

# Alphanumeric Index

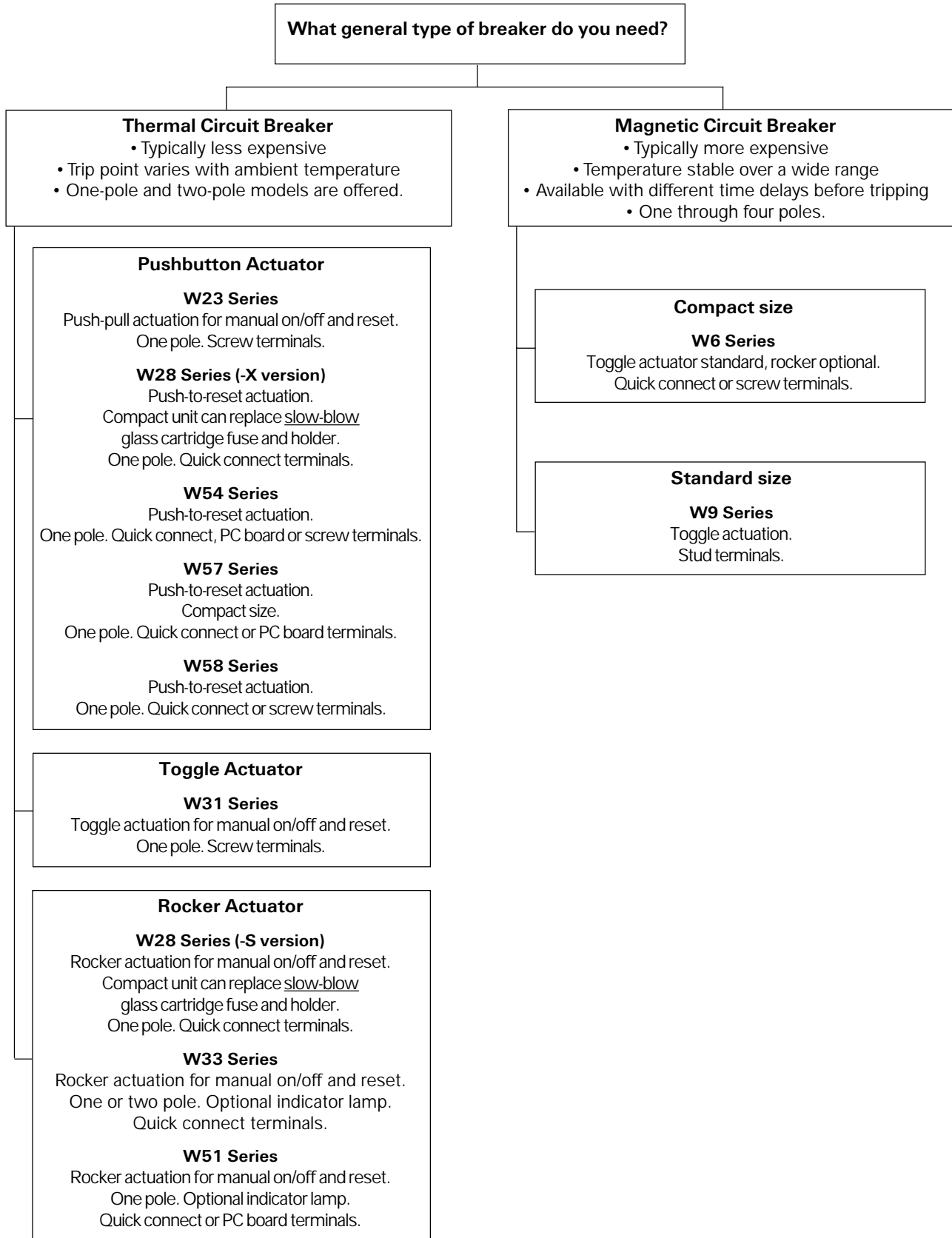
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**NOTE:** A question tree that may help you in selecting an appropriate circuit breaker for your application can be found on the next page.

# P&B Circuit Breaker Question Tree

This guide helps the user select one or more circuit breaker series which may be appropriate for a given application. The user should then refer to detailed specifications elsewhere in this catalog to determine the actual part number to be specified. Of course, the user must assume ultimate responsibility for determining the suitability of a breaker for a particular application.





# W57 series

## Compact, Push To Reset Only Thermal Circuit Breaker



### Features

- New, compact, design.
- 4 to 20 amp ratings.
- Cannot be manually tripped.
- Button extends for visual trip indication.
- Push button to reset breaker.
- Numerous mounting and termination options.

### Agency Approvals

W57 series is UL 1077 Recognized as Supplementary Protectors, File E69543, for Canada and the United States.

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### Electrical Data @ 25°C

- Calibration:** Will continuously carry 100% of rating. May trip between 101% and 134%, but must trip at 135% of rating within one hour at +25°C.
- Dielectric Strength:** 1,500VAC (60 seconds).
- Insulation Resistance:** 100 megohms.
- Maximum Operating Voltages:** 50VDC; 250VAC, 50/60 Hz.

- Interrupt Capacity:** 1,000 amps in accordance with UL standard 1077.
- Resettable Overload Capacity:** Ten times rated current.
- Reset Time:** 60 seconds.

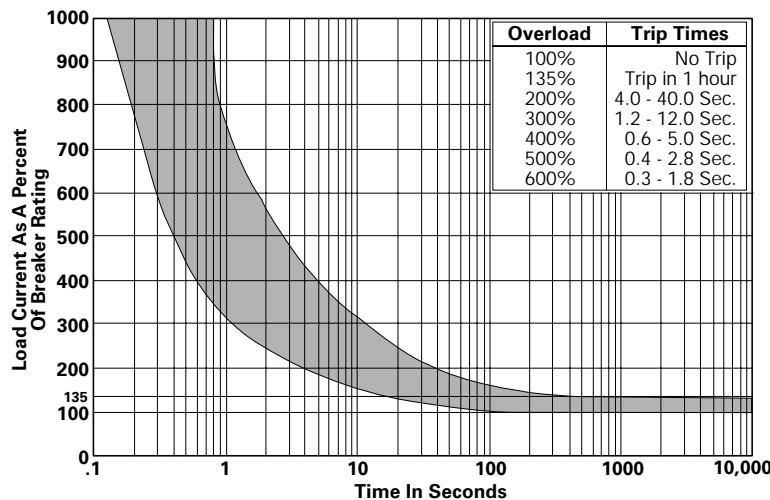
### Typical Resistance vs. Current Rating @ +25°C

| Current Rating in Amps | Typical Resistance in Ohms | Current Rating in Amps | Typical Resistance in Ohms |
|------------------------|----------------------------|------------------------|----------------------------|
| 4.0                    | 0.062                      | 10.0                   | 0.025                      |
| 5.0                    | 0.050                      | 12.0                   | 0.021                      |
| 6.0                    | 0.042                      | 15.0                   | 0.017                      |
| 7.0                    | 0.036                      | 20.0                   | 0.012                      |
| 8.0                    | 0.031                      |                        |                            |

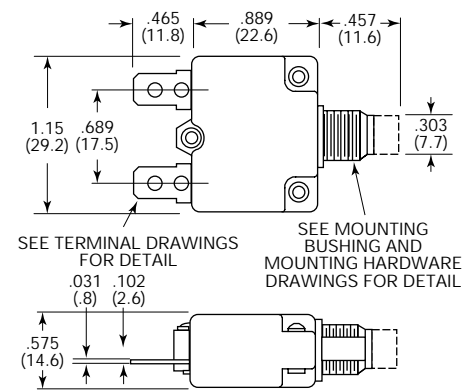
### Mechanical/Environmental Data

- Operating Temperature Range:** 0°C to +60°C.
- Termination:** .250" (6.35mm) quick connects.
- Mounting:** Various options. See Ordering Information and drawings.
- Approximate Weight:** 0.5 oz. (14.3g).

### Time vs. Current Trip Curve @ +25°C

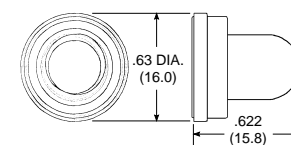


### Outline Dimensions



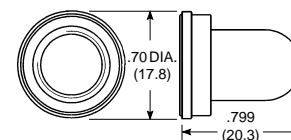
### Optional Protective Boot

Silicone rubber boot is bonded to integral aluminum nut.



**1-1423696-5**  
Black boot for W57 with 3/8"-24 bushing.

**1-1423696-7**  
Clear boot for W57 with 3/8"-24 bushing.



**1-1423696-4**  
Black boot for W57 with M11 X 1.0 bushing.

**1-1423696-6**  
Clear boot for W57 with M11 X 1.0 bushing.

### Ambient Compensation Table

| Ambient Temperature in °C | Rating Correction Factor |              |
|---------------------------|--------------------------|--------------|
|                           | 3-6A Models              | 7-20A Models |
| 10                        | .80                      | .80          |
| 20                        | .90                      | .90          |
| 25                        | 1.00                     | 1.00         |
| 30                        | 1.10                     | 1.05         |
| 40                        | 1.25                     | 1.15         |
| 50                        | 1.61                     | 1.25         |
| 60                        | 2.15                     | 1.40         |

**To use this chart:** Divide 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. Do not use these devices outside their specified operating temperature ranges.

**Ordering Information**

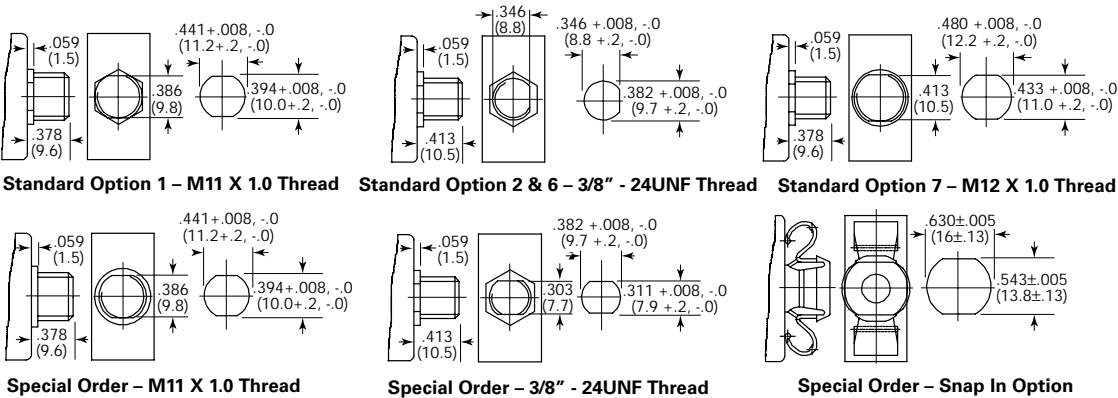
|   |          |           |           |          |          |          |          |          |          |          |           |
|---|----------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| <b>Typical Part No. ▶</b>   | <b>W</b> | <b>57</b> | <b>-X</b> | <b>B</b> | <b>1</b> | <b>A</b> | <b>4</b> | <b>A</b> | <b>1</b> | <b>0</b> | <b>-4</b> |
| <b>1. Designator:</b><br>W = Circuit breaker  |          |           |           |          |          |          |          |          |          |          |           |
| <b>2. Series Number:</b><br>57 = Compact, Single Pole, Push-to-Reset, Thermal Model   |          |           |           |          |          |          |          |          |          |          |           |
| <b>3. Circuit Function:</b><br>X = Series Trip  |          |           |           |          |          |          |          |          |          |          |           |
| <b>4. Button:</b><br>A = White, plain, no rate marking      C = White with black rate marking (vertical)<br>B = White with red rate marking (vertical)  |          |           |           |          |          |          |          |          |          |          |           |
| <b>5. Mounting Bushing:</b><br>1 = 9.8mm x 9.6mm long, plastic      6 = 3/8" (one side flat) x 10.5mm long, metal<br>2 = 3/8" (one side flat) x 10.5mm long, plastic      7 = 10.8mm x 12.6mm long, metal |          |           |           |          |          |          |          |          |          |          |           |
| <b>6. Terminals:</b><br>A = Quick connect .250" (6.35mm) straight   |          |           |           |          |          |          |          |          |          |          |           |
| <b>7. Mounting Hardware:</b><br>4 = Metal knurled nut/hex nut      5 = Plastic knurled nut      12 = Metal knurled nut      99 = None   |          |           |           |          |          |          |          |          |          |          |           |
| <b>8. Mounting Hardware Packaging:</b><br>A = Assembled to bushing      B = Bulk unassembled      C = No mounting hardware.   |          |           |           |          |          |          |          |          |          |          |           |
| <b>9. Maximum Operating Voltage (AC):</b><br>1 = 250VAC   |          |           |           |          |          |          |          |          |          |          |           |
| <b>10. Nameplate:</b><br>0 = None   |          |           |           |          |          |          |          |          |          |          |           |
| <b>11. Specify Amp Rating:</b>  | 4        | 5         | 6         | 7        | 8        | 10       | 12       | 15       | 20       |          |           |

**Our authorized distributors are more likely to stock the following items for immediate delivery.**

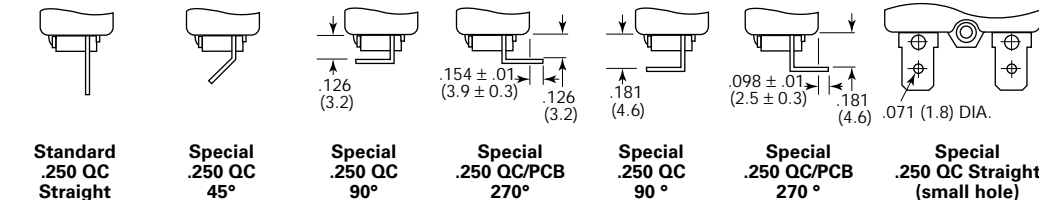
W57-XB1A4A10-5    W57-XB1A4A10-15    W57-XB1A7A10-5    W57-XB1A7A10-15  
W57-XB1A4A10-10    W57-XB1A4A10-20    W57-XB1A7A10-10    W57-XB1A7A10-20

**ORDERING NOTE:** Many options illustrated below are not listed in the "Ordering Information" chart above. Options denoted by "Special" or "Special Order" in their descriptions are only offered on a special order basis. Additionally, mounting hardware can be ordered separately. These options are subject to extended leadtimes and significant minimum order quantities. Your Tyco Electronics sales engineer must consult with the factory before providing price and availability information regarding these options.

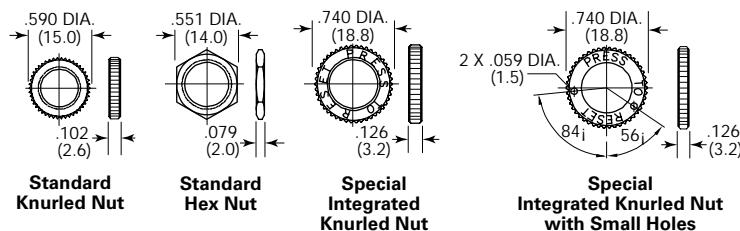
**Mounting Bushings and Recommended Panel Cutouts**



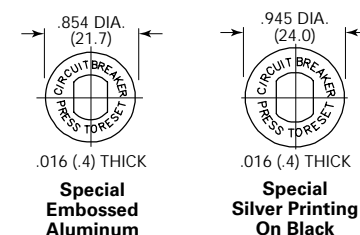
**Termination Options**



**Mounting Hardware Options**



**Optional Nameplates**





# W54 series

## Push To Reset Only Thermal Circuit Breaker



### Features

- New design.
- 5 to 40 amp ratings. (35A and 40A models will not be submitted for UL).
- Cannot be manually tripped.
- Button extends for visual trip indication.
- Push button to reset breaker.
- Numerous mounting and termination options.

### Agency Approvals

**W54 series (except 35A and 40A models) is UL 1077 Recognized as Supplementary Protectors, File E69543, for Canada and the United States.**

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### Electrical Data @ 25°C

- Calibration:** Will continuously carry 100% of rating. May trip between 101% and 134%, but must trip at 135% of rating within one hour at +25°C.
- Dielectric Strength:** 1,500VAC (60 seconds).
- Insulation Resistance:** 100 megohms.
- Maximum Operating Voltages:** 50VDC; 250VAC .

- Interrupt Capacity:** 1,000 amps in accordance with UL standard 1077.
- Resettable Overload Capacity:** Ten times rated current.
- Reset Time:** 60 seconds.

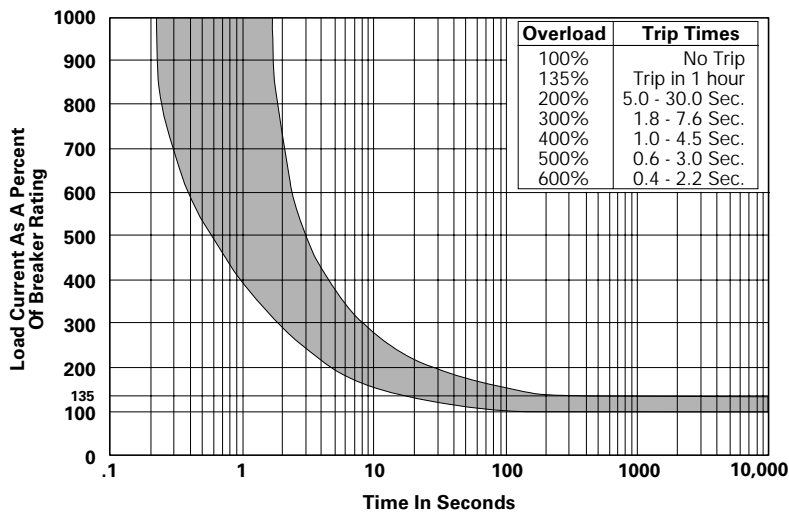
### Typical Resistance vs. Current Rating @25°C

| Current Rating in Amps | Typical Resistance in Ohms | Current Rating in Amps | Typical Resistance in Ohms |
|------------------------|----------------------------|------------------------|----------------------------|
| 5.0                    | 0.050                      | 15.0                   | 0.017                      |
| 6.0                    | 0.042                      | 20.0                   | 0.012                      |
| 7.0                    | 0.036                      | 25.0                   | 0.010                      |
| 8.0                    | 0.031                      | 30.0                   | 0.008                      |
| 10.0                   | 0.025                      | 35.0                   | 0.007                      |
| 12.0                   | 0.021                      | 40.0                   | 0.006                      |

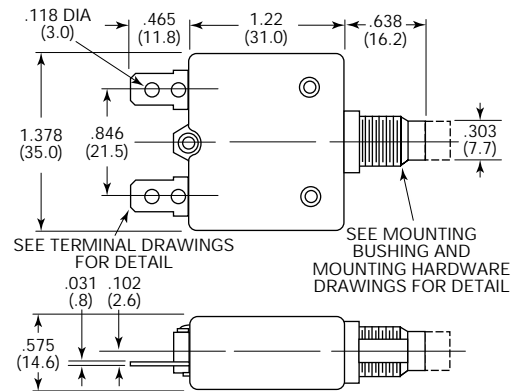
### Mechanical/Environmental Data

- Operating Temperature Range:** 0°C to +60°C.
- Termination:** .250" (6.35mm) quick connects or #8-32 screws.
- Mounting:** Various options. See Ordering Information and drawings.
- Approximate Weight:** 0.9 oz. (25.0g).

### Time vs. Current Trip Curve @ +25°C

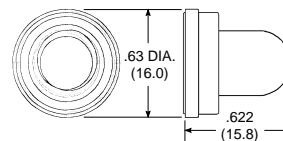


### Outline Dimensions



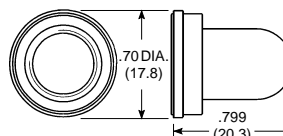
### Optional Protective Boot

Silicone rubber boot is bonded to integral aluminum nut.



**1-1423696-5**  
Black boot for W54 with 3/8" -24 bushing.

**1-1423696-7**  
Clear boot for W54 with 3/8" -24 bushing.



**1-1423696-4**  
Black boot for W54 with M11 X 1.0 bushing.

**1-1423696-6**  
Clear boot for W54 with M11 X 1.0 bushing.

### Ambient Compensation Table

| Ambient Temperature in °C | Rating Correction Factor |              |
|---------------------------|--------------------------|--------------|
|                           | 4-8A Models              | 9-30A Models |
| 10                        | .90                      | .80          |
| 20                        | .98                      | .90          |
| 25                        | 1.00                     | 1.00         |
| 30                        | 1.10                     | 1.05         |
| 40                        | 1.25                     | 1.15         |
| 50                        | 1.61                     | 1.31         |
| 60                        | 2.00                     | 1.55         |

**To use this chart:** Divide 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. Do not use these devices outside their specified operating temperature ranges.

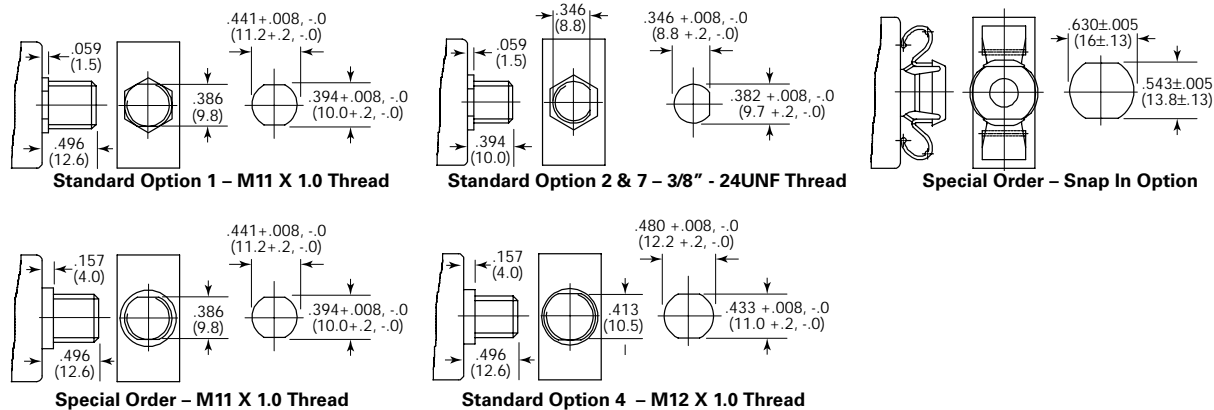
Ordering Information

|  |          |           |           |          |          |          |          |          |          |          |           |
|--|----------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|-----------|
| Typical Part No. ▶   | <b>W</b> | <b>54</b> | <b>-X</b> | <b>B</b> | <b>1</b> | <b>A</b> | <b>4</b> | <b>A</b> | <b>1</b> | <b>0</b> | <b>-5</b> |
| <b>1. Designator:</b><br>W = Circuit breaker   |          |           |           |          |          |          |          |          |          |          |           |
| <b>2. Series Number:</b><br>54 = Single Pole, Push-to-Reset, Thermal Model   |          |           |           |          |          |          |          |          |          |          |           |
| <b>3. Circuit Function:</b><br>X = Series Trip   |          |           |           |          |          |          |          |          |          |          |           |
| <b>4. Button:</b><br>A = White, plain, no rate marking      C = White with black rate marking (vertical)<br>B = White with red rate marking (vertical)   |          |           |           |          |          |          |          |          |          |          |           |
| <b>5. Mounting Bushing:</b><br>1 = 9.8mm x 12.6mm long, metal      4 = 10.8mm x 12.6mm long, metal<br>2 = 3/8" (one side flat) x 10mm long, metal      7 = 3/8" (one side flat) x 10mm long, plastic |          |           |           |          |          |          |          |          |          |          |           |
| <b>6. Terminals:</b><br>A = Quick connect .250" (6.35mm) straight<br>C = #8-32 screw 90° (screws installed)  |          |           |           |          |          |          |          |          |          |          |           |
| <b>7. Mounting Hardware:</b><br>4 = Metal knurled nut/hex nut      5 = Plastic knurled nut      12 = Metal knurled nut      99 = None  |          |           |           |          |          |          |          |          |          |          |           |
| <b>8. Mounting Hardware Packaging:</b><br>A = Assembled to bushing      B = Bulk unassembled      C = No mounting hardware   |          |           |           |          |          |          |          |          |          |          |           |
| <b>9. Maximum AC Operating Voltage:</b><br>1 = 250VAC  |          |           |           |          |          |          |          |          |          |          |           |
| <b>10. Nameplate:</b><br>0 = None  |          |           |           |          |          |          |          |          |          |          |           |
| <b>11. Specify Amp Rating:</b>   |          |           |           |          |          |          |          |          |          |          |           |
| 5      7      10      15      25      35*  |          |           |           |          |          |          |          |          |          |          |           |
| 6      8      12      20      30      40*      *Not UL   |          |           |           |          |          |          |          |          |          |          |           |

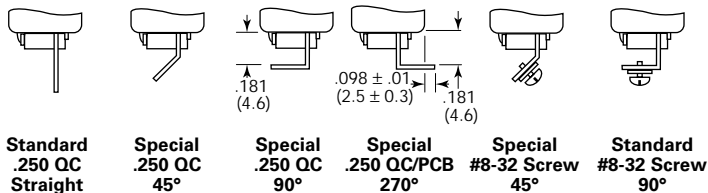
Our authorized distributors are more likely to stock the following items for immediate delivery.

- W54-XB1A4A10-5      W54-XB1A4A10-20
- W54-XB1A4A10-10      W54-XB1A4A10-25
- W54-XB1A4A10-15      W54-XB1A4A10-30

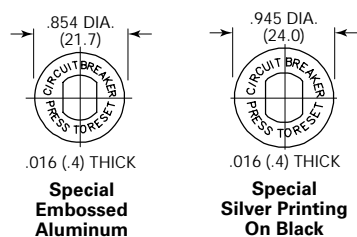
Mounting Bushings and Recommended Panel Cutouts



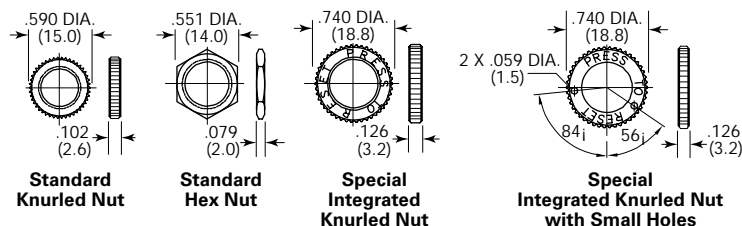
Termination Options



Optional Nameplates



Mounting Hardware Options



ORDERING NOTE:

Many options illustrated here are not listed in the "Ordering Information" chart above. Options denoted by "Special" or "Special Order" in their descriptions are only offered on a special order basis. Additionally, mounting hardware can be ordered separately. These options are subject to extended leadtimes and significant minimum order quantities. Your Tyco Electronics sales engineer must consult with the factory before providing price and availability information regarding these options.



# W58 series

## Push To Reset Only Thermal Circuit Breaker



### Features

- 0.5 amp to 30 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.**

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### 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 - 30 amp models).

1,000 amps at 250VAC (0.5 - 30 amp models).

**Note:** 30 0amp model 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                        | 8                      | 0.020                      |
| 1                      | 1.35                       | 9                      | 0.020                      |
| 2                      | 0.32                       | 10                     | 0.014                      |
| 3                      | 0.18                       | 12                     | 0.010                      |
| 4                      | 0.10                       | 15                     | 0.010                      |
| 5                      | 0.026                      | 20                     | 0.005                      |
| 6                      | 0.026                      | 25                     | 0.006                      |
| 7                      | 0.020                      | 30*                    | 0.004                      |

\*No UL/CSA

### Mechanical/Environmental Data

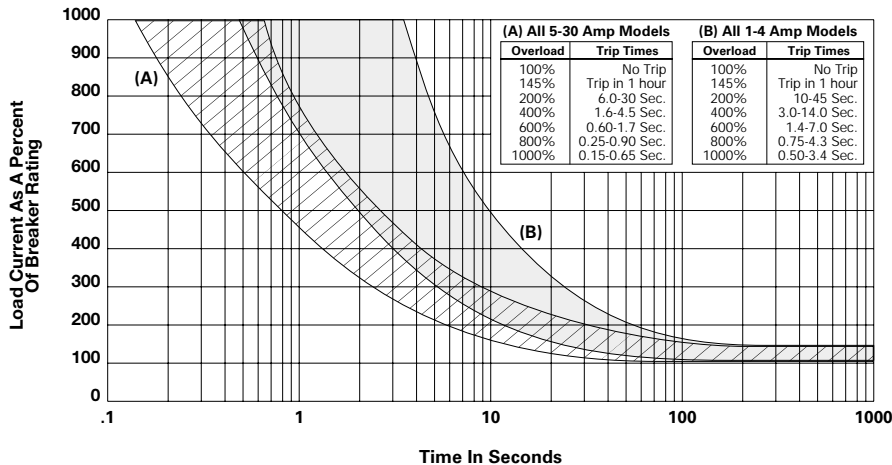
**Shock:** Withstands to 10g.

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

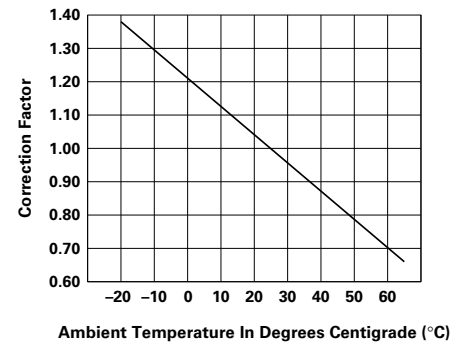
**Vibration:** Withstands to 10g at 10-55 Hz.

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

### 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.

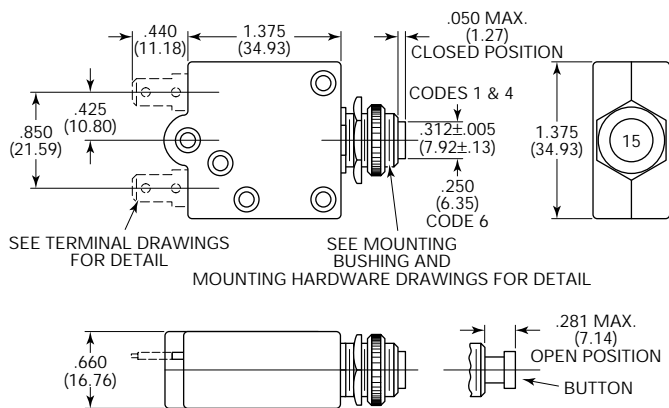
**Ordering Information**

|   |          |           |           |          |          |                |          |          |           |
|---|----------|-----------|-----------|----------|----------|----------------|----------|----------|-----------|
| <b>Typical Part No. ▶</b>   | <b>W</b> | <b>58</b> | <b>-X</b> | <b>B</b> | <b>1</b> | <b>A</b>       | <b>4</b> | <b>A</b> | <b>-5</b> |
| <b>1. Designator:</b><br>W = Circuit breaker  |          |           |           |          |          |                |          |          |           |
| <b>2. Series Number:</b><br>58 = Single Pole, Push-to-Reset   |          |           |           |          |          |                |          |          |           |
| <b>3. Circuit Function:</b><br>X = Series Trip  |          |           |           |          |          |                |          |          |           |
| <b>4. Button:</b><br>A = White, plain, no rate marking, no trip band      E = White with red rate marking no trip band<br>B = White with red rate marking, red trip band      F = White with black rate marking, no trip band<br>C = White with black rate marking, red trip band |          |           |           |          |          |                |          |          |           |
| <b>5. Mounting Bushing:</b><br>1 = 7/16" x .500" (12.70mm) long<br>4 = 15/32" x .300" (7.62mm) long, black<br>6 = 3/8" x .465" (11.81mm) long, round  |          |           |           |          |          |                |          |          |           |
| <b>6. Terminals:</b><br>A = Quick connect .250" (6.35mm) straight<br>C = 6/32 screw 90° (screws installed)<br>D = 6/32 screw 90° (screws bulk packed)   |          |           |           |          |          |                |          |          |           |
| <b>7. Mounting Hardware:</b><br>4 = Knurled nut/hex nut      15 = Two hex nuts/lock washer<br>6 = Knurled nut/hex nut/lock washer      99 = No mtg. hardware supplied (Use C, Step #8)<br>12 = Knurled nut/lock washer  |          |           |           |          |          |                |          |          |           |
| <b>Note:</b> For other hardware combinations, order separately. See mounting hardware Ordering Information table.   |          |           |           |          |          |                |          |          |           |
| <b>8. Mounting Hardware Packaging:</b><br>A = Assembled to bushing<br>B = Bulk unassembled<br>C = No mounting hardware  |          |           |           |          |          |                |          |          |           |
| <b>9. Specify Amp Rating:</b>   |          |           |           |          |          |                |          |          |           |
| 0.5   | 3        | 6         | 9         | 15       | 30*      |                |          |          |           |
| 1   | 4        | 7         | 10        | 20       |          |                |          |          |           |
| 2   | 5        | 8         | 12        | 25       |          | *Not UL or CSA |          |          |           |

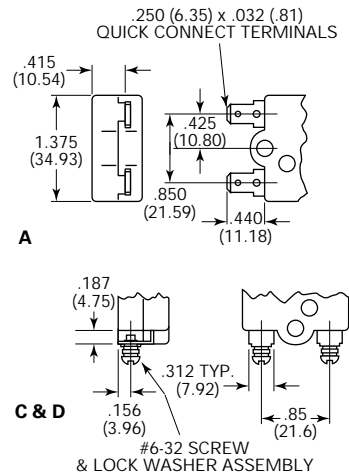
**Stock Items – Authorized distributors are more likely to stock the following items.**

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

**Outline Dimensions**



**Terminal Options**



**Mounting Hardware**

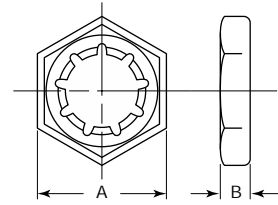
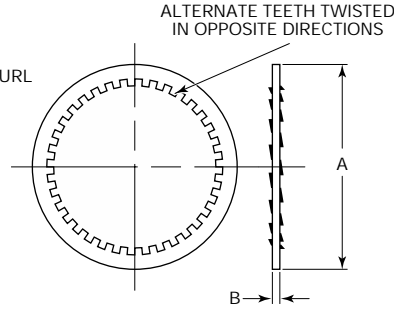
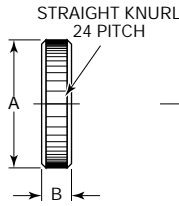
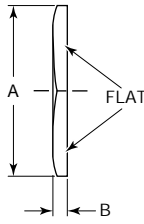
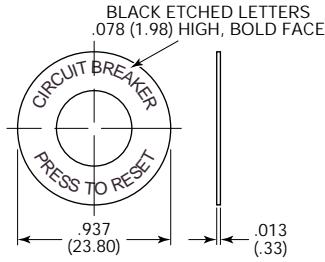
Disc

Hex Nut

Knurled Nut

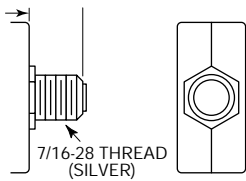
Lockwasher

Pal Nut

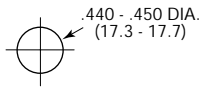


**Mounting Bushing**

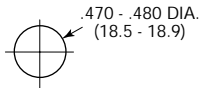
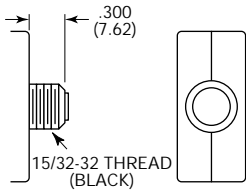
Type 1



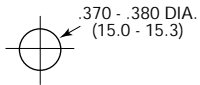
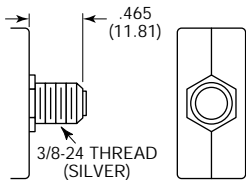
Recommended Cutout



Type 4



Type 6



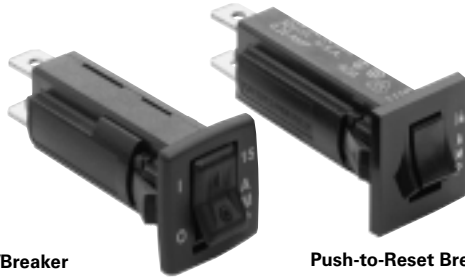
**Mounting Hardware Dimensions**

|    | Dim.   | Hex. | Knurled | L/W  | Pal  |
|----|--------|------|---------|------|------|
| A. | 3/8"   | .556 | .562    | .562 | .562 |
|    | 7/16"  | .625 | .625    | .540 | .625 |
|    | 15/32" | .556 | .625    | .600 | .625 |
| B. | 3/8"   | .085 | .078    | .018 | .140 |
|    | 7/16"  | .078 | .125    | .022 | .111 |
|    | 15/32" | .078 | .125    | .018 | .090 |

**Mounting Hardware Ordering Information**

| Mounting Bushing Code | Knurl Nut | Hex Nut | Pal Nut | Washer  | Push to Reset Disc |
|-----------------------|-----------|---------|---------|---------|--------------------|
| 1                     | 55-010A   | 55-011A | 16S086B | 88-021B | 33-012A            |
| 4                     | •         | 55-001B | 16S086C | 88-002A | 33-012C            |
| 6                     | 55-008A   | 55-001D | 16S086A | 88-006K | 33-012B            |

• 55-010B (silver) 55-010E (black)



Switch/Breaker

Push-to-Reset Breaker

# W28 series

## Switchable or Push to Reset Fuseholder-Type Thermal Circuit Breaker



**Note:** VDE, Demko, Semko not available on 16A and 20A W28 only.

**Note:** Consult factory regarding availability of switchable model.

### 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. 16 amp and 20 amp models do not have VDE, DEMKO and SEV approvals at present. W28-S is UL 1077 Recognized, and CSA Certified for models up to and including 15 amps.

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### 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.

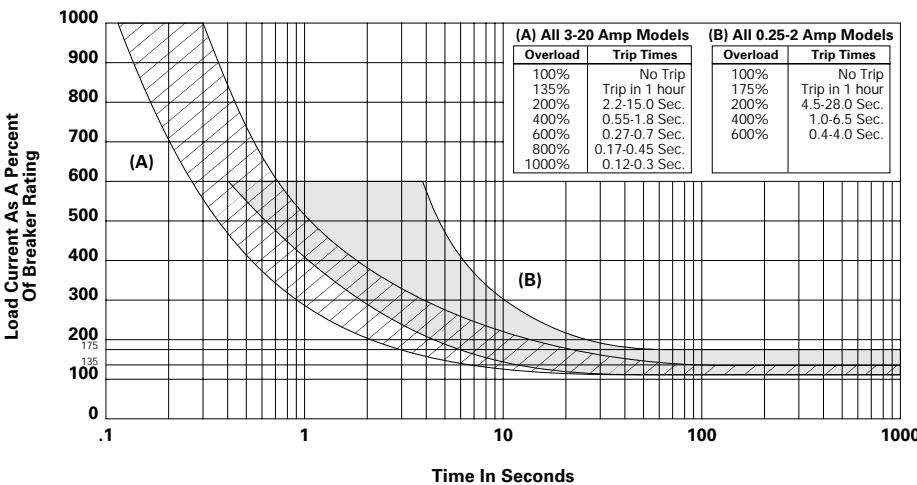
### Typical Resistance vs. Current Rating @ +25°C

| Current Rating 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                      |

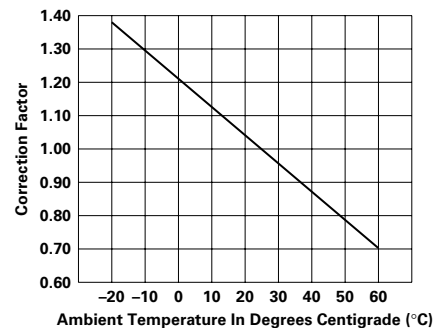
### Mechanical/Environmental Data

- Endurance Cycling (switchable type):** Typically 30,000 operations at 100% of rating.
- Termination:** .250" (6.35mm) quick connects. Soldering to terminals is not recommended.
- Mounting:** Snaps into panel from front. See Recommended Panel Cutouts.
- Approximate Weight:** 0.35 oz. (10g).

### 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. Do not use these devices outside their specified operating temperature ranges.

Ordering Information

Typical Part Number ▶

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 (Consult factory for availability of "S")

4. Terminal Type and Mounting:

Q = .250" (6.35mm) Quick Connect will mount in .032"-.062" (.813mm - 1.574mm) thick panel.  
T = .250" (6.35mm) Quick Connect will mount in .075"-.105" (1.905mm - 2.667mm) 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  
B = Black with White "Reset" Marked On Bezel (No Rate Marking) †

† Not available with Circuit Function "S".  
Consult factory for other bezel colors.

6. Button Color:

A = Black  
B = Red  
Consult factory for other button colors.

7. Amp Rating:

|       |    |   |   |    |    |     |
|-------|----|---|---|----|----|-----|
| 0.25† | 1† | 4 | 7 | 10 | 13 | 16  |
| 0.50† | 2† | 5 | 8 | 11 | 14 | 20* |
| 0.75† | 3  | 6 | 9 | 12 | 15 |     |

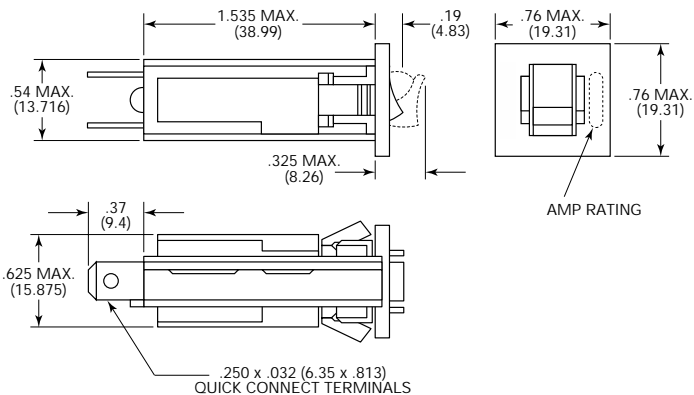
† Not available with Circuit Function "S".  
\* Contact factory for availability.

Stock Items – Authorized distributors are more likely to stock the following items.

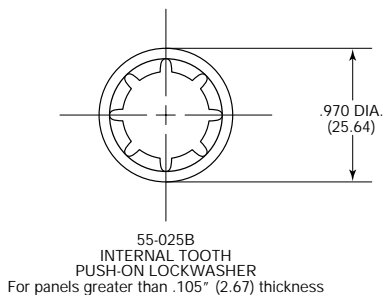
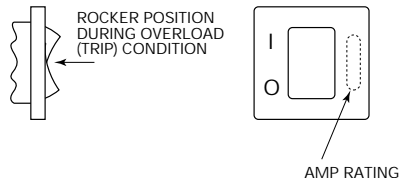
|               |            |             |             |             |
|---------------|------------|-------------|-------------|-------------|
| W28-XQ1A-0.25 | W28-XQ1A-2 | W28-XQ1A-6  | W28-XQ1A-12 | W28-XT1A-12 |
| W28-XQ1A-0.50 | W28-XQ1A-3 | W28-XQ1A-7  | W28-XQ1A-15 |             |
| W28-XQ1A-0.75 | W28-XQ1A-4 | W28-XQ1A-8  | W28-XQ1A-20 |             |
| W28-XQ1A-1    | W28-XQ1A-5 | W28-XQ1A-10 | W28-XT1A-10 |             |

Outline Dimensions

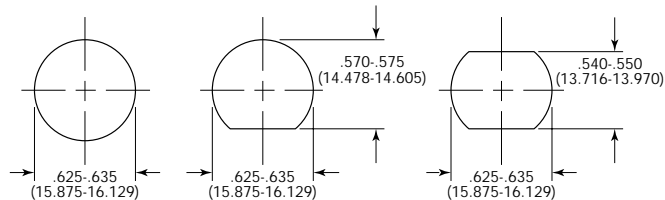
Push-to-Reset Type



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.



# W51 series

## Rocker-Actuated Thermal Circuit Breaker/Power Switch With Optional Indicator Lamp



### Features

- Compact, trip-free, rocker-actuated design.
- 5 to 20 amp ratings.
- Provides circuit protection and power switching in a single unit.
- Available with optional indicator lamp.
- Snaps into the same cutout as many common power switches.
- Various color, marking and termination options.

### Agency Approvals

W51 series is UL 1077 Recognized as Supplementary Protectors, File E69543, for Canada and the United States.

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### Electrical Data @ 25°C

- Calibration:** Will continuously carry 100% of rating. May trip between 101% and 134%, but must trip at 135% of rating within one hour at +25°C.
- Dielectric Strength:** 1,500VAC (60 seconds).
- Insulation Resistance:** 100 megohms.
- Maximum Operating Voltages:** 50VDC; 125 or 250VAC, 50/60 Hz. (model dependent).

- Interrupt Capacity:** 1,000 amps in accordance with UL standard 1077.
- Resettable Overload Capacity:** Ten times rated current.
- Switch Endurance Cycling:** Typically 6,000 operations at 100% of rating.
- Reset Time:** 60 seconds.

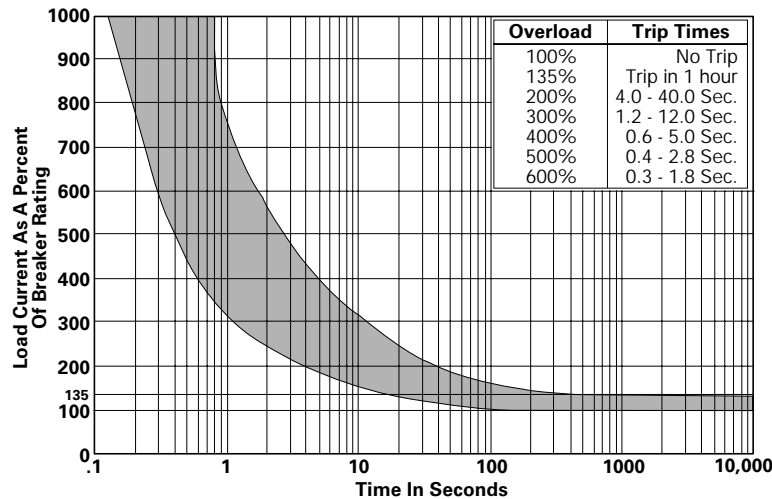
### Typical Resistance vs. Current Rating @ +25°C

| Current Rating in Amps | Typical Resistance in Ohms | Current Rating in Amps | Typical Resistance in Ohms |
|------------------------|----------------------------|------------------------|----------------------------|
| 5.0                    | 0.050                      | 10.0                   | 0.025                      |
| 6.0                    | 0.042                      | 15.0                   | 0.017                      |
| 7.0                    | 0.036                      | 20.0                   | 0.0125                     |
| 8.0                    | 0.031                      |                        |                            |

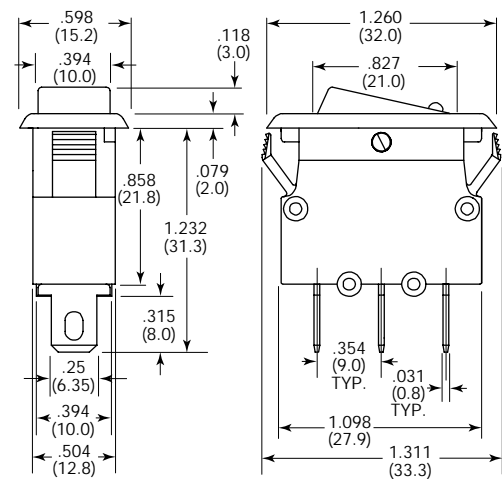
### Mechanical/Environmental Data

- Operating Temperature Range:** 0°C to +60°C.
- Termination:** .250" (6.35mm) quick connects, solder terminals or right angle PC terminals.
- Mounting:** Snaps into 1.122 x .531 (28.5 x 13.5) panel cutout.
- Approximate Weight:** 0.37 oz. (10.5g).

### Time vs. Current Trip Curve @ +25°C



### Outline Dimensions

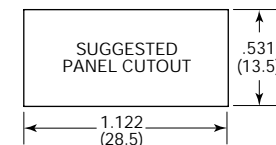


### Ambient Compensation Table

| Ambient Temperature in °C | Rating Correction Factor |              |
|---------------------------|--------------------------|--------------|
|                           | 5-6A Models              | 7-20A Models |
| 10                        | .80                      | .80          |
| 20                        | .90                      | .90          |
| 25                        | 1.00                     | 1.00         |
| 30                        | 1.10                     | 1.05         |
| 40                        | 1.25                     | 1.15         |
| 50                        | 1.61                     | 1.25         |
| 60                        | 2.15                     | 1.40         |

**To use this chart:** Divide 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. Do not use these devices outside their specified operating temperature ranges.

### Recommended Panel Cutout



### Panel Thickness

W51 series circuit breakers accommodate panel thicknesses from 0.030 in. to 0.118 in. (0.75 mm - 3.0 mm).

**Ordering Information**

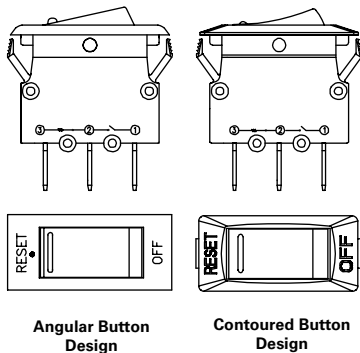
|   |          |           |           |          |          |          |          |          |           |
|---|----------|-----------|-----------|----------|----------|----------|----------|----------|-----------|
| <b>Typical Part No. ▶</b>   | <b>W</b> | <b>51</b> | <b>-A</b> | <b>1</b> | <b>2</b> | <b>1</b> | <b>B</b> | <b>1</b> | <b>-5</b> |
| <b>1. Designator:</b><br>W = Circuit breaker  |          |           |           |          |          |          |          |          |           |
| <b>2. Series Number:</b><br>51 = Switchable, Single Pole, Rocker-Actuated Thermal Model   |          |           |           |          |          |          |          |          |           |
| <b>3. Terminals:</b><br>A = Quick connect .250" (6.35mm) straight      C = Printed Circuit - right angle  |          |           |           |          |          |          |          |          |           |
| <b>4. Breaker Style &amp; Base Color:</b><br>1 = Angular button design (see drawing below), black base color<br>B = Countoured button design (see drawing below), black base color  |          |           |           |          |          |          |          |          |           |
| <b>5. Rocker Color:</b><br>1 = Amber (translucent)<br>2 = Red (translucent)<br>3 = Green (translucent)<br>4 = White (opaque - for use on non-illuminated models)<br>5 = Black (opaque - for use on non-illuminated models)<br>6 = Red (opaque - for use on non-illuminated models)<br>7 = Gray (opaque - for use on non-illuminated models)<br>8 = Black (opaque) with red (translucent) indicator (only available on model with contoured button)<br>9 = Black (opaque) with green (translucent) indicator (only available on model with contoured button) |          |           |           |          |          |          |          |          |           |
| <b>6. Maximum Operating Voltage (AC):</b><br>1 = 125VAC      2 = 250VAC   |          |           |           |          |          |          |          |          |           |
| <b>7. Light:</b><br>A = Non-illuminated      B = Illuminated  |          |           |           |          |          |          |          |          |           |
| <b>8. Marking option:</b><br>0 = No marking      2 = RESET/OFF molded (only available on model with contoured button)<br>1 = RESET/OFF printed  |          |           |           |          |          |          |          |          |           |
| <b>9. Specify Amp Rating:</b><br>5      6      7      8      10      15      20   |          |           |           |          |          |          |          |          |           |

**Our authorized distributors are more likely to stock the following items for immediate delivery.**

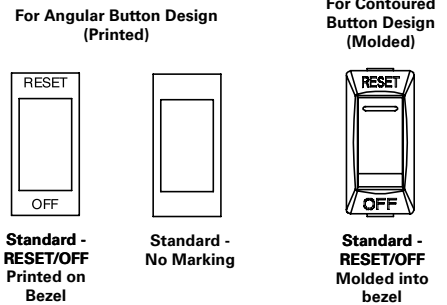
|               |               |               |               |               |               |
|---------------|---------------|---------------|---------------|---------------|---------------|
| W51-A121B1-5  | W51-A121B1-15 | W51-A122B1-5  | W51-A122B1-15 | W51-A152A1-5  | W51-A152A1-15 |
| W51-A121B1-10 | W51-A121B1-20 | W51-A122B1-10 | W51-A122B1-20 | W51-A152A1-10 | W51-A152A1-20 |

**ORDERING NOTE:** Some options illustrated below are not listed in the "Ordering Information" chart above. Options denoted by "Special" or "Special Order" in their descriptions are only offered on a special order basis. Other base and button colors and intermediate amp ratings are also available on a special order basis. All special order items are subject to extended leadtimes and significant minimum order quantities. Your Tyco Electronics sales engineer must consult with the factory before providing price and availability information regarding items with these options.

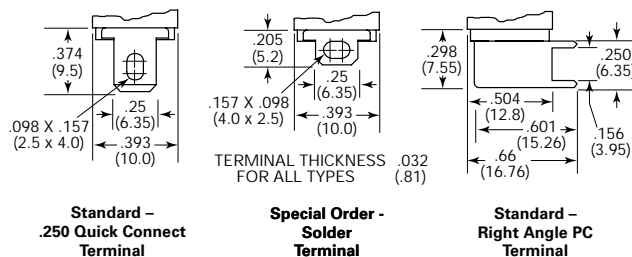
**Case Styles**



**Marking Options**



**Terminal Types**





## W33 series

### One- and Two-Pole, Switchable Thermal Circuit Breaker / Power Switch With Optional Indicator Lamp



#### Features

- Combines on/off switch and circuit protection in a single unit.
- 2 to 20 amp ratings (<2A types available as special order).
- One or two pole sensing.
- Lighted or non-lighted rocker actuator in various colors.
- Convenient, snap-in mounting.
- Optional auxiliary switch available.
- Trip-free operation.

#### Agency Approvals

W33 series is UL 1077 Recognized as Supplementary Protectors, File E69543, and CSA Certified as Appliance Component Protectors, File LR15734.

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

#### Electrical Data @ 25°C

**Calibration:** Breaker will continuously carry 100% of rated load. It may trip between 101% and 135%, but must trip at 135% within one hour at +25°C.

**Dielectric Strength:** Over 2,000 volts RMS.

**Maximum Operating Voltages:** 50VDC; 250VAC to 400 Hz.

**Interrupt Capacity:** 1,000 amps at 50VDC; 250VAC, 60 Hz. and 125/250VAC, 400 Hz.  
1,500 amps at 125/250VAC, 60 Hz.

**Resettable Overload Capacity:** Ten times rated current.

#### Mechanical/Environmental Data

**Termination: Poles 1&2:** .250" (6.35mm) quick connect/solder terminals.

**Opt. Aux. Sw.:** .110" (2.79mm) quick connect terminals.

**Mounting:** Snaps into panel from front.

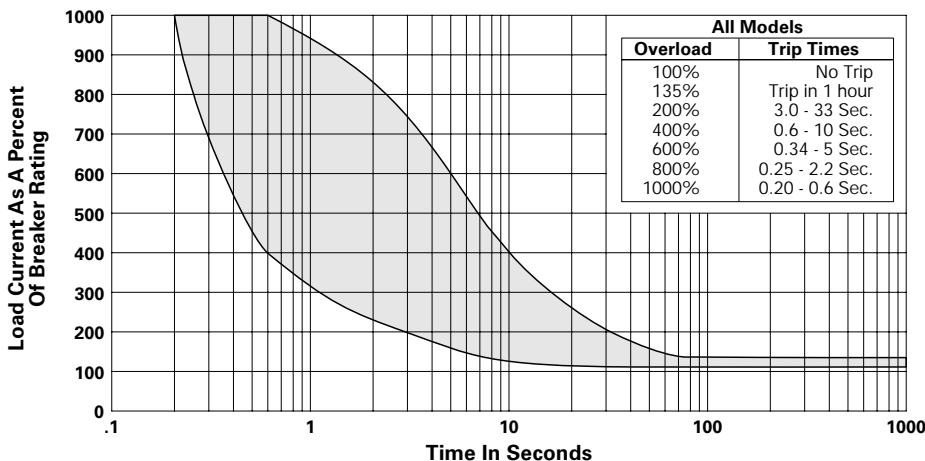
**Actuator:** Rocker or lighted rocker.

**Shock:** 30g tested to IEC 68-2-27, test Ea.

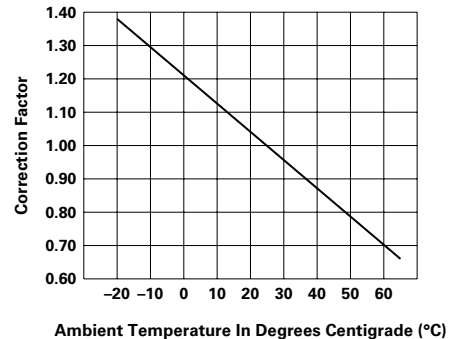
**Vibration:** 8g tested to IEC 68-2-6, test Fc.

**Switch Endurance Cycling:** 50,000 operations at rated load.  
1,000 operations at 200% rated load.

#### 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 33 -S 1 N 1 Q -20**

**1. Designator:**

W = Circuit breaker

**2. Series Number:**

33 = Two pole, rocker actuated

**3. Circuit Function:**

S = Pole 1 – Switch only; Pole 2 – Series trip overload sensing.  
T = Poles 1 & 2 – Series trip overload sensing.  
SS = Same as S with auxiliary switch on pole 1.  
TS = Same as T with auxiliary switch on pole 1.  
D = 2 Pole switching.

**4. Rocker Color:**

1 = Black. 2 = White. 3 = Red. 4 = Amber. 5 = Smoke.

**5. Light (available only with White, Red, Amber and Smoke rocker colors):**

A = 24VDC (Incandescent). B = 120VAC (Neon with resistor). C = 240VAC (Neon with resistor). N = No light.

**6. Marking:**

1 = International I/O. 2 = Contrasting I/O stamp (white toggle with black stamp).

**7. Termination:**

Q = .250" x .032" (6.35 x .813mm) quick connect / solder terminals.

**8. Amp Rating:**

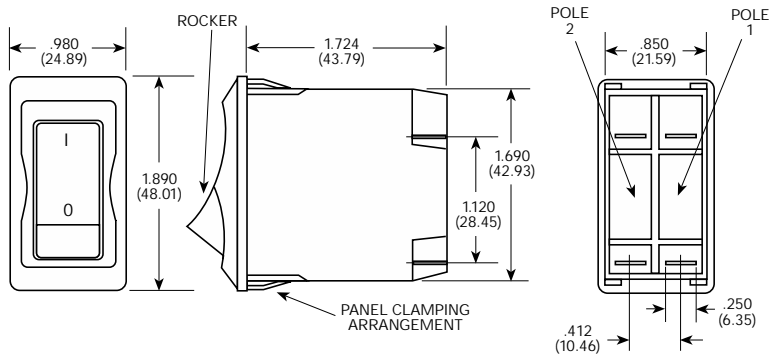
2 5 7 10 12 15 16 20

Consult factory for availability of ratings <2A

**Stock Items – Authorized distributors are more likely to stock the following items.**

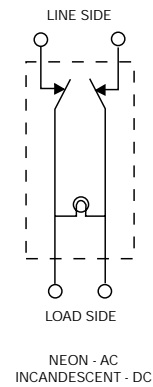
|              |              |              |
|--------------|--------------|--------------|
| W33-S1N1Q-5  | W33-S4B1Q-10 | W33-T4B1Q-5  |
| W33-S1N1Q-15 | W33-S4B1Q-15 | W33-T4B1Q-10 |
| W33-S1N1Q-20 | W33-T2N1Q-20 | W33-T4B1Q-15 |

**Outline Dimensions**



FITS .875 x 1.750 (22.22 x 44.45) PANEL OPENING  
FROM .032" - .250" (.813mm - 6.35mm) THICK

**Schematic**





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.
- Trip-free operation.

### Agency Approvals

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

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### 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:

##### With 4X Max. Series Fuse Protection

- 0.5-50 amp models — 1000 amps at 240VAC.
- 30-50 amp models — 1000 amps at 50VDC.

##### Without 4X Max. Series Fuse Protection

- 0.5-25 amp models — 2000 amps at 50VDC.
- 10-20 amp models — 2000 amps at 120VAC.

**Resettable Overload Capacity:** Ten times rated current.

**Dielectric Strength:** Over 1,500 volts RMS.

### Maximum Resistance vs. Current Rating @ +25°C

| Current Rating in Amps | Maximum Resistance in Ohms ± 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 106.

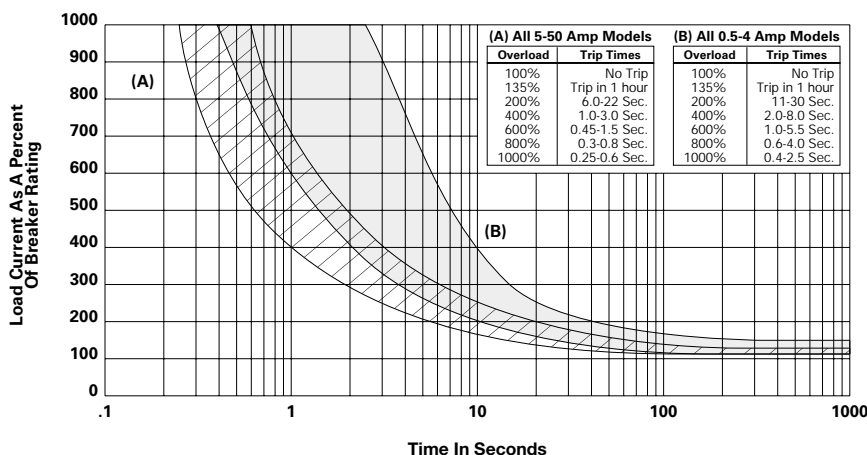
**Salt Spray:** Will meet requirements of MIL-STD-202, Method 101, Test Condition B.

**Termination:** Two #8-32 screw terminals.

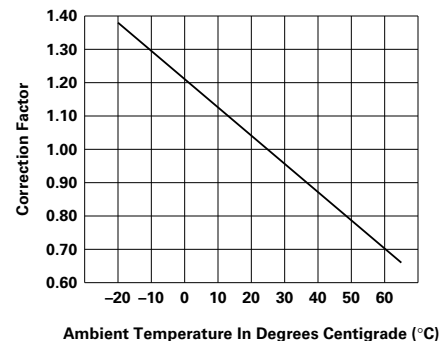
**Mounting:** W23 — Threaded bushing, 3/8" (9.53mm) diameter.  
W31 — Threaded bushing, 15/32" (11.91mm) diameter, with or without anti-rotation flats.

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

### 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

|  |          |           |           |          |          |          |          |           |
|--|----------|-----------|-----------|----------|----------|----------|----------|-----------|
| <b>Typical Part No. ▶</b>  | <b>W</b> | <b>23</b> | <b>-X</b> | <b>1</b> | <b>A</b> | <b>1</b> | <b>G</b> | <b>-5</b> |
| <b>1. Designator:</b><br>W = Circuit breaker   |          |           |           |          |          |          |          |           |
| <b>2. Series Number:</b><br>23 = Single pole, push/pull  |          |           |           |          |          |          |          |           |
| <b>3. Circuit Function:</b><br>X = Series trip   |          |           |           |          |          |          |          |           |
| <b>4. Button:</b><br>1 = Black with white amp rate marking and white trip band.  |          |           |           |          |          |          |          |           |
| <b>5. Mounting Bushing:</b><br>A = 3/8" -24 threaded bushing .375" (9.53mm) long, silver color   |          |           |           |          |          |          |          |           |
| <b>6. Terminals (See drawings for relative terminal positions):</b><br>1 = Screw terminals situated 90° to each other with #8-32 screws and washers installed.<br>3 = Screw terminals situated parallel to each other pointing upward with #8-32 screws and washers installed. |          |           |           |          |          |          |          |           |
| <b>7. Mounting Hardware:</b><br>A = Knurled nut/hex nut installed<br>G = Two hex nuts/lockwasher installed<br>Z = No mounting hardware supplied  |          |           |           |          |          |          |          |           |
| <b>8. Amp Rating:</b>  |          |           |           |          |          |          |          |           |
| 0.5  | 3        | 7.5       | 20        | 35       |          |          |          |           |
| 1  | 4        | 10        | 25        | 40       |          |          |          |           |
| 2  | 5        | 15        | 30        | 50       |          |          |          |           |

Stock Items – Authorized distributors are more likely to stock the following items.

|             |                |              |              |
|-------------|----------------|--------------|--------------|
| 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

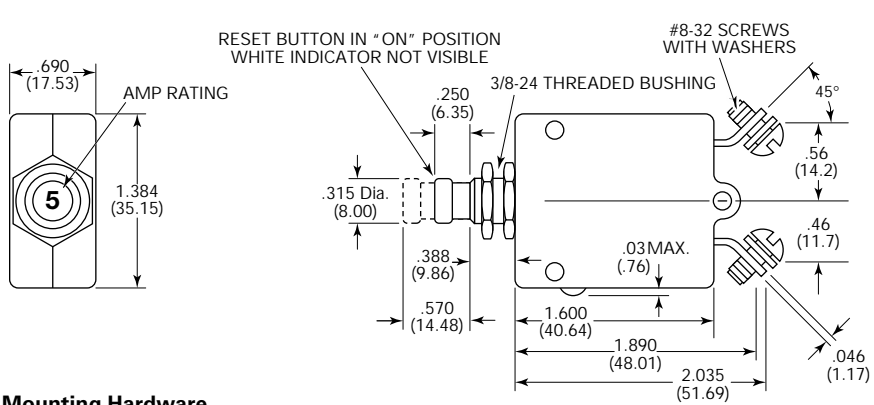
|   |          |           |           |          |          |          |          |           |
|---|----------|-----------|-----------|----------|----------|----------|----------|-----------|
| <b>Typical Part No. ▶</b>   | <b>W</b> | <b>31</b> | <b>-X</b> | <b>2</b> | <b>M</b> | <b>1</b> | <b>G</b> | <b>-5</b> |
| <b>1. Designator:</b><br>W = Circuit breaker  |          |           |           |          |          |          |          |           |
| <b>2. Series Number:</b><br>31 = Single pole, toggle actuator   |          |           |           |          |          |          |          |           |
| <b>3. Circuit Function:</b><br>X = Series trip  |          |           |           |          |          |          |          |           |
| <b>4. Mounting Bushing:</b><br>1 = 15/32" -32 threaded bushing .320" (8.13mm) long, round, silver color<br>2 = 15/32" -32 threaded bushing .320" (8.13mm) long, double "D", silver color  |          |           |           |          |          |          |          |           |
| <b>5. Toggle:</b><br>M = Silver color metal toggle, round, with amp rate marking on end   |          |           |           |          |          |          |          |           |
| <b>6. Terminals (See drawing for relative terminal positions):</b><br>1 = Screw terminals situated 90° to each other with #8-32 screws and washers installed.<br>5 = Screw terminals situated parallel to each other pointing downward with #8-32 screws and washers installed. |          |           |           |          |          |          |          |           |
| <b>7. Mounting Hardware:</b><br>A = Knurled nut/hex nut installed<br>G = Two hex nuts/lockwasher installed<br>Z = No mounting hardware supplied   |          |           |           |          |          |          |          |           |
| <b>8. Amp Rating:</b>   |          |           |           |          |          |          |          |           |
| 0.5   | 3        | 7.5       | 20        | 35       |          |          |          |           |
| 1   | 4        | 10        | 25        | 40       |          |          |          |           |
| 2   | 5        | 15        | 30        | 50       |          |          |          |           |

Stock Items – Authorized distributors are more likely to stock the following items.

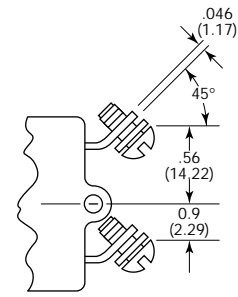
|                |              |              |
|----------------|--------------|--------------|
| W31-X2M1G-1    | W31-X2M1G-10 | W31-X2M1G-35 |
| W31-X2M1G-2    | W31-X2M1G-15 | W31-X2M1G-40 |
| W31-X2M1G-3    | W31-X2M1G-20 | W31-X2M1G-50 |
| W31-X2M1G-5    | W31-X2M1G-25 |              |
| W31-X2M1G-7.50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

**W23 Outline Dimensions**

**Terminal Style 1**



**Terminal Style 3**

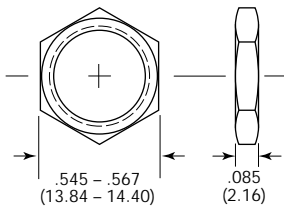


All dimensions are given as inches (mm)

**Mounting Hardware**

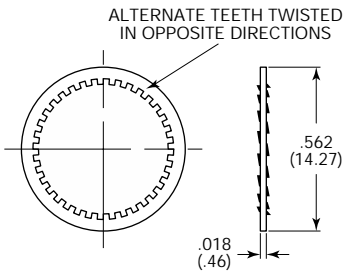
**Hex Nut**

(55-001D - Silver Color)



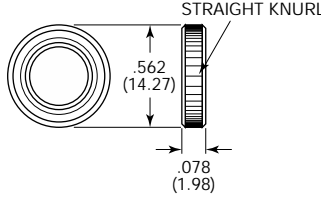
**Lockwasher**

(88-006B - Silver Color)

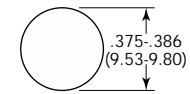


**Knurled Nut**

(55-008A - Silver Color)

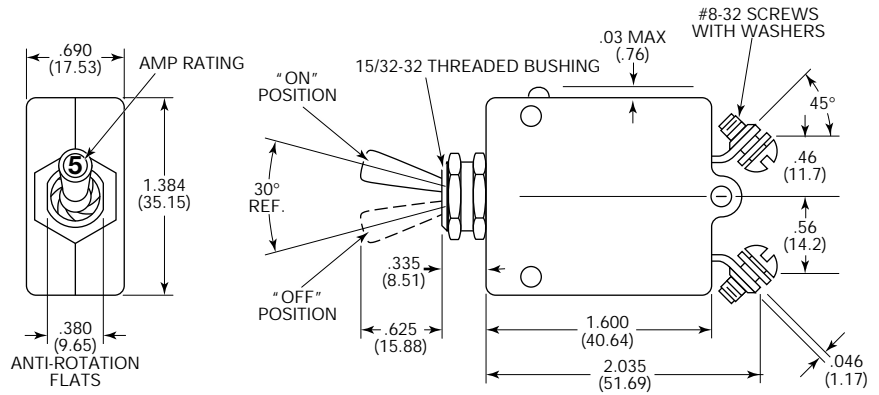


**Suggested Mounting Holes**

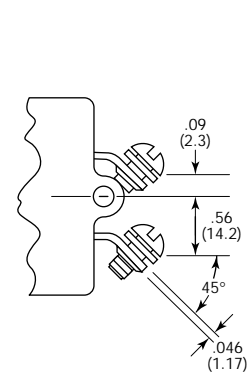


**W31 Outline Dimensions**

**Terminal Style 1**



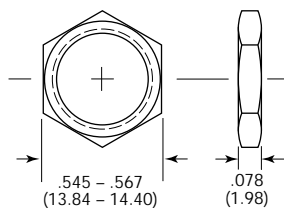
**Terminal Style 5**



**Mounting Hardware**

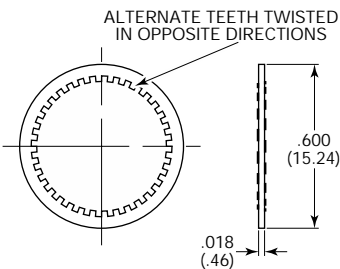
**Hex Nut**

(55-001B - Silver Color)



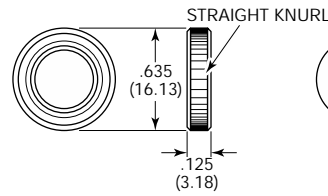
**Lockwasher**

(88-002B - Silver Color)

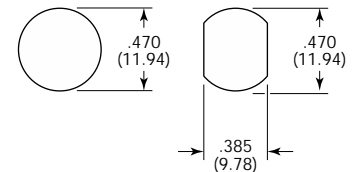


**Knurled Nut**

(55-010B - Silver Color)



**Suggested Mounting Holes**





# W6/W9 series

## Magnetic Hydraulic Circuit Breakers



### Features

- Designed for the international market. UL Recognized, CSA Certified, and VDE approved.
- Ratings to 50 amps.
- Heavy duty #10-32 stud connections. (W9)
- Quick-connect or screw terminals. (W6)
- Optional 10 amp auxiliary switch.
- Several delay curve options.
- Trip-free operation.

### Agency Approvals

**UL:** Recognized as Supplementary Protector under UL 1077. File E69543.

**CSA:** Certified as a Supplementary Protector. File LR15734.

**VDE:** Approved to VDE 0642/EN 60 934 (Circuit Breakers for Equipment) License No. 73782.

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

### Electrical Data

**Auxiliary Switch:** See Auxiliary Switch Ratings Table 2 for details.

**Calibration:** Breakers will hold 100% of rated current. Breakers may trip between 101% and 124% of rated load (149% for 400 Hz. units and 134% for AC/DC units). Breakers must trip at 125% of rated load and above (150% for 400 Hz. units and 135% for AC/DC units).

**Dielectric Strength:** 50/60 or 400 Hz., 1500V: DC, 1100V.

**Insulation Resistance:** 100 Megohms at 500VDC.

**Endurance:** 10,000 on/off cycles - 6000 at rated load, 4000 at no load. Units tested at six cycles per minute, 1 second on and 9 seconds off at 25°C ambient.

### Typical Resistance and Impedance

| Current (Amps) | DC Resistance (Ohms) | 50/60 Hz. Impedance (Ohms) | 400 Hz. Impedance (Ohms) |
|----------------|----------------------|----------------------------|--------------------------|
| 0.2            | 90                   | 90                         | 180                      |
| 1.0            | 1.2                  | 1.2                        | 2.0                      |
| 2.0            | 0.28                 | 0.28                       | 0.50                     |
| 5.0            | 0.04                 | 0.04                       | 0.05                     |
| 10.0           | 0.013                | 0.013                      | 0.025                    |
| 20.0           | 0.004                | 0.005                      | 0.0065                   |
| 30.0           | 0.0027               | 0.004                      | 0.004                    |
| 40.0           | 0.002                | 0.002                      | 0.003                    |
| 50.0           | 0.0015               | 0.0015                     | 0.0025                   |

Tolerance: 0.1 - 4.99 ± 15%; 5 - 9.99 ± 20%; 10 - 15 ± 25%; 16 - 30 ± 50%.

### Mechanical/Environmental Data

**Operating Temperature:** -40°C to +85°C.

**Humidity:** Meets requirements of Mil-STD-202 method 103.

**Shock:** Tested per Mil-STD-202, method 213, test condition C (100g @ 6 ms).

**Vibration:** Tested per Mil-STD-202, method 201, 10-55 Hz., 0.06" (1.52mm) total excursion in 2 planes.

**Fungus And Moisture Resistance:** Special moisture resistant finish applied to all ferrous parts.

Plastic parts are made of inherently fungus resistant material.

**Marking:** W6 units have ON and OFF molded on the rocker of rocker actuated units (rocker actuated VDE units have international "1" and "0"). W9 units have ON and OFF molded into the area at the base of the toggle. International "1" and "0" symbols are marked on the toggle for both W6 and W9.

**Mounting:** Units are mounted with two #6-32 screws from the front of the panel. Metric models for use with M3 x 0.5 screws are available. To maintain published performance specifications, units should not be mounted more than 90° from their normal upright position.

**Weight:** Approximately 2.5 ounces per pole.

### Approvals and Ratings Table 1

| W6 Series       |                | UL/CSA (All Circuit Functions) |                       |                              |
|-----------------|----------------|--------------------------------|-----------------------|------------------------------|
| Maximum Voltage | Frequency (Hz) | Phase                          | Current Rating (Amps) | Interrupting Capacity (Amps) |
| 65              | DC             | -                              | 0.2 - 50              | 2,000                        |
| 277             | 50/60          | 1                              | 0.2 - 20              | 5,000                        |
| 277             | 50/60          | 1                              | 21 - 50               | 2,500                        |
| 277/480         | 50/60          | 3Ø-Wye                         | 0.2 - 20              | 5,000                        |
| 250             | 400            | 1                              | 0.2 - 20              | 2,500                        |
| 250             | 400            | 1                              | 21 - 50               | 1,250                        |
| 250             | 400            | 3Ø-Wye                         | 0.2 - 20              | 2,500                        |

| W9 Series       |                | UL/CSA (All Circuit Functions) |                       |                              |
|-----------------|----------------|--------------------------------|-----------------------|------------------------------|
| Maximum Voltage | Frequency (Hz) | Phase                          | Current Rating (Amps) | Interrupting Capacity (Amps) |
| 65              | DC             | -                              | 0.2 - 50              | 2,000                        |
| 277             | 50/60          | 1                              | 0.2 - 50              | 5,000                        |
| 277/480         | 50/60          | 3Ø-Wye                         | 0.2 - 20              | 5,000                        |
| 250             | 400            | 1                              | 0.2 - 50              | 2,500                        |
| 250             | 400            | 3Ø-Wye                         | 0.2 - 50              | 2,500                        |

| W6 Series       |                | VDE (Circuit Function X) |                       |                              |
|-----------------|----------------|--------------------------|-----------------------|------------------------------|
| Maximum Voltage | Frequency (Hz) | Phase                    | Current Rating (Amps) | Interrupting Capacity (Amps) |
| 65              | DC             | -                        | 0.2-50                | 2,000                        |
| 250             | 50/60          | 1                        | 0.2-30                | 5,000                        |
| 250             | 50/60          | 1                        | 31-50                 | 2,000                        |
| 415/240         | 50/60          | 3Ø                       | 0.2-30                | 5,000                        |

| W9 Series       |                | VDE (Circuit Function X) |                       |                              |
|-----------------|----------------|--------------------------|-----------------------|------------------------------|
| Maximum Voltage | Frequency (Hz) | Phase                    | Current Rating (Amps) | Interrupting Capacity (Amps) |
| 65              | DC             | -                        | 0.2-50                | 2,000                        |
| 250             | 50/60          | 1                        | 0.2-30                | 5,000                        |
| 250             | 50/60          | 1                        | 31-50                 | 2,000                        |
| 415/240         | 50/60          | 3Ø                       | 0.2-30                | 5,000                        |

### Approvals and Ratings Table 2

| UL/CSA        |                   |                |   |
|---------------|-------------------|----------------|---|
| Switch Number | Voltage 50/60 Hz. | Current (Amps) | Terminals WxTxL                           |
| A             | 125               | 10             | .093 x .020 x .250<br>(2.36 x .51 x 6.40) |

Dimensions are shown for reference purposes only.

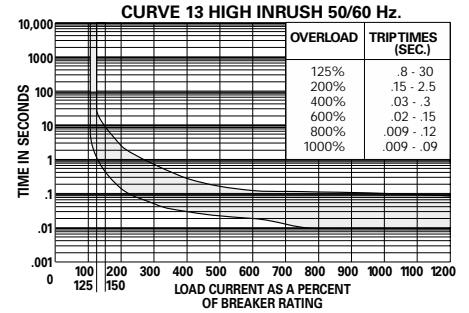
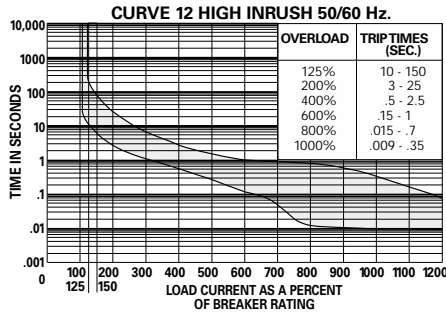
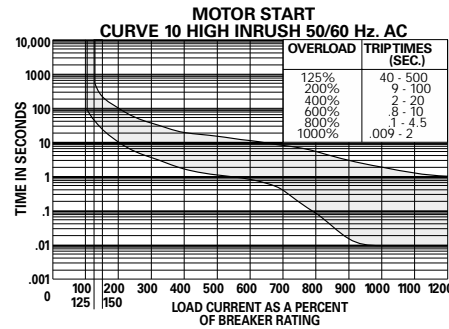
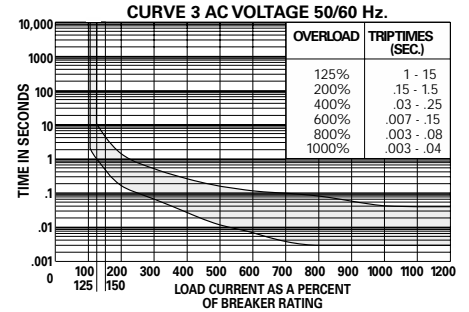
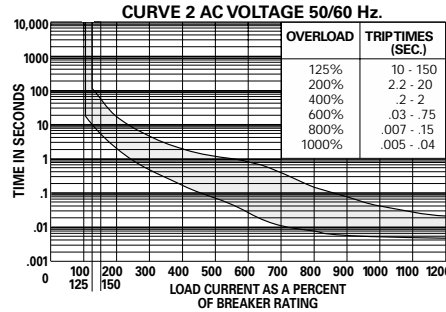
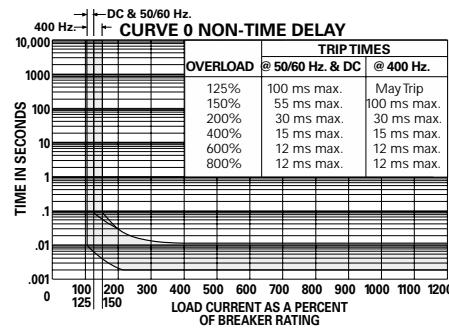
Dimensions are in inches or (millimeters) unless otherwise specified.

Specifications and availability subject to change.

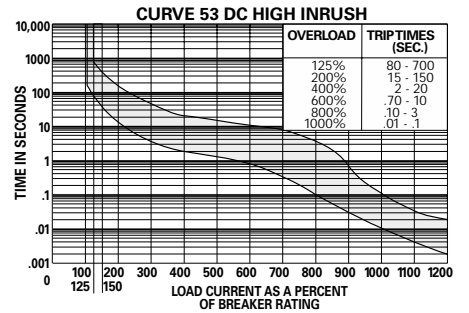
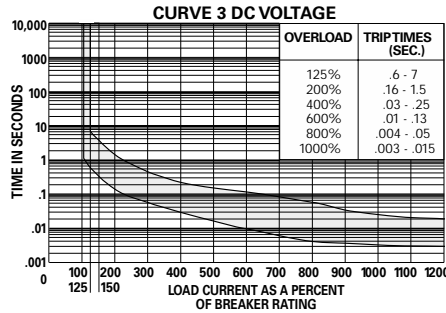
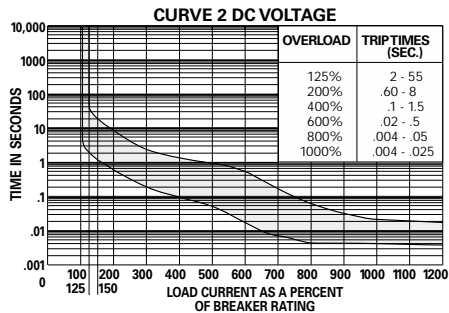
www.tycoelectronics.com  
Technical support:  
Refer to inside back cover.

Time vs. Current Trip Curves For W6 Series and W9 Series

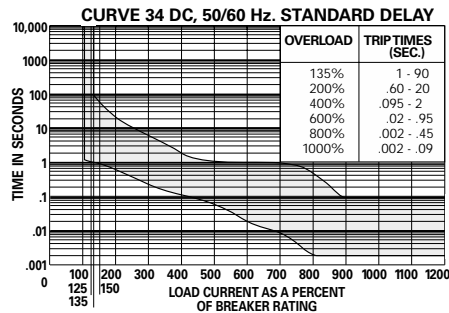
AC 50/60 Hz.



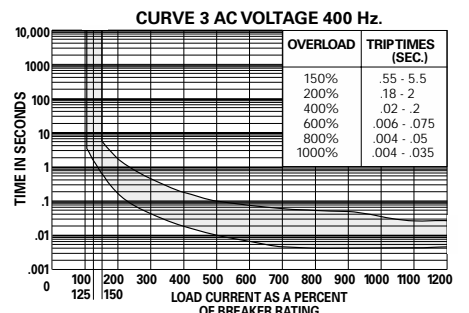
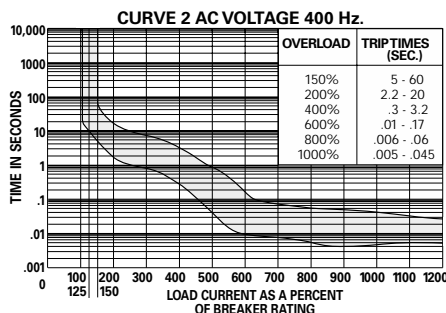
DC



AC/DC



AC 400 Hz.



Note:

For instantaneous curves for all voltages refer to Curve 0 Non-Time Delay under the AC 50/60 Hz. heading.

Pulse Tolerance Specifications

Pulse tolerance is defined as a single pulse of a half sine wave (1/2 cycle or 8 milliseconds) that will not trip the breaker. An inertia wheel for increased pulse tolerance is available by specifying "P" after the time delay curve number in the ordering information. The table at right lists pulse tolerance values of standard and inertia delay models.

| Voltage         | Time Delay Curve | Pulse Tolerance Value |               |
|-----------------|------------------|-----------------------|---------------|
|                 |                  | Standard              | Inertia Delay |
| AC<br>50/60 Hz. | 2                | 7.5                   | 18            |
|                 | 3                | 6                     | 18            |
|                 | 10               | 18                    | 30            |
|                 | 12               | 18                    | 30            |
|                 | 13               | 18                    | 30            |
| AC<br>400 Hz.   | 2                | 6.5                   | 18            |
|                 | 3                | 5.5                   | 18            |

To determine pulse tolerance multiply breaker rating by value in table. For example, a 2A breaker with time delay curve 3 has a standard pulse tolerance of 12A (2A x 6). The same breaker with an inertia delay has a pulse tolerance of 36A (2A x 18).

Ordering Information

W6 Series

|  |                                       |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
|--|---------------------------------------|---|-------------------------------------|----------|----------|----------|-----------|-----------|-------------------|-----------------------------------|---|------------------------|-----------------------------------|-----------------------------------|-----------------------------------|---------------------|---------------------------------------|---------------------|------|-------------------------------------|------|-----------|-----------------------------------|-------------------------------------|------|---------------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| <b>Typical Part No. ▶</b>  | <b>W</b>                              | <b>67-</b>  | <b>X</b>                            | <b>2</b> | <b>Q</b> | <b>1</b> | <b>2-</b> | <b>20</b> |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>1. Circuit Breaker Mounting:</b><br/>W = #6-32 mounting threads.<br/>M = M3.0 x 0.5 mounting threads.</p>  |                                       |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>2. Number of Poles:</b><br/>67 = Single pole      68 = Two pole      69 = Three pole      70 = Four pole</p>   |                                       |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>3. Circuit Function: (Only X is VDE approved)</b><br/>A = Series trip with auxiliary switch (.093" QC)      X = Series trip</p>  |                                       |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>4. Actuator: (One actuator per pole)</b><br/>1 = Black toggle      3 = Black rocker      5 = Red rocker      9 = Red toggle<br/>2 = White toggle      4 = White rocker      6 = Grey rocker</p>  |                                       |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>5. Termination:</b><br/>Q = .250" QC (DIN 46 244) [25A Max. VDE]      S = #8-32 screw [30A Max. VDE]      T = #10-32 screw [50A Max. VDE]<br/><b>Note:</b> "T" termination must be used for all ratings of 31 amps or above.</p>   |                                       |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>6. Maximum Line Voltage: (See Table 1 for current ranges)</b></p> <table border="0"> <tr> <td><b>UL/CSA</b></td> <td>1 = 277VAC, 50/60 Hz.</td> <td><b>VDE</b></td> <td>1 = 250VAC, 415/240VAC</td> </tr> <tr> <td><b>TYPES</b></td> <td>2 = 277/480</td> <td><b>TYPES</b></td> <td>5 = 65VDC</td> </tr> <tr> <td></td> <td>3 = 250VAC, 400 Hz.</td> <td></td> <td>7 = AC/DC 250VAC, 415/240VAC, 65VDC</td> </tr> <tr> <td></td> <td>5 = 65VDC</td> <td></td> <td>(Delay curve 34 must be specified.)</td> </tr> <tr> <td></td> <td>7 = AC/DC 277VAC or 65VDC</td> <td></td> <td></td> </tr> </table> <p>(Delay curve 34 must be specified.)</p> |                                       |   |                                     |          |          |          |           |           | <b>UL/CSA</b>     | 1 = 277VAC, 50/60 Hz.             | <b>VDE</b>  | 1 = 250VAC, 415/240VAC | <b>TYPES</b>                      | 2 = 277/480                       | <b>TYPES</b>                      | 5 = 65VDC           |                                       | 3 = 250VAC, 400 Hz. |      | 7 = AC/DC 250VAC, 415/240VAC, 65VDC |      | 5 = 65VDC |                                   | (Delay curve 34 must be specified.) |      | 7 = AC/DC 277VAC or 65VDC |     |     |     |     |     |      |      |      |      |      |      |
| <b>UL/CSA</b>  | 1 = 277VAC, 50/60 Hz.                 | <b>VDE</b>  | 1 = 250VAC, 415/240VAC              |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <b>TYPES</b>   | 2 = 277/480                           | <b>TYPES</b>  | 5 = 65VDC                           |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
|  | 3 = 250VAC, 400 Hz.                   |   | 7 = AC/DC 250VAC, 415/240VAC, 65VDC |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
|  | 5 = 65VDC                             |   | (Delay curve 34 must be specified.) |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
|  | 7 = AC/DC 277VAC or 65VDC             |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>7. Time Delay Curve:</b></p> <table border="0"> <tr> <td>0 = Instantaneous</td> <td>10 = AC high inrush (Motor start)</td> <td rowspan="5"><b>Notes:</b> Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details.</td> </tr> <tr> <td>2 = Standard delay</td> <td>12 = AC high inrush version of #2</td> </tr> <tr> <td>3 = Short delay</td> <td>13 = AC high inrush version of #3</td> </tr> <tr> <td>53 = DC high inrush</td> <td>34 = Combination AC/DC standard delay</td> </tr> </table>   |                                       |   |                                     |          |          |          |           |           | 0 = Instantaneous | 10 = AC high inrush (Motor start) | <b>Notes:</b> Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details. | 2 = Standard delay     | 12 = AC high inrush version of #2 | 3 = Short delay                   | 13 = AC high inrush version of #3 | 53 = DC high inrush | 34 = Combination AC/DC standard delay |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| 0 = Instantaneous  | 10 = AC high inrush (Motor start)     | <b>Notes:</b> Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details. |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| 2 = Standard delay   | 12 = AC high inrush version of #2     |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| 3 = Short delay  | 13 = AC high inrush version of #3     |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| 53 = DC high inrush  | 34 = Combination AC/DC standard delay |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>8. Amp Rating:</b></p> <table border="0"> <tr> <td>0.20</td><td>0.50</td><td>1.0</td><td>2.0</td><td>3.0</td><td>4.0</td><td>6.0</td><td>7.5</td><td>9.0</td><td>11.0</td><td>15.0</td><td>25.0</td><td>35.0</td><td>45.0</td><td rowspan="2">Consult factory for other values.</td> </tr> <tr> <td>0.25</td><td>0.75</td><td>1.5</td><td>2.5</td><td>3.5</td><td>5.0</td><td>7.0</td><td>8.0</td><td>10.0</td><td>12.0</td><td>20.0</td><td>30.0</td><td>40.0</td><td>50.0</td> </tr> </table>  |                                       |   |                                     |          |          |          |           |           | 0.20              | 0.50                              | 1.0   | 2.0                    | 3.0                               | 4.0                               | 6.0                               | 7.5                 | 9.0                                   | 11.0                | 15.0 | 25.0                                | 35.0 | 45.0      | Consult factory for other values. | 0.25                                | 0.75 | 1.5                       | 2.5 | 3.5 | 5.0 | 7.0 | 8.0 | 10.0 | 12.0 | 20.0 | 30.0 | 40.0 | 50.0 |
| 0.20   | 0.50                                  | 1.0   | 2.0                                 | 3.0      | 4.0      | 6.0      | 7.5       | 9.0       | 11.0              | 15.0                              | 25.0  | 35.0                   | 45.0                              | Consult factory for other values. |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| 0.25   | 0.75                                  | 1.5   | 2.5                                 | 3.5      | 5.0      | 7.0      | 8.0       | 10.0      | 12.0              | 20.0                              | 30.0  | 40.0                   | 50.0                              |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |
| <p><b>9. VDE Approval:</b><br/>Blank = UL/CSA approved breaker<br/>V = VDE approved breaker without auxiliary switch</p>   |                                       |   |                                     |          |          |          |           |           |                   |                                   |   |                        |                                   |                                   |                                   |                     |                                       |                     |      |                                     |      |           |                                   |                                     |      |                           |     |     |     |     |     |      |      |      |      |      |      |

Authorized distributors are more likely to stock the following items.

|              |              |              |              |               |              |               |               |
|--------------|--------------|--------------|--------------|---------------|--------------|---------------|---------------|
| W67-A2Q12-5  | W67-X2Q12-5  | W67-X2Q13-1  | W67-X2Q13-25 | W67-X2Q52-15  | W68-X2Q12-5  | W68-X2Q12-30  | W69-X2Q12-15  |
| W67-A2Q12-10 | W67-X2Q12-7  | W67-X2Q13-2  | W67-X2Q13-30 | W67-X2Q52-20  | W68-X2Q12-7  | W68-X2Q13-15  | W69-X2Q12-20  |
| W67-X2Q10-3  | W67-X2Q12-10 | W67-X2Q13-3  | W67-X2Q50-5  | W67-X2Q52-30  | W68-X2Q12-10 | W68-X2Q110-10 | W69-X2Q12-25  |
| W67-X2Q10-5  | W67-X2Q12-15 | W67-X2Q13-10 | W67-X2Q50-10 | W67-X2Q110-15 | W68-X2Q12-15 | W68-X2Q110-20 | W69-X2Q12-30  |
| W67-X2Q12-2  | W67-X2Q12-20 | W67-X2Q13-15 | W67-X2Q52-5  | W67-X2Q110-20 | W68-X2Q12-20 | W69-X2Q12-5   | W69-X2Q110-20 |
| W67-X2Q12-3  | W67-X2Q12-30 | W67-X2Q13-20 | W67-X2Q52-10 | W68-X2Q12-3   | W68-X2Q12-25 | W69-X2Q12-10  | W69-X2Q110-30 |

Ordering Information

W9 Series

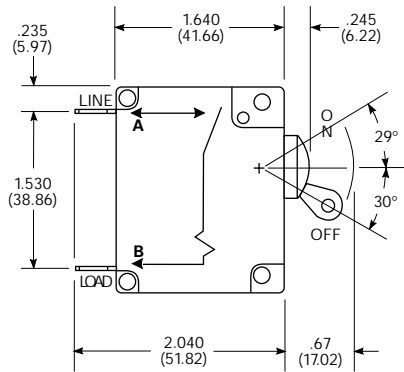
|  |                                       |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
|--|---------------------------------------|---|-------------------------------------|----------|----------|-----------|-----------|-------------------|-----------------------------------|---|------------------------|-----------------------------------|-----------------|-----------------------------------|---------------------|---------------------------------------|---------------------|-----------------------------------|-------------------------------------|-----|-----------|-----|-------------------------------------|-----|---------------------------|------|------|--|------|-----|-----|-----|-----|------|------|------|------|--|
| <b>Typical Part No. ▶</b>  | <b>W</b>                              | <b>91-</b>  | <b>X</b>                            | <b>1</b> | <b>1</b> | <b>2-</b> | <b>20</b> |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>1. Circuit Breaker Mounting:</b><br/>W = #6-32 mounting threads.      M = M3.0 x 0.5 mounting threads.</p>   |                                       |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>2. Number of Poles:</b><br/>91 = Single pole      92 = Two pole      93 = Three pole      94 = Four pole</p>   |                                       |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>3. Circuit Function: (Only X is VDE approved)</b><br/>A = Series trip with auxiliary switch (.093" QC)      X = Series trip</p>  |                                       |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>4. Actuator: (One actuator per pole):</b><br/>1 = Black toggle      2 = White toggle</p>   |                                       |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>5. Maximum Line Voltage: (See Table 1 for current ranges)</b></p> <table border="0"> <tr> <td><b>UL/CSA</b></td> <td>1 = 277VAC, 50/60 Hz.</td> <td><b>VDE</b></td> <td>1 = 250VAC, 415/240VAC</td> </tr> <tr> <td><b>TYPES</b></td> <td>2 = 277/480</td> <td><b>TYPES</b></td> <td>5 = 65VDC</td> </tr> <tr> <td></td> <td>3 = 250VAC, 400 Hz.</td> <td></td> <td>7 = AC/DC 250VAC, 415/240VAC, 65VDC</td> </tr> <tr> <td></td> <td>5 = 65VDC</td> <td></td> <td>(Delay curve 34 must be specified.)</td> </tr> <tr> <td></td> <td>7 = AC/DC 277VAC or 65VDC</td> <td></td> <td></td> </tr> </table> <p>(Delay curve 34 must be specified.)</p> |                                       |   |                                     |          |          |           |           | <b>UL/CSA</b>     | 1 = 277VAC, 50/60 Hz.             | <b>VDE</b>  | 1 = 250VAC, 415/240VAC | <b>TYPES</b>                      | 2 = 277/480     | <b>TYPES</b>                      | 5 = 65VDC           |                                       | 3 = 250VAC, 400 Hz. |                                   | 7 = AC/DC 250VAC, 415/240VAC, 65VDC |     | 5 = 65VDC |     | (Delay curve 34 must be specified.) |     | 7 = AC/DC 277VAC or 65VDC |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <b>UL/CSA</b>  | 1 = 277VAC, 50/60 Hz.                 | <b>VDE</b>  | 1 = 250VAC, 415/240VAC              |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <b>TYPES</b>   | 2 = 277/480                           | <b>TYPES</b>  | 5 = 65VDC                           |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
|  | 3 = 250VAC, 400 Hz.                   |   | 7 = AC/DC 250VAC, 415/240VAC, 65VDC |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
|  | 5 = 65VDC                             |   | (Delay curve 34 must be specified.) |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
|  | 7 = AC/DC 277VAC or 65VDC             |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>6. Time Delay Curve:</b></p> <table border="0"> <tr> <td>0 = Instantaneous</td> <td>10 = AC high inrush (Motor start)</td> <td rowspan="4"><b>Notes:</b> Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details.</td> </tr> <tr> <td>2 = Standard delay</td> <td>12 = AC high inrush version of #2</td> </tr> <tr> <td>3 = Short delay</td> <td>13 = AC high inrush version of #3</td> </tr> <tr> <td>53 = DC high inrush</td> <td>34 = Combination AC/DC standard delay</td> </tr> </table>   |                                       |   |                                     |          |          |           |           | 0 = Instantaneous | 10 = AC high inrush (Motor start) | <b>Notes:</b> Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details. | 2 = Standard delay     | 12 = AC high inrush version of #2 | 3 = Short delay | 13 = AC high inrush version of #3 | 53 = DC high inrush | 34 = Combination AC/DC standard delay |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| 0 = Instantaneous  | 10 = AC high inrush (Motor start)     | <b>Notes:</b> Curves may be specified with increased pulse tolerance for 1/2 cycle by adding "P" after curve. See delay curve section for availability and details. |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| 2 = Standard delay   | 12 = AC high inrush version of #2     |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| 3 = Short delay  | 13 = AC high inrush version of #3     |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| 53 = DC high inrush  | 34 = Combination AC/DC standard delay |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>7. Amp Rating:</b></p> <table border="0"> <tr> <td>0.20</td><td>0.75</td><td>2.0</td><td>3.5</td><td>6.0</td><td>8.0</td><td>11.0</td><td>20.0</td><td>35.0</td><td>50.0</td><td rowspan="3">Consult factory for other values.</td> </tr> <tr> <td>0.25</td><td>1.0</td><td>2.5</td><td>4.0</td><td>7.0</td><td>9.0</td><td>12.0</td><td>25.0</td><td>40.0</td><td></td> </tr> <tr> <td>0.50</td><td>1.5</td><td>3.0</td><td>5.0</td><td>7.5</td><td>10.0</td><td>15.0</td><td>30.0</td><td>45.0</td><td></td> </tr> </table>  |                                       |   |                                     |          |          |           |           | 0.20              | 0.75                              | 2.0   | 3.5                    | 6.0                               | 8.0             | 11.0                              | 20.0                | 35.0                                  | 50.0                | Consult factory for other values. | 0.25                                | 1.0 | 2.5       | 4.0 | 7.0                                 | 9.0 | 12.0                      | 25.0 | 40.0 |  | 0.50 | 1.5 | 3.0 | 5.0 | 7.5 | 10.0 | 15.0 | 30.0 | 45.0 |  |
| 0.20   | 0.75                                  | 2.0   | 3.5                                 | 6.0      | 8.0      | 11.0      | 20.0      | 35.0              | 50.0                              | Consult factory for other values.   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| 0.25   | 1.0                                   | 2.5   | 4.0                                 | 7.0      | 9.0      | 12.0      | 25.0      | 40.0              |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| 0.50   | 1.5                                   | 3.0   | 5.0                                 | 7.5      | 10.0     | 15.0      | 30.0      | 45.0              |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |
| <p><b>8. VDE Approval:</b><br/>Blank = UL/CSA approved breaker<br/>V = VDE approved breaker without auxiliary switch</p>   |                                       |   |                                     |          |          |           |           |                   |                                   |   |                        |                                   |                 |                                   |                     |                                       |                     |                                   |                                     |     |           |     |                                     |     |                           |      |      |  |      |     |     |     |     |      |      |      |      |  |

Authorized distributors are more likely to stock the following items.

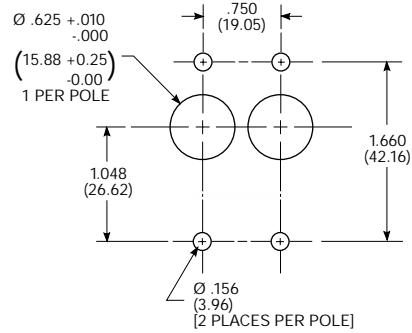
|             |             |             |              |             |              |              |              |
|-------------|-------------|-------------|--------------|-------------|--------------|--------------|--------------|
| W91-X112-1  | W91-X112-15 | W91-X113-15 | W91-X152-40  | W92-X112-5  | W92-X112-30  | W92-X1110-30 | W93-X112-30  |
| W91-X112-2  | W91-X112-20 | W91-X150-5  | W91-X152-50  | W92-X112-7  | W92-X112-40  | W93-X112-5   | W93-X112-40  |
| W91-X112-3  | W91-X112-40 | W91-X152-10 | W91-X1110-20 | W92-X112-10 | W92-X112-50  | W93-X112-10  | W93-X112-50  |
| W91-X112-5  | W91-X112-50 | W91-X152-15 | W92-X112-1   | W92-X112-15 | W92-X113-15  | W93-X112-15  | W93-X1110-20 |
| W91-X112-7  | W91-X113-5  | W91-X152-20 | W92-X112-2   | W92-X112-20 | W92-X113-20  | W93-X112-20  | W93-X1110-30 |
| W91-X112-10 | W91-X113-10 | W91-X152-30 | W92-X112-3   | W92-X112-25 | W92-X1110-20 | W93-X112-25  |              |

**Outline Dimensions - Toggle Actuator Models**

**W6 Series**

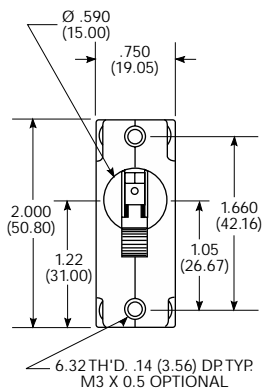


**Panel Mounting Cutout**

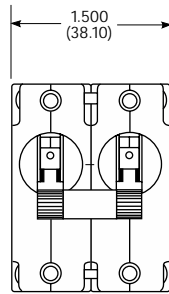


**W6 Series**

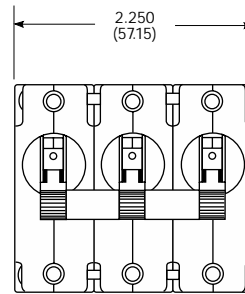
**1 Pole**



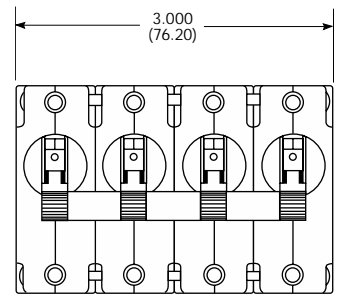
**2 Pole**



**3 Pole**



**4 Pole**

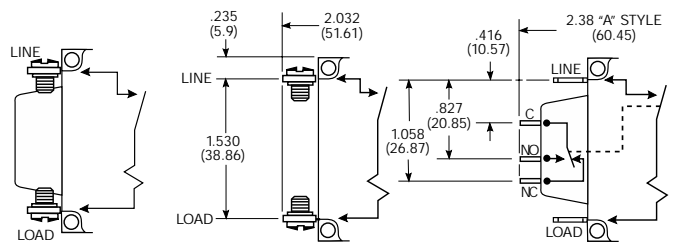


**Note:**  
Multi-pole models furnished with separate handle tie hardware.

**VDE Models W/Screw Terminals**

**UL/CSA Models W/Screw Terminals**

**UL/CSA/VDE Models W/Aux. Switch**

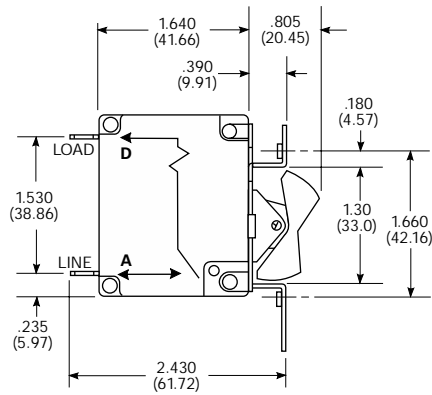


**Notes:**

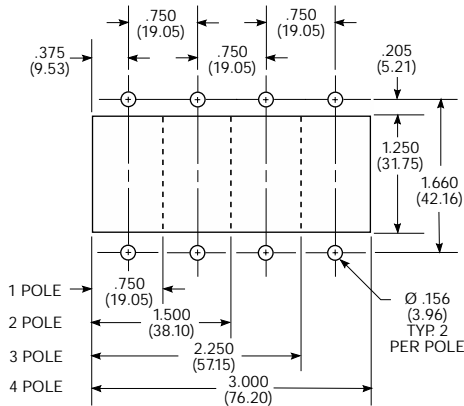
1. Terminal protrusion dimensions are referenced from back of mounting panel.
2. Main terminals are male quick connect type .250 (6.35) wide x .031 (.79) thick x .377 (9.58) long. Optional 8-32 x .250 (6.35) or 10-32 x .250 (6.35) screw type.
3. Panel mounting cutout detail mtg. detail tol.: ± .005 (.13) unless noted. Add additional cutouts to correspond to number of poles. Outline drawing tolerance ± .015 (.38) unless noted. Dimensions in brackets ( ) are in millimeters.

Outline Dimensions - Rocker Actuator Models

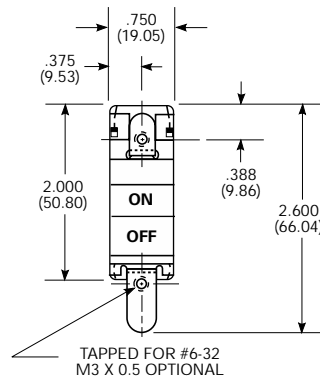
W6 Series



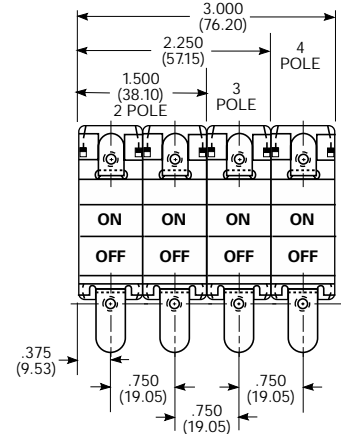
Panel Mounting Cutout



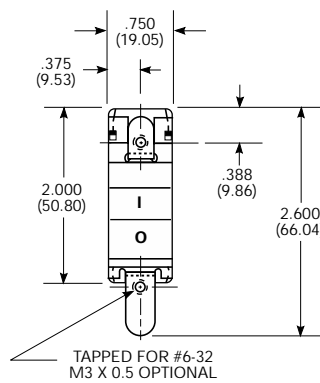
1 Pole



2, 3 & 4 Pole



VDE Rocker Marking



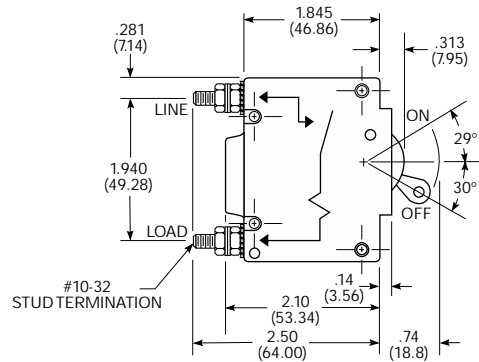
Notes:

1. Outline drawing tolerance  $\pm .015$  (.38) unless noted. Dimensions in brackets ( ) are in millimeters.
2. Mounting Detail Tol:  $\pm .005$  (.13) unless noted

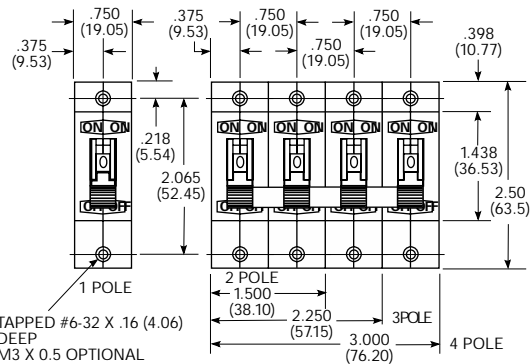
Outline Dimensions

W9 Series

Series Trip Model

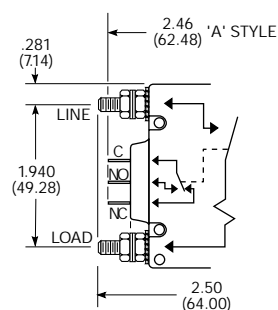


Series Trip Model

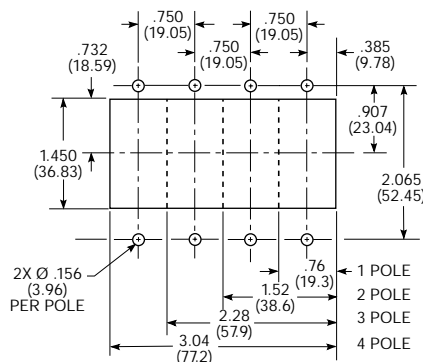


Series Trip Model

With Common Enclosed Auxiliary Switch



Panel Mounting Cutout Detail



Notes:

1. Terminal protrusion dimensions are referenced from the back of the mounting panel.
2. Mounting detail tolerance  $\pm .005$  (.13) unless noted.
3. Outline drawing tolerance  $\pm .015$  (.38) unless noted. Dimensions in brackets ( ) are in millimeters.

**Engineering Notes**

