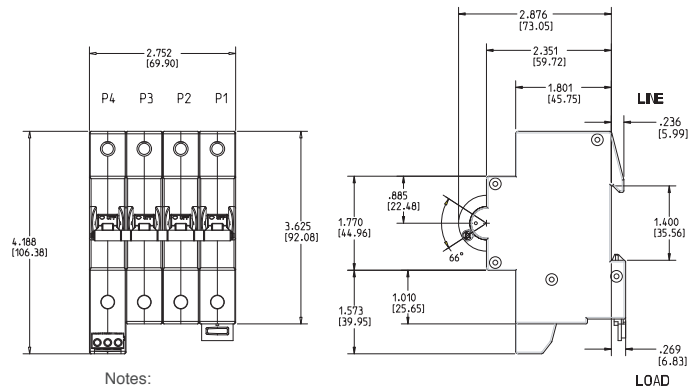


# G-Series Circuit Breaker

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



### Notes:

- 1 All dimensions are in inches [millimeters].
- 2 Tolerance  $\pm 0.020$  [.51] unless otherwise specified.



**Carling Technologies®**

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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	MINIMUM POLES	SHORT CIRCUIT CAPACITY (AMPS)			APPLICATION CODES	
	MAX RATING	FREQ.	PHASE			UL WITHOUT BACKUP FUSE	CSA WITHOUT BACKUP FUSE	TUV WITHOUT BACKUP FUSE	UL	CSA
	SERIES	80	DC	--		63	1	3000	3000	1500
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

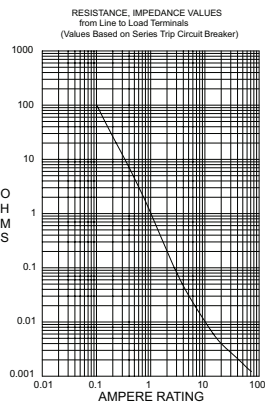
**Maximum Voltage** AC: 240VAC (single pole), 440VAC (3 poles, additional pole shall be dedicated for neutral break)  
 DC: 80VDC (single pole and multipole) 0.2 – 63A. Other ratings available, see Ordering Scheme.

**Current 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.

**Auxiliary Switch Rating** Minimum of 100 Megohms at 500 VDC. 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.

**Insulation Resistance Dielectric Strength** Values from Line to Load Terminal - based on Series Trip Circuit Breaker.

**Resistance, Impedance**



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.

**Fire and smoke** NF F16-101/102, DIN5510 & BS6853 fire and smoke material selection & application for electrical equipment.

## 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.

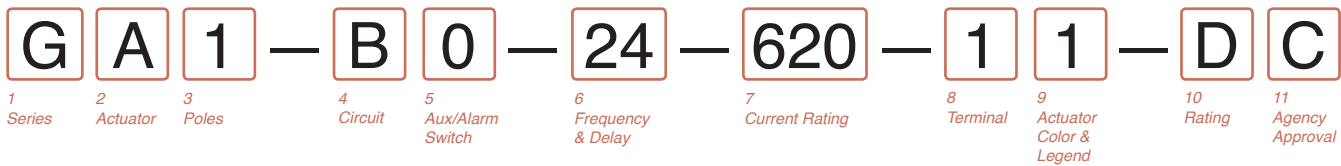
**Moisture Resistance** Method 106D, i.e., ten 24-hour cycles @ +25°C to +65°C, 80-98% RH.

**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.



**1 SERIES**  
**G**

**2 ACTUATOR<sup>1</sup>**  
**A** Handle, one per pole    **S** Mid-Trip Handle, one per pole

**3 POLE**  
**1** One    **2** Two    **3** Three    **4** Four<sup>1</sup>

**4 CIRCUIT**  
**A<sup>2</sup>** Switch Only (no coil)    **B** Series Trip (current)

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

**6 FREQUENCY & DELAY**

<b>03<sup>2</sup></b> DC 50/60Hz, Switch Only	<b>24</b> 50/60Hz Medium
<b>10</b> DC Instantaneous	<b>26</b> 50/60Hz Long
<b>11</b> DC Ultra Short	<b>42<sup>4</sup></b> 50/60Hz Short, Hi-Inrush
<b>12</b> DC Short	<b>44<sup>4</sup></b> 50/60Hz Medium, Hi-Inrush
<b>14</b> DC Medium	<b>46<sup>4</sup></b> 50/60Hz Long, Hi-Inrush
<b>16</b> DC Long	<b>52<sup>4</sup></b> DC Short, Hi-Inrush
<b>20</b> 50/60Hz Instantaneous	<b>54<sup>4</sup></b> DC Medium, Hi-Inrush
<b>21</b> 50/60Hz Ultra Short	<b>56<sup>4</sup></b> DC Long, Hi-Inrush
<b>22</b> 50/60Hz Short	

**7 CURRENT RATING (AMPERES)**

CODE	AMPERES		AMPERES		AMPERES		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	<b>A</b>	<b>B</b>	<b>1</b>	Black
Black	<b>C</b>	<b>D</b>	<b>2</b>	White
Red	<b>F</b>	<b>G</b>	<b>3</b>	White
Green	<b>H</b>	<b>J</b>	<b>4</b>	White
Blue	<b>K</b>	<b>L</b>	<b>5</b>	White
Yellow	<b>M</b>	<b>N</b>	<b>6</b>	Black
Gray	<b>P</b>	<b>Q</b>	<b>7</b>	Black
Orange	<b>R</b>	<b>S</b>	<b>8</b>	Black

**10 MAX. APPLICATION RATING**  
**M** 80VDC    **D** 240VAC    **H** 480VAC<sup>5</sup>

**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.

**Time Delay Values**

	PERCENT OF RATED CURRENT											
		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 - .060	.005 - .040	
	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.

