

W23

W31

W23/W31 series

TOGGLE OR PUSH/PULL ACTUATOR THERMAL CIRCUIT BREAKER



FEATURES

- 0.5 amp to 50 amp ratings may be used as on/off switch.
- Cannot be reset against overload.
- W23 has visible trip indicator.
- Screw termination.

AGENCY APPROVALS

W23 and W31 are UL 1077 Recognized as Supplementary Protectors, File E69543, and CSA Certified as Appliance Component Protectors, File LR15734.

ELECTRICAL DATA @ +25 °C

Calibration: Will continuously carry 100% of rating, may trip between 101% and 134% of rating at 25°C. Must trip at 135% in one hour.

Maximum Operating Voltages: 50VDC or 250VAC (to 400 Hz).

Interrupting Capacity: 0.5-25 amp models — 2,500 amps at 50VDC, 1000 amps at 250VAC. 26-50 amp models — 1000 amps at 50VDC or 250VAC.

Resettable Overload Capacity: Ten times rated current.

Dielectric Strength: Over 1,500 volts RMS.

RESISTANCE CHART

Current Rating In Amps	Maximum Resistance In Ohms \pm 30%
1	.61
5	.03
10	.01
15	.006
20	.004
30	.003
40	.002
50	.002

MECHANICAL/ENVIRONMENTAL DATA

Endurance Cycling: More than 6,000 cycles at 100% of rating or 10,000 mechanical cycles.

Humidity: Will meet requirements of MIL-STD-202, Method 1

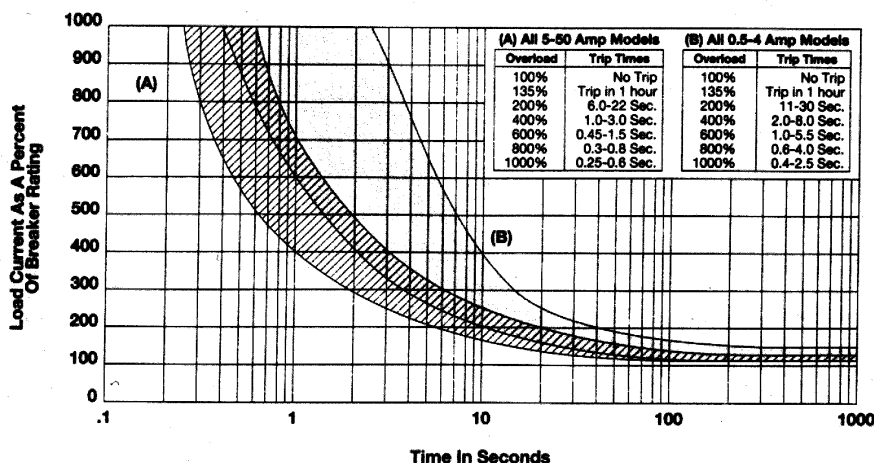
Salt Spray: Will meet requirements of MIL-STD-202, Method Test Condition B.

Termination: Two #8-32 screw terminals.

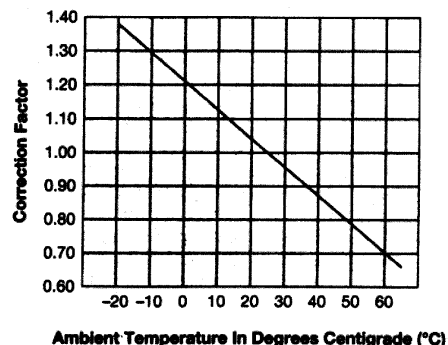
Mounting: W23 — Threaded bushing, 3/8" (9.53 mm) diameter
W31 — Threaded bushing, 15/32" (11.91 mm) diameter, with or without anti-rotation flats.

Weight: Less than 2 oz. (57 g).

TIME VS. CURRENT TRIP CURVE @ +25 °C



AMBIENT COMPENSATION CHART



TO USE THIS CHART: Read up from the ambient temperature to the curve, and across to find a correction factor. Multiply the breaker rating by the correction factor to determine the compensated rating. Calculate the overloads in terms of the compensated rating to use the published trip curve.

ORDERING INFORMATION

Typical Part No. >		W	23	-X	1	A	1	G	-5
1. DESIGNATOR: W = Circuit breaker									
2. SERIES NUMBER: 23 = Single pole, push/pull									
3. CIRCUIT FUNCTION: X = Series trip									
4. BUTTON: 1 = Black with white amp rate marking and white trip band.									
5. MOUNTING BUSHING: A = 3/8"-24 threaded bushing .375" (9.53mm) long, silver color									
6. TERMINALS (See drawings for relative terminal positions): 1 = Screw terminals situated 90° to each other with #8-32 screws and washers installed. 3 = Screw terminals situated parallel to each other pointing upward with #8-32 screws and washers installed.									
7. MOUNTING HARDWARE: A = Knurled nut/hex nut installed G = Two hex nuts/lockwasher installed Z = No mounting hardware supplied									
8. AMP RATING:									
0.5	3	7.5	20	35					
1	4	10	25	40					
2	5	15	30	50					

STOCK ITEMS - The following items are normally maintained in stock for immediate delivery

W23-X1A1G-1	W23-X1A1G-7.50	W23-X1A1G-25	W23-X1A1G-50
W23-X1A1G-2	W23-X1A1G-10	W23-X1A1G-30	
W23-X1A1G-3	W23-X1A1G-15	W23-X1A1G-35	
W23-X1A1G-5	W23-X1A1G-20	W23-X1A1G-40	

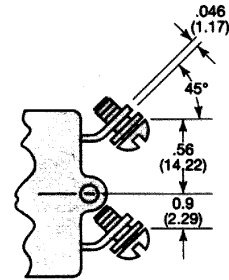
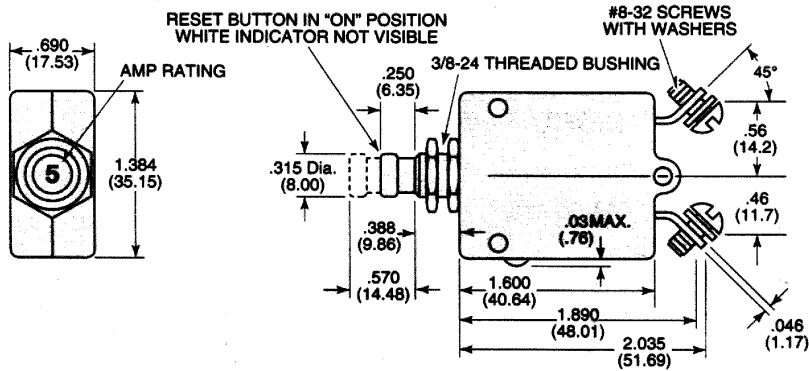
ORDERING INFORMATION

Typical Part No. >		W	31	-X	2	M	1	G	-5
1. DESIGNATOR: W = Circuit breaker									
2. SERIES NUMBER: 31 = Single pole, toggle actuator									
3. CIRCUIT FUNCTION: X = Series trip									
4. MOUNTING BUSHING: 1 = 15/32"-32 threaded bushing .320" (8.13 mm) long, round, silver color 2 = 15/32"-32 threaded bushing .320" (8.13 mm) long, double "D", silver color									
5. TOGGLE: M = Silver color metal toggle, round, with amp rate marking on end									
6. TERMINALS (See drawing for relative terminal positions): 1 = Screw terminals situated 90° to each other with #8-32 screws and washers installed. 5 = Screw terminals situated parallel to each other pointing downward with #8-32 screws and washers installed.									
7. MOUNTING HARDWARE: A = Knurled nut/hex nut installed G = Two hex nuts/lockwasher installed Z = No mounting hardware supplied									
8. AMP RATING:									
0.5	3	7.5	20	35					
1	4	10	25	40					
2	5	15	30	50					

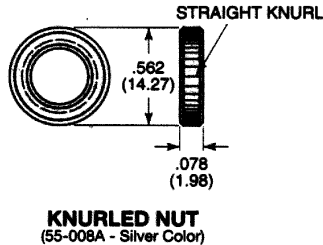
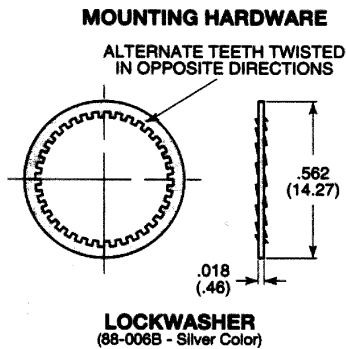
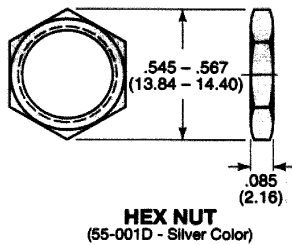
STOCK ITEMS - The following items are normally maintained in stock for immediate delivery

W31-X2M1G-1	W31-X2M1G-7.50	W31-X2M1G-25	W31-X2M1G-50
W31-X2M1G-2	W31-X2M1G-10	W31-X2M1G-30	
W31-X2M1G-3	W31-X2M1G-15	W31-X2M1G-35	
W31-X2M1G-5	W31-X2M1G-20	W31-X2M1G-40	

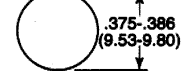
W23 OUTLINE DIMENSIONS



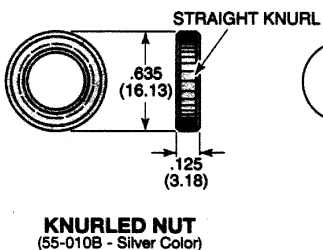
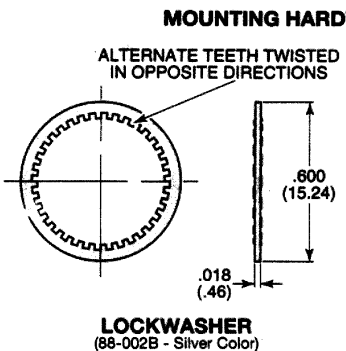
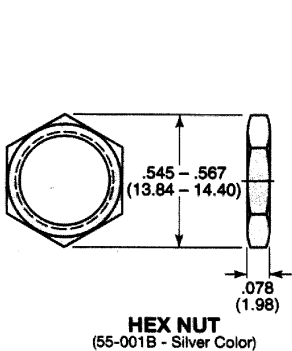
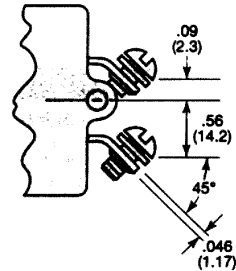
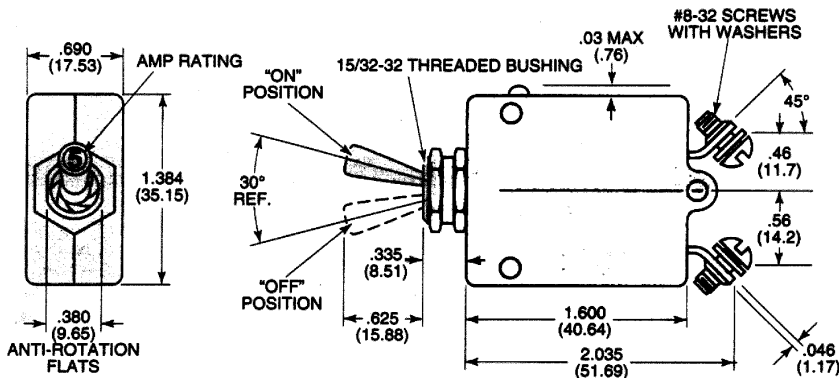
All dimensions are given as inches (mm)



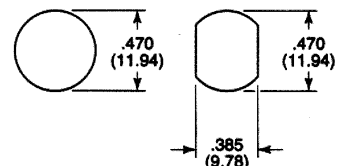
SUGGESTED MOUNTING HOLES

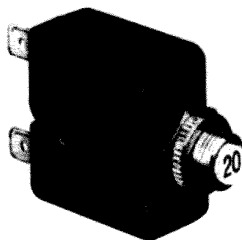


W31 OUTLINE DIMENSIONS



SUGGESTED MOUNTING HOLES





W58 series

PUSH TO RESET ONLY THERMAL CIRCUIT BREAKER



FEATURES

- 0.5 amp to 35 amp ratings.
- Cannot be manually tripped.
- Button extends for visual trip indication.
- Push button to reset breaker.
- Termination is screw or .250" QC.

AGENCY APPROVALS

W58 Series is UL 1077 Recognized as Supplementary Protectors, File E69543, and CSA Certified as Appliance Component Protectors, File LR15734.

ELECTRICAL DATA @ +25 C

Calibration: Breaker will continuously carry 100% of rated load. It may trip between 101% and 145% of rated load, but must trip at 145% at 25°C.

Dielectric Strength: Over 1,500 volts RMS.

Maximum Operating Voltages: 50VDC; 250VAC.

Interrupt Capacity: 2,000 amps at 50VDC (0.5 - 35 amp models).

1,000 amps at 250VAC (0.5 - 35 amp models).

Note: 30 and 35 amp models not UL or CSA.

Resettable Overload Capacity: Ten times rated current.

MAXIMUM RESISTANCE VS. CURRENT RATING @ +25°C

Current Rating In Amps	Maximum Resistance In Ohms	Current Rating In Amps	Maximum Resistance In Ohms
0.5	5.0	7	0.020
0.75	2.5	8	0.020
1	1.35	9	0.020
1.5	0.75	10	0.014
2	0.32	12	0.010
2.5	0.25	15	0.010
3	0.18	20	0.006
3.5	0.15	25	0.005
4	0.10	30	0.004
5	0.026	35	0.004
6	0.026		

MECHANICAL/ENVIRONMENTAL DATA

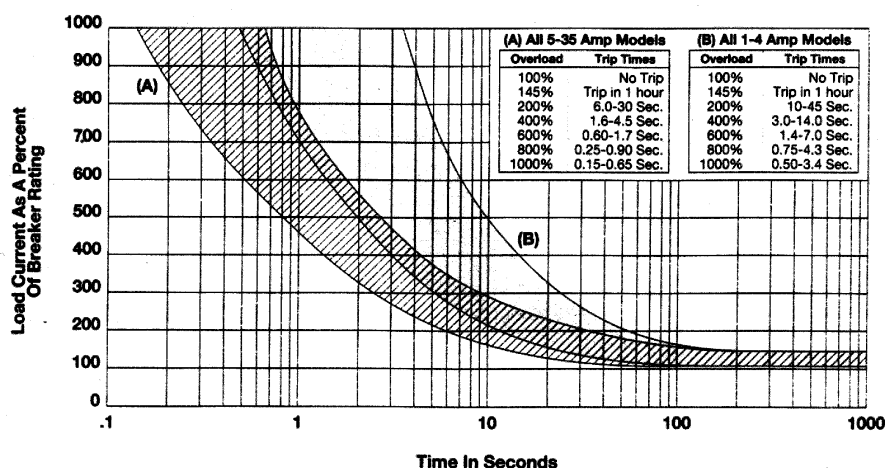
Shock: Withstands to 10 g.

Endurance Cycling: Over 1,000 cycles at 200% of rated load.

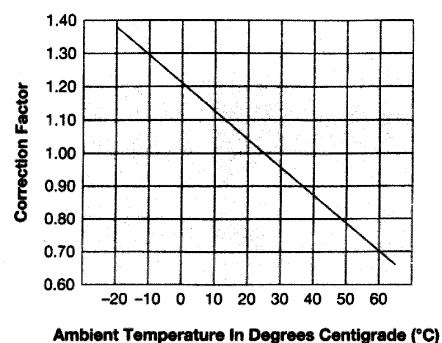
Vibration: Withstands to 10 g at 10-55 Hz.

Weight: Less than 1 1/2 oz. (42.5 g).

TIME VS. CURRENT TRIP CURVE @ +25 C



AMBIENT COMPENSATION CHART



TO USE THIS CHART: Read up from the ambient temperature to the curve, and across to find a correction factor. Multiply the breaker rating by the correction factor to determine the compensated rating. Calculate the overloads in terms of the compensated rating to use the published trip curve.

ORDERING INFORMATION

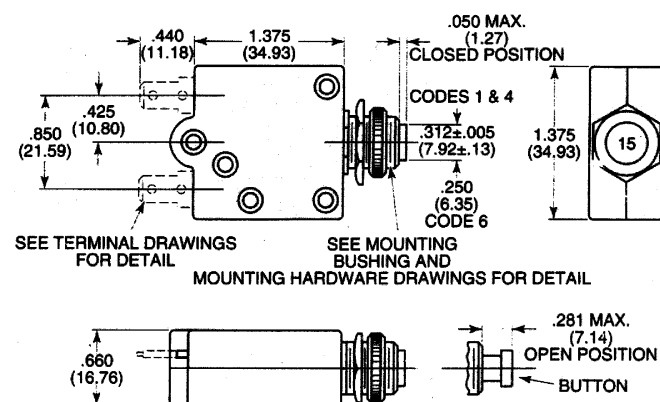
Typical Part No. >		W	58	-X	B	1	A	4	A	-5	
1. DESIGNATOR: W = Circuit breaker											
2. SERIES NUMBER: 58 = Single Pole, Push-to-Reset											
3. CIRCUIT FUNCTION: X = Series Trip											
4. BUTTON: A = White, plain, no rate marking, no trip band E = White with red rate marking no trip band B = White with red rate marking, red trip band F = White with black rate marking, no trip band C = White with black rate marking, red trip band											
5. MOUNTING BUSHING: 1 = 7/16" x .500" (12.70 mm) long 4 = 15/32" x .300" (7.62 mm) long, black 6 = 3/8" x .465" (11.81 mm) long, round											
6. TERMINALS: A = Quick connect .250" (6.35 mm) straight B = Quick connect .250" (6.35 mm) 90° C = 6/32 screw 90° (screws installed) D = 6/32 screw 90° (screws bulk packed)											
7. MOUNTING HARDWARE: 4 = Knurled nut/hex nut 15 = Two hex nuts/lock washer 6 = Knurled nut/hex nut/lock washer 99 = No mtg. hardware supplied (Use C, Step #8) 12 = Knurled nut/lock washer											
8. MOUNTING HARDWARE PACKAGING: A = Assembled to bushing B = Bulk unassembled C = No mounting hardware											
9. SPECIFY AMP RATING:											
0.5	1.5	3	5	8	12	25					
0.75	2	3.5	6	9	15	30*					
1	2.5	4	7	10	20	35*					

*Not UL or CSA

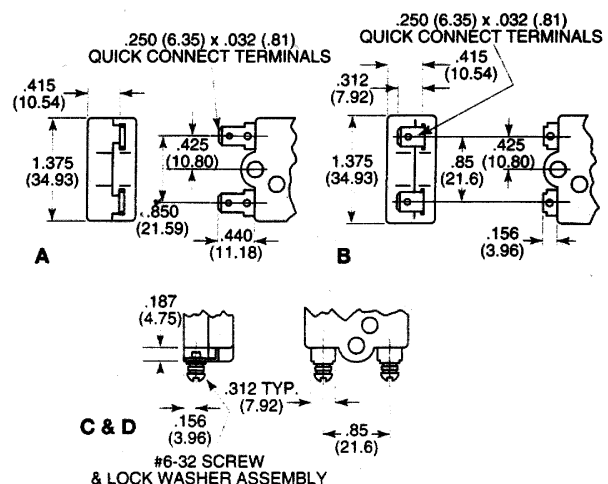
STOCK ITEMS - The following items are normally maintained in stock for immediate delivery.

W58-XB1A4A-1	W58-XB1A4A-6	W58-XB1A4A-15	W58-XC4C12A-1	W58-XC4C12A-10	W58-XC4C12A-35
W58-XB1A4A-2	W58-XB1A4A-7	W58-XB1A4A-20	W58-XC4C12A-2	W58-XC4C12A-15	
W58-XB1A4A-3	W58-XB1A4A-8	W58-XB1A4A-25	W58-XC4C12A-3	W58-XC4C12A-20	
W58-XB1A4A-4	W58-XB1A4A-10	W58-XB1A4A-30	W58-XC4C12A-5	W58-XC4C12A-25	
W58-XB1A4A-5	W58-XB1A4A-12	W58-XB1A4A-35	W58-XC4C12A-7	W58-XC4C12A-30	

OUTLINE DIMENSIONS

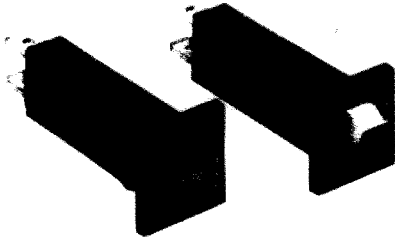


TERMINAL OPTIONS



6
CIRCUIT BREAKERS & FUSES

**SWITCHABLE VERSION
NOW AVAILABLE**



W28 series

**SWITCHABLE OR
PUSH TO RESET
FUSEHOLDER-TYPE
THERMAL CIRCUIT BREAKER**



Note: Some approvals pending for switchable type.

FEATURES

- Switchable version combines on-off switch and circuit protection in a single unit.
- Approved to many international standards (push to reset type).
- Replaces slow blow glass cartridge fuse.
- Labor-saving snap-in mounting.
- Button extends for visual trip indication on push to reset model.
- Rocker on switchable model moves to "overload" position upon trip.

AGENCY APPROVALS

W28 series is UL 1077 Recognized as Supplementary Protectors, File E69543, and CSA Certified as Appliance Component Protectors, File LR15734. W28 breakers have been issued Certificate of Suitability CS2190N as supplementary Equipment Protectors by the Energy Authority of New South Wales, Australia. W28 breakers are also DEMKO (Denmark) and SEV (Switzerland) approved. VDE approved for use in office equipment and provides 8mm isolation. 20 amp models do not have VDE, DEMKO and SEV approvals at present. W28-S is UL 1077 Recognized, with other approvals pending.

ELECTRICAL DATA @ 25°C

Calibration: Will continuously carry 100% of rating.
3-20 amp models – may trip between 101% and 134%, but must trip at 135% of rating within one hour at +25°C.
0.25-2 amp models – may trip between 101% and 174%, but must trip at 175% of rating within one hour at +25°C.

Dielectric Strength: Over 1,500 volts RMS.

Maximum Operating Voltages: 32VDC; 250VAC, 50/60 Hz.

Interrupt Capacity: 1,000 amps at 250VAC, 50/60 Hz, and 32VDC in accordance with UL standard 1077.

Resettable Overload Capacity: Six times rated current for 0.25 through 2 amp models. Ten times rated current for 3 through 20 amp models.

Reset Time: 180 seconds max. for 0.25 through 2 amp models. 10 to 60 seconds for 3 through 20 amp models.

TYPICAL RESISTANCE VS. CURRENT RATING @ +25°C

Current Rating (A)	Resistance (mΩ)	Current Rating (A)	Resistance (mΩ)
0.25	14.0	8.0	0.016
0.50	3.55	9.0	0.014
0.75	2.0	10.0	0.011
1.0	0.89	11.0	0.01
2.0	0.17	12.0	0.009
3.0	0.089	13.0	0.009
4.0	0.043	14.0	0.007
5.0	0.030	15.0	0.007
6.0	0.026	16.0	0.007
7.0	0.017	20.0	0.006

MECHANICAL/ENVIRONMENTAL DATA

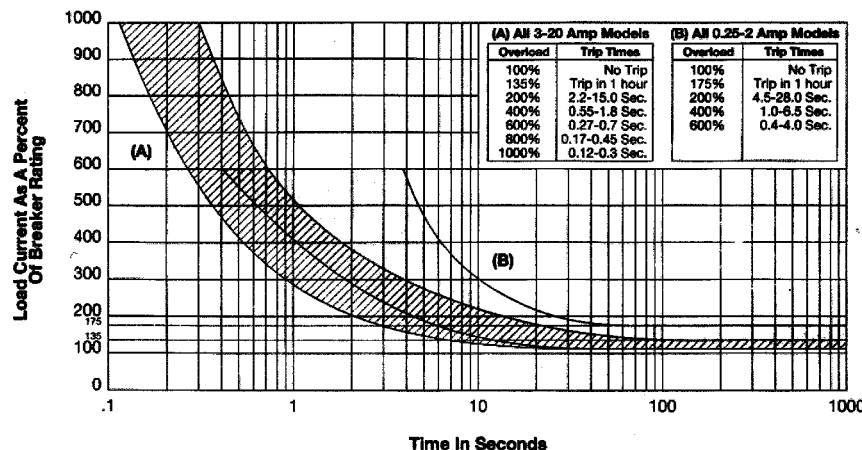
Endurance Cycling (switchable type): Typically 30,000 operations at 100% of rating.

Termination: .250" (6.35 mm) quick connects. Soldering to terminals is not recommended.

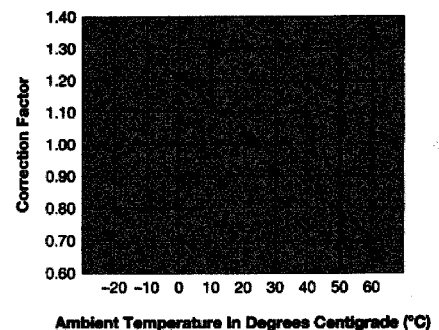
Mounting: Snaps into panel from front. See Recommended Panel Cutouts.

Approximate Weight: 0.35 oz. (10 g).

TIME VS. CURRENT TRIP CURVE @ +25°C



AMBIENT COMPENSATION CHART



TO USE THIS CHART: Read up from the ambient temperature to the curve, and across to find a correction factor. Multiply the breaker rating by the correction factor to determine the compensated rating. Calculate the overloads in terms of the compensated rating to use the published trip curve.

ORDERING INFORMATION

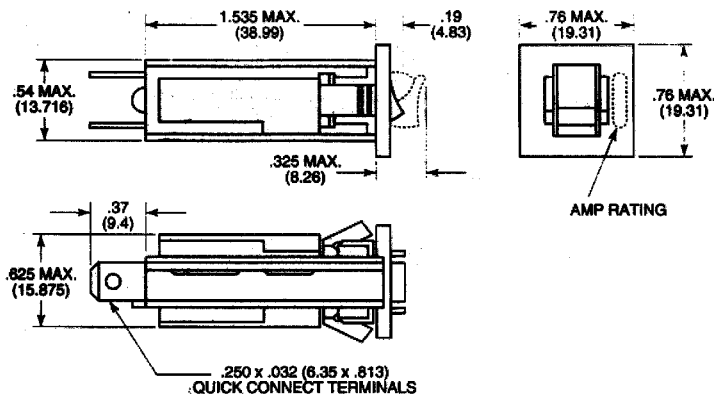
Typical Part No. >		W	28	-X	Q	1	A	-5																											
1. DESIGNATOR: W = Circuit breaker																																			
2. SERIES NUMBER: 28 = Single Pole Fuseholder Type																																			
3. CIRCUIT FUNCTION: X = Series Trip, Push-to-Reset Button S = Series Trip, Switchable Rocker																																			
4. TERMINAL TYPE AND MOUNTING: Q = .250" (6.35 mm) Quick Connect will mount in .032"-.062" (.813 mm - 1.574 mm) thick panel. T = .250" (6.35 mm) Quick Connect will mount in .075"-.105" (1.905 mm - 2.667 mm) thick panel. For panel thicknesses other than above, order "Q" type and 55-025B Internal Tooth Push-On Lockwasher.																																			
5. BEZEL COLOR: 1 = Black with White Rate Marking † 11 = Black with No Rate Marking 2 = Red with Black Rate Marking † 21 = Red with No Rate Marking † Not available with Circuit Function "S". B = Black with White "Reset" Marked On Bezel (No Rate Marking) †																																			
6. BUTTON COLOR: A = Black B = Red																																			
7. AMP RATING: <table border="0"> <tr> <td>0.25†</td><td>1†</td><td>4</td><td>7</td><td>10</td><td>13</td><td>16</td><td></td><td></td> </tr> <tr> <td>0.50†</td><td>2†</td><td>5</td><td>8</td><td>11</td><td>14</td><td>20*</td><td></td><td></td> </tr> <tr> <td>0.75†</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td></td><td></td><td></td> </tr> </table> † Not available with Circuit Function "S".									0.25†	1†	4	7	10	13	16			0.50†	2†	5	8	11	14	20*			0.75†	3	6	9	12	15			
0.25†	1†	4	7	10	13	16																													
0.50†	2†	5	8	11	14	20*																													
0.75†	3	6	9	12	15																														

STOCK ITEMS - The following items are normally maintained in stock for immediate delivery.

W28-SQ11A-3	W28-SQ11A-12	W28-XQ1A-0.75	W28-XQ1A-4	W28-XQ1A-8	W28-XT1A-10
W28-SQ11A-5	W28-SQ11A-15	W28-XQ1A-1	W28-XQ1A-5	W28-XQ1A-10	W28-XT1A-12
W28-SQ11A-8	W28-XQ1A-0.25	W28-XQ1A-2	W28-XQ1A-6	W28-XQ1A-12	
W28-SQ11A-10	W28-XQ1A-0.50	W28-XQ1A-3	W28-XQ1A-7	W28-XQ1A-15	

OUTLINE DIMENSIONS

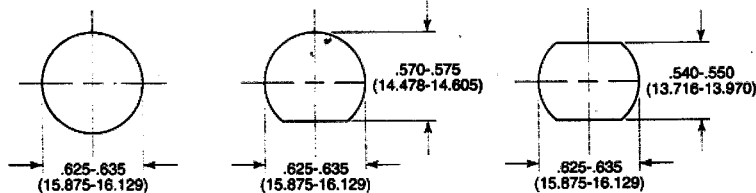
PUSH-TO-RESET TYPE



SWITCHABLE TYPE



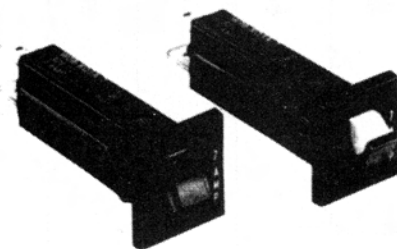
RECOMMENDED PANEL CUTOUTS



- Note:**
1. Soldering to terminals is not recommended.
 2. Recommended Panel Thickness: Style Q: .032" - .062" (.813 mm - 1.574 mm)
Style T: .075" - .105" (1.905 mm - 2.667 mm)
 3. Internal tooth push-on washer available for panel thickness not covered above.
Part No. 55-025B.

6
CIRCUIT BREAKERS & FUSES

**SWITCHABLE VERSION
NOW AVAILABLE**



FEATURES

- Switchable version combines on-off switch and circuit protection in a single unit.
- Approved to many international standards (push to reset type).
- Replaces slow blow glass cartridge fuse.
- Labor-saving snap-in mounting.
- Button extends for visual trip indication on push to reset model.
- Rocker on switchable model moves to "overload" position upon trip.

AGENCY APPROVALS

W28 series is UL 1077 Recognized as Supplementary Protectors, File E69543, and CSA Certified as Appliance Component Protectors, File LR15734. W28 breakers have been issued Certificate of Suitability CS2190N as supplementary Equipment Protectors by the Energy Authority of New South Wales, Australia. W28 breakers are also DEMKO (Denmark) and SEV (Switzerland) approved. VDE approved for use in office equipment and provides 8mm isolation. 20 amp models do not have VDE, DEMKO and SEV approvals at present. W28-S is UL 1077 Recognized, with other approvals pending.

ELECTRICAL DATA @ 25°C

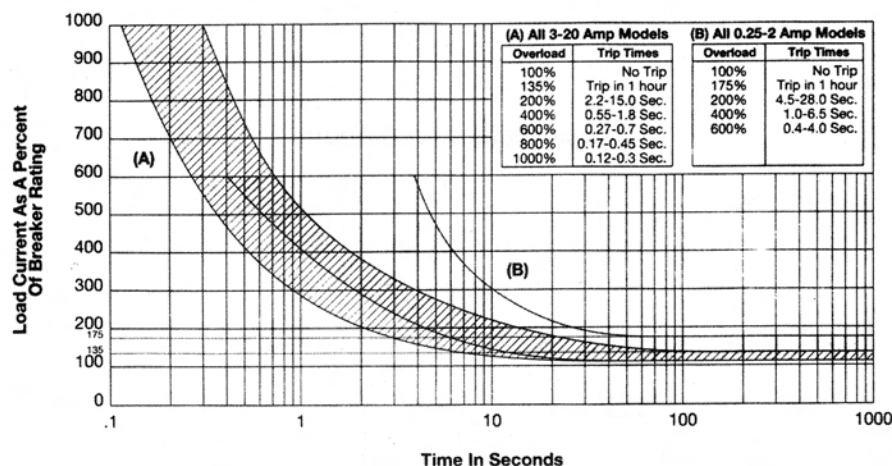
Calibration: Will continuously carry 100% of rating.
3-20 amp models – may trip between 101% and 134%, but must trip at 135% of rating within one hour at +25°C.
0.25-2 amp models – may trip between 101% and 174%, but must trip at 175% of rating within one hour at +25°C.

Dielectric Strength: Over 1,500 volts RMS.

Maximum Operating Voltages: 32VDC; 250VAC, 50/60 Hz.

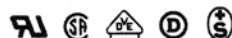
Interrupt Capacity: 1,000 amps at 250VAC, 50/60 Hz. and 32VDC in accordance with UL standard 1077.

TIME VS. CURRENT TRIP CURVE @ +25°C



W28 series

**SWITCHABLE OR
PUSH TO RESET
FUSEHOLDER-TYPE
THERMAL CIRCUIT BREAKER**



Note: Some approvals pending for switchable type.

Resettable Overload Capacity: Six times rated current for 0.25 through 2 amp models. Ten times rated current for 3 through 20 amp models.

Reset Time: 180 seconds max. for 0.25 through 2 amp models. 10 to 60 seconds for 3 through 20 amp models.

TYPICAL RESISTANCE VS. CURRENT RATING @ +25°C

Current Rating in Amps	Typical Resistance in Ohms	Current Rating in Amps	Typical Resistance in Ohms
0.25	14.0	8.0	0.016
0.50	3.55	9.0	0.014
0.75	2.0	10.0	0.011
1.0	0.89	11.0	0.01
2.0	0.17	12.0	0.009
3.0	0.069	13.0	0.009
4.0	0.043	14.0	0.007
5.0	0.030	15.0	0.007
6.0	0.026	16.0	0.007
7.0	0.017	20.0	0.006

MECHANICAL/ENVIRONMENTAL DATA

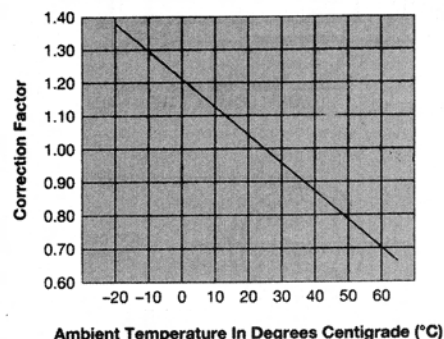
Endurance Cycling (switchable type): Typically 30,000 operations at 100% of rating.

Termination: .250" (6.35 mm) quick connects. Soldering to terminals is not recommended.

Mounting: Snaps into panel from front. See Recommended Panel Cutouts.

Approximate Weight: 0.35 oz. (10 g).

AMBIENT COMPENSATION CHART



TO USE THIS CHART: Read up from the ambient temperature to the curve, and across to find a correction factor. Multiply the breaker rating by the correction factor to determine the compensated rating. Calculate the overloads in terms of the compensated rating to use the published trip curve.

6
CIRCUIT BREAKERS & FUSES

ORDERING INFORMATION

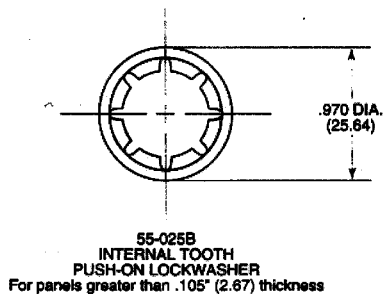
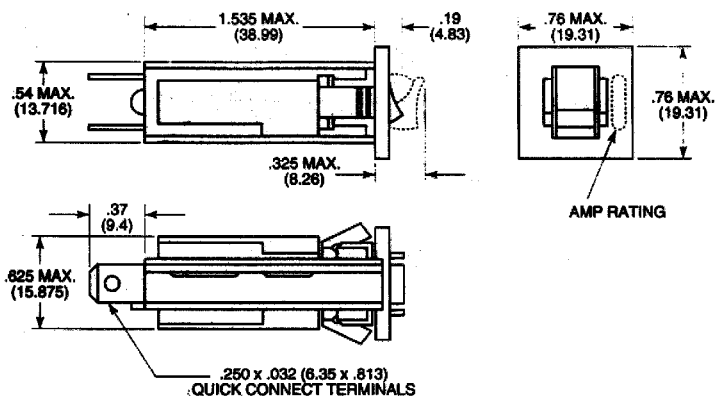
Typical Part No. >		W	28	-X	Q	1	A	-5
1. DESIGNATOR: W = Circuit breaker								
2. SERIES NUMBER: 28 = Single Pole Fuseholder Type								
3. CIRCUIT FUNCTION: X = Series Trip, Push-to-Reset Button S = Series Trip, Switchable Rocker								
4. TERMINAL TYPE AND MOUNTING: Q = .250" (6.35 mm) Quick Connect will mount in .032"-.062" (.813 mm - 1.574 mm) thick panel. T = .250" (6.35 mm) Quick Connect will mount in .075"-.105" (1.905 mm - 2.667 mm) thick panel. For panel thicknesses other than above, order "Q" type and 55-025B Internal Tooth Push-On Lockwasher.								
5. BEZEL COLOR: 1 = Black with White Rate Marking † 11 = Black with No Rate Marking 2 = Red with Black Rate Marking † 21 = Red with No Rate Marking † Not available with Circuit Function "S". B = Black with White "Reset" Marked On Bezel (No Rate Marking) †								
6. BUTTON COLOR: A = Black B = Red								
7. AMP RATING: 0.25† 1† 4 7 10 13 16 0.50† 2† 5 8 11 14 20† † Not available with Circuit Function "S". 0.75† 3 6 9 12 15								

STOCK ITEMS - The following items are normally maintained in stock for immediate delivery.

W28-SQ11A-3	W28-SQ11A-12	W28-XQ1A-0.75	W28-XQ1A-4	W28-XQ1A-8	W28-XT1A-10
W28-SQ11A-5	W28-SQ11A-15	W28-XQ1A-1	W28-XQ1A-5	W28-XQ1A-10	W28-XT1A-12
W28-SQ11A-8	W28-XQ1A-0.25	W28-XQ1A-2	W28-XQ1A-6	W28-XQ1A-12	
W28-SQ11A-10	W28-XQ1A-0.50	W28-XQ1A-3	W28-XQ1A-7	W28-XQ1A-15	

OUTLINE DIMENSIONS

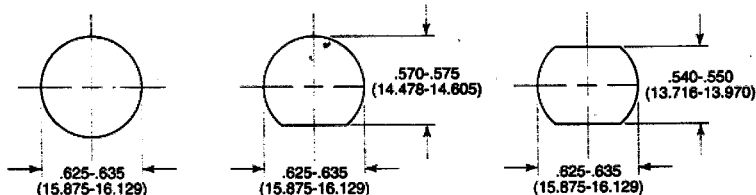
PUSH-TO-RESET TYPE



SWITCHABLE TYPE



RECOMMENDED PANEL CUTOUTS



- Note:**
- Soldering to terminals is not recommended.
 - Recommended Panel Thickness: Style Q: .032" - .062" (.813 mm - 1.574 mm)
Style T: .075" - .105" (1.905 mm - 2.667 mm)
 - Internal tooth push-on washer available for panel thickness not covered above.
Part No. 55-025B.