating environment. As such, de-rating considerations due to temperature variations are not required, and heat-induced nuisance tripping is avoided.

Key Features:

- 1-4 poles
- 0.02 - 63 Amps
- 80 VDC, 240 VAC, 480 VAC
- Mid-trip actuator indication
- Precise temperature independent operation
- Wiping contacts – mechanical linkage with two-step
- actuation – cleans contacts and ensures longer contact life
- Wide choice of trip time delay curves
- Optional integrated auxiliary contacts
- Unique terminal bus connection system
- DIN rail mounting
- Finger safe terminals
- Suitable for reverse feed
- Common trip linkage between poles – ensures that an overload in one pole will trip all adjacent poles

Applications:

- Renewable Energy
- Telecom
- Control Panels

Carling Technologies™
Innovative Designs. Powerful Solutions.

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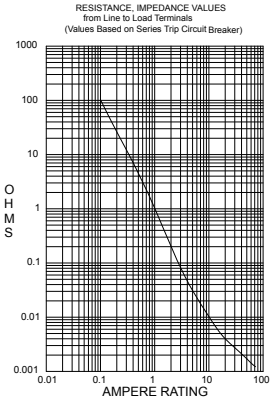
Electrical Tables

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

G SERIES - COMPONENT SUPPLEMENTARY PROTECTOR											
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT		SHORT CIRCUIT CAPACITY (AMPS)			APPLICATION CODES	
						UL	CSA	TUV		
	MAX RATING	FREQ.	PHASE	FULL LOAD	MINIMUM POLES	WITHOUT BACKUP FUSE	WITHOUT BACKUP FUSE	WITHOUT BACKUP FUSE	UL	CSA
SERIES	80	DC	--	63	1	3000	3000	1500	TC1, OL1, U1	TC1, OL1, U1
	240	50/60	1	63	1	3000	3000	1500	TC1, OL1, U1	TC1, OL1, U1
	240	50/60	1	63	2	3000	3000	1500	TC1, OL1, U1	TC1, OL1, U1
	480	50/60	3	63	3	1500	1500	415V, 1000	TC1, OL1, U1	TC1, OL1, U1

Electrical

Maximum Voltage	AC: 240VAC (single pole), 440VAC (3 poles, additional pole shall be dedicated for neutral break) DC: 110VDC (single pole and multipole)
Current Rating	0.2 – 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 (%)
0.02 - 5.0	15%
5.1 - 20.0	25%
20.1 - 63.0	35%

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

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

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

3 POLE
1	One	**2**	Two	**3**	Three	**4**	Four[1]

4 CIRCUIT
A[2]	Switch Only (no coil)	**B**	Series Trip (current)

5 AUXILIARY/ALARM SWITCH[3]
0	w/o Aux Switch	**3**	S.P.D.T. screw terminal/ Gold contacts
1	S.P.D.T., screw terminal		

6 FREQUENCY & DELAY
03[2]	DC 50/60Hz, Switch Only	**24**	50/60Hz Medium
10	DC Instantaneous	**26**	50/60Hz Long
11	DC Ultra Short	**42**[4]	50/60Hz Short, Hi-Inrush
12	DC Short	**44**[4]	50/60Hz Medium, Hi-Inrush
14	DC Medium	**46**[4]	50/60Hz Long, Hi-Inrush
16	DC Long	**52**[4]	DC Short, Hi-Inrush
20	50/60Hz Instantaneous	**54**[4]	DC Medium, Hi-Inrush
21	50/60Hz Ultra Short	**56**[4]	DC Long, Hi-Inrush
22	50/60Hz Short		

7 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	**618**	18.00
245	0.450	**420**	2.00	**485**	8.50	**620**	20.00
250	0.500	**522**	2.25	**490**	9.00	**622**	22.00
255	0.550	**425**	2.50	**495**	9.50	**624**	24.00
260	0.600	**527**	2.75	**610**	10.00	**625**	25.00
265	0.650	**430**	3.00	**710**	10.50	**630**	30.00
270	0.700	**435**	3.50	**611**	11.00	**635**	35.00
275	0.750	**440**	4.00	**711**	11.50	**640**	40.00
280	0.800	**445**	4.50	**612**	12.00	**650**	50.00
285	0.850	**450**	5.00	**712**	12.50	**660**	60.00
290	0.900	**455**	5.50	**613**	13.00	**663**	63.00

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 MAX. APPLICATION RATING
M	80VDC	**D**	240VAC	**H**	480VAC[5]

11 AGENCY APPROVAL
A	Without approvals
C	UL Recognized, CUL
E	UL Recognized, CUL, TUV

Notes:
1. 4th pole for neutral break only.
2. Switch only construction currently only available on multipole units when at least one pole is a protected pole.
3. On multipole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. (when viewed from back.)
4. High Inrush delays limited to 50A max.
5. 480V only available as three or four pole. Two pole is not available.

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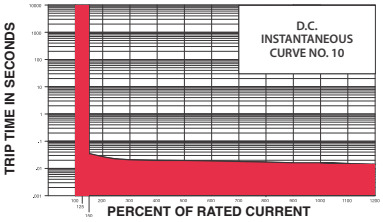
Time Delay Values

G-SERIES TIME DELAY VALUES											
	PERCENT OF RATED CURRENT										
	DELAY	100%	125%	135%	150%	200%	400%	600%	800%	1000%	1200%
	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
TRIP	22	No Trip	.700 - 12.0	---	.350 - 4.00	.130 - 1.30	.027 - .220	.008 - .130	.004 - .090	.004 - .045	.004 - .040
TIME	24	No Trip	10.0 - 160	---	6.00 - 60.0	2.20 - 20.0	.300 - 3.00	.050 - 1.30	.007 - .500	.005 - .060	.005 - .040
(SECONDS)	26	No Trip	50.0 - 700	---	32.0 - 350	10.0 - 90.0	1.50 - 15.0	.500 - 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	.026 - .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

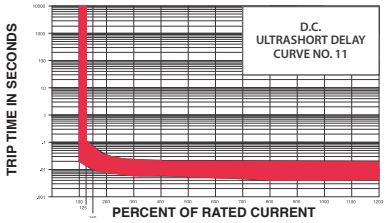
Notes:

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.

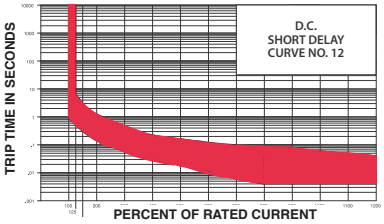
Instantaneous - DC 10



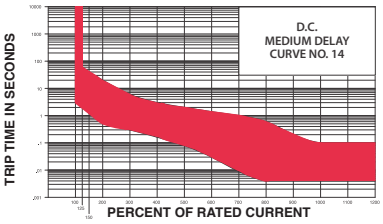
Ultrashort - DC 11



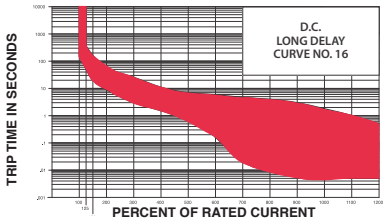
Short - DC 12



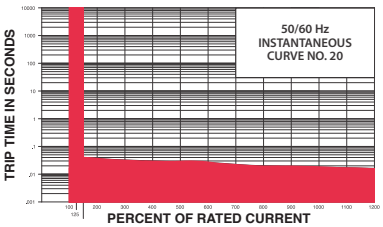
Medium - DC 14



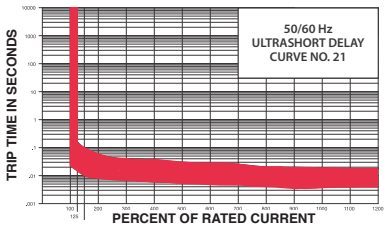
Long - DC 16



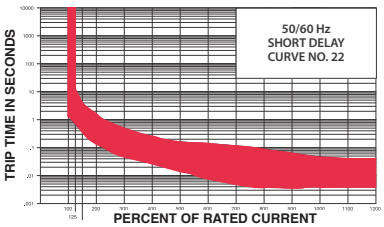
Instantaneous - AC 20



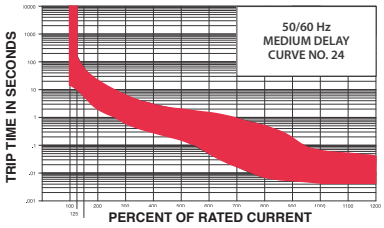
Ultrashort - AC 21



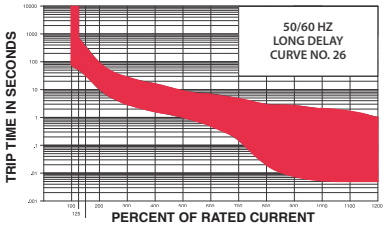
Short - AC 22



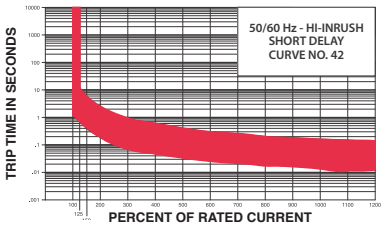
Medium - AC 24



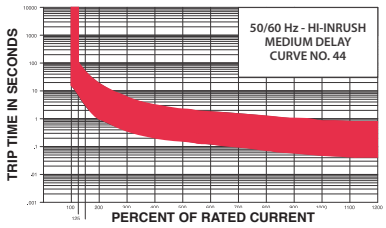
Long - AC 26



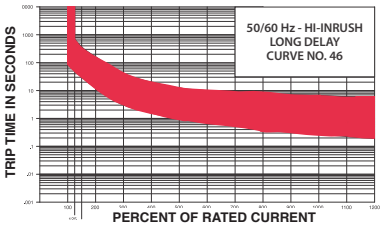
Short - High Inrush AC 42



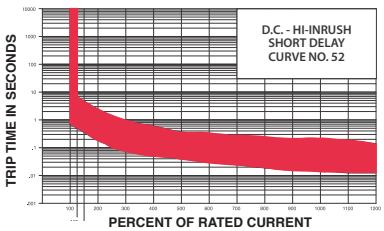
Medium - High Inrush AC 44



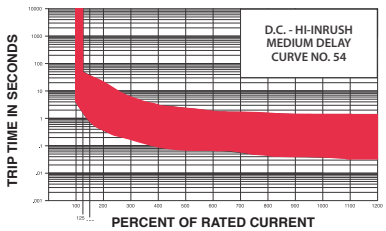
Long - High Inrush AC 46



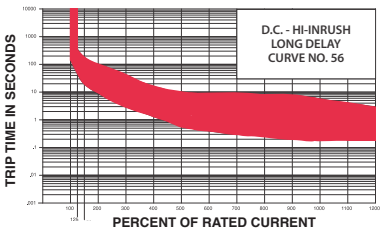
Short - High Inrush DC 52

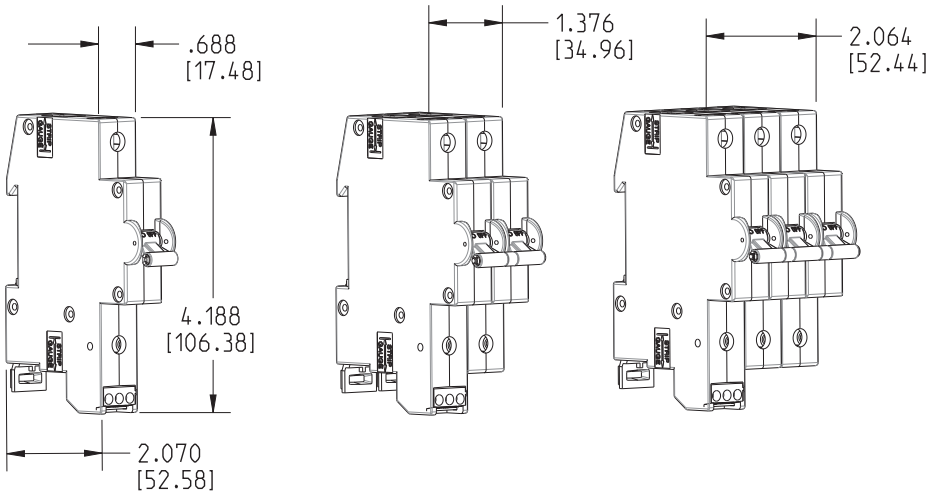


Medium - High Inrush DC 54



Long - High Inrush DC 56





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

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