

# TR11 Series

## UL1077 Recognized Supplementary Protector/ Circuit Breaker for Equipment

### Applications:

Protection of Control Transformers, UPS, Power strips, Solenoids etc., against damage due to overload conditions.

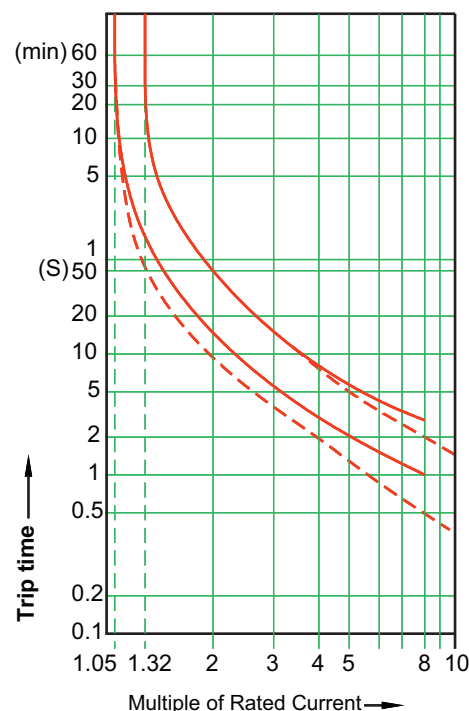


E209569

up to 12 Amps

|                                                                                       |                                                                                                                                  |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Current Rating (A)                                                                    | 0.1 - 16A                                                                                                                        |
| Standard Current Rating (A)                                                           | 0.1, 0.25, 0.5, 0.9, 1.0, 1.2, 1.5, 1.8, 2.0, 2.2, 2.5, 2.7, 3.0, 3.3, 4.0, 5.0, 6.0, 6.5, 7.0, 8.0, 9.0, 10.0, 12.0, 15.0, 16.0 |
| Rated Voltage                                                                         | 240V AC, 50/60Hz, 50V DC / 24V DC (VDE)                                                                                          |
| Initial insulation resistance (500V DC)                                               | > 100 M ohms. (As per EN 60934)                                                                                                  |
| Dielectric strength                                                                   | 1.5 KV for One minute. (As per EN 60934)                                                                                         |
| Overload Switching Capacity                                                           | 6 I <sub>n</sub> - AC up to 9.0A<br>4 I <sub>n</sub> - DC up to 12.0A (As per EN 60934)<br>60A AC/DC Max. - from 10.0A to 12.0A  |
| Maximum Breaking Capacity                                                             | 8x I <sub>n</sub> AC/DC for <6.0A<br>60A AC/DC MAX. for > 6.0A                                                                   |
| Power Loss                                                                            | 1 - 2 Watts                                                                                                                      |
| Operating Temperature                                                                 | Maximum 60°C Ambient                                                                                                             |
| Operational Life at 2xI <sub>n</sub>                                                  | 1000 Cycles                                                                                                                      |
| Rated Conditional Short Circuit Current Capacity I <sub>nc1</sub> (PC1) Ref.: EN60934 | 1000 Amps PC 1, 240V AC, 24V DC, Ref.: EN60934<br>SC: 1KA, C1, 240V AC 50V DC<br>Ref.: CSA22.2 No.235-04, UL-1077                |
| Tripping Current Code TC                                                              | TC 2Ref.: CSA22.2 No. 235-04                                                                                                     |
| Overload Rating                                                                       | OL0 240V AC, 50V DC, Ref.: CSA22.2 No. 235-04                                                                                    |
| Application Type                                                                      | General Industrial Ref.: CSA22.2 No. 235-04                                                                                      |
| Method of Tripping                                                                    | Thermal 'TO' Trip Free                                                                                                           |
| Type of Actuation                                                                     | Reset Type 'R'                                                                                                                   |
| Application Standards                                                                 | CSA 22.2 No. 235-04, UL-1077, EN 60934                                                                                           |
| Weight                                                                                | aprox. 11g                                                                                                                       |
| Approvals                                                                             | 0.1 - 16.0A<br>240V AC 50V DC<br>0.5 - 12.0A<br>240V AC 24V DC                                                                   |

### Operating Characteristic



Rated current

&lt; 6 A

Ambient

≥ 6 A

Temperature

23°C

### ORDERING INSTRUCTIONS

|                                                               |      |   |    |   |   |   |   |      |   |                                                                                                          |
|---------------------------------------------------------------|------|---|----|---|---|---|---|------|---|----------------------------------------------------------------------------------------------------------|
| PRODUCT TYPE                                                  | TR20 | C | 63 | S | B | 1 | A | 7.0A | 2 | INDICATOR PLATE                                                                                          |
| MOUNTING TYPE                                                 |      |   |    |   |   |   |   |      |   | 0 None<br>1 Black letters on Aluminium Background<br>2 Silver Letters on Black Background                |
| TERMINAL SIZE                                                 |      |   |    |   |   |   |   |      |   | CURRENT RATING                                                                                           |
| 63 6.3 x 0.8mm                                                |      |   |    |   |   |   |   |      |   | 3A, 4A, 5A, 6A, 7A, 8A, 10A, 12A, 15A, 10A & 20A                                                         |
| TERMINAL CONFIGURATION                                        |      |   |    |   |   |   |   |      |   | MOUNTING NUT                                                                                             |
| S Straight<br>L 90° Bend, Left side<br>R 90° Bend, Right side |      |   |    |   |   |   |   |      |   | N None or wing clip<br>A Plastic knurled<br>B Metal knurled<br>C Metal Hex Nut<br>D Sealing knurled boot |
| SLIDER COLOR                                                  |      |   |    |   |   |   |   |      |   | SLIDER MARKING                                                                                           |
| B Black                                                       |      |   |    |   |   |   |   |      |   | 0 None<br>1 White, Vertical<br>2 Black, Vertical<br>3 White, Horizontal<br>4 Black, Horizontal           |
| WB White with trip indication                                 |      |   |    |   |   |   |   |      |   |                                                                                                          |

### Time Current Characteristics:

The standard characteristic is valid for ambient temperatures of +23°C. If the device is to be used in an ambient temperature other than +23°C, allowances must be made when selecting the current rating according to the following guidelines:

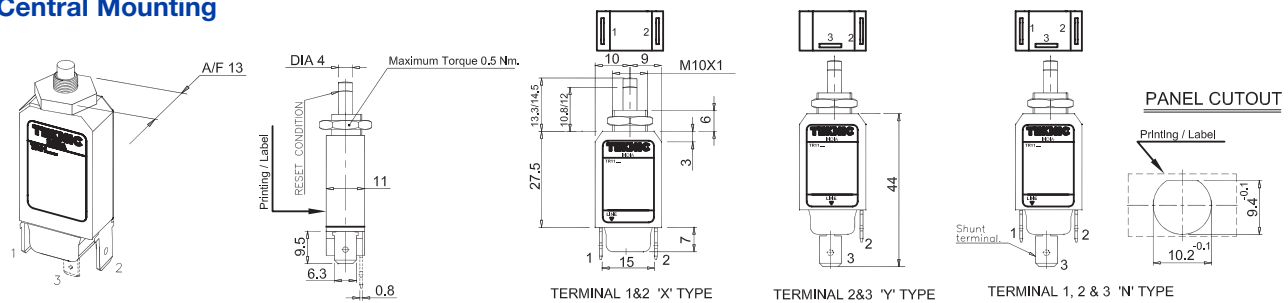
|                   |     |      |     |      |     |      |      |     |     |
|-------------------|-----|------|-----|------|-----|------|------|-----|-----|
| Ambient temp. °C  | -20 | -5   | 0   | +10  | +20 | +30  | +40  | +50 | +60 |
| Correction Factor | 0.8 | 0.88 | 0.9 | 0.96 | 1   | 1.05 | 1.12 | 1.2 | 1.3 |

|          |                            |                    |
|----------|----------------------------|--------------------|
| Example: | Normal Continuous Current  | 1.8A               |
|          | Ambient Temperature        | 40°C               |
|          | Correction Factor          | 1.12               |
|          | Recommended Current Rating | 1.8 x 1.12 = 2.016 |
|          | Select the nearest         | 2.0A               |

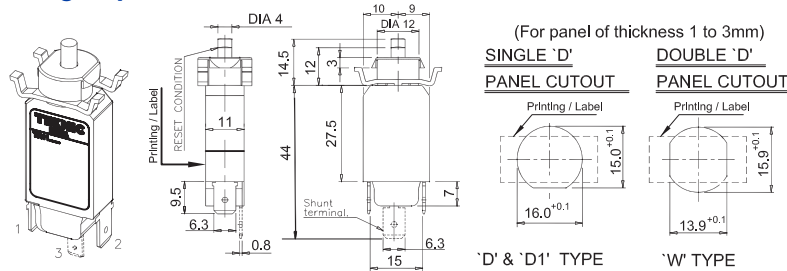
Note: TR11-C Series stocked; contact Altech for availability.

# TR-11 Dimensions & Mounting Options

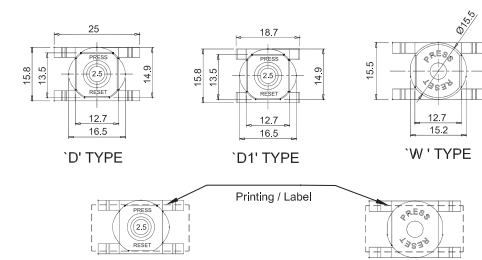
## Central Mounting



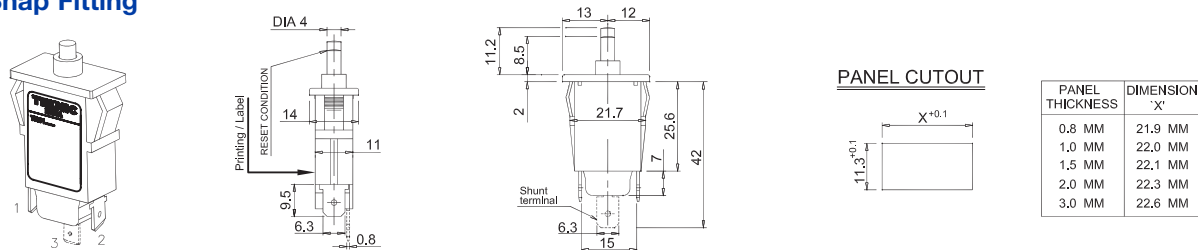
## Wing Clips



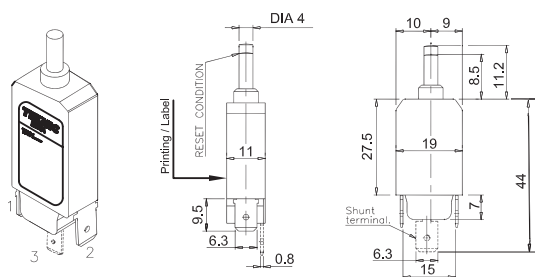
## Wing Clip Types



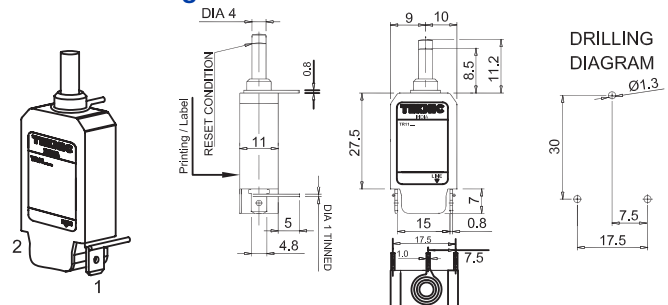
## Snap Fitting



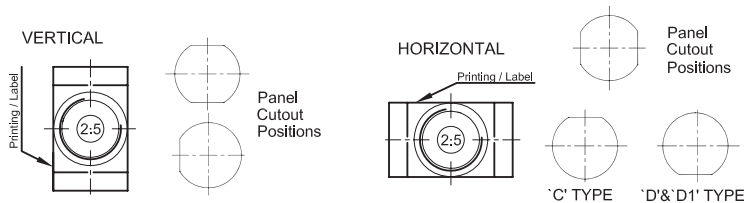
## Body Mounting



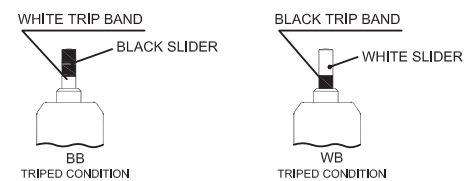
## PCB Mounting



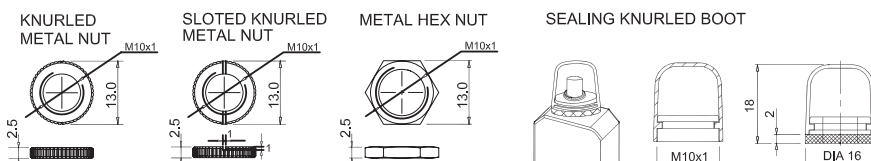
## Slider Printing for Current Rating



## Slider Color with Trip Band



## Accessories



Dimensions in mm (to convert to inches multiply by 0.03937)

A sealing boot for central mounting Type (C) Circuit breaker to provide dust & splash protection (IP 54).

# TR20 Series

## UL1077 Recognized Supplementary Protector/ Circuit Breaker for Equipment

### Applications:

Protection of Control Transformers, UPS, Power strips, Solenoids etc., against damage due to overload conditions.

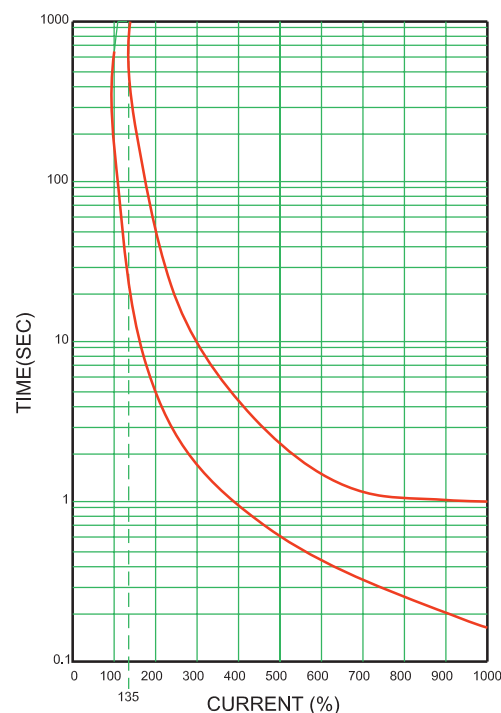
|                                                                                      |                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application Type                                                                     | General Industrial Ref. CSA22.2 No.235-04                                                                                                                                                                                                                   |
| Function                                                                             | SPST                                                                                                                                                                                                                                                        |
| Standard Current Rating (A)                                                          | 3, 4, 5, 6, 7, 8, 10, 12, 15, 16 & 20<br>AC-Inductive, DC-Resistive                                                                                                                                                                                         |
| Rated Voltage                                                                        | 125/125V AC, 50/60 Hz, 50V DC                                                                                                                                                                                                                               |
| Method of tripping                                                                   | Thermal TO, Cycling trip - free                                                                                                                                                                                                                             |
| Type of Actuation                                                                    | Reset Type 'R'                                                                                                                                                                                                                                              |
| Initial insulation resistance                                                        | > 100 M ohms. (DC500V)                                                                                                                                                                                                                                      |
| Dielectric strength                                                                  | 1.500 KV for 1 minute                                                                                                                                                                                                                                       |
| Impulse withstand voltage                                                            | 2.5kV Ref.: EN 60934                                                                                                                                                                                                                                        |
| Contact Gap                                                                          | Micro disconnection(μ) Ref.: EN60934                                                                                                                                                                                                                        |
| Housing Material                                                                     | Thermoplastic / Thermoset                                                                                                                                                                                                                                   |
| Slider Material                                                                      | Thermoset                                                                                                                                                                                                                                                   |
| Contact Material                                                                     | Silver alloy                                                                                                                                                                                                                                                |
| Terminal Material                                                                    | Copper alloy                                                                                                                                                                                                                                                |
| Fixing                                                                               | By a nut or snap fitting                                                                                                                                                                                                                                    |
| Resettable overload capacity                                                         | 10 times the rated current                                                                                                                                                                                                                                  |
| Overload capacity                                                                    | 2 times rated current for 50 switching cycles min.<br>Ref.: UL 1077                                                                                                                                                                                         |
| Rated Short Circuit Capacity $I_{cn}$<br>Ref.: EN60934                               | Min 6 times the rated current ( $6I_n$ ) for 250V AC (Inductive)<br>Min 4 times the rated current ( $4I_n$ ) for 50V DC (Resistive)                                                                                                                         |
| Rated Conditional Short Circuit<br>Current Capacity $I_{nc1}$ (PC1)<br>Ref.: EN60934 | 1000 Amps 125/250V AC, 50V DC<br>SC: 1kA, C1, 125/250V AC, 50V AC<br>Ref.: CSA22.2 No.235-04, UL-1077                                                                                                                                                       |
| Tripping Current Code TC                                                             | TC 2Ref.: CSA22.2 No. 235-04                                                                                                                                                                                                                                |
| Overload Rating                                                                      | OLO 125/250V AC, 50V DC, Ref.: CSA 22.2 No. 235-04                                                                                                                                                                                                          |
| Weight                                                                               | aprox. 17g                                                                                                                                                                                                                                                  |
| Application Standards                                                                | UL 1077, CSA 22.2 No. 235-04, EN 60934                                                                                                                                                                                                                      |
| Approvals                                                                            |    |



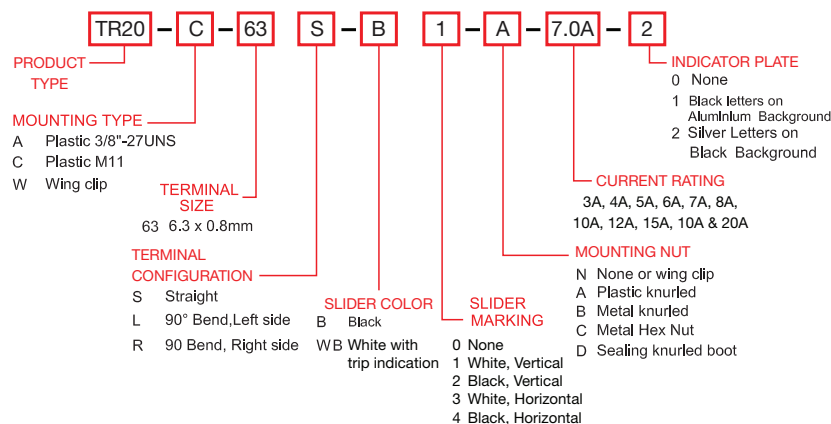
E209569



### Operating Characteristic



## ORDERING INSTRUCTIONS



### Time Current Characteristics:

The standard characteristic is valid for ambient temperatures of +25°C. If the device is to be used in an ambient temperature other than +25°C, allowances must be made when selecting the current rating according to the following guidelines:

|                                    |                |      |      |     |     |     |     |
|------------------------------------|----------------|------|------|-----|-----|-----|-----|
| Ambient temp. °C                   | -20            | -10  | 0    | +10 | +25 | +30 | +35 |
| Multiplication Factor 3A to 4A     | 0.8            | 0.85 | 0.9  | 0.9 | 1   | 1   | 1.1 |
| Multiplication Factor 5A to 20A    | 0.8            | 0.85 | 0.88 | 0.9 | 1   | 1.1 | 1.3 |
| Example: Normal Continuous Current | 5.0A           |      |      |     |     |     |     |
| Ambient Temperature                | 40°C           |      |      |     |     |     |     |
| Multiplication Factor              | 1.1            |      |      |     |     |     |     |
| Selected rated current at +40°C    | 5 x 1.1 = 5.5  |      |      |     |     |     |     |
| Ambient temperature                | 6.0A (nearest) |      |      |     |     |     |     |

\* SPECIAL ORDER ONLY. Contact Altech for more details.

PCB Mounting and additional Shunt Terminal available, please contact Altech.



# TR30 Series

## UL1077 Recognized Supplementary Protector/ Circuit Breaker for Equipment

### Applications:

Protection of Control Transformers, UPS, Power strips, Solenoids etc., against damage due to overload conditions.

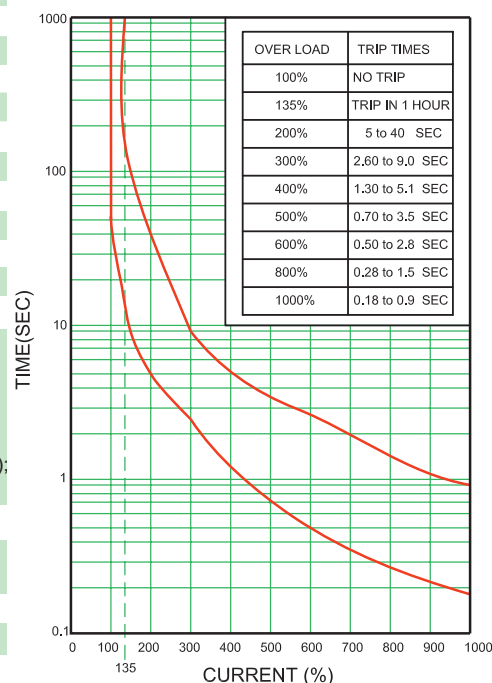
|                                                                  |                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Application Type                                                 | General Industrial Ref. CSA22.2 No.235-04                                                                                                                                                                                                                                                           |
| Function                                                         | SPST                                                                                                                                                                                                                                                                                                |
| Standard Current Rating (A)                                      | 20A, 25A, 30A & 35A                                                                                                                                                                                                                                                                                 |
| Rated Voltage                                                    | 125/125V AC, 50/60 Hz, 50V DC                                                                                                                                                                                                                                                                       |
| Method of tripping                                               | Thermol TO, Cycling trip - free                                                                                                                                                                                                                                                                     |
| Type of Actuation                                                | Reset Type 'R'                                                                                                                                                                                                                                                                                      |
| Initial insulation resistance                                    | > 100 M ohms. (DC500V)                                                                                                                                                                                                                                                                              |
| Dielectric strength                                              | 1.500 KV for 1 minute                                                                                                                                                                                                                                                                               |
| Impulse withstand voltage                                        | 2.5kV Ref.: EN 60934                                                                                                                                                                                                                                                                                |
| Contact Gap                                                      | Micro disconnection(μ) Ref.: EN60934                                                                                                                                                                                                                                                                |
| Housing Material                                                 | Thermoset - UL94-V0 flammability class                                                                                                                                                                                                                                                              |
| Slider Material                                                  | Thermoset - UL94-V0 flammability class                                                                                                                                                                                                                                                              |
| Contact Material                                                 | Silver alloy                                                                                                                                                                                                                                                                                        |
| Terminal Material                                                | Copper alloy                                                                                                                                                                                                                                                                                        |
| Fixing                                                           | By a nut or snap fitting                                                                                                                                                                                                                                                                            |
| Resettable overload capacity                                     | 10 times the rated current                                                                                                                                                                                                                                                                          |
| Rated Short Circuit Capacity $I_{cn}$                            | Min 6 times the rated current ( $6I_n$ ) for 250V AC (Inductive)<br>Ref.: EN60934<br>Min 4 times the rated current ( $4I_n$ ) for 50V DC (Resistive)                                                                                                                                                |
| Rated Conditional Short Circuit Current Capacity $I_{nc1}$ (PC1) | 2kA, 20 to 35A, 250V AC,<br>As per EN60934<br>1kA, 20 to 35A, 50V DC<br>As per CSA 22.2 No. 235-04 & UL 1077<br>1kA, C1, 50V Dc, -(20-35A); 500A, U3, 125V AC, -(20-35A);<br>1kA, U1a, 125V AC, -(20-35A); 2kA, C1, 125V AC, -(20-35A);<br>1kA, C1, 250V AC, -(20-15A); 2kA, C1, 250V AC, -(20-35A) |
| Tripping Current Code TC                                         | TC 3 Ref.: CSA22.2 No. 235-04                                                                                                                                                                                                                                                                       |
| Overload Rating                                                  | 20-35A - OL0 125/250V AC, 50V DC;<br>As per CSA 22.2 No. 235-04<br>20-35A - OL1 125V AC; 20-35A - OL1 250V AC                                                                                                                                                                                       |
| Weight                                                           | aprox. 25g                                                                                                                                                                                                                                                                                          |
| Application Standards                                            | UL 1077, CSA 22.2 No. 235-04, EN 60934, UL 1500                                                                                                                                                                                                                                                     |
| Approvals                                                        |                                            |
| Ignition Protected                                               | Compliant as per UL 1500<br>(Standard for safety for Ignition protection test for Marine products)                                                                                                                                                                                                  |



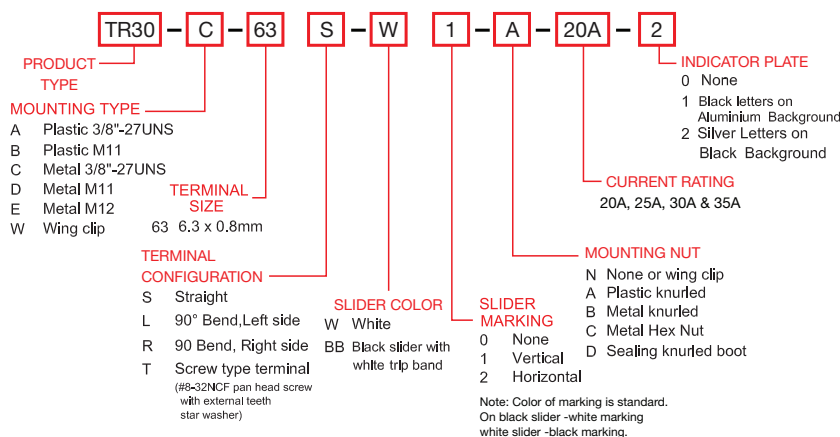
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E209569



### Operating Characteristic



## ORDERING INSTRUCTIONS



### Time Current Characteristics:

The standard characteristic is valid for ambient temperatures of +25°C. If the device is to be used in an ambient temperature other than +25°C, allowances must be made when selecting the current rating according to the following guidelines:

|                                  |     |      |      |      |     |      |      |      |      |
|----------------------------------|-----|------|------|------|-----|------|------|------|------|
| Ambient temp. °C                 | -5  | -0   | +10  | +20  | +25 | +30  | +40  | +50  | +60  |
| Multiplication Factor 5A         | 0.9 | 0.92 | 0.95 | 0.98 | 1   | 1.12 | 1.15 | 1.25 | 1.5  |
| Multiplication Factor 56A to 30A | 0.9 | 0.92 | 0.95 | 0.98 | 1   | 1.05 | 1.15 | 1.25 | 1.35 |
| Multiplication Factor 35A        | 0.9 | 0.93 | 0.95 | 0.98 | 1   | 1.05 | 1.15 | 1.25 | 1.35 |

Example: Normal Continuous Current 20A  
 Ambient Temperature 40°C  
 Multiplication Factor 1.15  
 Selected rated current at +40°C ambient temperature  $20 \times 1.15 = 23$   
 25A (nearest)

\* SPECIAL ORDER ONLY. Contact Altech for more details.

PCB Mounting and additional Shunt Terminal available, please contact Altech.

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