# **A-Series** CIRCUIT BREAKER

Well known for their proven reliability, Carling Technologies' A-Series hydraulic magnetic circuit breakers are compact, temperature stable and designed for precision operation in OEM markets requiring general purpose as well as full load amp applications. When front panel operation and aesthetics demand a clean, contemporary design, the visi-rocker or paddle actuators are ideally suitable. A sealed toggle actuator style is also available and ideal for harsh environment applications requiring additional sealing protection. Optional rocker-guard and pushto-reset bezels, which help prevent inadvertent actuation, are also available.

1-6 poles; ratings from 0.02 to 50 amps, up to 277VAC or 80VDC; UL Recognized, UL Listed, UL1500, UL1077, TUV, VDE & CSA











## **Resources:**

Configure a Complete Part

Download CAD & Sales Drawing >

# **Product Highlights:**

- · Up to 50 amps in a compact size
- Various actuator styles
- · Sealed metal toggle option tested to MIL-PRF-55629C. Meets IP68 Requirements

## **Typical Applications:**

- · Telecom / Datacom
- Marine
- Military
- · Renewable Energy
- · Generators & Welder



#### **Electrical**

Maximum Voltage **Current Ratings** 

277VAC 50/60 Hz, 80VDC Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0, 50.0. Other ratings available - consult ordering scheme.

Standard Voltage Coils

DC-6V, 12V; AC-120V, Other ratings available, consult ordering scheme. SPDT; 10.1 A - 250VAC,

Auxiliary Switch Rating

1.0 A-65VDC/0.5 A - 80 VDC, 0.1A - 125VAC (with gold contacts). Minimum: 100 Megohms at 500

Insulation Resistance

**VDC** 

Dielectric Strength

UL, CSA - 1500V 60 Hz for one minute between all electrically isolated terminals. A-Series rocker circuit breakers comply with the 8mm spacing & 3750V dielectric requirements from hazardous voltage to operator accessible surfaces per EN 60950 and VDE

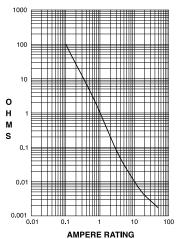
0805.

Resistance, Impedance

Values from Line to Load Terminal based on Series Trip Circuit

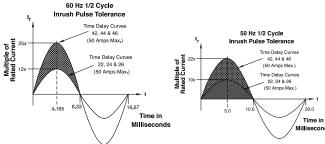
Breaker.

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



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	15
5.1 - 20.0	25
20.1 - 50.0	35

## Pulse Tolerance Curves



#### Mechanical

Endurance

minute; with rated Current & Voltage. All A-Series Circuit Breakers will trip Trip Free

on overload, even when the actuator is forcibly held in the ON position.

Trip Indication The operating actuator moves positively to the OFF position when

an overload causes the circuit breaker to trip. When mid-trip handle is specified, the handle moves to the mid position on electrical trip of the circuit breaker. When mid-trip handle with alarm switch is specified, the handle moves to the mid position & the alarm switch actuates when the

circuit breaker is electrically tripped.

10,000 ON-OFF operations @ 6 per

## **Physical**

Number of Poles 1 - 6 Poles (handle) and 1-3 poles

> (rocker) at 30 Amps or less. 1 and 2 poles at 31 Amps thru 50 Amps. Series, (with or without auxiliary

switch), Shunt and Relay with current

or voltage trip coils, Dual Coil, Switch Only with or without auxiliary

switch.

Approximately 65 grams/pole. Weight

(Approximately 2.32 ounces/pole) Standard Colors Housing - Black: Actuator- See

Ordering Scheme.

## **Environmental**

Vibration

Internal Circuit Config.

Designed and tested 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 ultra-short curves tested @ 90% of rated current.

Withstands 0.060" excursion from

10-55 Hz, and 10 Gs 55-500 Hz, at rated current per Method 204C. Test Condition A. Instantaneous and ultrashort curves tested at 90% of

rated current.

Moisture Resistance Method 106D; ten 24-hour cycles @

+ 25°C to +65°C, 80-98% RH.56

days @ +85°C, 85% RH.

Method 101, Condition A (90-95% Salt Spray

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

<sup>\*</sup>Manufacturer reserves the right to change product specification without prior notice.

## **Electrical Tables**

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

	A-SERIES TABLE A: COMPONENT SUPPLEMENTARY PROTECTORS												
		Voltage		Currei	nt Rating	Short Circuit Ca	apacity (Amps)	Application	an Codos				
Circuit	May			Full Land	General	UL/	CSA	Application	on Codes	Construction			
Configuration	Max Rating	Frequency	Phase	Full Load Amps	Purpose Amps	With Backup Fuse	Without Backup Fuse	UL	CSA	Notes			
	32	DC		0.02 - 15			5000	TC1, OL1, U2	TC1, OL1, U2				
	65	DC		31 - 50			7500		TC1, 2, OL1, U1				
	80	DC		0.02 - 30			7500	TC1, 2, OL1, U1					
					31 - 50		7500		TC1, 2, OL0, U1				
	125	50 / 60	1	0.02 - 30			3000	TC1, OL1, U2	TC1, OL1, U2	Rocker Version			
	125	50 / 60	1	1 - 50			2000	TC1, OL1, U2	TC1, OL1, U2				
	125	50 / 60	14	1 - 50			1000	TC1, OL1, U2	TC3, OL1, U3				
Series	125 / 250	50 / 60	13	0.02 - 30			3000		TC1, 2, OL1, U2				
Series	125 / 250	50 / 60	1 <sup>3</sup>	0.02 - 50			3000		TC1, 2, OL1, U2				
				0.02 - 30			1500		TC1, 2, OL0, U2				
			1	0.02 - 30			3000	TC1, OL1, U2	TC1, OL1, U2	Two Pole Break			
	250	50 / 60					3000	TC1, 2, OL0, U1	TC1, 2, OL0, U1				
	250	30,00	14	1 - 50			1000	TC1, OL1, U2	TC3, OL1, U3				
			3	0.02 - 30		5000 <sup>2</sup>		TC1, 2, OL1, C1	TC1, 2, OL1, C1				
				31 - 50		2000 1		TC1, 2, OL1, C1	TC1, 2, OL1, C1				
	277	50 / 60	1	0.02 - 30		5000 <sup>1</sup>		TC1, 2, OL1, C1	TC1, 2, OL1, C1				
	32	DC		0.02 - 50			5000	TC1, OL1, U2	TC1, OL1, U2				
	65	DC		0.02 - 50			7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1				
	80 DC	DC		0.02 - 30			7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1				
	125					31 - 50		7500	TC1, 2, OL0, U1	TC1, 2, OL0, U1			
		50 / 60	1	0.02 - 30			3000	TC1, OL1, U2	TC1, OL1, U2	Rocker Version			
		30,00	'	1 - 50			2000	TC1, OL1, U2	TC1, OL1, U2				
	125	50 / 60	14	0.02 - 30			1000	TC1, OL1, U2	TC3, OL1, U3				
Dual Cail	125 / 250	50 / 60	1 <sup>3</sup>	0.02 - 30			3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1	Rocker Version			
Dual Coil	125 / 250	50 / 60	13	0.02 - 50			3000	TC1, 2, OL1, U2	TC1, 2, OL1, U2				
			1	0.02 - 30			1500	TC1, OL0, U2	TC1, OL0, U2	Single Pole Break			
						1	0.02 - 30			3000	TC1, OL1, U2	TC1, OL1, U2	Two Pole Break
	250		1		31 - 50		3000	TC1, 2, OL0, U1	TC1, 2, OL0, U1				
	250	50 / 60	14	1 - 50			1000	TC1, OL1, U2	TC3, OL1, U3				
				0.02 - 30		5000 <sup>2</sup>		TC1, 2, OL1, C1	TC1, 2, OL1, C1				
			3	31 - 50		2000 <sup>1</sup>		TC1, 2, OL1, C1	TC1, 2, OL1, C1				
	277	50 / 60	1	0.02 - 30		5000 <sup>1</sup>		TC1, 2, OL1, U1	TC1, 2, OL1, U1				
	80	DC		0.02 - 30			7500	TC1, 2, OL1, U1	TC1, 2, OL1, U1				
	125 / 250	50 / 60	1	0.02 - 30			3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1				
Shunt	250	F0 / C0	1	0.02 - 30			3000	TC1, 2, OL1, U1	TC1, 2, OL1, U1				
	250	50 / 60	3	0.02 - 30		5000 <sup>2</sup>			TC1, 2, OL1, C1				
	277	50 / 60	1	0.02 - 30		5000 <sup>1</sup>		TC1, 2, OL1, C1	TC1, 2, OL1, C1				
	80	DC		0.02 - 30			7500		TC1, 2, OL1, U1				
	125 / 250	50 / 60	1 <sup>3</sup>	0.02 - 30			3000		TC1, 2, OL1, U1				
Relay	252	F0 / 60	1	0.02 - 30			3000		TC1, 2, OL1, U1				
	250	50 / 60	3	0.02 - 30		5000 <sup>2</sup>			TC1, 2, OL1, C1				
	277	50 / 60	1	0.02 - 30		5000 <sup>1</sup>		TC1, 2, OL1, C1	TC1, 2, OL1, C1				
	65	DC		0.02 - 50					•				
	80	DC		0.02 - 30		1							
Switch Only	252	F0 / 10	1		31 - 50	1	not a	oplicable					
	250	50 / 60	3	0.02 - 50									
	277	50 / 60	1	0.02 - 30	31 - 50								
Notes:													

Notes:
1 Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse (15A minimum) at no more than 4 times the rating of the protector.
2 Same as note 1, except that backup fuse is limited to 80 A maximum.
3 2 pole protector required (with one pole per power line) for: 125/250 VAC, 1 pole protector required for : 125 VAC, 1Ø Power System.
4 Satisfies the requirements of clause 11.2.8.2.5 of CSA STD C22.2 No 100 for the use of supplementary protectors with portable generators.

## **Electrical Tables**

Table B: Lists UL Recognized, CSA Accepted, VDE & TUV Certified configurations & performance capabilities as a Component Supplementary Protector.

	A-SERIES TABLE B: COMPONENT SUPPLEMENTARY PROTECTORS																
VOLTAGE CURRENT RATING					SHORT CIRCUIT CAPACITY (AMPS)				APPLICATION CODES								
CIRCUIT					GENERAL		/CSA	VI	VDE		JV			VDE CONSTRUCTION			
CONFIGURATION	MAX. RATING		PHASE	FULL LOAD AMPS	PURPOSE AMPS <sup>1</sup>	WITH BACKUP FUSE	WITHOUT BACKUP FUSE	(Inc) WITH BACKUP FUSE	(Icn) WITHOUT BACKUP	(Inc) WITH BACKUP FUSE	(Icn) WITHOUT BACKUP	UL	CSA	NOTES			
	65	DC	_	0.10 - 50	_		7500	_	_	5000	3000	TC1,2, OL1,U1	TC1,2, OL1,U1	World Market Breaker TUV Only			
				0.10 - 30	_	_	7500	3000	1500	3000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Handle Version 1 Pole Only			
				31 - 50	31 - 50	_	7500	3000	1500	3000	1500	TC1,2, OL0,U1	TC1,2, OL0,U1	Handle Version 1 Pole Only			
	80	DC	_	0.10 - 30	_	_	7500	3000	1500	3000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 1 - 3 Poles			
				31 - 32	_	_	7500	3000	1500	3000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 2 Pole Only			
SERIES							31 - 50	31 - 50	-	7500	3000	1500	3000	1500	TC1,2, OL0,U1	TC1,2, OL0,U1	Rocker Version 1 Pole Only
SERIES	250	50 / 60		0.10 - 30	_	_	3000	3000	1500	5000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 1 - 3 Poles			
			1	31 - 50	31 - 50	_	3000	_	_	5000	1500	TC1,2, OL0,U1	TC1,2, OL0,U1	Rocker Version 1 - 3 Poles			
				31 - 32	_	_	3000	6000	1500	5000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 2 Pole Only			
			1	0.10 - 30	_	_	3000	6000	1500	5000	1500	TC1, OL1,U2	TC1, OL1,U2	Rocker Version 2 Pole Only			
			1 4	1 - 50	_	-	1000	_	_	5000	1500	TC1, OL1,U2	TC3, OL1,U3	Rocker Version 1 - 3 Poles			
			3	0.10 - 30	_	5000 <sup>3</sup>	_	3000	1500	3000	1500	TC1,2, OL1,C1	TC1,2, OL1,C1	Rocker Version 1 - 3 Poles			
			3	31 - 50	_	2000°	_	3000	1500	3000	1500	TC1,2, OL1,C1	TC1,2, OL1,C1	Rocker Version 1 - 3 Poles			
	80	DC	-	0.10 - 30	_	ı	7500	3000	1500	3000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 1 - 3 Poles			
			1	0.10 - 30	_	_	3000	3000	1500	5000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 1 - 3 Poles			
DUAL COIL	250	50 / 60	-	30 - 50	31 - 50	ı	3000	_	_	5000	1500	TC1,2, OL0,U1	TC1,2, OL0,U1	Rocker Version 1 - 3 Poles			
	250	50 / 60	3	0.10 - 30	_	5000 <sup>3</sup>	_	3000	1500	3000	1500	TC1,2, OL1,C1	TC1,2, OL1,C1	Rocker Version 1 - 3 Poles			
			3	31 - 50	_	2000°	_	_	_	3000	1500	TC1,2, OL1,C1	TC1,2, OL1,C1	Rocker Version 1 - 3 Poles			
	80	DC		0.10 - 30	_	_	7500	3000	1500	3000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Handle Version 1 Pole Only			
	60	ьс		0.10 - 30	_	-	7500	3000	1500	3000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 1 - 3 Poles			
SHUNT			1	0.10 - 30			3000	3000	1500	5000	1500	TC1,2, OL1,U1	TC1,2, OL1,U1	Rocker Version 1 - 3 Poles			
SHUNI	250	50 / 60	-	30 - 50	31 - 50	-	3000	_	_	5000	1500	TC1,2, OL0,U1	TC1,2, OL0,U1	Rocker Version 1 - 3 Poles			
	230	30/60	3	0.10 - 30	_	5000 <sup>3</sup>	_	3000	1500	3000	1500	TC1,2, OL1,C1	TC1,2, OL1,C1	Rocker Version 1 - 3 Poles			
			3	31 - 50	_	2000°	_	_	_	3000	1500	TC1,2, OL1,C1	TC1,2, OL1,C1	Rocker Version 1 - 3 Poles			

Notes:
1 General Purpose Ratings for UL/CSA Only.
2 Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse (15A minimum) at no more than 4 times the rating of the protector.
3 Same as note 2, except that backup fuse is limited to 80 A maximum.
4 Satisfies the requirements of clause 11.2.8.2.5 of CSA STD C22.2 No 100 for the use of supplementary protectors with portable generators.

## **Electrical Tables**

Table C: Lists UL Recognized, CSA Accepted configurations and performance capabilities as Protectors, Supplementary for Marine Electrical and Fuel Systems (Guide PEQZ2, File E75596). Ignition Protected per UL 1500. UL Classified Small Craft Electrical Devices, Marine in accordance with ISO 8846 (Guide UZMK, File MQ1515) as Marine Supplementary Protectors.

	A-SERIES TABLE C: UL1500 (Marine Ignition Protected)										
CIRCUIT		VOLTAGE		CURRENT RATING	SHORT CIRCUIT CAPACITY (AMPS)	APPLICATION	ON CODES				
CONFIGURATION	MAX. RATING	FREQUENCY	PHASE	FULL LOAD AMPS	WITHOUT BACKUP FUSE	UL	CSA				
SERIES	14 <sup>1</sup>	DC		0.02 - 50	5000	TC1,OL1,U1	TC1,OL1,U1				
	32 <sup>1</sup>	DC		0.02 - 50	5000	TC1,OL1,U2	TC1,OL1,U2				
	65	DC		0.02 - 50	3000	TC1,OL1,U1	TC1,OL1,U1				
	125	50 / 60	1	0.02 - 50	3000	TC1,OL1,U2	TC1,OL1,U2				
	125 / 250	250 50 / 60		0.02 - 50	3000	TC1,OL1,U2	TC1,OL1,U2				
	250	50 / 60	1	0.02 - 30	1500	TC1,OL1,U1	TC1,OL1,U1				

Table D: Lists UL Listed configurations and performance capabilities as Circuit Breakers for use in Communications Equipment (Guide DITT, File E189195), under UL489A.

	A-SERIES TABLE D: UL489A (COMMUNICATIONS EQUIPMENT)										
	CIRCUIT CONFIGURATION SERIES	vo	LTAGE	CURRENT RATING	INTERRUPTING CAPACITY (AMPS)						
		MAX. RATING	FREQUENCY	GENERAL PURPOSE AMPS	WITHOUT BACKUP FUSE						
		80	DC	0.10 - 50	5000						
	SERIES	80	DC	60 - 90 <sup>1</sup>	5000						

Notes:

## **Agency Certifications**

## **UL Recognized**

UL Standard 1077 AI.

UL Standard 508

Component Recognition Program as Protectors Supplementary (Guide CCN/QVNU2, File E75596)

Switches, Industrial Control (Guide CCN/NRNT2, File E148683)

UL Standard 1500 Protectors, Supplementary for Marine Electrical & Fuel Systems (Guide PEQZ2, File E75596) **Ignition Protection** 

> Communications Equipment (Guide CCN/DITT, File E189195)

**CSA Accepted** 

(F)

Component Supplementary Protector under Class 3215 30, File 047848 0 000 CSA Standard C22.2 No. 235

**TUV Certified** 

EN60934, under License No. R72103448

**VDE Certified** 

EN60934, VDE 0642 under File No. 10537

<u>(U)</u>

*8*1.

**UL Listed** 

UL Standard 489A



Available with special catalog number only (consult factory).

2 pole protector required (with one per power line) for 125 / 250 VAC. 1 pole protector required for 125 VAC 1 phase power system

Parallel Pole Construction



2 A C	CTUATOR 1
Α	Handle, one per pole
В	Handle, one per multipole unit
S	Mid-Trip Handle, one per pole
Т	Mid-Trip Handle, one per pole & Alarm Switch

3 P	OLES					
1	One	3	Three	5	Five	
2	Two	4	Four	6	Six	
						-

4 CIF	RCUIT		
<b>A</b> <sup>2</sup>	Switch Only (No Coil)	F <sup>3</sup>	Relay Trip (Current)
В	Series Trip (Current)	<b>G</b> 3	Relay Trip (Voltage)
С	Series Trip (Voltage)	$H^{3,4}$	Dual Coil with Shunt Trip
<b>D</b> 3	Shunt Trip (Current)		Voltage Coil
<b>E</b> 3	Shunt Trip (Voltage)	K 3,4	Dual Coil with Relay Trip
	, (3-/		Voltage Coil

5 A	UXILIARY / ALARM SWITCH <sup>3</sup>		
0	without Aux Switch	7	S.P.S.T., 0.110 Q.C. Term.
1	S.P.D.T., 0.093 Q.C. Term.		(Gold Contacts)
2	S.P.D.T., 0.110 Q.C. Term.	8	S.P.S.T., 0.187 Q.C. Term.
5	S.P.S.T., 0.093 Q.C. Term.	9	S.P.D.T., 0.187 Q.C. Term.
	(Gold Contacts)		

6 FR	EQUENCY & DELAY		
03	DC 50/60Hz, Switch Only	30	DC, 50/60Hz Instantaneous
10	DC Instantaneous	31	DC, 50/60Hz Ultra Short
11	DC Ultra Short	32	DC, 50/60Hz Short
12	DC Short	34	DC, 50/60Hz Medium
14	DC Medium	36	DC, 50/60Hz Long
16	DC Long	<b>42</b> <sup>7</sup>	50/60Hz Short, High-inrush
20	50/60Hz Instantaneous	44 <sup>7</sup>	50/60Hz Medium, High-inrush
21	50/60Hz Ultra Short	46 <sup>7</sup>	50/60Hz Long, High-inrush
22	50/60Hz Short	<b>52</b> <sup>7</sup>	DC, Short, High-inrush
24	50/60Hz Medium	54 <sup>7</sup>	DC, Medium, High-inrush
26	50/60Hz Long	56 <sup>7</sup>	DC, Long, High-inrush

Actuator Code.

A: Handle tie pin spacer(s) and retainers provided un-assembled with multi-pole units.

B: Handle location as viewed from front of breaker:

2 pole - left pole 3 pole - center pole 4 pole - two handles at center pole 5 pole - three handles at center poles 6 pole - four handles at center poles S: Handle moves to mid-position only upon electrical trip of the breaker. Available with circuit codes B, C, D, E, F, G, H and K. 4 pole - two handles at center poles

circuit codes B, C, D, E, F, G, H and K.

T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker. Available with circuit codes B & C.

Switch Only circuits, rated up to 50 amps and 6 poles, and only available when tied to a protected pole (Circuit Code B, C, D or H.), For .02 to 30 amps, select Current Code 630. For 35 - 50 amps, select Current Code 650.

Available with terminal Codes 1, 2 and 3. Current Rating limited to 50A amps maximum. Consult factory for available Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line voltage. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only. Auxiliary Switch breakers with Series Trip & Switch Only circuits: ≤ 30A - supplied with standard half shells. 35-50A - supplied with extended boat (B-Style) half shells.

On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. Separate pole type voltage coils not rated for continuous duty. Available only with delay codes 10 and 20.

5

6 codes 10 and 20

Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps.

VDE Certification available with single pole breakers with DC Delay only. UL Recognition and CSA Accepted available in one and two pole breakers.

10

and CSA Accepted available in one and two pole breakers. Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.. Terminal Code 1: VDE Certification up to 25 amps and UL Recognition and CSA Certification up to 30 amps, but not recommended over 20 amps. Terminal Codes 3, 5, E and H (Bus Type) with VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only VDE Certified when the washers are used. Terminal Code L: VDE Certified available up to 12A. UL Recognized & CSA Accepted available up to 30A. 11

12 vailable up to 30A.

Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL Recognition and CSA Accepted, with Circuit Codes A, B and C. Two pole breakers with Terminal Code P (Printed Circuit Board) are available up to 40 amps with UL Recognition and CSA Accepted with Circuit Codes A, B and C. Terminal Code Q not available with VDE certification.

Single pole only.

7	CURRENT	<b>RATING</b>	(AMPERES)
---	---------	---------------	-----------

		(,, ,	,				
CODE 020	AMPERES 0.020	225	0.250	420	2.000	611	11.000
025	0.025	230	0.300	522	2.250	711	11.500
030	0.030	235	0.350	527	2.750	612	12.000
035	0.035	240	0.400	430	3.000	712	12.500
040	0.040	245	0.450	435	3.500	613	13.000
045	0.045	250	0.500	440	4.000	614	14.000
050	0.050	255	0.550	445	4.500	615	15.000
055	0.055	260	0.600	450	5.000	616	16.000
060	0.060	265	0.650	455	5.500	617	17.000
065	0.065	270	0.700	460	6.000	618	18.000
070	0.070	275	0.750	465	6.500	620	20.000
075	0.075	280	0.800	470	7.000	622	22.000
080	0.080	285	0.850	475	7.500	624	24.000
085	0.085	290	0.900	480	8.000	625	25.000
090	0.000	295	0.950	485	8.500	630	30.000
095	0.095	410	1.000	490	9.000		35.000
210	0.100	512	1.250	495	9.500		40.000
215	0.150	415	1.500	610	10.000		45.000
220	0.200	517	1.750	710	10.500		50.000
						000	30.000
	OLTAGE CO	IL (NO	KWAL RAIE	יטע עו	LIAGE) 0		
CODE	AMPERES	• • •	00.00	140	10.40	105	05.40
A06	6 DC	A32	32 DC	J12	12 AC	J65	65 AC
A12	12 DC	A48	48 DC	J18	18 AC	K20	120 AC
A18	18 DC	A65	65 DC	J24	24 AC	L40	240 AC
A24	24 DC	J06	6 AC	J48	48 AC		

					_
ο.	ΤEI		IINI	ΛI	9
		ΠIV	шч	ML	- 1

Push-On 0.250 Tab (Q.C.) 2 3 11 Screw 8-32 with upturned lugs

Screw 8-32 (Bus Type) Screw 10-32 with upturned lugs 5 <sup>11</sup> Screw 10-32 (Bus Type)

Screw 8-32 with upturned lugs & 30° bend

7 Screw 8-32 (Bus Type) & 30° bend Screw 10-32 with upturned lugs 8

& 30° bend Screw 10-32 (Bus Type) & 30° bend

В Screw M5 with upturned lugs Screw M4 with upturned lugs E 11 Screw M4 (Bus Type)

Screw M5 with upturned lugs & 30° bend Screw M5 (Bus Type) & 30° bend

H <sup>11</sup> Screw M5 (Bus Type) L <sup>12</sup> 0.250 Q.C./ Solder Lug

M 11 M6 Threaded Stud Q 14 Push-In Stud Screw M4 with upturned lugs

& 30° bend T 11 Screw M4 (Bus Type)

& 30° bend P 13 Printed Circuit Board Terminals

**S** <sup>13</sup> Push-On 0.110 Tab (Q.C.)

9 ACTUATOR COLOR & LEGEND				
Actuator Color	I-O	ON-OFF	Dual	Legend Color
White	Α	В	1	Black
Black	С	D	2	White
Red	F	G	3	White
Green	Н	J	4	White
Blue	K	L	5	White
Yellow	M	N	6	Black
Gray	P	Q	7	Black
Orange	R	S	8	Black
Black (short handle)15	Т	U	9	White

#### 10 MOUNTING / BARRIERS

	MOUNTING STYLE	BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
Α	6-32 x 0.195 inches	yes
2	ISO M3 x 5mm	no
В	ISO M3 x 5mm (multipole only)	yes
	Front panel Snap-In, 0.75" wide bezel	
5	without Handleguard	no
6	without Handleguard (multipole only)	yes
	Front panel Snap-In, 0.96" wide bezel	-
7	without Handleguard, 1-pole 0.96" wide;	no
	multipole units have .105" bezel overhang on all sides	
8	without Handleguard, 1-pole 0.96" wide;	yes
	(multipole only) 105" bezel overhang on all sides	-

## 11 AGENCY APPROVAL

UL Recognized & CSA Accepted
VDE Certified, UL Recognized & CSA Accepted Ď

TUV Certified, UL Recognized & CSA Accepted

UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted



#### 2 ACTUATOR <sup>1</sup>

- Handle, one per pole
- Mid-Trip Handle, one per pole Mid-Trip Handle, one per pole & Alarm Switch

#### 3 POLES 2

- One
- Two
- Three
- Four

#### **4 CIRCUIT**

Series Trip (Current)

#### 5 AUXILIARY/ALARM SWITCH <sup>2</sup>

- 0 without Aux Switch
- S.P.D.T., 0.093 Q.C. Term.
- S.P.D.T., 0.110 Q.C. Term.
- S.P.S.T., 0.110 Q.C. Term. (Gold Contacts)
- S.P.S.T., 0.187 Q.C. Term. S.P.D.T., 0.187 Q.C. Term.

#### **6 FREQUENCY & DELAY**

DC Ultra Short DC, Short, High-inrush 12 DC Short DC, Medium, High-inrush **56** 3 DC Medium 14 DC, Long, High-inrush DC Long 16

#### **7 CURRENT RATING (AMPERES)**

CODE	AMPERES					
210	0.100	285	0.850	455	5.500	<b>613</b> 13.000
215	0.150	290	0.900	460	6.000	<b>614</b> 14.000
220	0.200	295	0.950	465	6.500	<b>615</b> 15.000
225	0.250	410	1.000	470	7.000	<b>616</b> 16.000
230	0.300	512	1.250	475	7.500	<b>617</b> 17.000
235	0.350	415	1.500	480	8.000	<b>618</b> 18.000
240	0.400	517	1.750	485	8.500	<b>620</b> 20.000
245	0.450	420	2.000	490	9.000	<b>622</b> 22.000
250	0.500	522	2.250	495	9.500	<b>624</b> 24.000
255	0.550	527	2.750	610	10.000	<b>625</b> 25.000
260	0.600	430	3.000	710	10.500	<b>630</b> 30.000
265	0.650	435	3.500	611	11.000	<b>635</b> <sup>3</sup> 35.000
270	0.700	440	4.000	711	11.500	<b>640</b> <sup>3</sup> 40.000
275	0.750	445	4.500	612	12.000	<b>645</b> <sup>3</sup> 45.000
280	0.800	450	5.000	712	12.500	<b>650</b> <sup>3</sup> 50.000

#### 8 TERMINAL 5

- 1 6 Push-On 0.250 Tab (Q.C.)
- 2 Screw 8-32 with upturned lugs **3** 7 Screw 8-32 (Bus Type)
- Screw 10-32 with upturned lugs
- Screw 10-32 (Bus Type)
- Screw 8-32 with upturned lugs & 30° bend
- Screw 8-32 (Bus Type)
- & 30° bend
- Screw 10-32 with upturned lugs
- Screw 10-32 (Bus Type) 9 & 30° bend
- Screw M5 with upturned lugs
- Screw M5 with upturned lugs & 30° bend
- Screw M5 (Bus Type) & 30° bend
- Screw M5 (Bus Type) M6 Threaded Stud
- P<sup>8</sup> Printed Circuit Board Terminals
- Q 9 Push-In Stud

## 9 ACTUATOR COLOR & LEGEND

3 ACTUATOR COLOR	1 & LEGEND	•		
Actuator Color	ON-OFF	Dual	Legend Color	
White	В	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	
Black (short handle) 10	o U	9	White	

- 1	10 N	IOUNTING / BARRIERS	
		MOUNTING STYLE	BARRIERS
		Threaded Insert, 2 per pole	
1	1	6-32 x 0.195 inches	no
-	A	6-32 x 0.195 inches	yes
2	2	ISO M3 x 5mm	no
	В	ISO M3 x 5mm (multipole only)	yes
		Front panel Snap-In, 0.75" wide bezel	-
5	5	without Handleguard	no
6	3	without Handleguard (multipole only)	yes
		Front panel Snap-In, 0.96" wide bezel	-
7	7	without Handleguard, 1-pole 0.96" wide;	no
		multipole units have .105" bezel overhang on all sides	
8	3	without Handleguard, 1-pole 0.96" wide;	ves
		(multipole only) .105" bezel overhang on all sides	•
		. 1 7/	

#### 11 MAXIMUM APPLICATION RATING

80 DC

#### 12 AGENCY APPROVAL

- UL489A Listed
- ĸ UL489A Listed, VDE Certified UL489A Listed, TUV Certified

#### Notes:

- Actuator Code:

  Actuator Code:

  A: Handle tie pin spacer(s) and retainers provided un-assembled with multi-pole units.

  S: Handle moves to mid-position only upon electrical trip of the breaker.

  T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the
- On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole.

  VDE Certified to 30 amps. UL489A Listed to 50 amps.

  VDE Certification available with single pole breakers only. UL489A Listing available with one
- 5

- VDE Certification available with single pole breakers only. UL489A Listing available with one and two pole breakers.

  Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9 G, H, M and Q. Terminal Code 1 (Push-On) available up to 25 amps with VDE Certification and 30 amps with UL489A Listing, but is not recommended over 20 amps. Terminal Codes 3, 5 and H (Bus Type) with VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only VDE Certified when the washers are used. Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL489A Listing. Terminal Code Q not available with VDE certification.

- 10 Single pole only.



#### 2 ACTUATOR 1

- Handle, one per pole
- Handle, one per multipole unit
- Mid-Trip Handle, one per pole
- Mid-Trip Handle, one per pole & Alarm Switch

One 3 Three Five 6 Two Four Six

Switch Only (No Coil) Series Trip (Current) Series Trip (Voltage) **D** 3 Shunt Trip (Current) Shunt Trip (Voltage) Dual Coil with Shunt Trip Ē3 В H 3,4 c Voltage Coil

#### 5 AUXILIARY / ALARM SWITCH 5

without Aux Switch S.P.D.T., 0.110 Q.C. Term.

DC 50/60Hz Switch Only

## **6 FREQUENCY & DELAY**

us	DC 50/60Hz, SWILCH OHly	30	DC, 30/00HZ IIIStaritarieous
10	DC Instantaneous	31	DC, 50/60Hz Ultra Short
11	DC Ultra Short	32	DC, 50/60Hz Short
12	DC Short	34	DC, 50/60Hz Medium
14	DC Medium	36	DC, 50/60Hz Long
16	DC Long	<b>42</b> <sup>7</sup>	50/60Hz Short, High-inrush
20	50/60Hz Instantaneous	<b>44</b> <sup>7</sup>	50/60Hz Medium, High-inrush
21	50/60Hz Ultra Short	46 <sup>7</sup>	50/60Hz Long, High-inrush
22	50/60Hz Short	<b>52</b> <sup>7</sup>	DC, Short, High-inrush
24	50/60Hz Medium	54 <sup>7</sup>	DC, Medium, High-inrush
26	50/60Hz Long	56 <sup>7</sup>	DC, Long, High-inrush

30 DC 50/60Hz Instantaneous

#### **7 CURRENT RATING (AMPERES)**

CODE	AMPERES						
210	0.100	285	0.850	455	5.500	613	13.000
215	0.150	290	0.900	460	6.000	614	14.000
220	0.200	295	0.950	465	6.500	615	15.000
225	0.250	410	1.000	470	7.000	616	16.000
230	0.300	512	1.250	475	7.500	617	17.000
235	0.350	415	1.500	480	8.000	618	18.000
240	0.400	517	1.750	485	8.500	620	20.000
245	0.450	420	2.000	490	9.000	622	22.000
250	0.500	522	2.250	495	9.500	624	24.000
255	0.550	527	2.750	610	10.000	625	25.000
260	0.600	430	3.000	710	10.500	630	30.000
265	0.650	435	3.500	611	11.000	635 <sup>8</sup>	35.000
270	0.700	440	4.000	711	11.500	640 <sup>8</sup>	40.000
275	0.750	445	4.500	612	12.000	645 <sup>8</sup>	45.000
280	0.800	450	5.000	712	12.500	650 <sup>8</sup>	50.000
OR V	OLTAGE CO	IL (NO	RMAL RATE	D VO	LTAGE) <sup>6</sup>		
CODE	<b>AMPERES</b>						
A06	6 DC	A32	32 DC	J12	12 AC	J65	65 AC
A12	12 DC	A48	48 DC	J18	18 AC	K20	120 AC
A18	18 DC	A65	65 DC	J24	24 AC	L40	240 AC
A24	24 DC	J06	6 AC	J48	48 AC		

## 8 TERMINAL 9

- Push-On 0.250 Tab (Q.C.) Screw 8-32 with upturned lugs Screw 8-32 (Bus Type)
- Screw 10-32 with upturned lugs
- 5 <sup>11</sup> Screw 10-32 (Bus Type)
- 6 Screw 8-32 with upturned lugs & 30° bend
- Screw 8-32 (Bus Type) 7
- & 30° bend Screw 10-32 with upturned lugs
- Screw 10-32 (Bus Type)
- 9 & 30° bend
- Screw M5 with upturned lugs В
- Screw M4 with upturned lugs Screw M4 (Bus Type) С
- Screw M5 with upturned lugs & 30° bend
- Screw M5 (Bus Type) & 30° bend Screw M5 (Bus Type) Screw M4 with upturned lugs G H 11
- & 30° bend
- Screw M4 (Bus Type) & 30° bend

9 ACTUATOR COLOR	& LEGE	ND		
Actuator Color	I-O	Dual	Legend Color	
White	Α	1	Black	
Black	С	2	White	
Red	F	3	White	
Green	н	4	White	
Blue	K	5	White	
Yellow	M	6	Black	
Gray	Р	7	Black	
Orange	R	8	Black	
Black (short handle)15	Т	9	White	

10 1	IOUNTING / BARRIERS	
	MOUNTING STYLE	BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
Α	6-32 x 0.195 inches	yes
2	ISO M3 x 5mm	no
В	ISO M3 x 5mm (multipole only)	yes
	Front panel Snap-In, 0.75" wide bezel	
5	without Handleguard	no
6	without Handleguard (multipole only)	yes
	Front panel Snap-In, 0.96" wide bezel	
7	without Handleguard, 1-pole 0.96" wide;	no
	multipole units have .105" bezel overhang on all sides	
8	without Handleguard, 1-pole 0.96" wide;	yes
	(multipole only) 105" bezel overhang on all sides	-

#### 11 AGENCY APPROVAL

- TUV Certified, UL Recognized & CSA Accepted UL Recognized STD 1077, UL Recognized 1500 (ignition protected), Q & CSA Accepted

- Notes:

  Actuator Code:
  A: Handle tie pin spacer(s) and retainers provided unassembled with multi-pole units. S: Handle moves to mid-position only upon electrical trip of the breaker. Available with circuit codes B, C, D, E, and H.
  - T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker. Available with circuit codes B & C.
    Switch Only circuits, rated up to 50 amps and 6 poles, and only available when tied to a
- Switch Only circuits, rated up to 50 amps and 6 poles, and only available when tied to a protected pole (Circuit Code B, C, D or H.), For .01 to 30 amps, select Current Code 630. For 35 50 amps, select Current Code 650.

  Available with terminal Codes 1, 2 and 3. Current Rating limited to 30 amps maximum. Consult factory for available Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line voltage. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.

  On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. Separate note two voltage coils not rated for continuous duty. Available only with delay.
- Separate pole type voltage coils not rated for continuous duty. Available only with delay codes 10, 20 & 30.

  Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps.

  Available up to two poles with AC or DC delays.

- Available up to two poles with AC of De Clearlys.

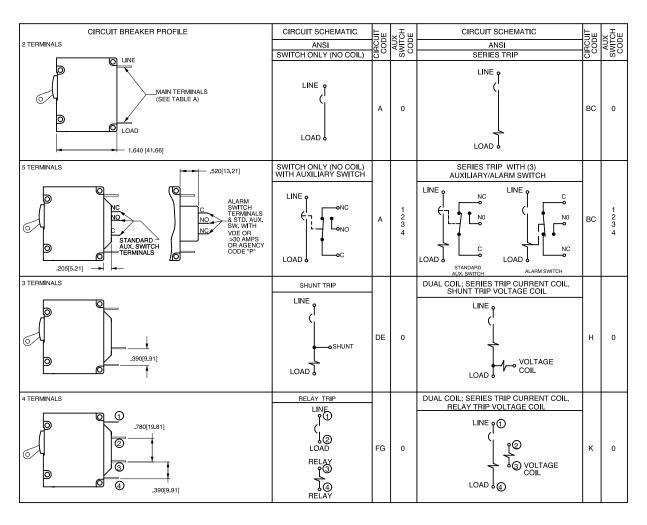
  Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G and H.

  Terminal Code 1: TUV Certification up to 30 amps, but not recommended over 20 amps.

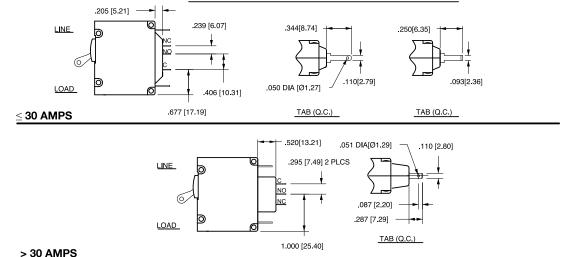
  Terminal Codes 3, 5, 7, 9, E, G and H (Bus Type) are supplied with Lock Washers.

  These breakers are only TUV Certified when the washers are used.
- 11
- 12 Single pole only.

# **Circuit & Terminal Diagrams: in. [mm]**



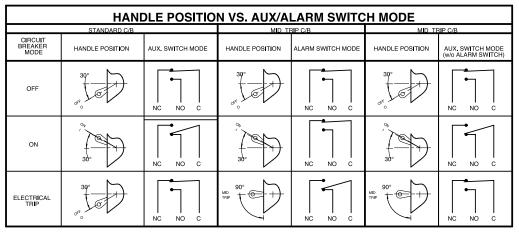
#### **AUXILIARY/ALARM SWITCH TERMINAL DETAIL**

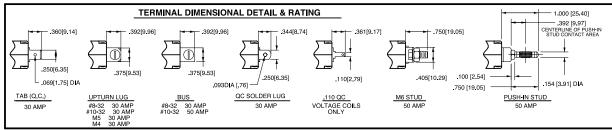


#### Notes

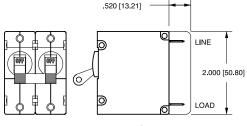
- All dimensions are in inches [millimeters].
  Tolerance ±.020 [.51] unless otherwise specified.
  Alarm Switch available with .110 x .020 Q.C. & Solder Lug Terminals Only.

# Circuit & Terminal Diagrams: in. [mm]







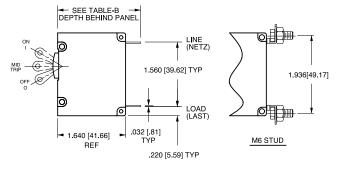


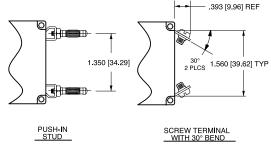
BARRIER FOR UL-RECOGNIZED MULTI-POLE BREAKERS

	TIABLE A TIGHTENING TORQUE SPECIFICATIONS				
THREAD SIZE	TORQUE				
#6-32 & M3 MOUNTING	7-9 IN-LBS				
HARDWARE	[0.8-1.0 NM]				
#8-32 & M4 THREAD	12-15 IN-LBS				
TERMINAL SCREW	[1.4-1.7 NM]				
#10-32 & M5 THREAD	15-20 IN-LBS				
TERMINAL SCREW	[1.7-2.3 NM]				

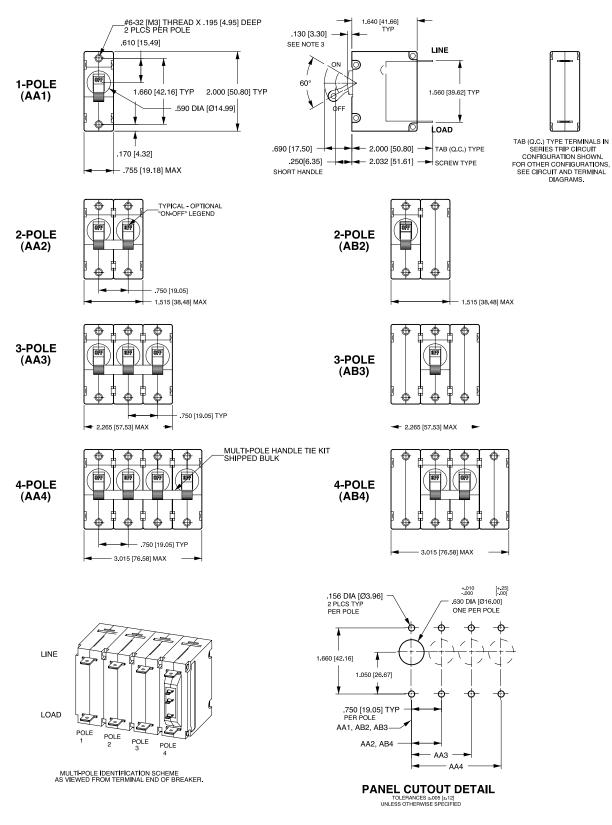
TABLE B					
TERMIN	DEPTH BEHIND PANEL				
	TAB (Q.C.)				
MAIN	SCREW TYPE	2.032 [51.60]			
SHUNT, RELAY	TAB (Q.C.)	2.207 [56.10]			
& DUAL COIL	SCREW #8-32 W/UPTURNED LUGS	2.364 [60.05]			
AUX. SWITCH*	.093 TAB (Q.C.)	2.095 [53.20]			
AUX. SWITCH	.110 TAB (Q.C.)	2.189 [55.60]			
	SOLDER TYPE	1.970 [50.00]			

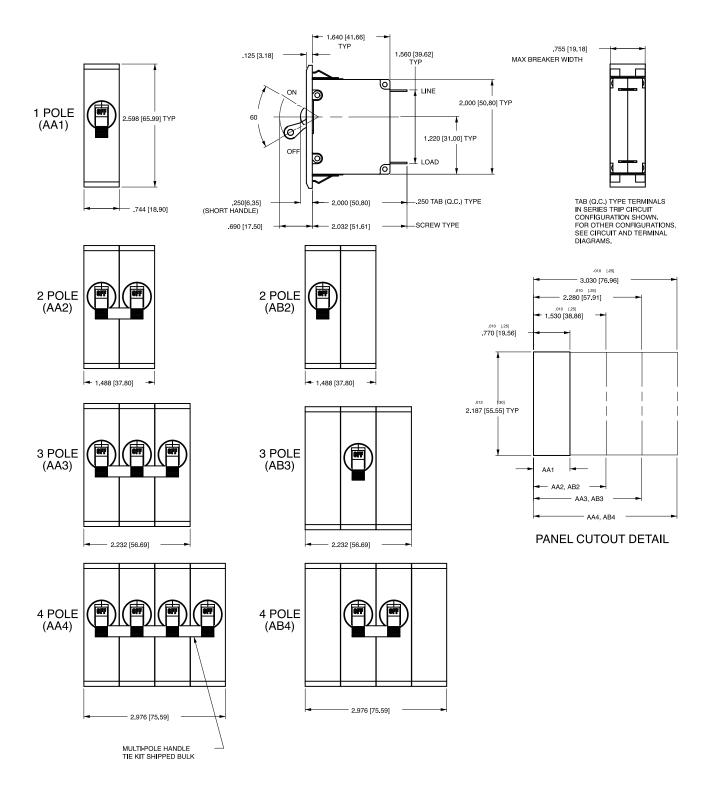
AVAILABLE ON SERIES TRIP AND SWITCH ONLY CIRCUITS. WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, AS SHOWN IN MULTI-POLE IDENTIFICATION SCHEME.



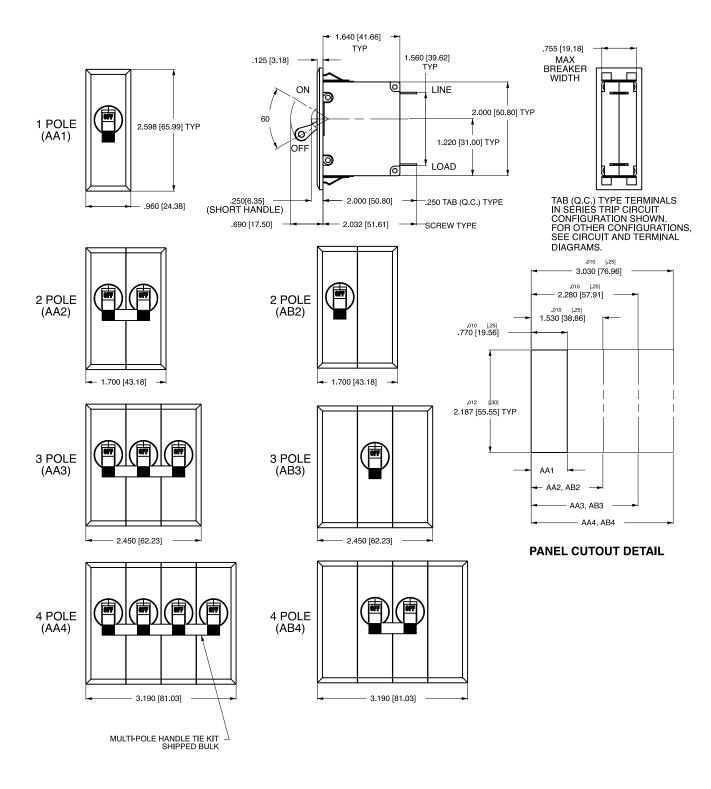


- vs.
  All dimensions are in inches [millimeters].
  Tolerance ±.020 [.51] unless otherwise specified.
  Alarm Switch available with .110 x .020 QC & solder lug terminals only.





- All dimensions are in inches [millimeters].
  Recommended panel thickness: .040 [1.02] to .100 [2.54].
  Tolerance ±.020 [.51] unless otherwise specified.



All dimensions are in inches [millimeters].
Recommended panel thickness: .040 [1.02] to .100 [2.54].
Tolerance ±.020 [.51] unless otherwise specified.



#### 2 ACTUATOR 1

Sealed Toggle, one per unit

#### 3 POLES

- One Two
- Three

- 4 CIRCUIT A 2 Switch Switch Only (No Coil) Series Trip (Current) Series Trip (Voltage) В
- c Shunt Trip (Current)
- Shunt Trip (Voltage)
- **G** 3
- Relay Trip (Current) Relay Trip (Voltage) Dual Coil with Shunt Trip **H** 3,4 Voltage Coil
- Dual Coil with Relay Trip Voltage Coil

#### 5 AUXILIARY / ALARM SWITCH 5

- 0 without Aux Switch
- S.P.D.T., 0.093 Q.C. Term.
- S.P.D.T., 0.110 Q.C. Term. S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)
- S.P.S.T., 0.110 Q.C. Term.
- (Gold Contacts) S.P.S.T., 0.187 Q.C. Term. S.P.D.T., 0.187 Q.C. Term. 8
- 6 FREQUENCY & DEL AY

011	ILGOLIACI & DELAI		
03	DC 50/60Hz, Switch Only	30	DC, 50/60Hz Instantaneous
10	DC Instantaneous	31	DC, 50/60Hz Ultra Short
11	DC Ultra Short	32	DC, 50/60Hz Short
12	DC Short	34	DC, 50/60Hz Medium
14	DC Medium	36	DC, 50/60Hz Long
16	DC Long	<b>42</b> <sup>7</sup>	50/60Hz Short, High-inrush
20	50/60Hz Instantaneous	44 <sup>7</sup>	50/60Hz Medium, High-inrush
21	50/60Hz Ultra Short	46 <sup>7</sup>	50/60Hz Long, High-inrush
22	50/60Hz Short	<b>52</b> <sup>7</sup>	DC, Short, High-inrush
24	50/60Hz Medium	54 <sup>7</sup>	DC, Medium, High-inrush
26	50/60Hz Long	56 <sup>7</sup>	DC, Long, High-inrush

## **7 CURRENT RATING (AMPERES)**

CODL	AMPLILL					
020	0.020	230	0.300	425	2.500	<b>612</b> 12.000
025	0.025	235	0.350	527	2.750	<b>712</b> 12.500
030	0.030	240	0.400	430	3.000	<b>613</b> 13.000
035	0.035	245	0.450	435	3.500	<b>614</b> 14.000
040	0.040	250	0.500	440	4.000	<b>615</b> 15.000
045	0.045	255	0.550	445	4.500	<b>616</b> 16.000
050	0.050	260	0.600	450	5.000	<b>617</b> 17.000
055	0.055	265	0.650	455	5.500	<b>618</b> 18.000
060	0.060	270	0.700	460	6.000	<b>620</b> 20.000
065	0.065	275	0.750	465	6.500	<b>622</b> 22.000
070	0.070	280	0.800	470	7.000	<b>624</b> 24.000
075	0.075	285	0.850	475	7.500	<b>625</b> 25.000
080	0.080	290	0.900	480	8.000	<b>630</b> 30.000
085	0.085	295	0.950	485	8.500	<b>635</b> 8 35.000
090	0.090	410	1.000	490	9.000	<b>640</b> 8 40.000
095	0.095	512	1.250	495	9.500	<b>645</b> <sup>8</sup> 45.000
210	0.100	415	1.500	610	10.000	<b>650</b> 8 50.000
215	0.150	517	1.750	710	10.500	
220	0.200	420	2.000	611	11.000	
225	0.250	522	2.250	711	11.500	

#### OR VOLTAGE COIL (NORMAL RATED VOLTAGE) 6

A06 A12 A18	6 DC 12 DC 18 DC 24 DC	A48	32 DC 48 DC 65 DC 6 AC	J18 J24	12 AC 18 AC 24 AC 48 AC	65 AC 120 AC 240 AC

# 8 TERMINAL 9 1 10 Push-On 0

- Push-On 0.250 Tab (Q.C.) Screw 8-32 with upturned lugs
- 3 Screw 8-32 (Bus Type)
- Screw 10-32 with upturned lugs
- Screw 10-32 (Bus Type)
- 6 Screw 8-32 with upturned lugs & 30° bend
- Screw 8-32 (Bus Type) & 30° bend
- 8 Screw 10-32 with upturned lugs & 30° bend
- Screw 10-32 (Bus Type) & 30° bend
- Screw M5 with upturned lugs Screw M4 with upturned lugs

- Ε Screw M4 (Bus Type) Screw M5 with upturned lugs
  - $\&~30^{\circ}$  bend
- Screw M5 (Bus Type) & 30° bend G
- Screw M5 (Bus Type) 0.250 Q.C./ Solder Lug н
- L 12 M6 Threaded Stud
- Push-In Stud
- Screw M4 with upturned lugs  $\&~30^{\circ}$  bend
- Screw M4 (Bus Type)
- & 30° bend
- P 12 Printed Circuit Board Terminals Push-On 0.110 Tab (Q.C.)
- 9 LEGEND PLATE

0 No legend plate

# 10 MOUNTING / BARRIERS MOUNTING STYLE

Standard Hex Nut (multipole only)

**BARRIERS** Standard Hex Nut nο yes

- 11 AGENCY APPROVAL С
  - UL Recognized & CSA Accepted
    UL Recognized STD 1077, UL Recognized 1500 (ignition protected),
    & CSA Accepted

#### Notes

- Actuator Code M: Handle location as viewed from front of panel:

- Actuator Code M: Handle location as viewed from front of panel:

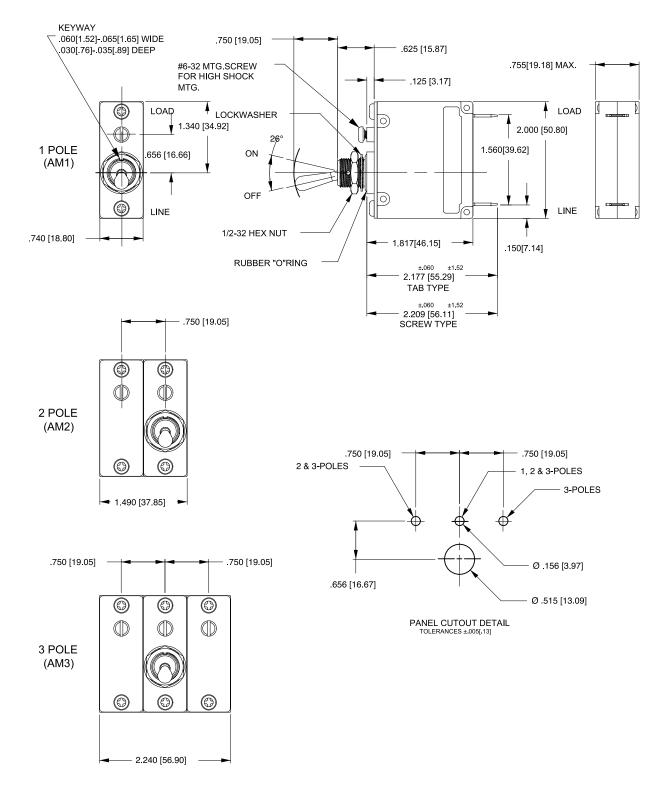
  2 pole right pole 3 pole center pole

  Switch Only circuits, rated up to 50 amps and 3 poles. Only available when tied to a protected pole. For .02 to 30 amps, select Current Code 630. For 35 50 amps, select Current Code 650. For 35 50 amps, select Current Did to the company of the company of the company of the construction, Dual Colis will trip instantaneously on line voltage. Dual colis require 30\text{Vist} migram power to trip and are rated for intermittent duty only.
- 5
- Shurt construction, Dual Colls will trip instantaneously on line Voitage. Dual colls require 30VA minimum power to trip and are rated for intermittent duty only. Auxiliary Switch available on Series Trip & Switch Only circuits, limited to 30 amps. On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. Voltage coils not rated for continuous duty. Available only with delay codes 10 and 20. Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accented & T.I. IV Certified to 50 amps.
- Available with Crutic Goods & Donly, VDE Certified to 30 amps. DE Recognized Accepted & TUV Certified to 50 amps. UL Recognition and CSA Certification available on one and two pole breakers. Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, B, F, G, H, M and Q. Terminal Code 1: UL Recognition and CSA Certification up to 30 amps, but not

- recommended over 20 amps.

  Terminal Code L : available up to 30A.

  Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 50 amps, with Circuit Codes A, B and C. Two pole breakers with Terminal Code F (Printed Circuit Board) are available up to 40 amps with Circuit Codes A, B and C.



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



2 A	CTUATOR 1		ROCKER STYLE	DESCRIPTIONS	s
Tw	o Color Visi-Rocker		HORIZONTAL STYLE	VERTICAL STYL	E
c	Indicate ON, vertical legend	.NO	CODE "D"	LINE CODE	"C"
D	Indicate ON, horizontal legend		ON OFF		
F	Indicate OFF, vertical legend	INDICATE	1 0	/ OF	<b>"</b>
G H	Indicate OFF, horizontal legend Indicate OFF, no legend	[음		INDICATE O	.
	sh-To-Reset, Visi-Rocker	=	LNE	INDICATE COLOR LOCATION	
N	Indicate OFF, vertical legend	ñ	CODE "G", "O"	CODE "F",	"N"
ö	Indicate OFF, horizontal legend	"OFF"	OFF ON		
P	Indicate OFF, no legend		6 T	/ / off	
Sir	igle color	INDICATE		A P	
Ĵ	Vertical legend	볼	LINE	LINE	J
Κ	Horizontal legend	Н	CODE "K", "U"	CODE "J". "	*D*
L	No legend	COLOR	CODE K, U		n
	sh-To-Reset , Single color	8	OFF ON	) \   <b>c</b> ea	
R	Vertical legend	쁬		( ) op	
V	Horizontal legend	SINGLE	LINE	LINE ) DEF	
v	No legend	٠,			

3 P	OLES				
1	One	2	Two	3	Three

A <sup>3</sup> B C D <sup>4</sup>	RCUIT Switch Only (No Coil) Series Trip (Current) Series Trip (Voltage) Shunt Trip (Current)		Relay Trip (Current) Relay Trip (Voltage) Dual Coil with Shunt Trip Voltage Coil Dual Coil with Relay Trip
E <sup>4</sup>	Shunt Trip (Current) Shunt Trip (Voltage)	Κ 1,0	Voltage Coil

#### 5 AUXILIARY / ALARM SWITCH 6,7

0	without Aux Switch	7	S.P.S.T., 0.110 Q.C. Term.
1	S.P.D.T., 0.093 Q.C. Term.		(Gold Contacts)
2	S.P.D.T., 0.110 Q.C. Term.	8	S.P.S.T., 0.187 Q.C. Term.
5	S.P.S.T., 0.093 Q.C. Term.	9	S.P.D.T., 0.187 Q.C. Term.
	(Gold Contacts)		•

#### 6 FREQUENCY & DELAY 03 DC 50/60Hz, Switch Only DC, 50/60Hz Instantaneous DC Instantaneous DC, 50/60Hz Ultra Short DC Ultra Short DC Short 32 34 DC, 50/60Hz Short DC, 50/60Hz Medium 11 12 DC Medium DC, 50/60Hz Long 16 20 21 **42** 9 DC Long 50/60Hz Instantaneous 50/60Hz Short, High-inrush 50/60Hz Medium, High-inrush **44** 9 50/60Hz Ultra Short 50/60Hz Long, High-inrush **52** 9 **54** 9 22 24 50/60Hz Short DC, Short, High-inrush DC, Medium, High-inrush 50/60Hz Medium 50/60Hz Long DC, Long, High-inrush

- push-To-Reset actuators have OFF portion of rocker shrouded.

  Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.

  Switch Only circuits, rated up to 50 amps & 3 poles, are available only when tied to a protected pole (Circuit Code B, C, D or H), For .02 to 30 amps, select Current Code 630.

  For 35 50 amps, select Current Code 650.

  Available with terminal Codes 1, 2 and 3. Current Rating limited to 30 amps maximum.

  Consult factory for Dual Coil options, as special catalog number is required.

  With Shunt construction, Dual Coils will trip instantaneously on line voltage. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.

  Auxiliary Switch breakers with Series Trip & Switch Only circuits: ≤ 30A, are supplied with standard half shells. 30-50A are supplied with extended boat (B-Style) half shells.

  On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. Separate pole type voltage coils not rated for continuous duty, Available only with delay codes 10 & 20. Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps. 3

- 6

- 11

- Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized, CSA Accepted & TUV Certified to 50 amps.

  Series Trip current ratings: VDE Certification available with single pole breakers with DC Delay only.

  UL Recognition & CSA Accepted available in one and two pole breakers.

  Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.

  Terminal Code 1: VDE Certification up to 25 amps and UL Recognition and CSA Accepted up to 30 amps, but not recommended over 20 amps.

  Terminal Codes 3, 5 E & H (Bus Type) with VDE, are supplied with Lock Washers; Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only VDE Certification when the washers are used.

  VDE Cert. available up to 12 amps. UL Rec. & CSA Accepted available up to 30 amps. Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL Recognition and CSA Accepted, with Circuit Codes A, B & C.

  Two pole breakers with Terminal Code P (Printed Circuit Board) are available up to 40 amps with UL Recognition and CSA Accepted, with Circuit Codes A, B & C.

  Terminal Code Q not available with VDE.

- OL Recognition and CSA Certification with CTCoin Codes A, B and C. Terminal Code G not available with VDE. Terminal Code S used on voltage coil circuit constructions only. Color shown is visi and legend with remainder of rocker black. Dual = ON-OFF/I-O legend with actuator. None = no legend on actuator Legend on Push-to-reset bezel/shroud is white with single color actuator codes R, & U. Legend on Push-to-reset bezel/shroud matches Visi-color of rocker with actuator codes N & O. Rockerguard available with actuator codes C through L.

		Color Barriers	πρριοναί
7 CURRENT RATI	ING (AMPERES	s)	
CODE AMPERES 020 0.020	<b>225</b> 0.250	<b>420</b> 2.000	<b>611</b> 11.000
<b>025</b> 0.025	<b>230</b> 0.300	<b>522</b> 2.250	<b>711</b> 11.500
<b>030</b> 0.030	<b>235</b> 0.350	<b>527</b> 2.750	<b>612</b> 12.000
<b>035</b> 0.035	<b>240</b> 0.400	<b>430</b> 3.000	<b>712</b> 12.500
<b>040</b> 0.040	<b>245</b> 0.450	<b>435</b> 3.500	<b>613</b> 13.000
<b>045</b> 0.045	<b>250</b> 0.500	<b>440</b> 4.000	<b>614</b> 14.000
<b>050</b> 0.050	<b>255</b> 0.550	<b>445</b> 4.500	<b>615</b> 15.000
<b>055</b> 0.055	<b>260</b> 0.600	<b>450</b> 5.000	<b>616</b> 16.000
<b>060</b> 0.060	<b>265</b> 0.650	<b>455</b> 5.500	<b>617</b> 17.000
<b>065</b> 0.065	<b>270</b> 0.700	<b>460</b> 6.000	<b>618</b> 18.000
<b>070</b> 0.070	<b>275</b> 0.750	<b>465</b> 6.500	<b>620</b> 20.000
<b>075</b> 0.075	<b>280</b> 0.800	<b>470</b> 7.000	<b>622</b> 22.000
<b>080</b> 0.080	<b>285</b> 0.850	<b>475</b> 7.500	<b>624</b> 24.000
<b>085</b> 0.085	<b>290</b> 0.900	<b>480</b> 8.000	<b>625</b> 25.000
<b>090</b> 0.090	<b>295</b> 0.950	<b>485</b> 8.500	<b>630</b> 30.000
<b>095</b> 0.095	<b>410</b> 1.000	<b>490</b> 9.000	<b>635</b> 8 35.000
<b>210</b> 0.100	<b>512</b> 1.250	<b>495</b> 9.500	<b>640</b> <sup>8</sup> 40.000 <b>645</b> <sup>8</sup> 45.000
<b>215</b> 0.150	<b>415</b> 1.500	<b>610</b> 10.000	<b>650</b> 8 50.000
<b>220</b> 0.200	<b>517</b> 1.750	<b>710</b> 10.500	<b>650</b> ° 50.000
	IL (NORMAL R	ATED VOLTAGE) 8	
CODE AMPERES A06 6 DC	<b>A32</b> 32 DC	<b>J12</b> 12 AC	<b>J65</b> 65 AC
A12 12 DC	<b>A48</b> 48 DC	J12 12 AC J18 18 AC	<b>K20</b> 120 AC
A12 12 DC A18 18 DC	<b>A65</b> 65 DC	<b>J24</b> 24 AC	<b>L40</b> 240 AC
<b>A24</b> 24 DC	<b>J06</b> 6 AC	J48 48 AC	L40 240 AC
A27 24 DC	000 0 AC	40 AC	

 TE	RI	MIN	ΙΔΙ	11

<b>1</b> 12	Push-On 0.250 Tab (Q.C.)
2 12	Screw 8-32 with upturned lugs

- Screw 8-32 (Bus Type) Screw 10-32 with upturned lugs Screw 10-32 (Bus Type) 13
- 6 Screw 8-32 with upturned lugs & 30° bend Screw 8-32 (Bus Type)
- & 30° bend Screw 10-32 with upturned lugs 8
- & 30° bend 9 Screw 10-32 (Bus Type)
- & 30° bend Screw M5 with upturned lugs Screw M4 with upturned lugs ВС
- E 13 Screw M4 (Bus Type) F Screw M5 with upturned lugs & 30° bend
- G Screw M5 (Bus Type) & 30° bend H 13 Screw M5 (Bus Type) L 14 0.250 Q.C./ Solder Lug M 13 M6 Threaded Stud
- P 15 Printed Circuit Board Terminals Q 16 Push-In Stud
- Screw M4 with upturned lugs & 30° bend
- **S** <sup>17</sup> Push-On 0.110 Tab (Q.C.) & 30° bend
- Screw M4 (Bus Type) & 30° bend

9 ACTUATOR COLOR & LEGEND					
Actuator or	0020	Marking:	_	Marking (	Color
Visi-Color 12	I-O	ON-OFF	Dual 12	Single Color	
White	Α	В	1	Black	White
Black	С	D	2	White	n/a
Red	F	G	3	White	Red
Green	Н	J	4	White	Green
Blue	K	L	5	White	Blue
Yellow	M	N	6	Black	Yellow
Gray	Р	Q	7	Black	Gray
Orange	R	S	8	Black	Orange

10 N	OUNTING / BARRIERS 20	
	STANDARD ROCKER BEZEL	BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
Α	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
В	ISO M3 x 5mm (multi-pole units only)	ves
	ROCKERGUARD & PUSH-TO-RESET BEZEL	
	Threaded Insert, 2 per pole	
3	6-32 x 0.195 inches	no
C 4 D	6-32 x 0.195 inches (multi-pole units only)	yes
4	ISO M3 x 5mm	no
D	ISO M3 x 5mm (multi-pole units only)	ves
	FRONT PANEL SNAP-IN BRACKÉT, 0.744" [1	8.90mm] wide bezel
8	without Rockerguard (single pole units only)	no <sup>-</sup>
Ĥ	with Rockerquard (single pole units only)	no
	FRONT PANEL SNAP-IN BRACKET, 0.96" [24	.48mml wide bezel
9	without Rockerquard (single pole units only)	no
Ĵ	with Rockerguard (single pole units only)	no
•	man noonengaara (emigro pero armo emi)	

#### 11 AGENCY APPROVAL

- UL Recognized & CSA Accepted
- D VDE Certified, UL Recognized & CSA Accepted
- TUV Certified, UL Recognized & CSA Accepted UL Recognized STD 1077, UL Recognized 1500 (ignition protected), & CSA Accepted



#### 2 ACTUATOR 1

#### Two Color Visi-Rocker

- Indicate ON, vertical legend Indicate ON, horizontal legend Indicate OFF, vertical legend
- Indicate OFF, horizontal legend

#### Single color

- Vertical legend
- Horizontal legend

# Push-To-Reset, Visi-Rocker N Indicate OFF, vertical legend

Indicate OFF, horizontal legend

## Push-To-Reset , Single color

- Vertical legend
- **U** Horizontal legend

	ROCKER STYLE DESCRIPTIONS					
	INDICATE "ON"	INDICATE "OFF"	SINGLE COLOR			
VERTICAL STYLE	NDICATE COLOR ON COM	CODE "F", "N"	CODE "J", "R"			
HORIZONTAL STYLE	CODE "D"	CODE "G", "O"	CODE "K", "U"			

### 3 POLES 2

- One
- Two 3 Three

#### **4 CIRCUIT**

Series Trip (Current)

#### 5 AUXILIARY / ALARM SWITCH <sup>2</sup>

- without Aux Switch
- S.P.D.T., 0.093 Q.C. Term.
- S.P.D.T., 0.110 Q.C. Term.

- (Gold Contacts) S.P.S.T., 0.187 Q.C. Term. S.P.D.T., 0.187 Q.C. Term.

S.P.S.T., 0.110 Q.C. Term.

#### **6 FREQUENCY & DELAY**

- DC Ultra Short 11
- DC Short 12
- DC Medium
- DC, Short, High-inrush DC, Medium, High-inrush
- DC Long
- DC, Long, High-inrush

#### **7 CURRENT RATING (AMPERES)**

CODE	AMPERES					
210	0.100	285	0.850	455	5.500	<b>613</b> 13.000
215	0.150	290	0.900	460	6.000	<b>614</b> 14.000
220	0.200	295	0.950	465	6.500	<b>615</b> 15.000
225	0.250	410	1.000	470	7.000	<b>616</b> 16.000
230	0.300	512	1.250	475	7.500	<b>617</b> 17.000
235	0.350	415	1.500	480	8.000	<b>618</b> 18,000
240	0.400	517	1.750	485	8.500	<b>620</b> 20.000
245	0.450	420	2.000	490	9.000	<b>622</b> 22.000
250	0.500	522	2.250	495	9.500	<b>624</b> 24.000
255	0.550	527	2.750	610	10.000	<b>625</b> 25.000
260	0.600	430	3.000	710	10.500	<b>630</b> 30.000
265	0.650	435	3.500	611	11.000	<b>635</b> <sup>4</sup> 35.000
270	0.700	440	4.000	711	11.500	<b>640</b> <sup>4</sup> 40.000
275	0.750	445	4.500	612	12.000	<b>645</b> <sup>4</sup> 45.000
280	0.800	450	5.000	712	12.500	<b>650</b> <sup>4</sup> 50.000

- 8 TERMINAL 5 1 6 Push-On 0 Push-On 0.250 Tab (Q.C.)
- Screw 8-32 with upturned lugs Screw 8-32 (Bus Type)
- Screw 10-32 with upturned lugs Screw 10-32 (Bus Type)
- Screw 8-32 with upturned lugs & 30° bend
- Screw 8-32 (Bus Type) & 30° bend
- Screw 10-32 with upturned lugs & 30° bend
- Screw 10-32 (Bus Type)
- & 30° bend Screw M5 with upturned lugs В Screw M5 with upturned lugs
- & 30° bend Screw M5 (Bus Type) & 30° bend
- Screw M5 (Bus Type)
- M 7 M6 Threaded Stud
- Printed Circuit Board Terminals

nο

Q 9 Push-In Stud

### 9 ACTUATOR COLOR & LEGEND

9 ACTUATOR COLOR & LEGEND						
Actuator or	Marking:		Marking Color			
Visi-Color 10	ON-OFF	Dual 10	Single Color	Visi-Rocker		
White	В	1	Black	White		
Black	D	2	White	n/a		
Red	G	3	White	Red		
Green	J	4	White	Green		
Blue	L	5	White	Blue		
Yellow	N	6	Black	Yellow		
Gray	Q	7	Black	Gray		
Orange	S	8	Black	Orange		

10 I	MOUNTING / BARRIERS 11	
	STANDARD ROCKER BEZEL	BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
Α	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
В	ISO M3 x 5mm (multi-pole units only)	yes
	ROCKERGUARD & PUSH-TO-RESET BEZEL	_
	Threaded Insert, 2 per pole	
3	6-32 x 0.195 inches	no
С	6-32 x 0.195 inches (multi-pole units only)	yes
4	ISO M3 x 5mm	no
D	ISO M3 x 5mm (multi-pole units only)	yes
	FRONT PANEL SNAP-IN BRACKET, 0.744" [	18.90mm] wide bezel
8	without Rockerguard (single pole units only)	no
Н	with Rockerguard (single pole units only)	no
	FRONT PANEL SNAP-IN BRACKET, 0.96" [24	4.48mm] wide bezel
9	without Rockerguard (single pole units only)	no

#### 11 MAXIMUM APPLICATION RATING

80 DC

#### 12 AGENCY APPROVAL

- UL489A Listed
- UL489A Listed, VDE Certified UL489A Listed, TUV Certified

Push-To-Reset actuators have OFF portion of rocker shrouded

with Rockerguard (single pole units only)

- Push 10-Heset actuators have OF- portion of rocker shrouced. Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.

  Auxiliary Switch breakers with Series Trip circuits: ≤ 30A, are supplied with standard half shells.

  30-50A are supplied with extended boat (B-Style) half shells.

  VDE Certification available with single pole breakers only. UL489A Listing available with one part has pells beachers.

- VDE Certification available with single pole breakers only. UL489A Listing available with one and two pole breakers.

  Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, 6, H, M and Q. Terminal Code 1 (Push-On) available up to 25 amps with TUV or VDE Certification and 30 amps with UL489A Listing, but is not recommended over 20 amps. Terminal Codes 3, 5 and H (Bus Type) with TUV or VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only TUV or VDE Certified when the washers are used. Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL489A Listing. Terminal Code Q not available with VDE certification.

- Color shown is Visi and Legend with remainder of rocker black. Dual = ON-OFF/I-O legend. Legend on Push-to-reset bezel/shroud is white with single color actuator codes R & U. Legend on Push-To-Reset bezel/shroud matches Visi-Color of rocker with actuator codes N & O. Rockerguard available with actuator codes C through K

# **Circuit & Terminal Diagrams: in. [mm]**

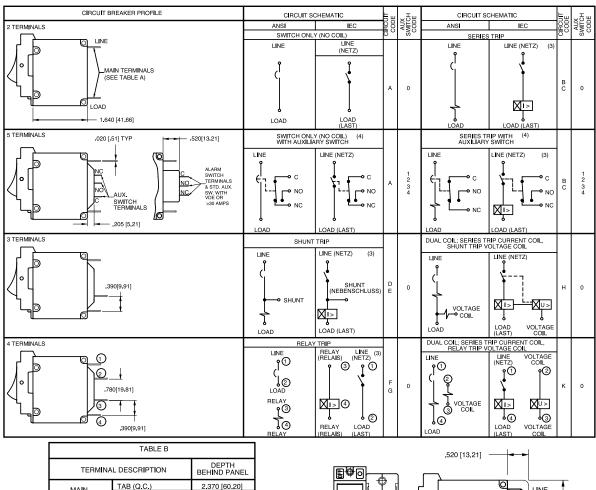
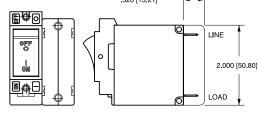
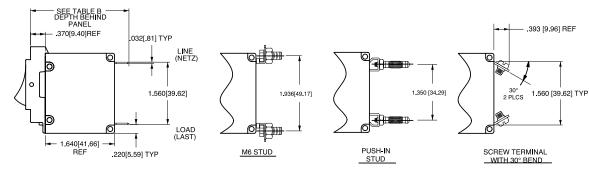


TABLE B					
TERMINA	DEPTH BEHIND PANEL				
MAIN	TAB (Q.C.)	2.370 [60.20]			
WAIN	SCREW TYPE	2.402 [61.01]			
SHUNT, RELAY	TAB (Q.C.)	2.577 [65.46]			
DUAL COIL	SCREW #8-32 W/UPTURNED LUGS	2.734 [69.44]			
AUX.	.093 TAB (Q.C.)	2.465 [62.61]			
SWITCH*	.110 TAB (Q.C.)	2.559 [65.00]			
	SOLDER TYPE	2.340 [59.44]			

\* AVAILABLE ON SERIES TRIP AND SWITCH ONLY CIRCUITS. WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, AS VIEWED IN MULTI-POLE IDENTIFICATION SCHEME.

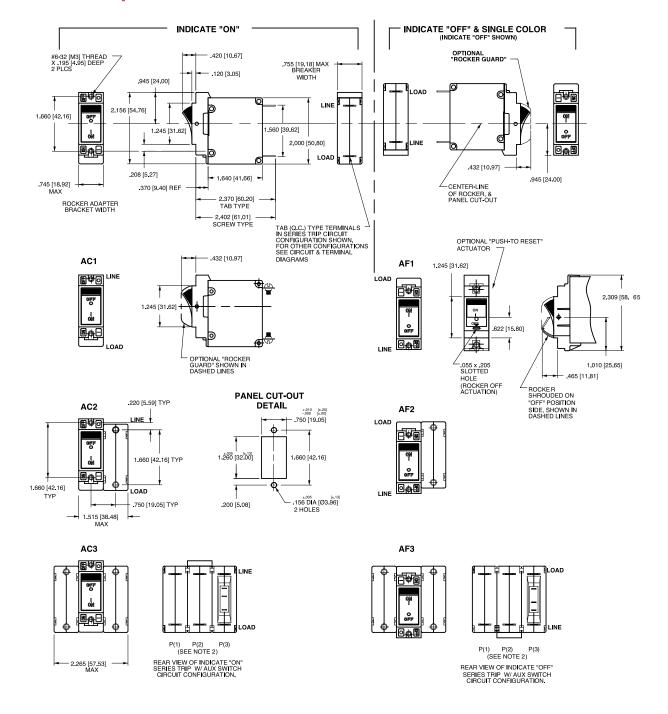


BARRIER FOR UL-RECOGNIZED MULTI-POLE BREAKERS



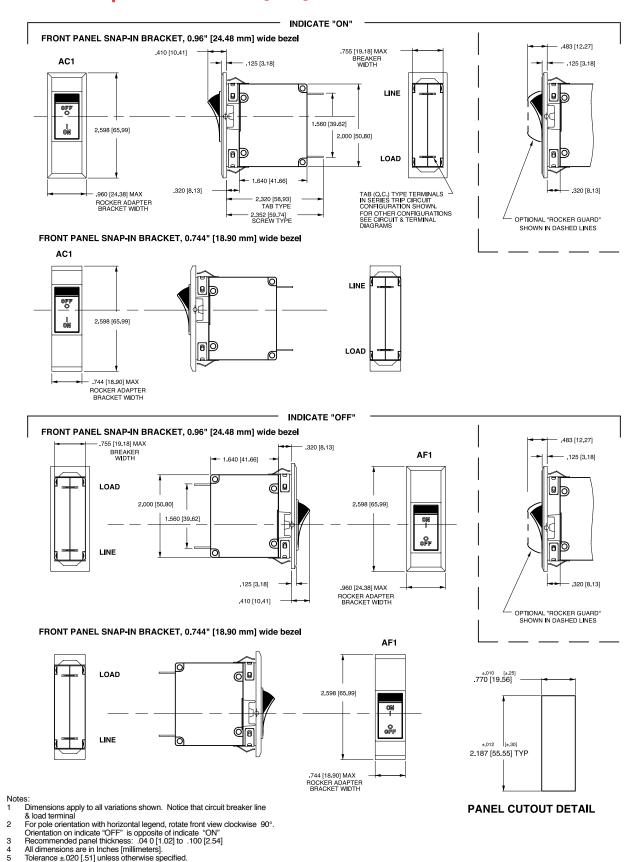
## Notes:

- ss:
  All dimensions are in inches [millimeters],
  Tolerance ±020 [.51] unless otherwise specified.
  Schematic shown represents current trip circuit.
  Circuits shown for >30 amps / VDE.



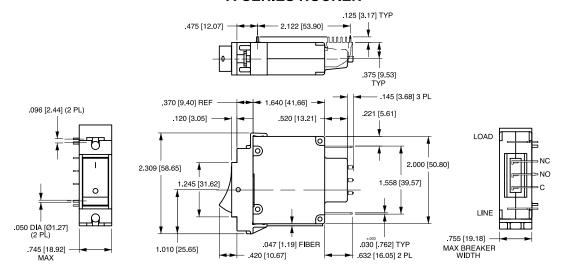
- Dimensions apply to all variations shown. Notice that circuit breaker line & load terminal orientation on indicate OFF is opposite of indicate ON. For pole orientation with horizontal legend, rotate front view clockwise 90°. All dimensions are in inches [millimeters].

- Tolerance ± 0.20 [.51] unless otherwise specified.

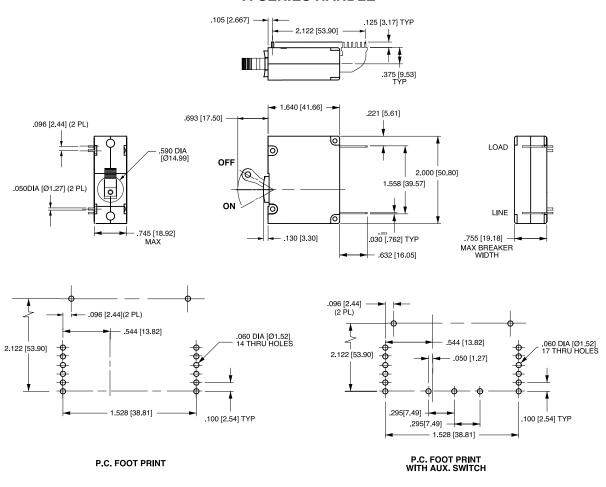


# PC Terminal Diagrams: in. [mm]

## **A-SERIES ROCKER**



## **A-SERIES HANDLE**



#### Notes

- Drawing illustrates A-Series with VDE certification.
  All dimensions are in inches [millimeters].
- Tolerance ± 0.20 [.51] unless otherwise specified



2 ACTUATOR <sup>1</sup> Two Color Visi-Rocker Indicate OFF, vertical legend Indicate OFF, horizontal legend Single color Vertical legend

 Vertical legend
 Horizontal legend
 Push-To-Reset, Visi-Rocker
 Indicate OFF, vertical legend
 Indicate OFF, horizontal legend
 Push-To-Reset, Single color
 Vertical legend Vertical legend Horizontal legend

	R	OCKER STYLE D	ESCRIPTIONS
		INDICATE "OFF"	SINGLE COLOR
d		CODE "1", "5"	CODE "3", "7"
J	VERTICAL STYLE	NINCATE COLOR LINE	GH CONTROL
d	HORIZONTAL STYLE	CODE "2", "6"	CODE "4", "8"

#### 3 POLES <sup>2</sup> 1 One Two 3 Three

4 CIRCUIT A 3 Switch B Series Relay Trip (Current) Switch Only (No Coil) Series Trip (Current) Series Trip (Voltage) Shunt Trip (Current) Shunt Trip (Voltage) G <sup>4</sup> H 4,5

Relay Trip (Voltage) Dual Coil with Shunt Trip Voltage Coil Dual Coil with Relay Trip Voltage Coil

#### 5 AUXILIARY / ALARM SWITCH 6,7 without Aux Switch S.P.D.T., 0.093 Q.C. Term. S.P.D.T., 0.110 Q.C. Term. S.P.S.T., 0.110 Q.C. Term. (Gold Contacts) S.P.S.T., 0.187 Q.C. Term. ., 0.093 Q.C. Term.. S.P.D.T., 0.187 Q.C. Term. (Gold Contacts)

6 FREQUENCY & DELAY 03 DC 50/60Hz, Switch Only DC, 50/60Hz Instantaneous 10 6 DC Instantaneous DC, 50/60Hz Ultra Short DC Ultra Short DC Short DC, 50/60Hz Short DC, 50/60Hz Medium DC Medium DC, 50/60Hz Long 50/60Hz Short, High-inrush 50/60Hz Medium, High-inrush 50/60Hz Long, High-inrush 16 20 <sup>6</sup> DC Long 50/60Hz Instantaneous 42 50/60Hz Ultra Short **46** <sup>9</sup> **52** 9 22 50/60Hz Short 50/60Hz Medium DC, Short, High-inrush DC, Medium, High-inrush 50/60Hz Long DC, Long, High-inrush

7 CUF CODE 020 025	AMPERES 0.020 0.025	NG (AI 225 230	0.250 0.300	420 522	2.000 2.250	611 711	11.000 11.500
030 035	0.030 0.035	235 240	0.350 0.400	527 430	2.750 3.000	612 712	12.000 12.500
040	0.035	245	0.450	435	3.500	613	13.000
045	0.045	250	0.500	440	4.000	614	14.000
050 055	0.050 0.055	255 260	0.550 0.600	445 450	4.500 5.000	615 616	15.000 16.000
060	0.060	265	0.650	455	5.500	617	17.000
065	0.065	270	0.700	460	6.000	618	18.000
070 075	0.070 0.075	275 280	0.750 0.800	465 470	6.500 7.000	620 622	20.000
080	0.080	285	0.850	475	7.500	624	24.000
085	0.085	290	0.900	480	8.000	625	25.000
090 095	0.090 0.095	295 410	0.950 1.000	485 490	8.500 9.000	630 635 <sup>8</sup>	30.000 35.000
210	0.100	512	1.250	495	9.500	640 8	40.000
215	0.150	415	1.500	610	10.000	645 <sup>8</sup>	45.000
220	0.200	517	1.750	710	10.500	<b>650</b> <sup>8</sup>	50.000
	OLTAGE CO	IL (NO	RMAL RATE	D VOL	TAGE) <sup>8</sup>		
CODE A06	AMPERES 6 DC	A32	32 DC	J12	12 AC	J65	65 AC
A12	12 DC	A48	48 DC	J18	18 AC	K20	120 AC
A18	18 DC	A65	65 DC	J24	24 AC	L40	240 AC
A24	24 DC	J06	6 AC	J48	48 AC		

1 <sup>12</sup> 2	RMINAL 11 Push-On 0.250 Tab (Q.C.) Screw 8-32 with upturned lugs Screw 8-32 (Bus Type) Screw 10-32 with upturned lugs Screw 10-32 (Bus Type)	F G	Screw M4 (Bus Type) Screw M5 with upturned lugs & 30° bend Screw M5 (Bus Type) & 30° bend Screw M5 (Bus Type)
6	Screw 8-32 with upturned lugs & 30° bend	L 14	0.250 Q.C./ Solder Lug M6 Threaded Stud
7	Screw 8-32 (Bus Type) & 30° bend	P 15 Q	Printed Circuit Board Terminals Push-In Stud
8	Screw 10-32 with upturned lugs & 30° bend	R	Screw M4 with upturned lugs & 30° bend
9	Screw 10-32 (Bus Type) & 30° bend	S 16	Push-On 0.110 Tab (Q.C.) & 30° bend
B C	Screw M5 with upturned lugs Screw M4 with upturned lugs	T	Screw M4 (Bus Type) & 30° bend

9 ACTUATOR O	OLOR & LE Marki	ng:	Markin	g Color
Visi-Color 17	ON-OFF	Dual 17	Single Color	Visi-Rocker
White	В	1	Black	White
Black	D	2	White	n/a
Red	G	3	White	Red
Green	J	4	White	Green
Blue	L	5	White	Blue
Yellow	N	6	Black	Yellow
Gray	Q	7	Black	Gray
Orange	S	8	Black	Orange

$\overline{}$								
10 /	10 MOUNTING / BARRIERS 18							
	STANDARD ROCKER BEZEL BARRIERS							
	Threaded Insert, 2 per pole							
	FLAT ROCKER ACTUATOR							
1	6-32 x 0.195 inches	no						
Α	6-32 X 0.195 inches (multi-pole units only)	yes						
A 2	ISO M3 x 5mm	no						
В	ISO M3 x 5mm (multi-pole units only)	ves						
	RECESSED OFF SIDE ROCKER ACTUATOR 19	•						
5	6-32 x 0.195 inches	no						
5 E 6 F	6-32 x 0.195 inches (multi-pole units only)	yes						
6	ISO M3 x 5mm	no						
F	ISO M3 x 5mm (multi-pole units only)	yes						
	PUSH-TO-RESET BEZEL, Threaded Insert, 2 per	pole						
3	6-32 x 0.195 inches	no no						
3 C	6-32 x 0.195 inches (multi-pole units only)	yes						
4	ISO M3 x 5mm	no						
D	ISO M3 x 5mm (multi-pole units only)	yes						
_	ice we kermin (main pole anne emy)	you						

#### 11 AGENCY APPROVAL

UL Recognized & CSA Accepted

TUV Certified, UL Recognized & CSA Accepted UL Recognized STD 1077, UL Recognized 1500 (ignition protected),

& CSA Accepted

Push-To-Reset actuators have OFF portion of rocker shrouded.
Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or

Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker.

Switch Only circuits, rated up to 50 amps & 3 poles. Only available when tied to a protected pole. For .02 to 30 amps, select Current Code 630. For 35 - 50 amps, select Current Code 650. Available with terminal Codes 1, 2 and 3. Current Rating limited to 30 amps maximum. Consult factory for Dual Coil options, as special catalog number is required. With Shunt construction, Dual Coils will trip instantaneously on line voltage. Dual coils require 30VA minimum power to trip and are rated for intermittent duty only.

Auxiliary Switch breakers with Series Trip & Switch Only circuits: ≤ 30A, are supplied with standard half shells. 30-50A are supplied with extended boat (Fs.Style) half shells.

On multi-pole breakers, one auxiliary switch is supplied, mounted in the extreme right pole. Separate pole type voltage coils not rated for continuous duty. Available only with delay codes 10 & 20. Available with Circuit Codes B & 0 only. UL Recognized, CSA Accepted & TUV Certified to 50 amps. UL Recognition, CSA Acceptance & TUV Certification available in one and two pole breakers. Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q. Terminal Code 1. Available up to 30 amps, but not recommended over 20 amps. Terminal Codes 3, 5 E & H (Bus Type) with TUV, are supplied with Lock and Flat Washers. These breakers are only TUV Certified when the washers are used.

6

Code M (M6 Threaded Stud) with TUV is supplied with Lock and Flat Washers. These breakers are only TUV Certified when the washers are used.

TUV Cert. available up to 12 amps. UL Rec. & CSA Accepted available up to 30 amps. Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 50 amps with UL Recognition, CSA Accepted & TUV Certification, with Circuit Codes A, B and C. Two pole breakers with Terminal Code P (Printed Circuit Board) are available up to 40 amps with UL Recognition and CSA Accepted with Circuit Codes A, B and C. Terminal Code S used on voltage coil circuit constructions only.

Color shown is visi and legend with remainder of rocker black, Dual = ON-OFF/I-O legend. Legend on Push-to-reset bezel/shroud is white with single color actuator codes 7 & 8. Legend on Push-To-Reset bezel/shroud matches Visi-Color of rocker with actuator codes 5 & 6. Recessed "off-side" available with actuator codes 1, 2, 3 & 4. Legends on rocker are available in ink stamping only.

18

19 in ink stamping only.



#### **ROCKER STYLE DESCRIPTIONS** 2 ACTUATOR 1 Two Color Visi-Rocker INDICATE "OFF" SINGLE COLOR Indicate OFF, vertical legend Indicate OFF, horizontal legend CODE "1" "5' CODE "3", "7 Single color 3 Vertical legend OM I Wertitical regenta Horizontal legend Push-To-Reset, Visi-Rocker Indicate OFF, vertical legend Indicate OFF, horizontal legend O OFF CODE "2", "6 CODE Push-To-Reset , Single color MO OFF 1900 I Vertical legend Horizontal legend

3 POLES <sup>2</sup> 1 One	<b>2</b> Two	3 Three

# 4 CIRCUIT B Series Trip (Current)

5 A	UXILIARY / ALARM SWITCH 3	7	S.P.S.T., 0.110 Q.C. Term.
0	without Aux Switch		(Gold Contacts)
1	S.P.D.T., 0.093 Q.C. Term.	8	S.P.S.T., 0.187 Q.C. Term.
2	S.P.D.T., 0.110 Q.C. Term.	9	S.P.D.T., 0.187 Q.C. Term.

6 FF	REQUENCY & DELAY		
11	DC Ultra Short	52	DC, Short, High-inrush
12	DC Short	54	DC, Medium, High-inrush
14	DC Medium	56	DC, Long, High-inrush
16	DC Long		, 0, 0

7 CU	RRENT RAT	ING (A	MPERES)			
020	0.020	225	0.250	420	2.000	<b>611</b> 11.000
025	0.025	230	0.300	522	2.250	<b>711</b> 11.500
030	0.030	235	0.350	527	2.750	<b>612</b> 12.000
035	0.035	240	0.400	430	3.000	<b>712</b> 12.500
040	0.040	245	0.450	435	3.500	<b>613</b> 13.000
045	0.045	250	0.500	440	4.000	<b>614</b> 14.000
050	0.050	255	0.550	445	4.500	<b>615</b> 15.000
055	0.055	260	0.600	450	5.000	<b>616</b> 16.000
060	0.060	265	0.650	455	5.500	<b>617</b> 17.000
065	0.065	270	0.700	460	6.000	<b>618</b> 18.000
070	0.070	275	0.750	465	6.500	<b>620</b> 20.000
075	0.075	280	0.800	470	7.000	<b>622</b> 22.000
080	0.080	285	0.850	475	7.500	<b>624</b> 24.000
085	0.085	290	0.900	480	8.000	<b>625</b> 25.000
090	0.090	295	0.950	485	8.500	<b>630</b> 30.000
095	0.095	410	1.000	490	9.000	<b>635</b> <sup>4</sup> 35.000
210	0.100	512	1.250	495	9.500	<b>640</b> <sup>4</sup> 40.000
215	0.150	415	1.500	610	10.000	<b>645</b> <sup>4</sup> 45.000
220	0.200	517	1.750	710	10.500	<b>650</b> <sup>4</sup> 50.000

#### 8 TERMINAL 5

- 1 6 Push-On 0.250 Tab (Q.C.) Screw 8-32 with upturned lugs
- Screw 8-32 (Bus Type)
- Screw 10-32 with upturned lugs
- Screw 10-32 (Bus Type) Screw 8-32 with upturned lugs 6
- & 30° bend Screw 8-32 (Bus Type) & 30° bend
- Screw 10-32 with upturned lugs & 30° bend
- Screw 10-32 (Bus Type)
- & 30° bend
- Screw M5 with upturned lugs Screw M5 with upturned lugs
- & 30° bend Screw M5 (Bus Type) & 30° bend Screw M5 (Bus Type)
- M6 Threaded Stud
- Printed Circuit Board Terminals
- Q 9 Push-In Stud

9 ACTUATOR ( Actuator or	COLOR & LE Marki	ng:	Markin	g Color
Visi-Color 11	ON-OFF	Dual 11	Single Color	Visi-Rocker
White	В	1	Black	White
Black	D	2	White	n/a
Red	G	3	White	Red
Green	J	4	White	Green
Blue	L	5	White	Blue
Yellow	N	6	Black	Yellow
Gray	Q	7	Black	Gray
Orange	S	8	Black	Orange

10 N	OUNTING / BARRIERS 12 STANDARD ROCKER BEZEL Threaded Insert, 2 per pole FLAT ROCKER ACTUATOR	BARRIERS
1	6-32 x 0.195 inches	no
Α	6-32 X 0.195 inches (multi-pole units only)	ves
A 2	ISO M3 x 5mm	no
В	ISO M3 x 5mm (multi-pole units only)	yes
	RECESSED OFF SIDE ROCKER ACTUATOR	1
5	6-32 x 0.195 inches	no
5 E 6 F	6-32 x 0.195 inches (multi-pole units only)	yes
6	ISO M3 x 5mm	no
F	ISO M3 x 5mm (multi-pole units only)	yes
	PUSH-TO-RESET BEZEL, Threaded Insert, 2	per pole
3	6-32 x 0.195 inches	no
С	6-32 x 0.195 inches (multi-pole units only)	yes
4	ISO M3 x 5mm	no
D	ISO M3 x 5mm (multi-pole units only)	yes

# 11 MAXIMUM APPLICATION RATING

80 DC

## 12 AGENCY APPROVAL

UL489A Listed

UL489A Listed, TUV Certified

- Notes:

  1 Push-To-Reset actuators have OFF portion of rocker shrouded.
- Multi-pole breakers have all breakers identical except when specifying Auxiliary switch and/or mixed poles, and have one rocker per breaker. Auxiliary Switch breakers with Series Trip circuits: < 30A, are supplied with standard half shells. 30-50A are supplied with extended boat (B-Style) half shells. VDE Certification available with single pole breakers only. UL489A Listing available with one
- and two pole breakers.

- and two pole breakers.

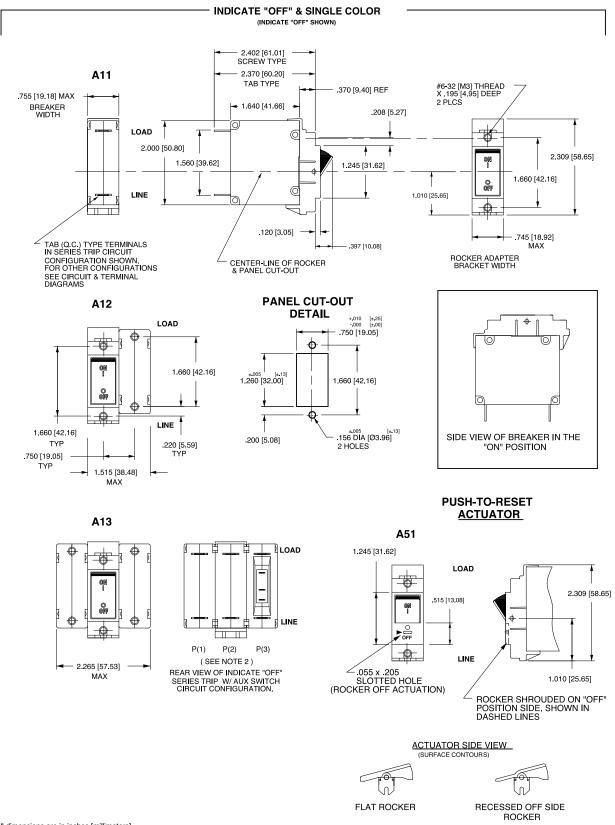
  Screw Terminals are recommended on ratings greater than 20 amps. Ratings over 30 amps are only available with Terminal Codes 5, 9, G, H, M and Q.

  Terminal Code 1 (Push-On) available up to 25 amps with TUV or VDE Certification and 30 amps with UL489A Listing, but is not recommended over 20 amps. Terminal Codes 3, 5 and H (Bus Type) with TUV or VDE, are supplied with Lock Washers, and Terminal Code M (M6 Threaded Stud) with VDE is supplied with Lock and Flat Washers. These breakers are only TUV or VDE Certified when the washers are used. Single pole breakers with Terminal Code P (Printed Circuit Board) are available up to 30 amps with VDE Certification and 50 amps with UL489A Listing.

  Terminal Code Q not available with VDE certification.

- Color shown is Visi and Legend with VDE certification:

  Color shown is Visi and Legend with remainder of rocker black. Dual = ON-OFF/I-O legend. Legend on Push-to-reset bezel/shroud is white with single color actuator codes R & U. Legend on Push-To-Reset bezel/shroud matches Visi-Color of rocker with actuator codes N & O. Rockerguard available with actuator codes C through K



Notes

All dimensions are in inches [millimeters].
For pole orientation with horizontal legend, rotate front view clockwise 90°.
Tolerance ± 0.20 [.51] unless otherwise specified.



& Delay

# 1 SERIES

Single Color Recessed Paddle Actuator with Vertical Legends

### 3 POLES 2

One Two Three

#### **4 CIRCUIT**

- Switch-Only (No Coil) Series Trip (Current) Series Trip (Voltage) Shunt Trip (Current) B C D E
- Relay Trip (Current) G

Switch

- Relay Trip (Voltage)
  Dual Coil with Shunt Trip Voltage Coil
  Dual Coil with Shunt Trip Current Coil
- Shunt Trip (Voltage)

#### **5 AUXILIARY SWITCH**

- 0
- without Aux Switch S.P.D.T. with 0.093 Q.C. Terminals S.P.D.T. with 0.110 Q.C. Terminals

- S.P.D.T. with 0.139 Solder Lug Terminals
  S.P.D.T. with 0.139 Solder Lug Terminals
  S.P.D.T. with 0.093 Q.C. Terminals (Gold Contacts)
  S.P.S.T.-N.O. with 0.139 Solder Lug Terminals
  S.P.S.T.-N.O. with 0.110 Q.C. Terminals (Gold Contacts)
  S.P.S.T.-N.O. with 0.187 Q.C. Terminals
  S.P.D.T. with 0.187 Q.C. Terminals
- 8

- 6 FREQUENCY & DELAY 3
  3 DC, 50/60 Hz Switch Only
  10 DC Instantaneous
- 12
- DC Ultra Short
  DC Short
  DC Medium
  DC Long
  50/60 Hz Instantaneous 50/60 Hz Ultra Short
- 50/60 Hz Short
- 24 26 42
- 50/60 Hz Short 50/60 Hz Medium 50/60 Hz Long 50/60 Hz Short High-inrush 50/60 Hz Medium High-inrush 50/60 Hz Long High-inrush DC, Short, High-inrush DC, Medium, High-inrush DC, Long, High-inrush 46

### 7 CURRENT RATING (AMPERES) 4

CODE	AMPERES						
220	0.200	295	0.950	460	6.000	614	14.000
225	0.250	410	1.000	465	6.500	615	15.000
230	0.300	512	1.250	470	7.000	616	16.000
235	0.350	415	1.500	475	7.500	617	17.000
240	0.400	517	1.750	480	8.000	618	18.000
245	0.450	420	2.000	485	8.500	620	20.000
250	0.500	522	2.250	490	9.000	622	22.000
255	0.550	425	2.500	495	9.500	624	24.000
260	0.600	527	2.750	610	10.000	625	25.000
265	0.650	430	3.000	710	10.500	630	30.000
270	0.700	435	3.500	611	11.000	635	35.000
275	0.750	440	4.000	711	11.500	640	40.000
280	0.800	445	4.500	612	12.000	645	45.000
285	0.850	450	5.000	712	12.500	650	50.000
290	0.900	455	5.500	613	13.000		

OR VOLTAGE COIL (NORMAL RATED VOLTAGE)							
CODE	<b>AMPERES</b>						
A06	6 DC	A32	32 DC	J12	12 AC	J65	65 AC
A12	12 DC	A48	48 DC	J18	18 AC	K20	120 AC
A18	18 DC	A65	65 DC	J24	24 AC	L40	240 AC
A24	24 DC	106	6 40	1/18	48 AC		

## **8 TERMINAL**

Push-On 0.250 Tab (Q.C.)

Color

- Screw 8-32 with upturned lugs
- Screw 8-32 (Bus Type) Screw 10-32 with upturned lugs
- Screw 10-32 (Bus Type)
- Screw 8-32 with upturned lugs & 30° bend
- 7 Screw 8-32 (Bus Type) & 30° bend
- Screw 10-32 with upturned lugs & 30° bend
- Screw 10-32 (Bus Type) & 30° bend
- В Screw M5 with upturned lugs

Screw, M4 with upturned lugs

Rating

Approval

- Screw, M4 (Bus Type) Screw M5 with upturned lugs E
- & 30° bend Screw M5 (Bus Type) & 30° bend
- Screw M5 (Bus Type)
- 0.250 Q.C./Solder Lug
- М M6 Threaded Stud
- Р Printed Circuit Board Terminals
- Q Push-In Stud
- R Screw, M4 with upturned lugs & 30° Bend
- Screw, M5 with upturned lugs
- Screw, M4 with upturned lugs

Barriers

#### 9 ACTUATOR COLOR & LEGEND 5 Actuator Color I-O ON-OFF Dual **Legend Color**

AALIIIG		ь		Diack	
Black	С	D	2	White	
Red	F	G	3	White	
Green	Н	J	4	White	
Blue	K	L	5	White	
Yellow	М	N	6	Black	
Gray	P	Q	7	Black	
Orange	R	S	8	Black	

#### 10 MOUNTING / PARRIERS

10 N	IOUNTING / BARRIERS	BARRIERS
1	6-32 x 0.195 inches	no
Α	6-32 X 0.195 inches (multi-pole units only)	yes
2	ISO M3 x 5mm	no
В	ISO M3 x 5mm (multi-pole units only)	yes

# 11 MAXIMUM APPLICATION RATING 6

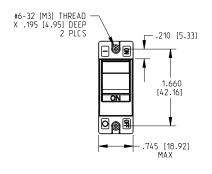
- 65 VDC
- A 120/240 VAC (Available only on 2 or 3-Pole units)
- 80 DC

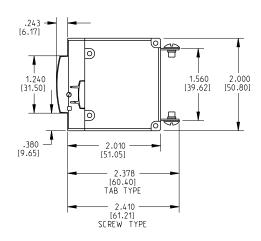
#### 12 AGENCY APPROVAL 7

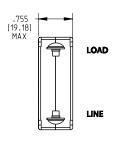
- Without Approvals A
- UL Recognized and CSA Accepted
- UL 489A

- All standard catalog numbers are supplied with Vertical Legends. For Horizontal or other non-standard legends, choose "X" and order as a special catalog number. For rating (T) 2 & 3 Pole not available. Frequency and Time Delay ratings of (03, 20, 21, 22, 24, 26, 42, 44, 46) not available with approval T.

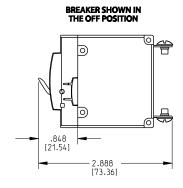
- Voltage Coil Ratings starting with (J, K, or L) not available with approval T. "OFF and/or "O" Legends are on Bracket and are only visible when the Paddle Actuator is in the off position.
- Maximum Application Ratings (C & K) not available with approval T. Not all approvals are available in all constructions. Consult factory for details.



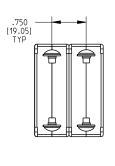


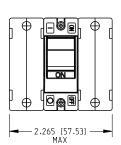


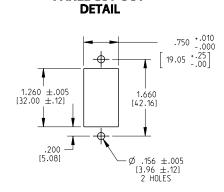
# BREAKER SHOWN IN THE OFF POSITION .750 [19.05] TYP 1.515 [38.48] MAX



**PANEL CUT-OUT** 







- $\begin{array}{ll} \text{Notes:} \\ 1 & \text{All dimensions are in inches [millimeters].} \\ 2 & \text{Tolerance} \pm 0.20 \, [.51] \, \text{unless otherwise specified} \\ \end{array}$

## **Authorized Sales Representatives and Distributors**

Click on a region of the map below to find your local representatives and distributors or visit www.carlingtech.com/findarep.



## **About Carling**

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.

To view all of Carling's environmental, quality, health & safety certifications please visit www.carlingtech.com/environmental-certifications

## **Worldwide Headquarters**

Carling Technologies, Inc. 60 Johnson Avenue, Plainville, CT 06062 **Phone:** 860.793.9281 **Fax:** 860.793.9231

Email: sales@carlingtech.com

Northern Region Sales Office: nrsm@carlingtech.com Southeast Region Sales Office: sersm@carlingtech.com Midwest Region Sales Office: mrsm@carlingtech.com West Region Sales Office: wrsm@carlingtech.com Latin America Sales Office: larsm@carlingtech.com

## **Asia-Pacific Headquarters**

Carling Technologies, Asia-Pacific Ltd., Suite 1607, 16/F Tower 2, The Gateway, Harbour City, 25 Canton Road, Tsimshatsui, Kowloon, Hong Kong

Phone: Int + 852-2737-2277 Fax: Int + 852-2736-9332

**Email:** sales@carlingtech.com.hk

**Shenzhen, China:** shenzhen@carlingtech.com **Shanghai, China:** shanghai@carlingtech.com

Pune, India: india@carlingtech.com

**Kaohsiung, Taiwan:** taiwan@carlingtech.com **Yokohama, Japan:** japan@carlingtech.com

## **Europe | Middle East | Africa Headquarters**

Carling Technologies LTD 4 Airport Business Park, Exeter Airport, Clyst Honiton, Exeter, Devon, EX5 2UL, UK

**Phone:** Int + 44 1392.364422 **Fax:** Int + 44 1392.364477

Email: ltd.sales@carlingtech.com

**Germany:** gmbh@carlingtech.com **France:** sas@carlingtech.com

