



Designed specifically for world market applications, the B-series utilizes the hydraulic magnetic principle which provides precise operation and performance even when exposed to extremely hot and/or cold application environments. Typical applications include power supplies, medical equipment, office equipment, control panels and marine equipment.

1-6 poles, 0.02 - 50 amps, up to 277 VAC or 80 VDC, with choice of time delays, terminals and actuator colors.

Agency Certifications

UL Recognized

UL Standard 1077



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

UL Standard 508



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

UL Standard 1500



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

UL Listed

UL Standard 489A



Communications Equipment (Guide CCN/DITT, File E189195)

CSA Certified



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

VDE Certified



EN60934, VDE 0642 under File No. 10537

Electrical

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

B-SERIES TABLE A: COMPONENT SUPPLEMENTARY PROTECTOR							
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING		INTERRUPTING CAPACITY (AMPS)	
	MAX RATING	FREQUENCY	PHASE	FULL LOAD AMPS	GENERAL PURPOSE AMPS	UL / CSA	
						WITH BACKUP FUSE	WITHOUT BACKUP FUSE
SERIES	65	DC	---	31 - 50	---	---	3000
	80	DC	---	0.02 - 30	---	---	3000
	80	DC	---	---	31 - 50	---	1500
	125/250	50/60	1 ³	0.02 - 30	---	---	3000
	125/250	50/60	1 ³	31 - 50	---	---	2000
	250	50/60	1	0.02 - 30	---	2000 ¹	---
	250	50/60	1	---	31 - 50	2000 ¹	---
	250	50/60	3	0.02 - 20	---	5000 ¹	---
	250	50/60	3	21 - 30	---	2000 ¹ 5000 ²	---
	277	50/60	1	0.02 - 30	---	5000 ¹	---
DUAL COIL	80	DC	---	0.02 - 30	---	---	3000
	250	50/60	1 & 3	0.02 - 20	---	5000 ¹	---
	250	50/60	1 & 3	21 - 30	---	2000 ¹ 5000 ²	---
	277	50/60	1	0.02 - 30	---	5000 ¹	---
SHUNT	80	DC	---	0.02 - 30	---	---	3000
	250	50/60	1 & 3	0.02 - 20	---	5000 ¹	---
	250	50/60	1 & 3	21 - 30	---	2000 ¹ 5000 ²	---
	277	50/60	1	0.02 - 30	---	5000 ¹	---
RELAY	80	DC	---	0.02 - 30	---	---	3000
	250	50/60	1 & 3	0.02 - 20	---	5000 ¹	---
	250	50/60	1 & 3	21 - 30	---	2000 ¹ 5000 ²	---
	277	50/60	1	0.02 - 30	---	5000 ¹	---
SWITCH ONLY	65	DC	---	0.02 - 50	---	---	---
	80	DC	---	0.02 - 30	---	---	---
	250	50/60	1	31 - 50	---	---	---
	250	50/60	1	---	31 - 50	---	---
	250	50/60	3	0.02 - 50	---	---	---
	277	50/60	1	0.02 - 30	31 - 50	---	---

Notes for Table A:

- 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.
- Same as note 1, except that backup fuse is limited to 80 A maximum.
- 2 pole protector required (with one pole per power line) for: 250/125 VAC, 125/250 VAC and 208Y/120 VAC Power Systems. 1 pole protector required for : 125 VAC, 1Ø Power System.

Electrical

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

B-SERIES TABLE B: COMPONENT SUPPLEMENTARY PROTECTOR											
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING		INTERRUPTING CAPACITY (AMPS)					
	MAX RATING	FREQUENCY	PHASE	FULL LOAD AMPS	GENERAL PURPOSE AMPS ¹	UL / CSA		VDE		TUV	
						WITH BACKUP FUSE	WITHOUT BACKUP FUSE	(Inc) WITH BACKUP FUSE	(Inc) WITHOUT BACKUP FUSE	(Inc) WITH BACKUP FUSE	(Inc) WITHOUT BACKUP FUSE
SERIES	80	DC	---	0.10 - 30	---	---	3000	3000	1500	3000	1500
	80	DC	---	31 - 50	31 - 50	---	1500	3000	1500	3000	1500
	80	DC	---	31 - 32	31 - 32	---	1500	3000	1500	3000	1500
	250	50/60	1 & 3	0.10 - 20	---	5000 ²	3000	3000	1500	3000	1500
	250	50/60	1 & 3	21 - 30	---	2000 ² 5000 ³	---	3000	1500	3000	1500
	250	50/60	1	0.10 - 30	---	---	2000	3000	1500	5000	1500
	250	50/60	1	31 - 50	---	---	2000	---	---	5000	1500
DUAL COIL	80	DC	---	0.10 - 30	---	---	3000	3000	1500	3000	1500
	250	50/60	1 & 3	0.10 - 20	---	5000 ²	---	3000	1500	3000	1500
	250	50/60	1 & 3	21 - 30	---	2000 ² 5000 ³	---	3000	1500	3000	1500
	250	50/60	1	31 - 50	31 - 50	---	2000	---	---	5000	1500
SHUNT	80	DC	---	0.10 - 30	---	---	3000	3000	1500	3000	1500
	250	50/60	1 & 3	0.10 - 20	---	5000 ²	---	3000	1500	3000	1500
	250	50/60	1 & 3	21 - 30	---	2000 ² 5000 ³	---	3000	1500	3000	1500
	250	50/60	1	31 - 50	31 - 50	---	2000	---	---	5000	1500

Notes for Table B:

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 1, except that backup fuse is limited to 80 A maximum.

Table C: Lists UL Recognized, CSA Certified configurations and performance capabilities as Protectors, Supplementary for Marine Electrical and Fuel Systems (CCN/Guide PEQ22, File E75596). Ignition Protected per UL 1500. UL Classified Small Craft Electrical Devices, Marine in accordance with ISO 8846 (CCN/Guide UZMK, File MQ1515) as Marine Supplementary Protectors.

B-SERIES TABLE C: UL1500 (MARINE IGNITION PROTECTED)					
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING	INTERRUPTING CAPACITY (AMPS)
	MAX RATING	FREQUENCY	PHASE	FULL LOAD AMPS	WITHOUT BACKUP FUSE
SERIES	14 ¹	DC	---	0.02 - 50	5000
	65	DC	---	0.02 - 50	3000
	125 / 250	50/60	1 ²	0.02 - 50	1500
	250	50/60	1	0.02 - 30	1000

Notes for Table C:

¹ Available with special catalog number only (consult factory).

² 2 pole protector required (with one pole per power line) for: 250/125 VAC, 125/250 VAC and 208Y/120 VAC Power Systems. 1 pole protector required for : 125 VAC, 1Ø Power System.

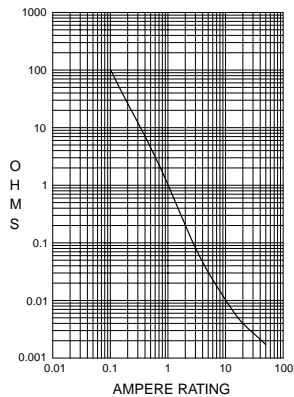
Table D: Lists UL Listed configurations and performance capabilities as Circuit Breakers for use in Communications Equipment (CCN/Guide DITT, File E189195), under UL489A

B-SERIES TABLE D: UL489A LISTED (COMMUNICATIONS EQUIPMENT)					
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING	INTERRUPTING CAPACITY (AMPS)
	MAX RATING	FREQUENCY	PHASE	UL GENERAL PURPOSE AMPS	WITHOUT BACKUP FUSE
SERIES	80	DC	---	.10 - 50	5000

Electrical

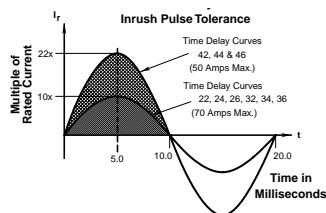
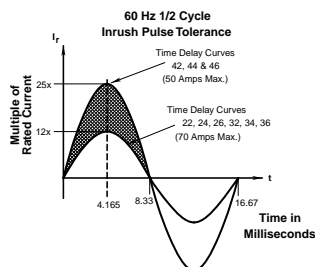
Maximum Voltage	277VAC 50/60 Hz, 80VDC
Current Ratings	Standard current coils: 0.100, 0.250, 0.500, 0.750, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0 and 50.0 amps. Other ratings available, see ordering scheme.
Standard Voltage Coils	DC - 6V, 12V; AC - 120V, other ratings available, see ordering scheme.
Auxiliary Switch Rating	SPDT; 10.1 AMPS - 250VAC, 1.0A 65 VDC or 0.5A 80 VDC, 0.1 Amps - 125VAC (with gold contacts). VDE-1.0 Amp - 125VAC.
Insulation Resistance	Minimum of 100 Megohms at 500 VDC.
Dielectric Strength	UL, CSA - 1500 V 50/60 Hz for one minute between all electrically isolated terminals. B-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.

RESISTANCE, IMPEDANCE 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	10,000 ON-OFF operations @ 6 per minute; with rated Current and Voltage.
Trip Free	All B-Series Circuit Breakers will trip on overload, even when Handle is forcibly held in the ON position.
Trip Indication	The operating Handle moves positively to the OFF position when an overload causes the breaker to trip.

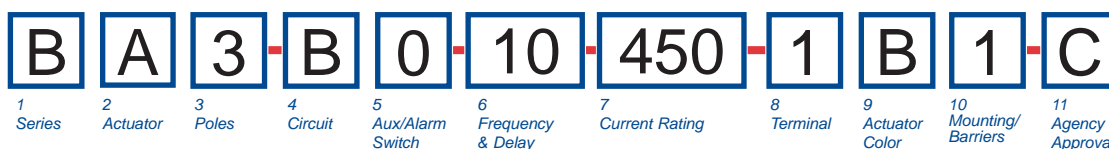
Physical

Number of Poles	1 - 6 poles at 30 Amps or less. 1 and 2 poles at 31 Amps thru 50 Amps.
Internal Circuit Config.	Series, (with or without auxiliary switch), Shunt and Relay with current or voltage trip coils, Dual Coil, Switch Only (with or without auxiliary switch).
Weight	Approximately 65 grams/pole. (Approximately 2.32 ounces/pole.
Standard Colors	Housing- Black; Actuator - See Ordering Scheme.

Environmental

Designed and tested in accordance with requirements of specification MIL-PRF- 55629 and 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.
Vibration	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, 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).



1 SERIES

B

2 ACTUATOR¹

A Handle, one per pole
B Handle, one per multipole unit
S Mid-Trip Handle, one per pole
T Mid-Trip Handle, one per pole & Alarm Switch

3 POLES

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

4 CIRCUIT

A² Switch Only (No Coil) **G³** Relay Trip (Voltage)
B Series Trip (Current) **H^{3,4}** Dual Coil with Shunt Trip
C Series Trip (Voltage) **J^{3,4}** Voltage Coil
D³ Shunt Trip (Current) **K^{3,4}** Dual Coil with Shunt Trip
E³ Shunt Trip (Voltage) **K^{3,4}** Voltage Coil (side terminal)
F³ Relay Trip (Current) **K^{3,4}** Dual Coil with Relay Trip
F³ Voltage Coil

5 AUXILIARY/ALARM SWITCH⁵

0 w/o Aux Switch
1 S.P.D.T., 0.093 Q.C. Term.
2 S.P.D.T., 0.110 Q.C. Term.
3 S.P.D.T., 0.139 Solder Lug
4 S.P.D.T., 0.110 Q.C. Term. (Gold Contacts)
5 S.P.S.T., 0.093 Q.C. Term. (Gold Contacts)
6 S.P.S.T., 0.139 Solder Lug
7 S.P.S.T., 0.110 Q.C. Term. (Gold Contacts)
8 S.P.S.T., 0.187 Q.C. Term.
9 S.P.D.T., 0.187 Q.C. Term.

6 FREQUENCY & DELAY

03² DC 50/60Hz, Switch Only
10⁶ DC Instantaneous
11 DC Ultra Short
12 DC Short
14 DC Medium
16 DC Long
20⁶ 50/60Hz Instantaneous
21 50/60Hz Ultra Short
22 50/60Hz Short
24 50/60Hz Medium
26 50/60Hz Long
30 DC, 50/60Hz Instantaneous
31 DC, 50/60Hz Ultra Short
32 DC, 50/60Hz Short
34 DC, 50/60Hz Medium
36 DC, 50/60Hz Long
42⁷ 50/60Hz Short, Hi-Inrush
44⁷ 50/60Hz Medium, Hi-Inrush
46⁷ 50/60Hz Long, Hi-Inrush
52⁷ DC, Short, Hi-Inrush
54⁷ DC, Medium, Hi-Inrush
56⁷ DC, Long, Hi-Inrush

Notes:

- Actuator Code:
A: Handle tie pin spacer(s) and retainers provided unassembled 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 poles 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.
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 with VDE Certification 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 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 and Switch Only circuits. On multi-pole breakers, one aux. 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.
- Available with Circuit Codes B & D only. VDE Certified to 30 amps. UL Recognized and CSA Certified to 50 amps.
- VDE Certification available with single pole breakers with DC Delay only. UL Recognition and CSA 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.
- 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.
- VDE Cert. available up to 12 amps. UL Rec. & CSA Cert. 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 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 Certification with Circuit Codes A, B and C.
- Available with Actuator Codes A, S and T.
- Available with voltage coils only.

7 CURRENT RATING (AMPERES)

020	0.020	230	0.300	425	2.500	612	12.000
025	0.025	235	0.350	527	2.750	712	12.500
030	0.030	240	0.400	430	3.000	613	13.000
035	0.035	245	0.450	435	3.500	614	14.000
040	0.040	250	0.500	440	4.000	615	15.000
045	0.045	255	0.550	445	4.500	616	16.000
050	0.050	260	0.600	450	5.000	617	17.000
055	0.055	265	0.650	455	5.500	618	18.000
060	0.060	270	0.700	460	6.000	620	20.000
065	0.065	275	0.750	465	6.500	622	22.000
070	0.070	280	0.800	470	7.000	624	24.000
075	0.075	285	0.850	475	7.500	625	25.000
080	0.080	290	0.900	480	8.000	630	30.000
085	0.085	295	0.950	485	8.500	635*	35.000
090	0.090	410	1.000	490	9.000	640*	40.000
095	0.095	512	1.250	495	9.500	645*	45.000
210	0.100	415	1.500	610	10.000	650*	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 (NOMINAL RATED VOLTAGE)⁶

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 TERMINAL⁸

1¹⁰	Push-On 0.250 Tab (Q.C.)	E¹¹	Screw M4 (Bus Type)
2	Screw 8-32 w/upturned lugs	F	Screw M5 w/upturned lugs and 30° bend
3¹¹	Screw 8-32 (Bus Type)	G	Screw M5 (Bus Type) and 30° bend
4	Screw 10-32 w/upturned lugs	H	Screw M5 (Bus Type)
5¹¹	Screw 10-32 (Bus Type)	L¹²	0.250 Q.C./ Solder Lug
6	Screw 8-32 w/upturned lugs and 30° bend	M¹¹	M6 Threaded Studs
7	Screw 8-32 (Bus Type) and 30° bend	P¹³	Printed Circuit Board Terminals
8	Screw 10-32 w/upturned lugs and 30° bend	Q	Push-In Stud
9	Screw 10-32 (Bus Type) and 30° bend	R	Screw M4 w/upturned lugs and 30° bend
B	Screw M5 w/upturned lugs	S¹⁵	Push-On 0.110 Tab (Q.C.)
C	Screw M4 w/upturned lugs	T	Screw M4 (Bus Type) and 30° bend

9 ACTUATOR COLOR & LEGEND

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 MOUNTING/BARRIERS

	MOUNTING STYLE	BARRIERS
	Threaded Insert, 2 per pole	
1	6-32 x 0.195 inches	no
A	6-32 X 0.195 inches	yes
2	ISO M3 x 5mm	no
B	ISO M3 x 5mm	yes
	Rectangular Adapter Plate with mounting centers of 2.062" [52.37mm] and Threaded insert, 2 per pole	
3¹⁴	6-32 x 0.225 inches	no
C¹⁴	6-32 X 0.225 inches	yes
4¹⁴	ISO M3 x 6.5mm	no
D¹⁴	ISO M3 x 6.5mm	yes
	Front panel Snap-In, 0.75" [19.05mm] wide bezel	
5	without Handleguard	no
6	without Handleguard	yes
	Front panel Snap-In, 0.96" [24.48mm] wide bezel	
7	without Handleguard on 1-pole units; .105" [2.67mm]]	no
8	without Handleguard on 1-pole units; .105" [2.67mm]	yes
	bezel overhang/side on multipole units	

11 AGENCY APPROVAL

C	UL Recognized & CSA Certified
D	VDE Certified, UL Recognized & CSA Certified
E	TUV Certified, UL Recognized & CSA Certified
I	UL Rec. STD 1077, UL Rec. 1500 (ignition protected), & CSA Certified

B	A	1	B	0	14	450	1	B	1	M	T
1 Series	2 Actuator	3 Poles	4 Circuit	5 Aux/Alarm Switch	6 Frequency & Delay	7 Current Rating	8 Terminal	9 Actuator Color	10 Mounting/Barriers	11 Max. Appl. Rating	12 Agency Approval

1 SERIES

B

2 ACTUATOR¹

A Handle, one per pole
S Mid-Trip Handle, one per pole
T Mid-Trip Handle, one per pole & Alarm Switch

3 POLES

1 One **2** Two **3** Three **4** Four

4 CIRCUIT

B Series Trip (Current)

5 AUXILIARY/ALARM SWITCH²

0 w/o Aux Switch	7 S.P.S.T., 0.110 Q.C.
1 S.P.D.T., 0.093 Q.C. Term.	Term.(Gold Contacts)
2 S.P.D.T., 0.110 Q.C. Term.	8 S.P.S.T., 0.187 Q.C. Term.
3 S.P.D.T., 0.139 Solder Lug	9 S.P.D.T., 0.187 Q.C. Term.

6 FREQUENCY & DELAY³

11 DC Ultra Short	52³ DC, Short, Hi-Inrush
12 DC Short	54³ DC, Medium, Hi-Inrush
14 DC Medium	56³ DC, Long, Hi-Inrush
16 DC Long	

7 CURRENT RATING (AMPERES)

210	0.100	415	1.500	710	10.500
215	0.150	517	1.750	611	11.000
220	0.200	420	2.000	711	11.500
225	0.250	522	2.250	612	12.000
230	0.300	527	2.750	712	12.500
235	0.350	430	3.000	613	13.000
240	0.400	435	3.500	614	14.000
245	0.450	440	4.000	615	15.000
250	0.500	445	4.500	616	16.000
255	0.550	450	5.000	617	17.000
260	0.600	455	5.500	618	18.000
265	0.650	460	6.000	620	20.000
270	0.700	465	6.500	622	22.000
275	0.750	470	7.000	624	24.000
280	0.800	475	7.500	625	25.000
285	0.850	480	8.000	630	30.000
290	0.900	485	8.500	635⁴	35.000
295	0.950	490	9.000	640⁴	40.000
410	1.000	495	9.500	645⁴	45.000
512	1.250	610	10.000	650⁴	50.000

8 TERMINAL⁵

1⁶ Push-On 0.250 Tab (Q.C.)	9 Screw 10-32 (Bus Type) and 30° bend
2 Screw 8-32 w/upturned lugs	B Screw M5 w/upturned lugs
3⁷ Screw 8-32 (Bus Type)	F Screw M5 w/upturned lugs and 30° bend
4 Screw 10-32 w/upturned lugs	G Screw M5 (Bus Type) and 30° bend
5⁷ Screw 10-32 (Bus Type)	H Screw M5 (Bus Type)
6 Screw 8-32 w/upturned lugs and 30° bend	M⁷ M6 Threaded Stud
7 Screw 8-32 (Bus Type) and 30° bend	P⁸ Printed Circuit Board Terminals
8 Screw 10-32 w/upturned lugs and 30° bend	Q Push-In Stud

9 ACTUATOR COLOR

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

10 MOUNTING/BARRIERS

MOUNTING STYLE		BARRIERS
Threaded Insert, 2 per pole		
1 6-32 x 0.195 inches		no
A 6-32 X 0.195 inches		yes
2 ISO M3 x 5mm		no
B ISO M3 x 5mm		yes
Rectangular Adapter Plate with mounting centers of 2.062 inches and Threaded insert, 2 per pole		
3 6-32 x 0.225 inches		no
C 6-32 X 0.225 inches		yes
4 ISO M3 x 6.5mm		no
D ISO M3 x 6.5mm		yes
Front panel Snap-In, 0.75" wide bezel		
5 without Handleguard		no
6 without Handleguard		yes
Front panel Snap-In, 0.96" wide bezel		
7 without Handleguard on 1-pole units; .105 " bezel overhang/ side on multipole units		no
8 without Handleguard on 1-pole units; .105 " bezel overhang/ side on multipole units		yes

11 MAXIMUM APPLICATION RATING

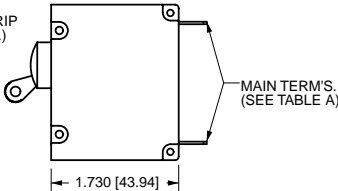
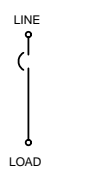
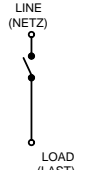
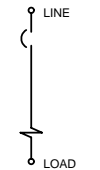
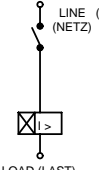
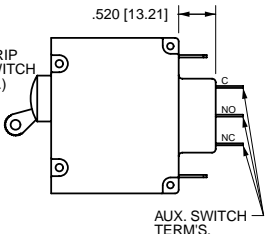
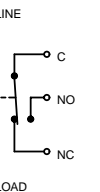
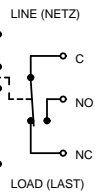
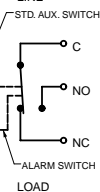
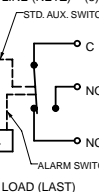
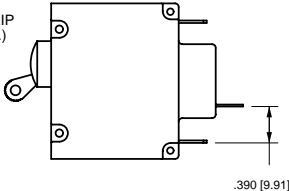
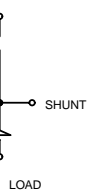
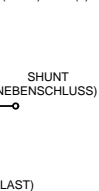
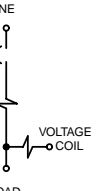
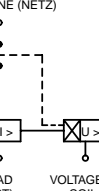
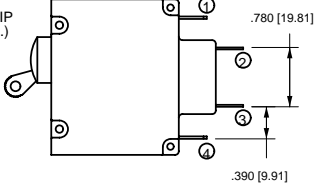
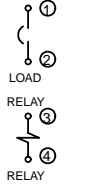
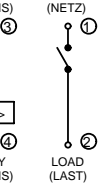
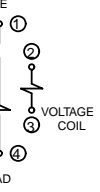
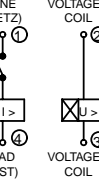
M 80 DC

12 AGENCY APPROVAL

T UL489A LISTED
K UL489A LISTED, VDE CERTIFIED

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.
T: Handle moves to mid-position and alarm switch activates only upon electrical trip of the breaker.
- 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 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.

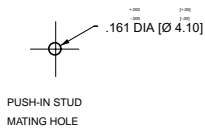
	CIRCUIT SCHEMATIC				CIRCUIT CODE	AUX SWITCH CODE	CIRCUIT SCHEMATIC				CIRCUIT CODE	AUX SWITCH CODE
	ANSI		IEC				ANSI		IEC			
	SWITCH ONLY (NO COIL)						SERIES TRIP					
<div>SERIES TRIP (2 TERM'S.)</div>  <div>1.730 [43.94]</div> <div>MAIN TERM'S. (SEE TABLE A)</div>			A	O			B C	O				
<div>SERIES TRIP W AUX SWITCH (5 TERM'S.)</div>  <div>.520 [13.21]</div> <div>AUX. SWITCH TERM'S.</div>			A	2 3 4			B C	2 3 4				
<div>SHUNT TRIP (3 TERM'S.)</div>  <div>.390 [9.91]</div>			D E	0			H	0				
<div>RELAY TRIP (4 TERM'S.)</div>  <div>.780 [19.81]</div> <div>.390 [9.91]</div>			F G	0			K	0				

Notes:

- All dimensions are in inches [millimeters].
- Tolerance $\pm .015$ [.38] unless otherwise specified.
- Alarm Switch available with .110 x .020 Q.C. & Solder Lug Terminals Only.

HANDLE POSITION VS. AUX/ALARM SWITCH MODE				
CIRCUIT BREAKER MODE	STANDARD C/B		MID TRIP C/B	
	HANDLE POSITION	AUX. SWITCH MODE	HANDLE POSITION	ALARM SWITCH MODE
OFF				
ON				
ELECTRICAL TRIP				

TERMINAL DIMENSIONAL DETAIL & RATING						
TAB (Q.C.) ≤ 30 AMP	UPTURN LUG #8-32 ≤ 30 AMP #10-32 ≤ 30 AMP M5 ≤ 30 AMP M4 ≤ 30 AMP	BUS #8-32 ≤ 30 AMP #10-32 ≤ 50 AMP	QC SOLDER LUG ≤ 30 AMP	.110 QC VOLTAGE COILS ONLY	M5 STUD ≤ 50 AMP	PUSH-IN STUD ≤ 50 AMP



AUXILIARY SWITCH TERMINAL DETAIL	
TAB (Q.C.)	SOLDER TYPE

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

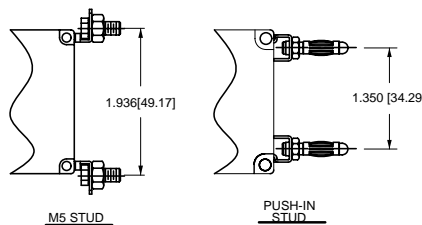
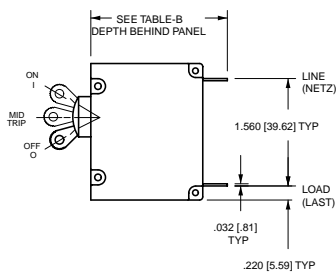
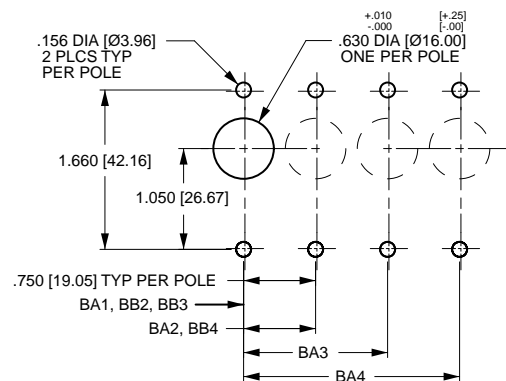
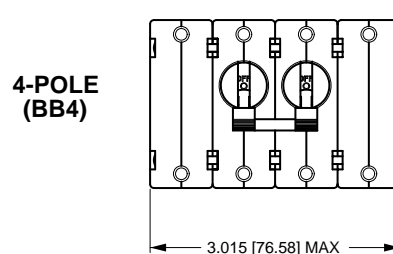
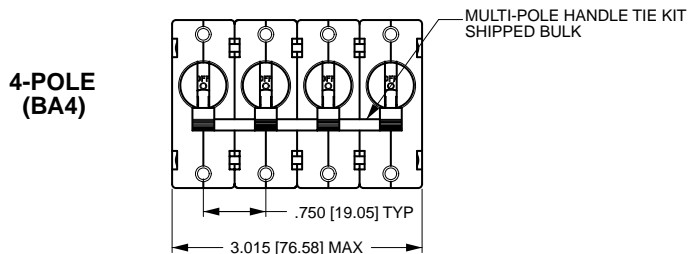
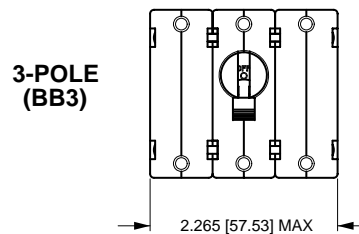
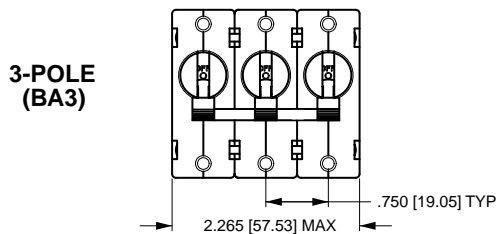
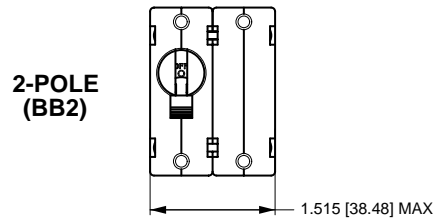
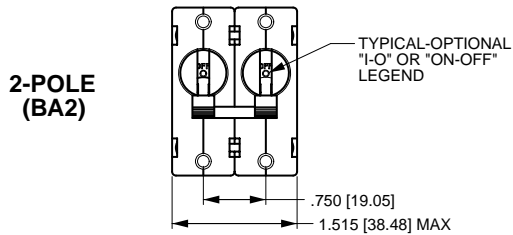
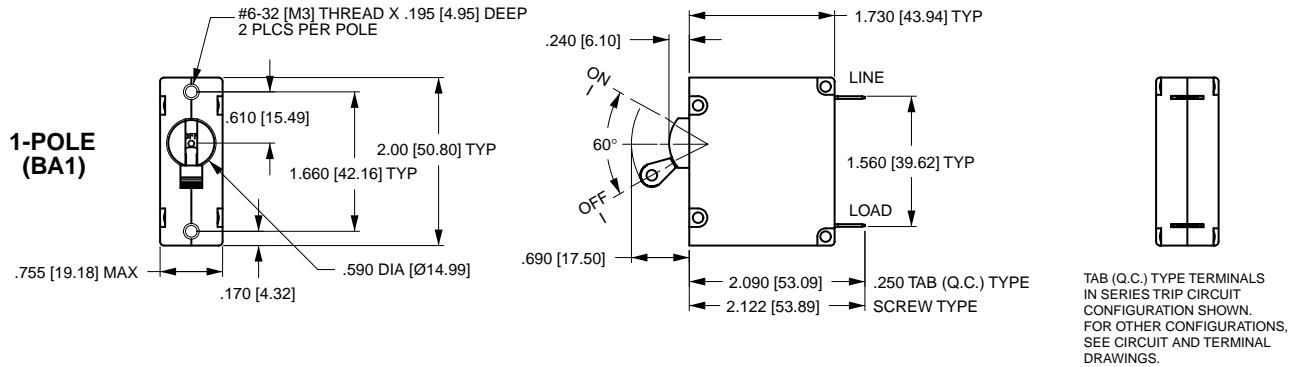


TABLE B		
TERMINAL DESCRIPTION		DEPTH BEHIND PANEL
MAIN	TAB (Q.C.)	2.090 [53.09]
	SCREW TYPE	2.122 [53.90]
SHUNT, RELAY & DUAL COIL	TAB (Q.C.)	2.612 [66.35]
	SCREW #8-32 W/UPTURNED LUGS	2.644 [67.16]
AUX. SWITCH*	TAB (Q.C.) .110 x .020	2.537 [64.44]
	SOLDER TYPE	2.348 [59.64]

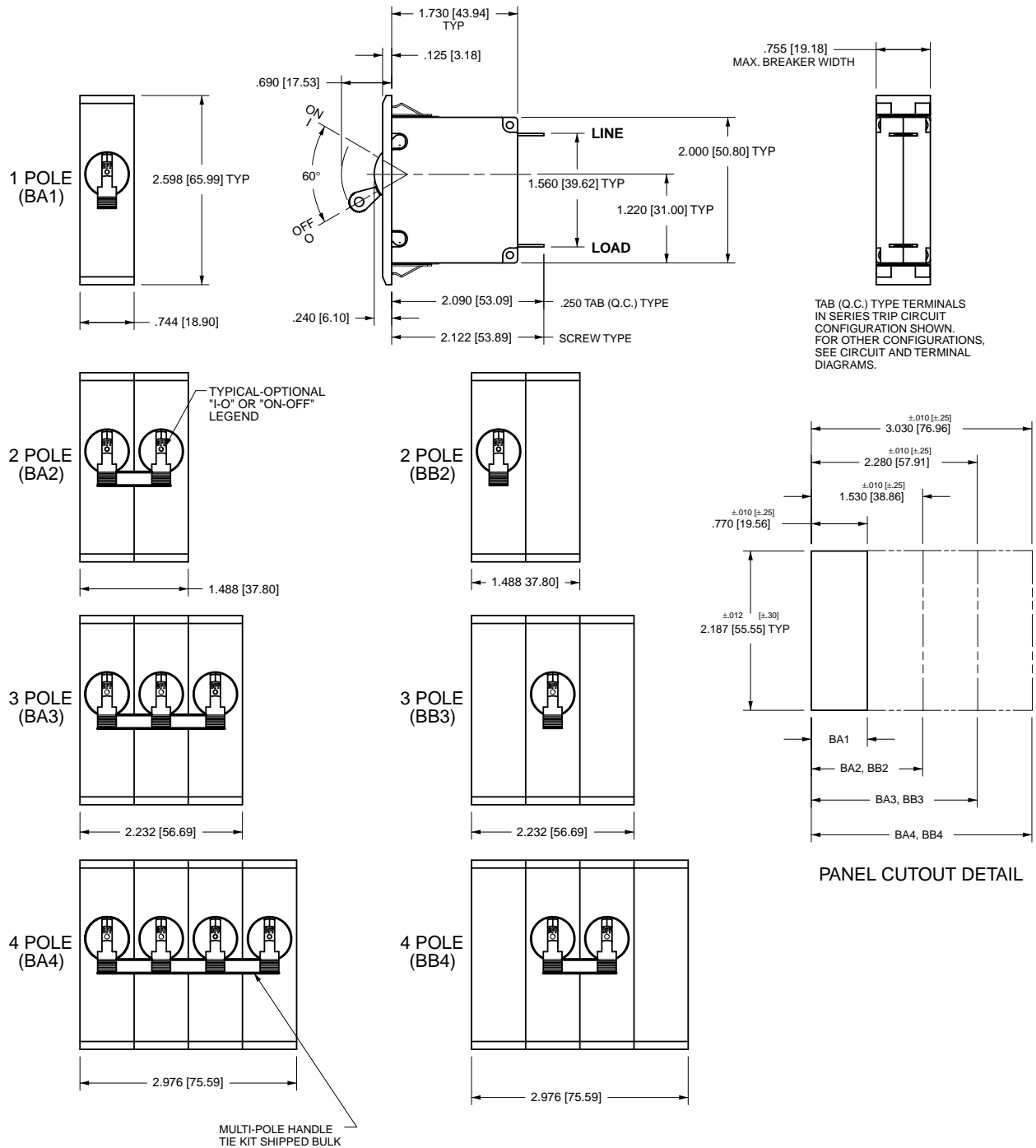
* AVAILABLE ON SERIES TRIP AND SWITCH ONLY CIRCUITS. WHEN CALLED FOR ON MULTI-POLE UNITS, ONLY ONE AUX. SWITCH IS NORMALLY SUPPLIED, AS SHOWN IN MULTI-POLE IDENTIFICATION SCHEME.

Notes:

- All dimensions are in inches [millimeters].
- Tolerance ± 0.015 [.38] unless otherwise specified.

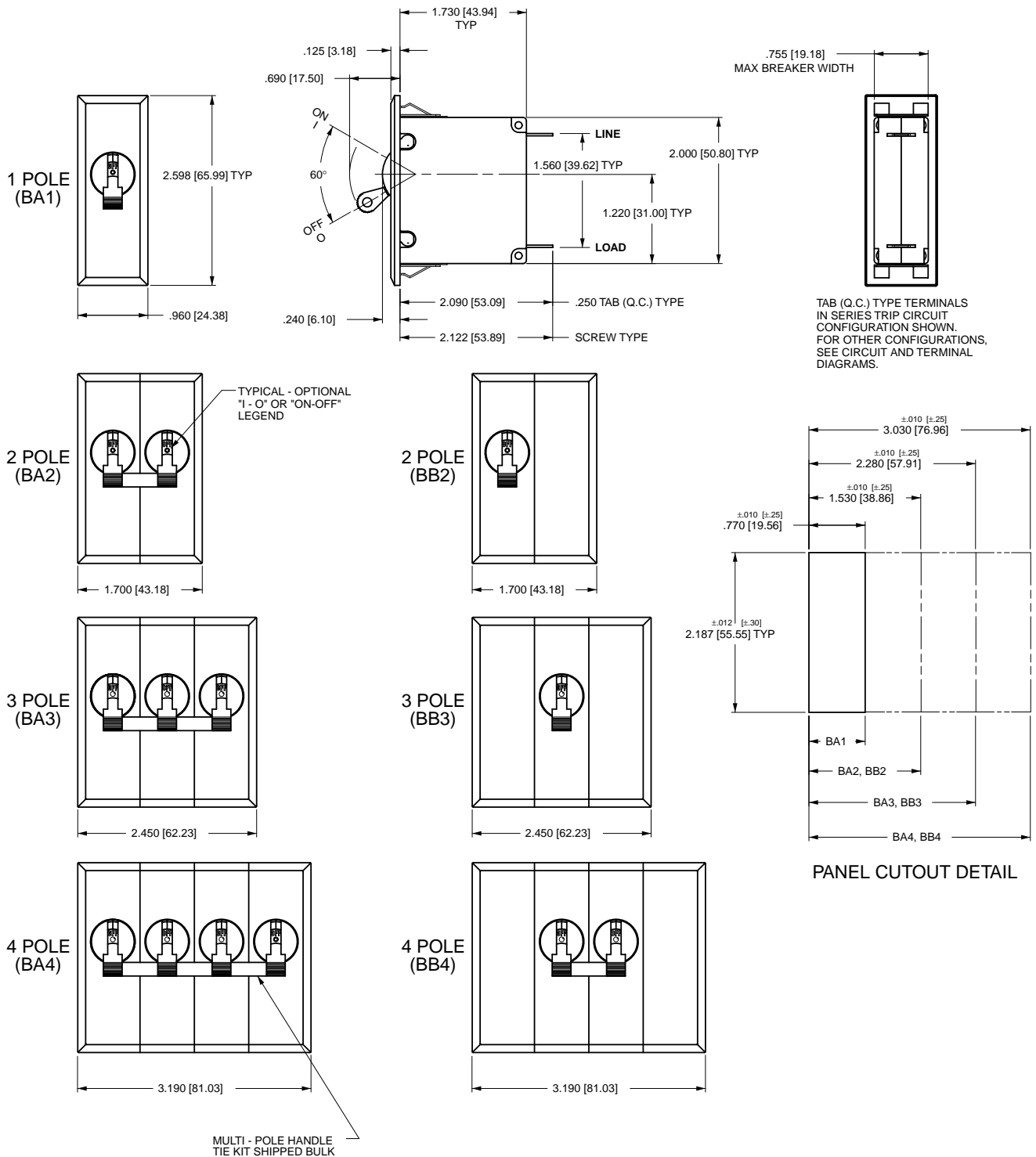


- Notes:
- 1 All dimensions are in inches [millimeters].
 - 2 Tolerance $\pm .010$ [$\pm .25$] unless otherwise specified.



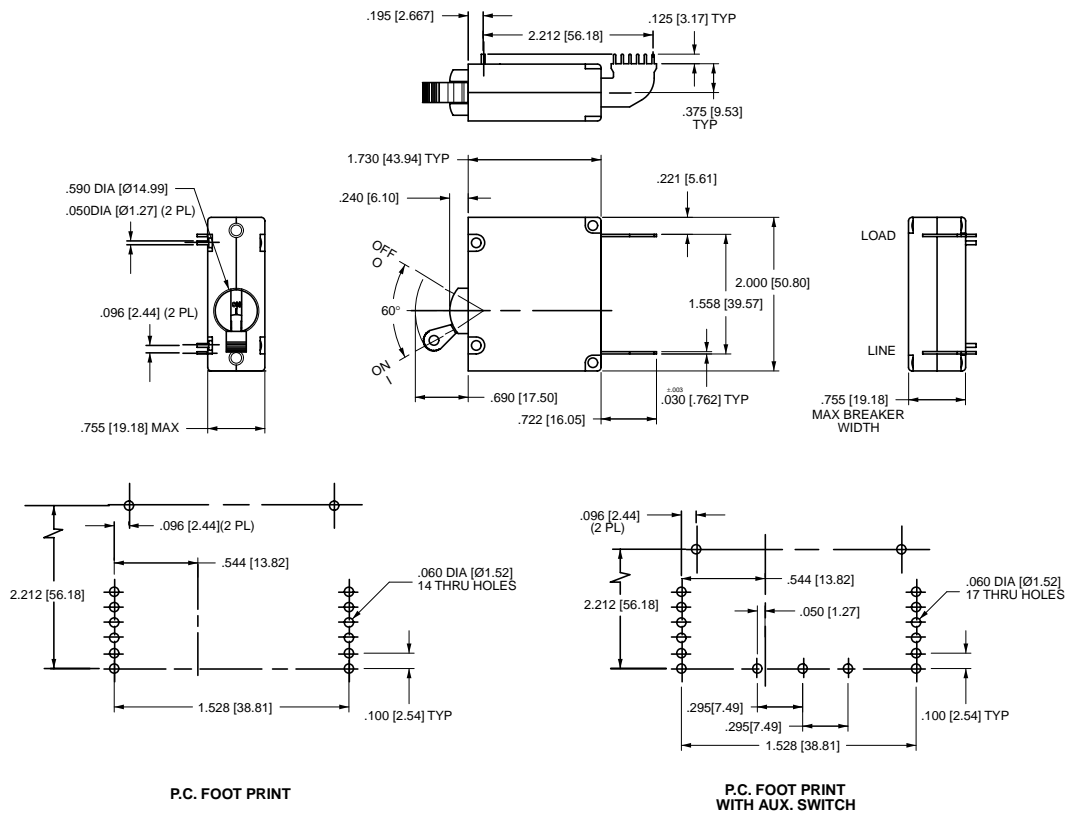
Notes:

- 1 All dimensions are in inches [millimeters].
- 2 Recommended panel thickness: .040 [1.02] to .100 [2.54].
- 3 Tolerance ±.015 [.38] unless otherwise specified.



Notes:

- 1 All dimensions are in inches [millimeters].
- 2 Recommended panel thickness .040 [1.02] to .100 [2.54].
- 3 Tolerance ±.015 [±.38] unless otherwise specified.



Notes:

- 1 All dimensions are in inches [millimeters].
- 2 Tolerance ± 0.010 [.25] unless otherwise specified.