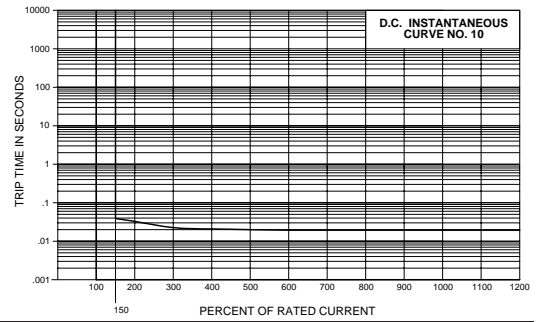
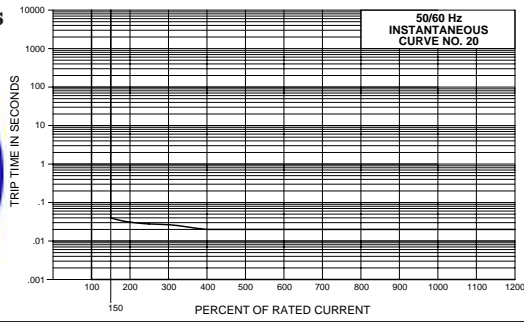


Time Delay Values (E-Series)

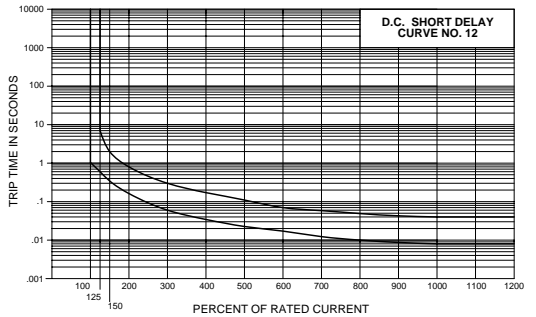
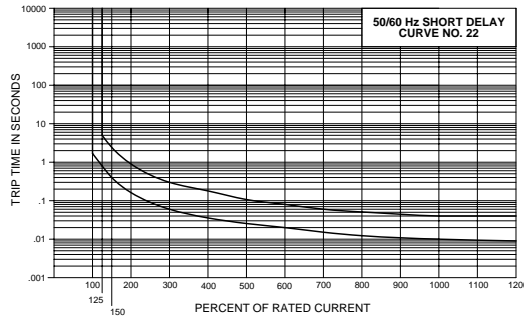
AC

DC

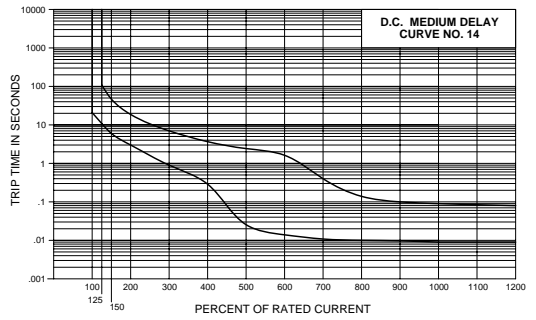
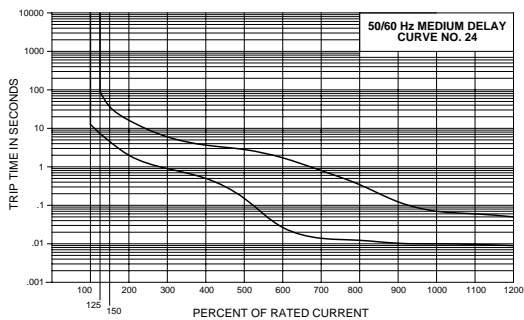
Instantaneous



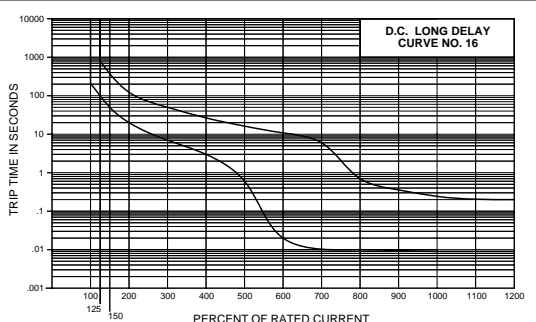
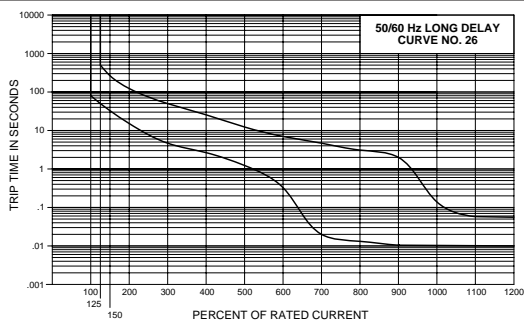
Short



Medium



Long



		PERCENT OF RATED CURRENT									
		DELAY	100%	125%	150%	200%	400%	600%	800%	1000%	1200%
TRIP TIME (SECONDS)	10	NO TRIP	MAY TRIP	.001-.038	.001-.032	.001-.021	.001-.019	.001-.019	.001-.019	.001-.019	
	12	NO TRIP	.600 - 7.00	.330 - 2.00	.150 - .800	.033 - .160	.016 - .071	.010 - .048	.008 - .040	.008 - .040	
	14	NO TRIP	11.0 - 110	6.00 - 45.0	3.00 - 18.0	.280 - 3.50	.013 - 1.50	.010 - .130	.009 - .090	.009 - .080	
	16	NO TRIP	100 - 800	50.0 - 360	20.0 - 120	3.00 - 25.0	.020 - 11.0	.010 - .700	.009 - .230	.009 - .200	
	20	NO TRIP	MAY TRIP	.001-.040	.001-.031	.001-.020	.001-.020	.001-.020	.001-.020	.001-.020	
	22	NO TRIP	.800 - 5.00	.400 - 2.30	.150 - .900	.034 - .170	.020 - .080	.012 - .051	.010 - .040	.009 - .040	
	24	NO TRIP	7.20 - 90.0	4.40 - 35.0	2.00 - 15.0	.500 - 3.50	.025 - 1.60	.012 - .330	.010 - .070	.009 - .050	
	26	NO TRIP	50.0 - 500	32.0 - 250	14.0 - 120	2.50 - 24.0	.320 - 7.00	.0125 - 3.10	.011 - .130	.010 - .055	

NOTES

Delay Curves 10,20: Breakers to hold 100% and must trip at 150% of rated current and greater within the time limit shown in these curves.

Delay Curves 12,14,16,24,26: Breakers to hold 100% and must trip at 125% of rated current and greater within the time limit shown in these curves.

All Curves: Curve data shown represents breaker response at ambient temperature of 77°F (25°C) with no preloading. Breakers are mounted in standard wall-mount position.

The minimum inrush pulse tolerance handling capability on the above standard delays is 16 times rated current on a 60 Hz 1/2 cycle, 8 ms pulse.

E-Series – Handle Actuator



Ideally suited for higher amperage applications. Available with front and back mounting, screw terminals, stud terminals and heavy duty box wire connectors for solid wire or a pressure plate connector for stranded wire. Power selector device available, consult factory.

The E-Series is UL LISTED and CSA Certified for Branch Circuit protection which does not require a fuse backup. It is also UL Recognized and CSA Certified as a Supplementary Protector and as a Manual Motor Controller.

1-6 poles, .1 - 100 amps, up to 600 VAC or 125 VDC, with choice of time delays and actuator colors.

Agency Approvals

UL LISTED Circuit Breaker, Guide DIVQ, File E129899, under UL Standard 489.

UL Recognized under the Component Recognition Program as: Protectors, Supplementary (Guide QVNU2, File E75596), UL Standard 1077; Industrial Control Equipment - Motor Controllers, Manual (Guide NLRV2, File E135367), UL Standard 508; Marine Electrical and Fuel Systems (Guide PEQZ2, File E 75596) UL Standard 1500 (Ignition Protection). CSA Certified Circuit Breaker, Class 1432 01, File LR93910, under CSA Standard C22.2 No. 5.

CSA Certified Supplementary Protectors, Class 3215 01, File LR47848 under Standard C22.2 No. 235.

In compliance with Publications IEC 380. 435, 950, EN 60950 and VDE 0805 with regard to 8mm reinforced spacing.



General Specifications

ELECTRICAL

Table A: Lists UL LISTED (489), CSA Certified (C22.2 No. 5) configurations and performance capabilities as a Molded Case Circuit Breaker and UL Recognized (1077), CSA Certified, (C22.2 No. 235) configurations and performance capabilities as a Component Supplementary Protector.

AS A LISTED (UL 489) BRANCH CIRCUIT PROTECTOR					
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT	
	MAX VOLTAGE	FREQUENCY	PHASE	FULL LOAD AMPS	INTERRUPTING CAPACITY
Series	125 120/240 240	DC 50/60Hz 50/60Hz	— 1Ø 1 & 3Ø	0.100 - 100 0.100 - 100 0.100 - 100	5000 A Res. 5000 A .45 P.F. 5000 A .45 P.F.

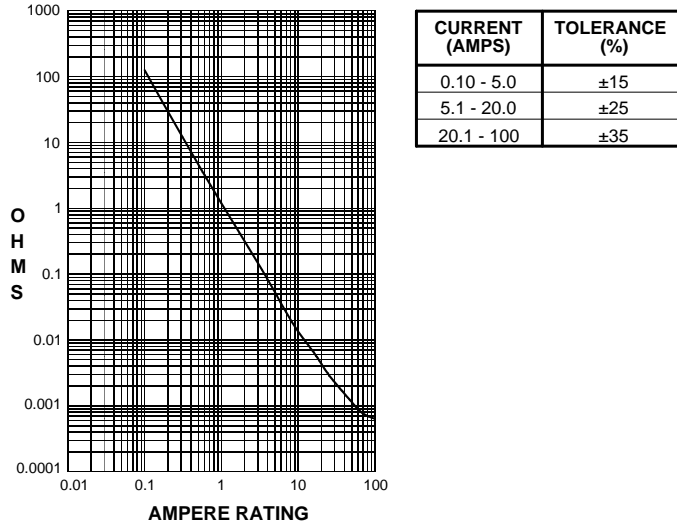
AS A UL RECOGNIZED (1077/508) SUPPLEMENTARY PROTECTOR/ MANUAL MOTOR CONTROLLER AND CSA CERTIFIED SUPPLEMENTARY PROTECTOR							
CIRCUIT CONFIGURATION	VOLTAGE			FULL LOAD AMPS	CURRENT		
	MAX VOLTAGE	FREQUENCY	PHASE		INTERRUPTING CAPACITY		
					with backup fuse		w/o backup fuse
I.C.	Max. Fuse	I.C.					
Series and Shunt	125	D.C.	-	0.100 - 100	-	-	5,000 A
	120/240	50/60 Hz	1Ø	0.100 - 100	-	-	5,000 A
	240	50/60 Hz	1 & 3Ø	0.100 - 100	-	-	5,000 A
	277	50/60 Hz	1Ø	0.100 - 100	-	-	5,000 A
	277	50/60 Hz	1Ø	0.100 - 100	10,000 A •	225 A •	-
	480	50/60 Hz	1 & 3Ø	0.100 - 100	10,000 A •	225 A •	-
Switch Only	600	50/60 Hz	1 & 3Ø	0.100 - 100	10,000 A •	225 A •	-
	125	D.C.	-	0.100 - 100			
	240	50/60 Hz	1 & 3Ø	0.100 - 100			
	277	50/60 Hz	1Ø	0.100 - 100			
	480	50/60 Hz	1 & 3Ø	0.100 - 100			
	600	50/60 Hz	1 & 3Ø	0.100 - 100			

NOTES

- * Requires branch circuit backup with a UL LISTED Type K5 or RK5 fuse rated 15A minimum and no more than 4 times the full load amps maximum, not to exceed 225A.
- 1. All circuit breakers are labeled with the maximum UL LISTED/Recognized and CSA Certified voltages.
- 2. 480V and 600V ratings require 3 or 4 pole 3Ø and 2 pole break 1Ø. In addition, an insulating barrier of vulcanized fibre or equivalent is required between the breaker and the front panel. Request drawing #PR 2003-720 for specifications.

General Specifications (cont.)

Maximum Voltage 600VAC 50/60 Hz, 125VDC (See Table A)
 Current Ratings Standard current coils: 0.100, 0.250, 0.500, 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 20.0, 25.0, 30.0, 50.0, 60.0, 70.0 & 100 Amp.
 Auxiliary Switch Rating SPDT; 10.1 AMPS - 250VAC, 5.0 AMPS-30VDC, 0.1 Amps - 125VAC (with gold contacts).
 Insulation Resistance Minimum of 100 Megohms at 500 VDC.
 Dielectric Strength UL, CSA: 2200 V 50/60 Hz for one minute between all electrically isolated terminals. E-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 IEC 380, 435, 950, EN 60950 and VDE 0805.
 Resistance, Impedance Values from Line to Load Terminal - based on Series Trip Circuit Breaker



MECHANICAL

Endurance 10,000 ON-OFF operations @ 6 per minute; with rated Current and Voltage.
 Trip Free All E-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.

ENVIRONMENTAL

Environmental Designed and tested in accordance with requirements of specification MIL-C-55629 and MIL-STD-202 as follows:
 Shock Withstands 100 Gs, 6ms, sawtooth while carrying rated current per Method 213, Test Condition "I".
 Vibration Withstands 0.060" excursion from 10-55 Hz, and 10 Gs 55-500 Hz, at rated current per Method 204C, Test Condition A.
 Moisture Resistance Method 106D, i.e., ten 24-hour cycles @ + 25°C to +65°C, 80-98% RH.
 Salt Spray Method 101, Condition A (90-95% RH @ 5% NaCl Solution, 96 hrs).
 Thermal Shock Method 107D, Condition A (Five cycles @ -55°C to +25°C to +85°C to +25°C).
 Operating Temperature -40° C to +85° C

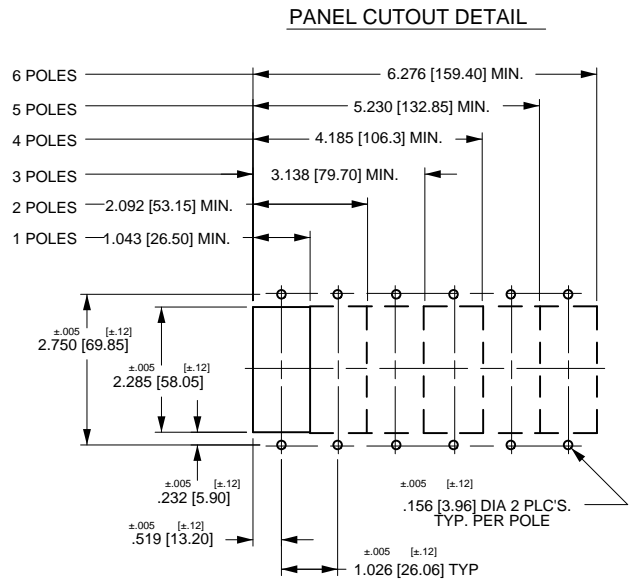
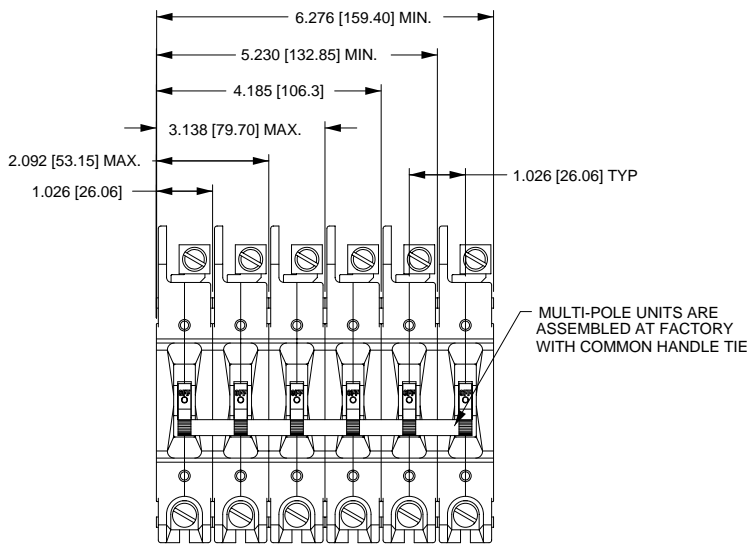
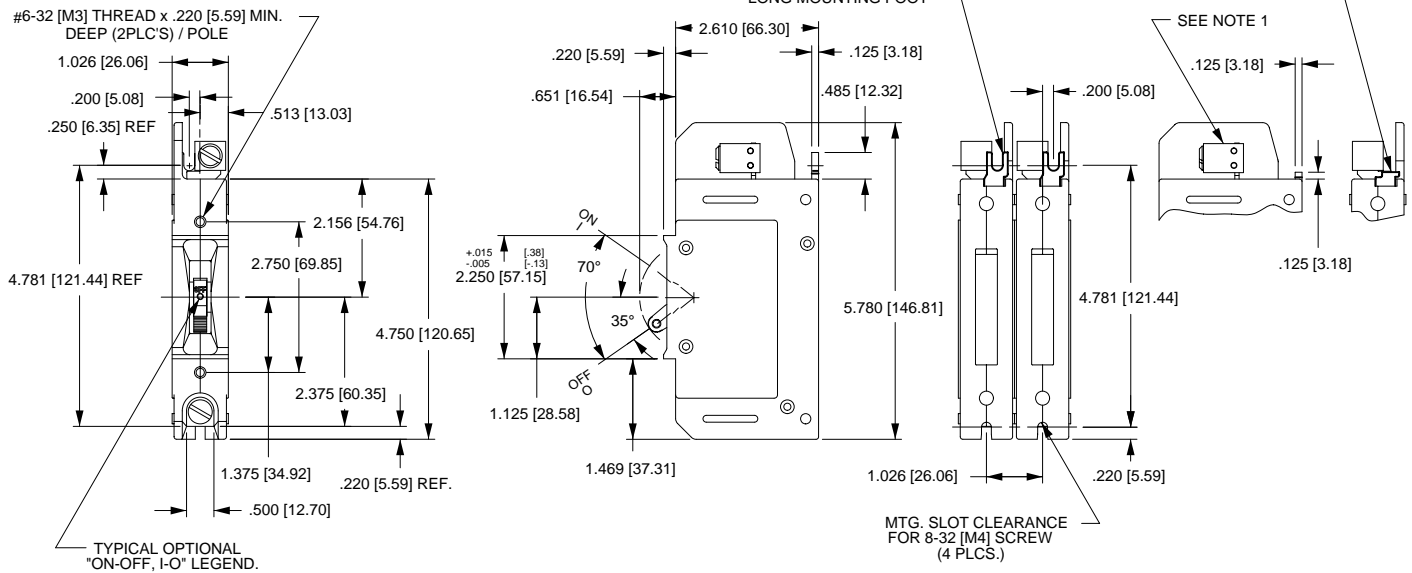
PHYSICAL

Number of Poles 1 - 6
 Mounting A 3" minimum spacing must be provided between the circuit breaker arc venting area on back connected E-Series circuit breakers and grounded obstructions. E-Series circuit breakers must be mounted on a vertical surface.
 Connectors, Box Type Front connected E-Series circuit breakers are supplied with box type pressure connectors that accept copper or aluminum conductors as follows: 1/0-14 Copper, 1/0-12 Aluminum Series and Switch Only, (with or without auxiliary switch). Shunt with current coils.
 Internal Circuit Configurations Approximately 252 grams/pole (Approximately 9 ounces/pole)
 Weight
 Standard Colors Housing-Black; Actuator - See Ordering Scheme.

Form and Fit Drawings

(Front Connected Type)

MOUNTING INSERTS:

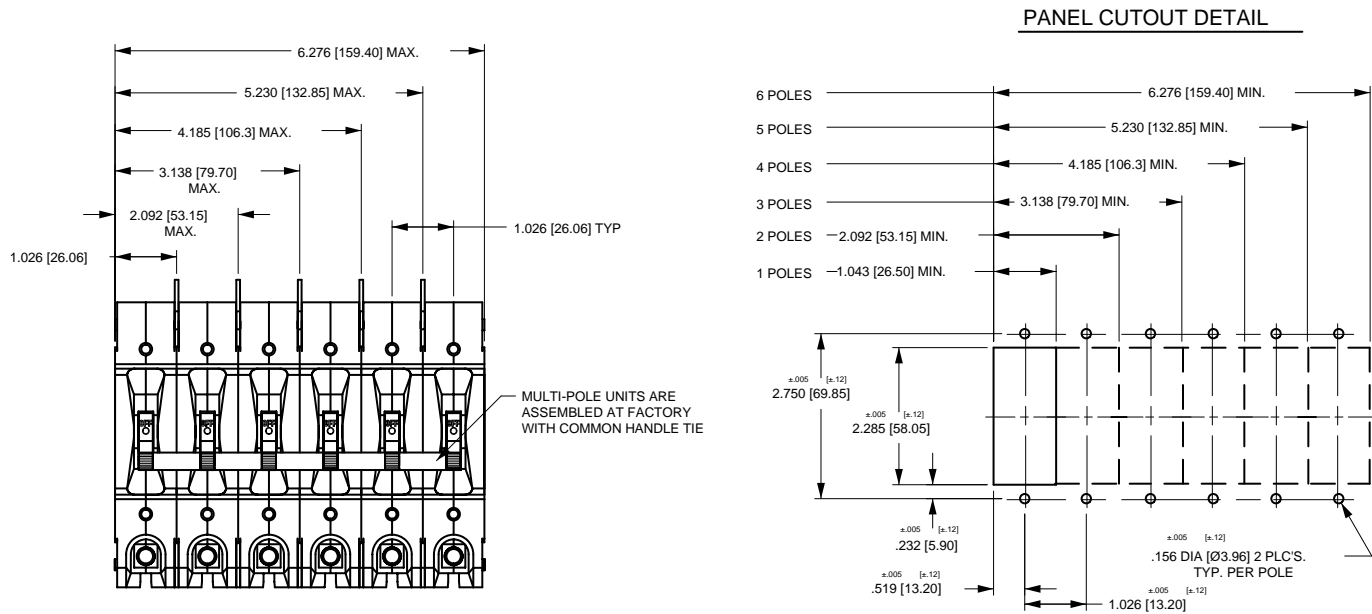
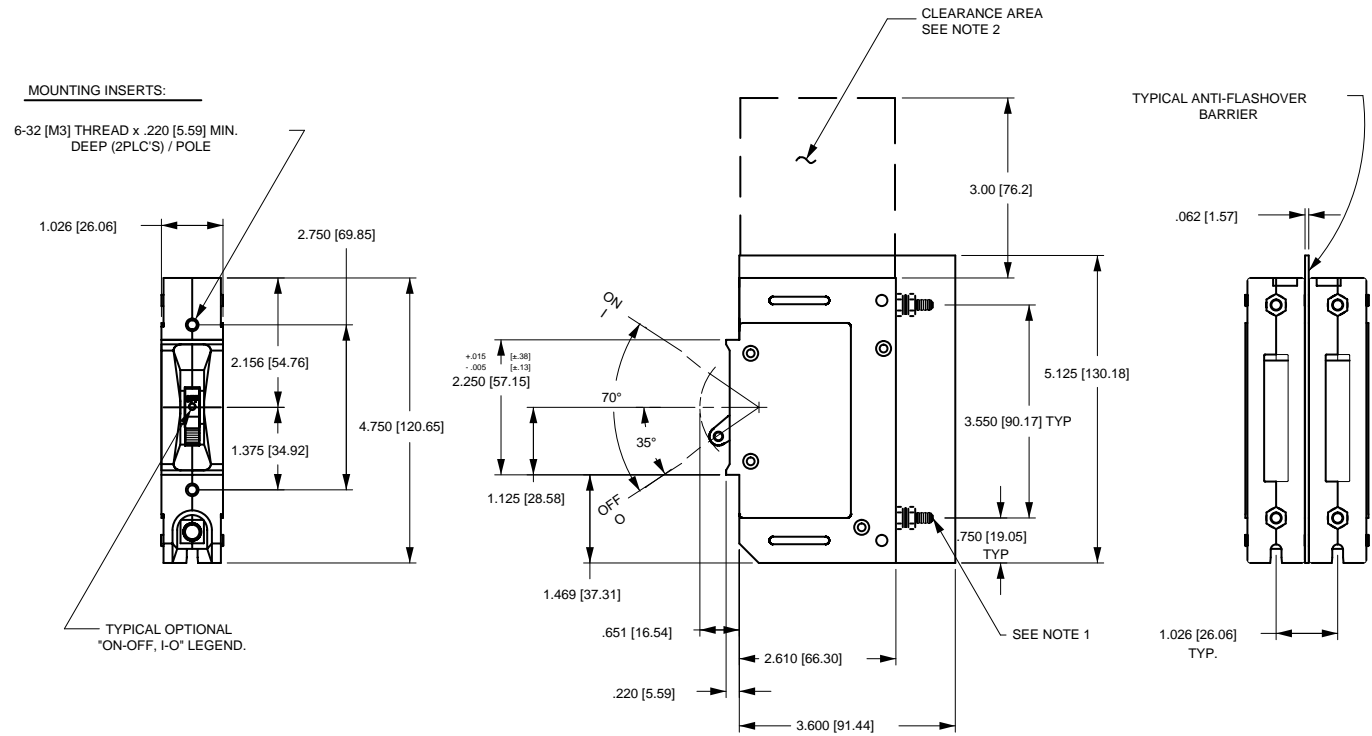


NOTES

- 1 All dimensions are in inches [millimeters].
- 2 Tolerance ±.020 [.51] unless otherwise specified.
- 3 Box wire connector terminal in Series Trip circuit configuration shown. For other configurations, consult factory.
- 4 Circuit breakers must be mounted on a vertical surface.

Form and Fit Drawings

(Back Connected Type)



NOTES

- 1 1/4 - 20 stud terminal in Series Trip circuit configuration shown. For other configurations, consult factory..
- 2 A 3" min spacing must be provided between the circuit breaker arc venting area of back connected E-Series circuit breakers and grounded obstructions.
- 3 All dimensions are in inches [millimeters].
- 4 Tolerance ±.020 [.51] unless otherwise specified.
- 5 Circuit breakers must be mounted on a vertical surface.

Power Selector

ACCESSORY CODE

8 Circuit Breaker
Accessory

**TOTAL SELECTOR
SYSTEM POLES**

6 Six poles
9 Nine poles

**NUMBER OF SECTIONS & NUMBER
OF POLES PER SECTION**

	Sections	Poles per section
C	Two	Three
G	Three	Three

The number of sliding lockout handles provided is one less than the number of sections specified, allowing only one section to be live at one time.

STYLE

1 Carlingswitch logo
2 Textured surface
3 Glossy Surface

8 E 6

- B - C 3 1

PRODUCT SERIES

E E-Series

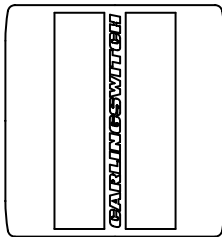
ACCESSORY TYPE

B Power Selector --
Sliding Lockout
Handle

COLOR

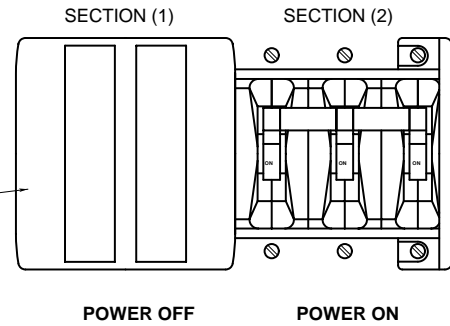
2 Black
3 Red

STYLE CODE 1



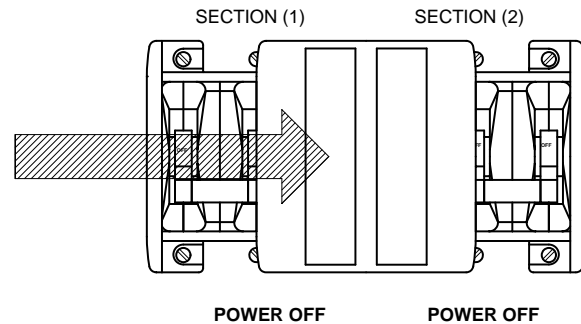
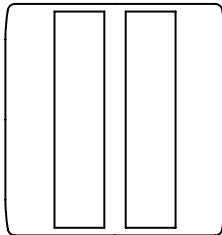
**MOUNTING
PANEL**

**SLIDING
LOCKOUT
HANDLE**



1

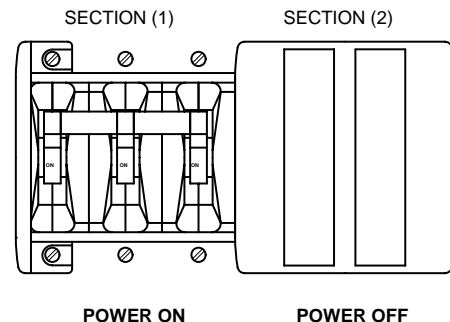
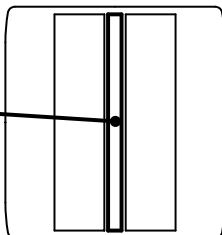
STYLE CODE 2



2

STYLE CODE 3

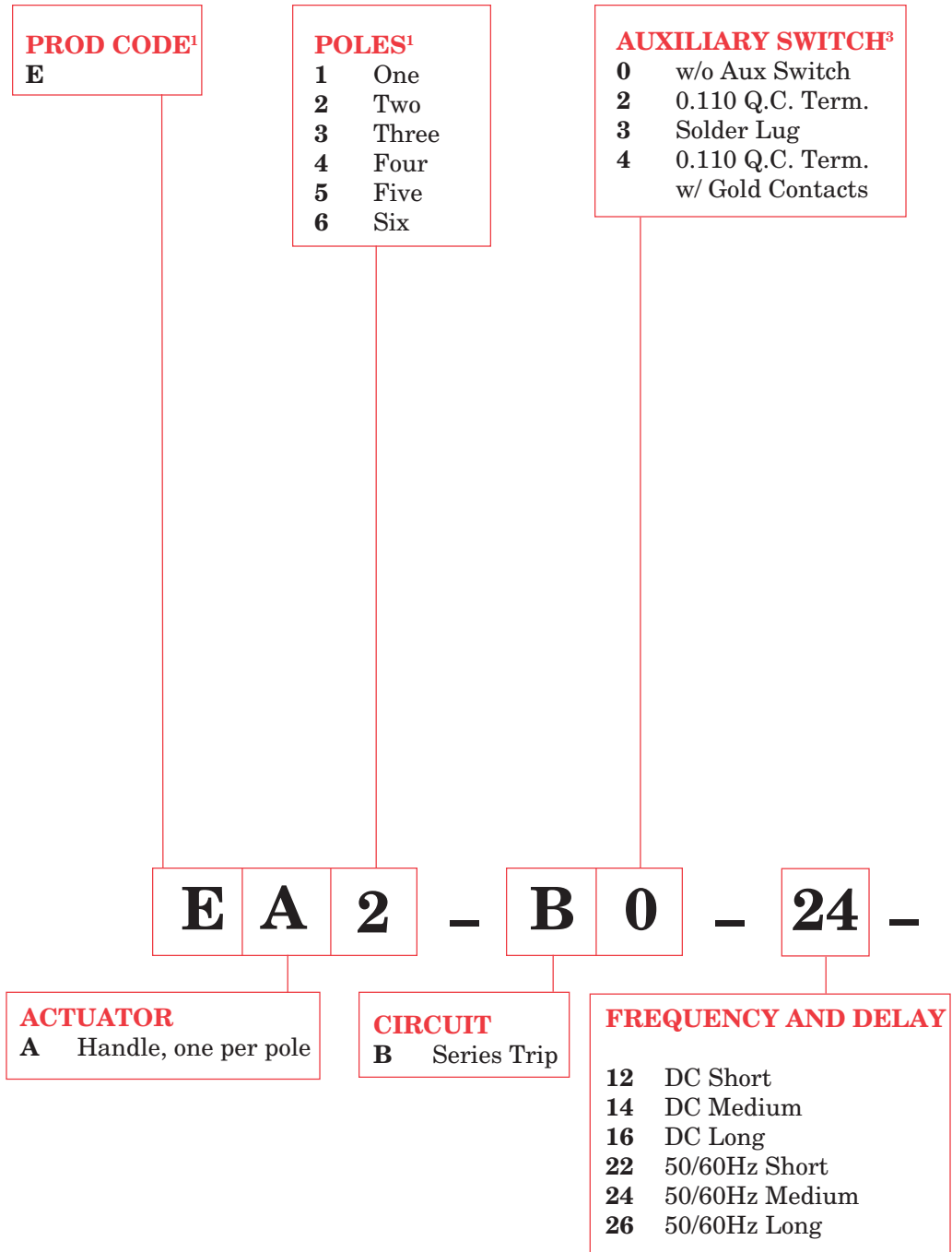
**GLOSSY
SURFACE
FOR
CUSTOMER
APPLIED
LABEL**



3

HANDLE STYLES

Ordering Scheme



NOTES

- 1 E-Series circuit breakers on this page are LISTED under UL Standard #489 (General and Special Purpose) and are Certified under CSA Standard #C22.2 No. 5.
- 2 Standard multi-pole units have all poles identical except when specifying auxiliary switch - (see Note 3 and Fig. A).
- 3 On multi-pole units, only one auxiliary switch is normally supplied mounted in the extreme right pole per Fig. A. Back mounted units require special mounting provisions when auxiliary switch is specified.
- 4 A terminal barrier is supplied between poles on multi-pole units with 10-32 stud (Terminal Code 1) and 1/4-20 stud (Terminal Code 2) per UL requirement.
- 5a. Box Wire Connector will accept #14 through 0 AWG. copper wire or #12 through 0 AWG. aluminum wire.
- 5b. Box Wire Connector with Pressure Plate for stranded wire, consult factory for details.
6. Standard handle colors are white and black with ON-OFF & dual; I-O/ON-OFF legends.
7. Back Mounted breakers can also be front mounted by utilizing the proper front panel mounting inserts normally supplied. However, terminal connections must be made prior to mounting.
8. Line Terminals must be same polarity.

COIL RATING CURRENT COIL

AMPERES	
210	0.100
225	0.250
250	0.500
410	1.000
425	2.500
450	5.000
475	7.500
610	10.000
615	15.000
620	20.000
625	25.000
630	30.000
650	50.000
660	60.000
670	70.000
810	100.000

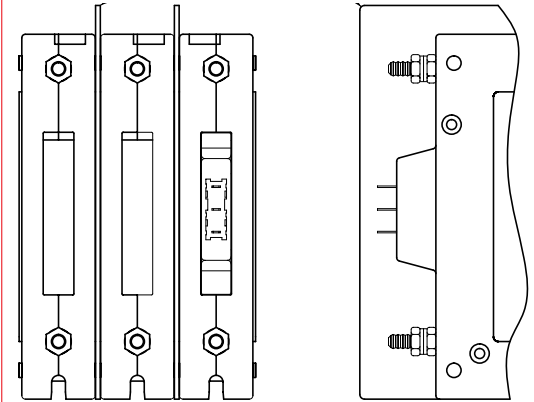
ACTUATOR COLOR

COLOR	LEGEND
B ⁶ White	On-Off (Black)
1 ⁶ White	Dual (Black)
D ⁶ Black	On-Off (White)
2 ⁶ Black	Dual (White)
G Red	On-Off (White)
3 Red	Dual (White)
N Yellow	On-Off (Black)
6 Yellow	Dual (Black)

MAXIMUM APPLICATION RATING

VOLTAGE	CURRENT
B 125 VDC	100 Amps
C 120/240 VAC	100 Amps
D 240 VAC	100 Amps

Figure A



POLE 1 POLE 2 POLE 3 LOAD

MULTI-POLE IDENTIFICATION SCHEME

450 - **1 2 A** - **C C**

AGENCY APPROVAL
A W/O Approval
C UL 489 LISTED and CSA Certified (Branch Circuit Breaker)

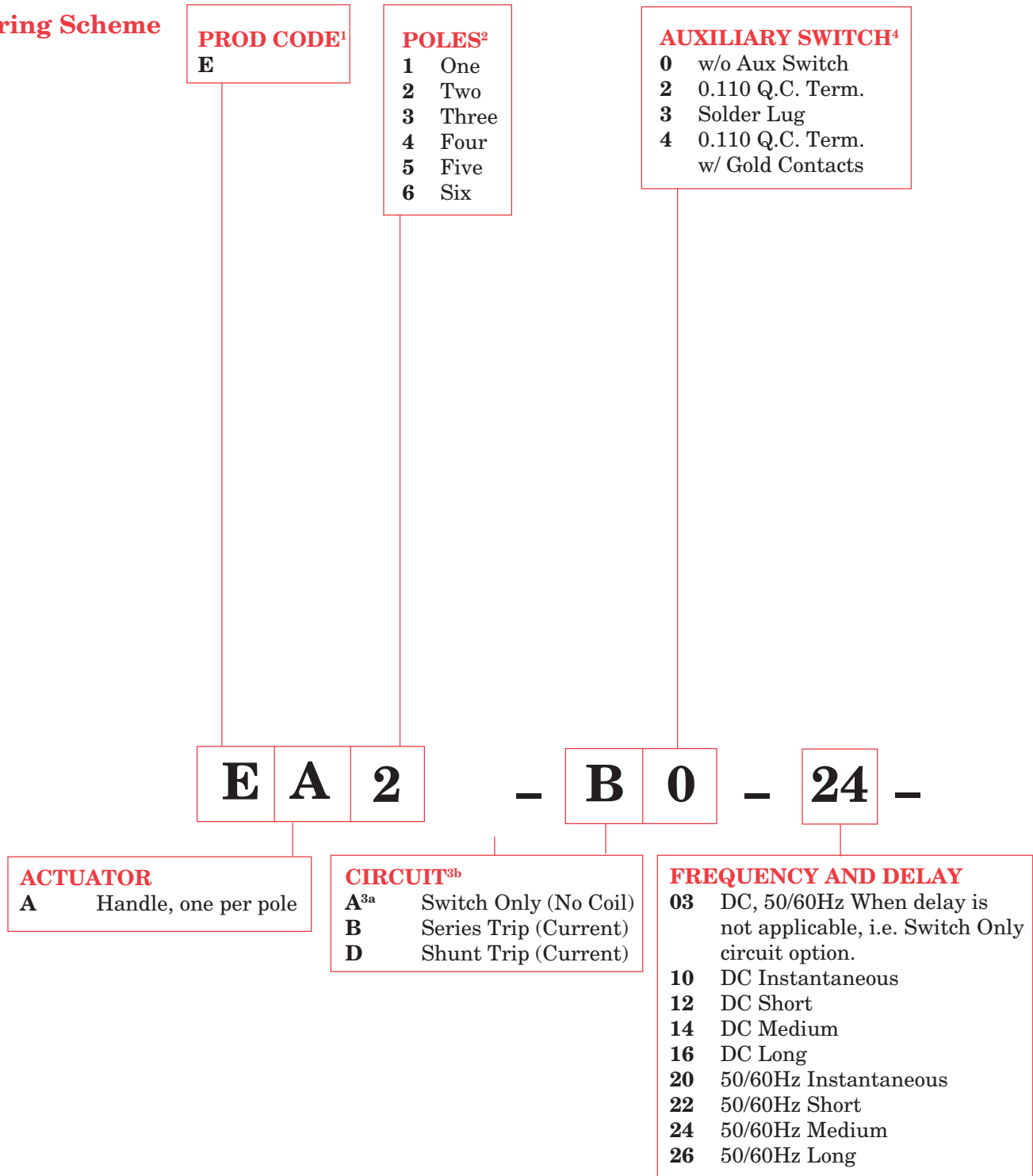
TERMINAL

	MAX. RATING
BACK CONNECTED (Front Mounted Only)	
1 ⁴ 10-32 studs (all terminals)	50A
2 ⁴ 1/4-20 studs (all terminals)	100A
FRONT CONNECTED (Back Mounted Only)	
3 ^{5a} Box Wire Connector (line & load)	100A
C ^{5b} Box Wire Connector w/ pressure plate (line & load)	100A
4 10-32 screw (line & load)	50A
5 ⁸ 10-32 "Bus-type" screw (line), 10-32 screw (load)	50A
6 ^{5a,8} 10-32 "Bus-type" screw (line), Box Wire Connector (load)	100A
F ^{5b,8} 10-32 "Bus-type" screw (line), Box Wire Connector w/ pressure plate (load)	100A
7 1/4-20 screw (line & load)	100A
8 ⁸ 1/4-20 "Bus-type" screw (line), 1/4-20 screw (load)	100A
9 ^{5a,8} 1/4-20 "Bus-type" screw (line), Box Wire Connector (load)	100A
J ^{5b,8} 1/4-20 "Bus-type" screw (line), Box Wire Connector w/ pressure plate (load)	100A

MOUNTING

FRONT (Back Connected Only)	
Mounting inserts	
A	6-32
B	ISO M3
BACK (Front Connected Only)⁷	
Back mounting foot type Front mounting insert (for opt. use)	
C	Short 6-32
D	Short ISO M3
E	Long 6-32
F	Long ISO M3

Ordering Scheme



- NOTES**
- E-Series circuit breakers on this page are UL Recognized under the Component Recognition Program as Supplementary Protectors, (UL Standard #1077) and Manual Motor Controllers. (UL Standard #508) and are also Certified to CSA Standard C22.2 No. 235 as Supplementary Protectors.
 - Standard multi-pole units have all poles identical except when specifying auxiliary switch - (see Note 4 and Figure A). For mixed ratings, consult factory.
 - Switch Only construction: 30 amps or less select Current Rating Code 630; 31-70 amps, select Current Rating code 670; 71-100 amps, select Current Rating Code 810.
 - Switch Only and Series Trip construction available with either front or back connected terminals. Shunt construction available with back connected terminals, (Terminal Codes 1 & 2) only.
 - Auxiliary Switch available on Switch Only and Series Trip units. On multi-pole units, only one auxiliary switch is normally supplied mounted in the extreme right pole per Figure A. Back mounted units require special mounting provisions when auxiliary switch is specified.
 - A terminal barrier is supplied between poles on multi-pole units with 10-32 stud (Terminal Code 1) and 1/4-20 stud (Terminal Code 2) per UL requirement.
 - Box Wire Connector will accept #14 through 0 AWG. copper wire or #12 through 0 AWG. aluminum wire.
 - Box Wire Connector with Pressure Plate for stranded wire, consult factory for details.
 - Standard handle colors are white and black with I-O, ON-OFF and DUAL ON-OFF/I-O legends.
 - Back Mounted breakers can also be front mounted by utilizing the proper front panel mounting inserts normally supplied. However, terminal connections must be made prior to mounting.
 - 480V and 600V ratings require 3 or 4 pole break 3Ø and 2 pole break 1Ø.
 - Line Terminals must be same polarity, rated 300V max.

**COIL RATING
CURRENT COIL**

	AMPERES
210	0.100
225	0.250
250	0.500
410	1.000
425	2.500
450	5.000
475	7.500
610	10.000
615	15.000
620	20.000
625	25.000
630	30.000
650	50.000
660	60.000
670	70.000
810	100.000

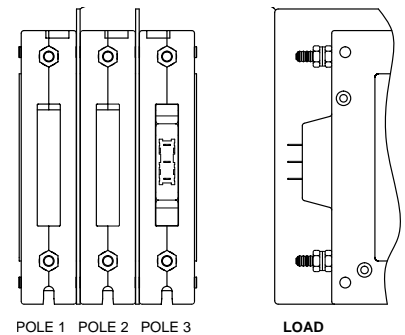
ACTUATOR COLOR

	COLOR	LEGEND
A⁷	White	I-O (Black)
B⁷	White	On-Off (Black)
1⁷	White	Dual (Black)
C⁷	Black	I-O (White)
D⁷	Black	On-Off (White)
2⁷	Black	Dual (White)
F	Red	I-O (White)
G	Red	On-Off (White)
3	Red	Dual (White)
M	Yellow	I-O (Black)
N	Yellow	On-Off (Black)
6	Yellow	Dual (Black)

MAXIMUM APPLICATION RATING

	VOLTAGE	CURRENT
B	125 VDC	100 Amps
C	120/240 VAC	100 Amps
D	240 VAC	100 Amps
E⁹	277/480 VAC	100 Amps
F	277 VAC	100 Amps
G⁹	600 VAC	100 Amps
H⁹	480 VAC	100 Amps
U	125 VDC/277 VAC	100 Amps
V⁹	125 VDC/600 VAC	100 Amps

Figure A



MULTI-POLE IDENTIFICATION SCHEME

450

-

1 2 A

-

C B

TERMINAL

	MAX. RATING
BACK CONNECTED (Front Mounted Only)	
1⁵ 10-32 studs (all terminals)	50A
2⁵ 1/4-20 studs (all terminals)	100A
FRONT CONNECTED (Back Mounted Only)	
3^{6a} Box Wire Connector (line & load)	100A
C^{6b} Box Wire Connector w/ pressure plate (line & load)	100A
4 10-32 screw (line & load)	50A
5¹⁰ 10-32 "Bus-type" screw (line), 10-32 screw (load)	50A
6^{6a,10} 10-32 "Bus-type" screw (line), Box Wire Connector (load)	100A
F^{6b,10} 10-32 "Bus-type" screw (line), Box Wire Connector w/ pressure plate (load)	100A
7 1/4-20 screw (line & load)	100A
8¹⁰ 1/4-20 "Bus-type" screw (line), 1/4-20 screw (load)	100A
9^{6a,10} 1/4-20 "Bus-type" screw (line), Box Wire Connector (load)	100A
J^{6b,10} 1/4-20 "Bus-type" screw (line), Box Wire Connector w/ pressure plate (load)	100A

MOUNTING

FRONT (Back Connected Only)	
Mounting inserts	
A	6-32
B	ISO M3
BACK (Front Connected Only)⁸	
Back mounting foot type Front mounting insert (for opt. use)	
C	Short 6-32
D	Short ISO M3
E	Long 6-32
F	Long ISO 32

AGENCY APPROVAL

A	W/O Approval
B	UL 1077 RECOGNIZED & CSA CERTIFIED (Supplementary Protector); UL 508 RECOGNIZED (Manual Motor Controller)