

TEKNIC

Supplementary Protector / Circuit Breaker for equipment - TR 11



The TR11 circuit breaker for equipment (CBE) is a single pole, push to reset, thermally operated overload protector, providing reliable trip free operation on overloads and short circuits within maximum breaking capacity specified. The trip mechanism is of a latch type and a high contact force can be maintained until the unit trips. This prevents contact bounce & reduces the risk of contact welding.

Application : Main applications are protection of single phase motor, transformers, UPS, Power strips, Solenoids etc., against damage due to overcurrent conditions.

Operation : The mechanism of the circuit breaker is designed to open the contacts in the event of a current flow in excess of the rated current according to the time/current characteristics of the device. A thermo bimetal strip, which has the advantage of being immune to high inrush currents and line transients, is heated by an overcurrent and deflects, there by releasing the latch mechanism. The contacts open even if the reset button is manually held in the closed position. This is known as 'trip free' mechanism. The contacts open and close with a positive snap action and the tripped state is clearly indicated by the extended projection of the reset button.

Shunt Terminal (N) : An optional additional terminal can be provided as a parallel circuit to the main current sensing circuit, for circuit breakers provided with heater winding, that is upto a rating of 6A. The shunt circuit between terminal 1 & 3 may be used for any signals which may be required in addition to the main circuit. However, since the circuit makes use of the bimetal as a current carrying path, the trip time of the circuit breaker may be slightly influenced.

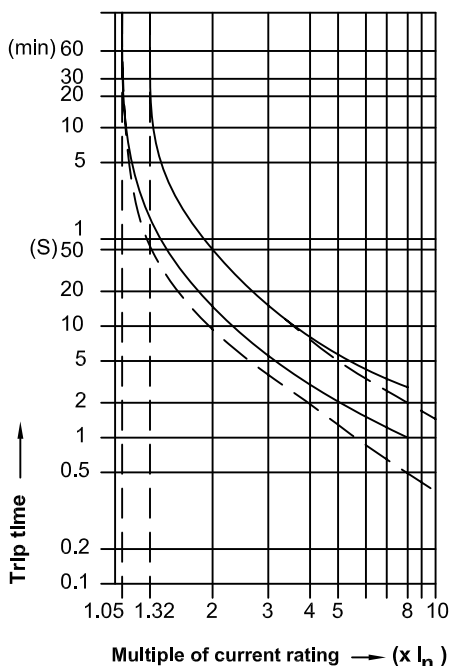
Time Current Characteristics : The standard characteristic is valid for ambient temperature of 23°C. If the device is to be used in an ambient temperature other than +23°C, allowance must be made when selecting the current rating according to the following guide lines:

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

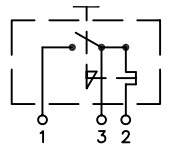
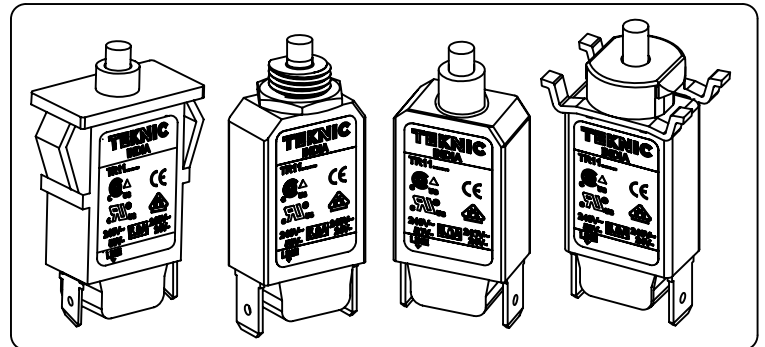
Example :

Normal Continuous Current : 1.8 A
 Ambient Temperature : 40°C
 Multiplication Factor : 1.12
 Recommended Current Rating : 1.8 x 1.12 = 2.016
 Select the nearest : 2 A

Operating Characteristic :



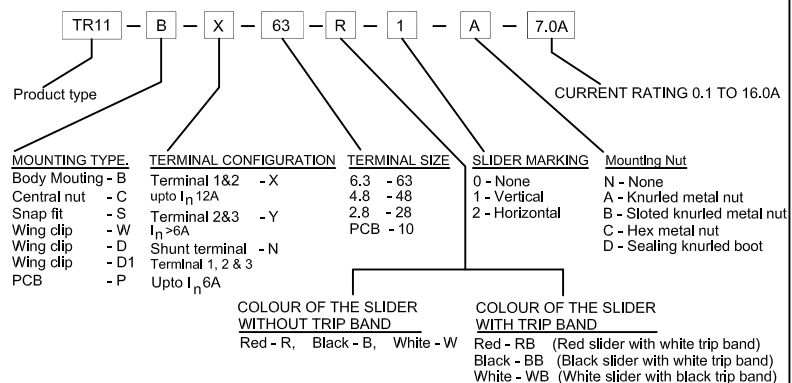
Rated current < 6 A
 Rated current ≥ 6 A
 Ambient Temperature 23°C



Technical Data

Current Rating in(Amp)	: 0.1 -16A
Standard Current Rating in(Amp)	: 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~ 50/60 Hz, 50V DC / 24V DC (VDE)
Initial insulation resistance (500 V DC)	: > 100 Megohms. (As per EN 60934)
Dielectric strength	: 1.5 KV for One minute. (As per EN 60934)
Overload Switching Capacity	: 6 In AC up to 9.0A 4 In DC up to 12.0A (As per EN 60934) 60A AC/DC Max. from 10.0A to 12.0A
Maximum Breaking Capacity	: 8x In AC/DC for <6.0A, 60 A AC/DC MAX. for > 6.0A,
Power Loss	: 1 - 2 Watts
Operating Temperature	: Maximum 60°C Amb.
Operational Life at 2xI _n	: 1000 Cycles
Rated conditional short circuit current capacity I _{nc1} (PC1)	: 1000 Amps PC 1, 240V AC, 24 V DC ,Ref.:EN60934 SC :1KA, C1, 240V AC 50 V DC Ref.: CSA22.2 No.235-04, UL-1077
Ref.: EN60934	
Tripping current code(TC)	: TC 2 Ref.: CSA22.2 No.235-04
Over load rating	: OLO 240 V AC, 50 V 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'
Applicable Standards	: CSA 22.2 No. 235-04, UL-1077, EN 60934,
Weight	: approx. 11g
Approvals	: 0.1 - 16.0A 240 V AC 50 V DC 0.5 - 12.0A 240 V AC 24 V DC

Ordering Example :

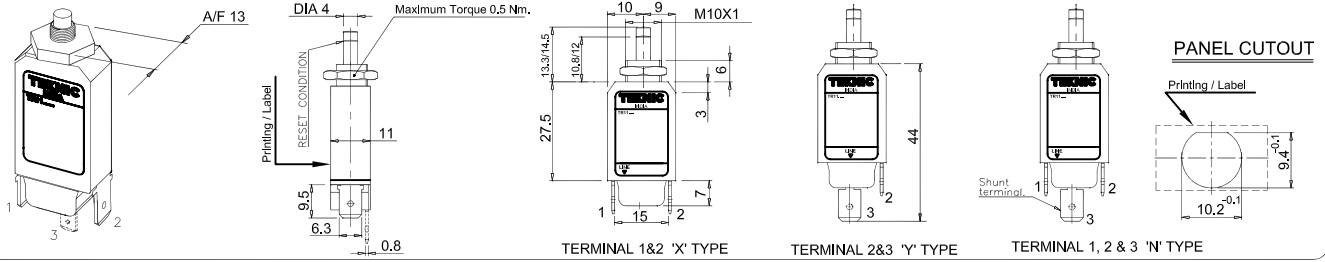


NOTE :

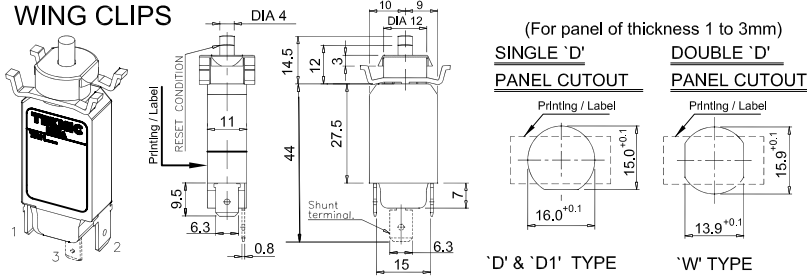
Terminal size 2.8 available upto I 6A
 Terminal size 4.8 available in X-type only upto I 12A.
 Terminal 1 & 2 with PCB pins available only upto I 12A.
 D & D1 wing clip types are with slider printing of current rating (horizontal).

MOUNTING OPTIONS

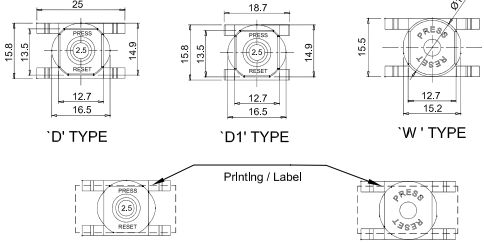
CENTRAL MOUNTING (C)



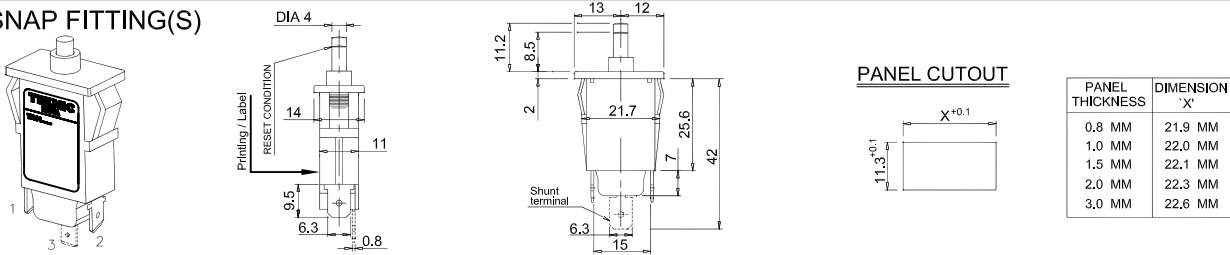
WING CLIPS



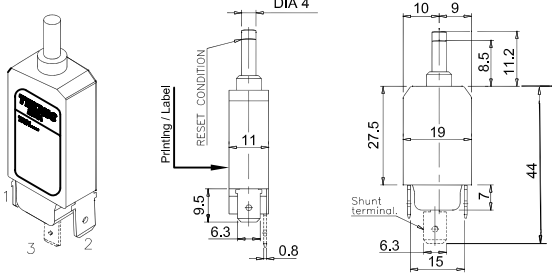
WING CLIP TYPES



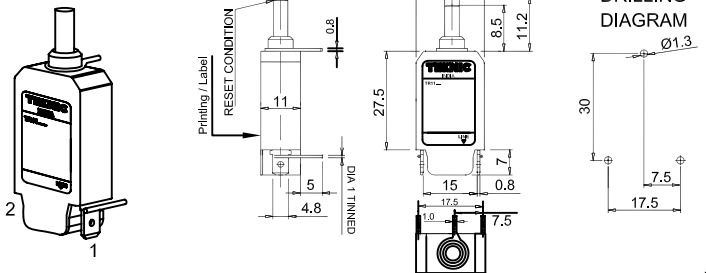
SNAP FITTING(S)



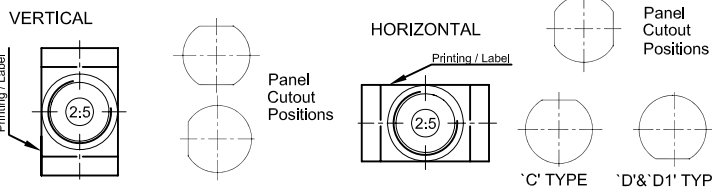
BODY MOUNTING (B)



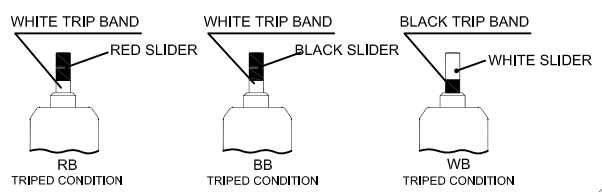
PCB MOUNTING (P)



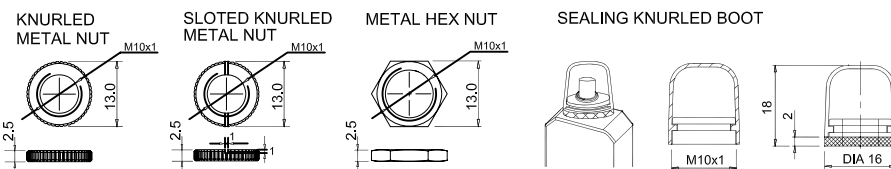
SLIDER PRINTING FOR CURRENT RATING



SLIDER COLOUR WITH TRIP BAND



ACCESSORIES



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

For further details, please write to :

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 E_MAIL : tepl_wks@satyam.net.in & tepl.wpl@satyammail.com
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 E_MAIL : teknic@vsnl.com
 Website : www.tekninc.com

TEKNIC

Supplementary Protector / Circuit Breaker for equipment - TR 30



The TR 30 circuit breaker for equipment (CBE) is a single pole, thermally operated, snap action over load protector, with a manual push-to-reset mechanism, providing reliable 'cycling trip free' operation on overloads & short circuits within maximum capacity specified. A high contact force is maintained till the contacts break due to overload through the snap action bimetal disc.

APPLICATION : Protection against overloads.
Used in home appliances, single phase motors/generators, marine products, UPS, power strips, portable gensets.

OPERATION: The entire mechanism of the circuit breaker is based on the use of a snap action cantilevered, thermo-bimetal disc profile with silver alloy contacts, designed to open in the event of a current flow in excess of the rated current, according to the time/current characteristic of the device. The contacts open and close with a positive snap action and the tripped state is clearly indicated by the extended projection of the reset button.

TIME & CURRENT CHARACTERISTICS :

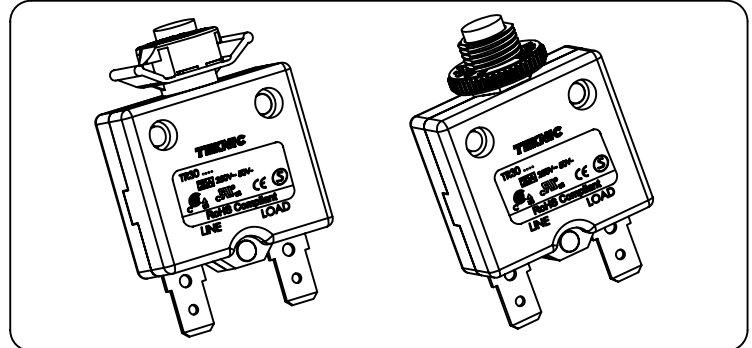
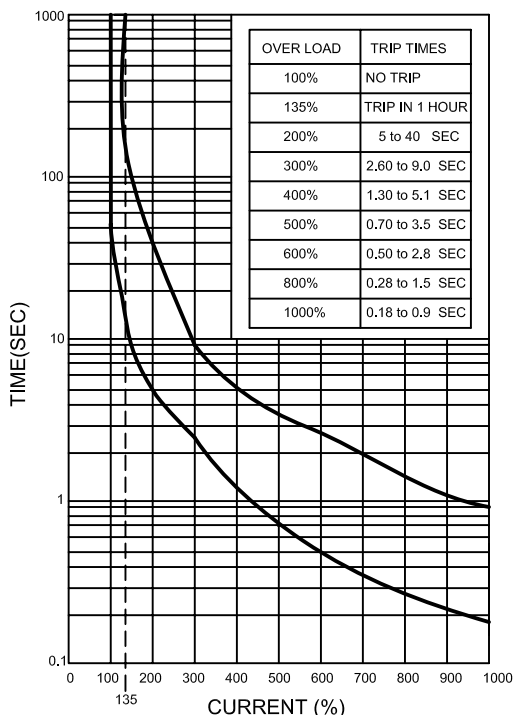
The standard characteristic is valid for an ambient temperature of 25 °C. If the device is to be used in an ambient temperature other than 25 °C, allowance must be made when selecting the current rating according to the following guide lines.

Example :

Normal continuous current	: 5.0A
Ambient temperature	: 40°C
Multiplication factor	: 1.15
Selected rated current at +40°C	
ambient temperature	: 5 X 1.15 = 5.75
	: 6.0A (nearest)

AMBIENT TEMP. (°C)	MULTIPLICATION FACTOR								
	-5°C	-0°C	10°C	20°C	25°C	30°C	40°C	50°C	60°C
5A	0.9	0.92	0.95	0.98	1	1.12	1.15	1.25	1.5
6A to 30A	0.9	0.92	0.95	0.98	1	1.05	1.15	1.25	1.35
35A	0.9	0.93	0.95	0.98	1	1.05	1.15	1.32	1.35

Operating Characteristics :



Technical Data

Application type	: General Industrial Ref.CSA22.2 No.235-04
Function	: SPST
Standard Current Rating in(Amp)	: 5A - 35A 5A,6A,7A,10A,12A,15A, 20A, 25A, 30A & 35A
Rated Voltage	: 125 / 250V AC, 50/60 Hz,50V DC.
Method of tripping	: Thermal TO Cycling trip - free
Type of actuation	: Reset type 'R'
Initial insulation resistance	: > 100 MΩ (DC500V)
Dielectric strength	: 1500V AC 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 over load capacity	: 10 times the rated current
Rated Short Circuit Capacity I _{cn}	: Min 6 times the rated current (6 I _n) for 250V AC (Inductive) Ref.: EN60934 Min 4 times the rated current (4 I _n) for 50V DC (Resistive)
Rated Conditional Short Circuit Current Capacity I _{nc1} (PC1)	: 1kA , 5 to 15A , 250VAC, 2kA , 20 to 35A , 250VAC, As per EN 60934 1kA , 5 to 35A , 50VDC, As per CSA 22.2 No.235-04 & UL 1077
As per CSA 22.2 No.235-04 & UL 1077	: 1kA , C1, 50VDC, -(5-35A) 500A , U3, 125VAC, -(20-35A) 1kA , U1a, 125VAC, -(5-35A) 2kA , C1, 125VAC, -(5-35A) 1kA , C1, 250VAC, -(5-15A) 2kA , C1, 250VAC, -(20-35A)
Tripping current code (TC3)	: TC 3 Ref.: CSA 22.2 No.235-04
Over load rating	: 5 - 35A -- OLO 125/250V AC,50V DC As per CSA 22.2 No.235-04 5 - 35A -- OL1 125V AC 5 - 25A -- OL1 250V AC
Weight	: approx. 25g
Applicable Standards	: UL-1077, CSA 22.2 No. 235-04, EN 60934,UL 1500.
Approvals	:
Ignition Protected	: Compliant as per UL 1500 (Standard for safety for Ignition protection test for Marine products)

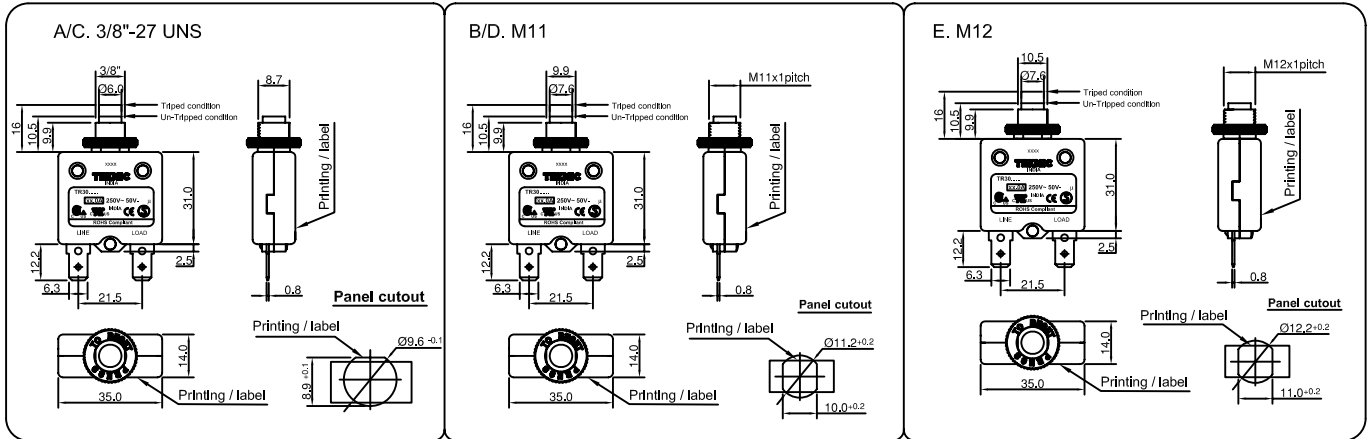
Ordering Example :

TR 30 - C - 63 S - W 1 - A - 7.0A - 2

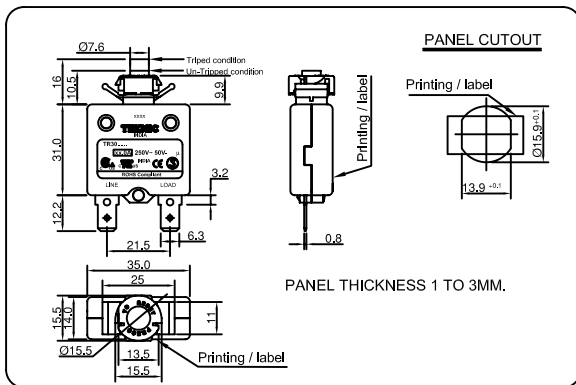
1 Mounting Bush	4 Terminal options	3 Slider Marking	0 Std. Current Rating
A Plastic 3/8"-27UNS	S Straight	0 None	5A, 6A, 7A, 10A
B Plastic M11	L 90° Bend, Left side	1 Vertical	12A, 15A, 20A, 25A
C Metal 3/8"-27UNS	R 90° Bend, Right side	2 Horizontal	30A & 35A
D Metal M11	T Screw type terminal	Note:	
E Metal M12	(#8-32NCF pan head screw with external teeth star washer)	(colour of marking is standard)	
W Wing clip		On red /black slider -white marking	
		white slider-black marking)	
2 Terminal size	5 Slider Colour	1 Mounting Nut	0 Indicator plate
63 6.3 x 0.8mm	W White	N None or wing clip	0 None
	RB Red slider with white trip band	A Plastic knurled	1 Black letters on Aluminum Background.
	BB Black slider with white trip band	B Metal knurled	2 Black letters on Black Background.
		C Metal Hex Nut	
		D Sealing knurled boot	

Mounting options:

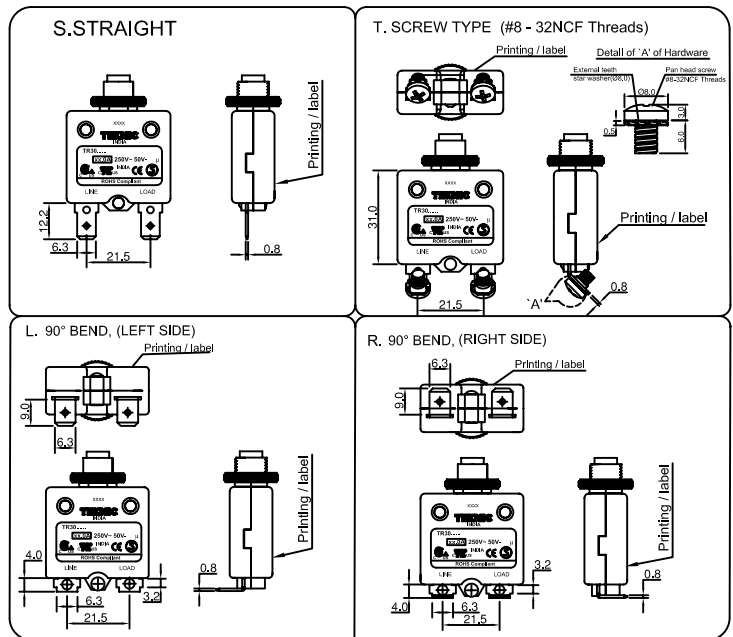
CENTRAL MOUNTING



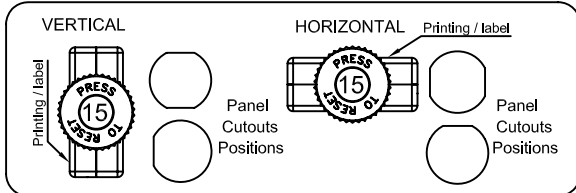
W. WING CLIP



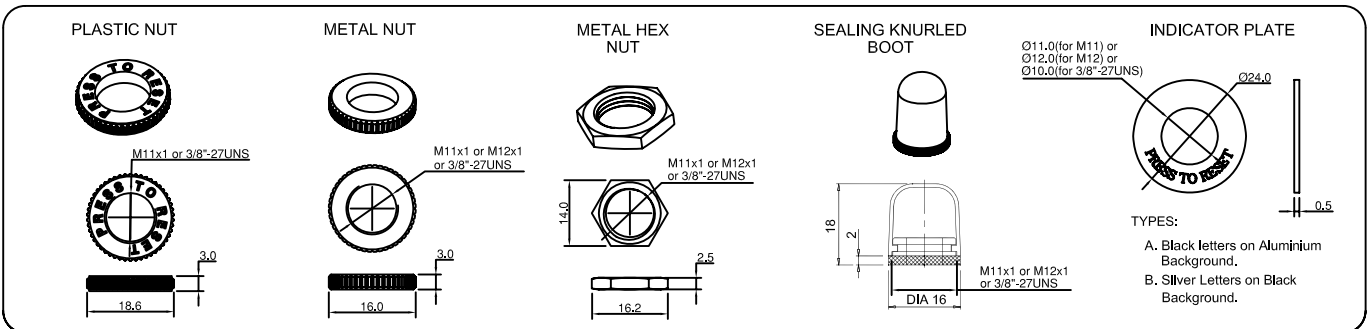
TERMINAL OPTIONS



SLIDER PRINTING FOR CURRENT RATING



ACCESSORIES



For further details, please write to:

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 E-MAIL : teknic ofs @satyam.net.in

Factory : 93, Electronic city, Hosur Road, Bangalore-560 100
 Tel. 0091-80-28520472, 28520714. Fax : 0091-80-28520254.
 E-MAIL : tep_l_wks@satyam.net.in & tep_l_wpl@satyammail.com

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 Email : teknic@vsnl.com

Website: www.teknico.co.in

TEKNIC



Supplementary Protector / Circuit Breaker for equipment - TR 20

The TR 20 circuit breaker for equipment (CBE) is a single pole, thermally operated, snap action over load protector, with a manual, push-to-reset mechanism, providing reliable 'cycling trip free' operation on overloads & short circuits within maximum capacity specified. A high contact force is maintained till the contacts break due to overload through the snap action bimetal disc.

APPLICATION : Protection against overloads.

OPERATION: The entire mechanism of the circuit breaker is based on the use of a snap action cantilevered, thermo-bimetal disc profile with silver alloy contacts, designed to open in the event of a current flow in excess of the rated current, according to the time/current characteristic of the device. The contacts open and close with a positive snap action and the tripped state is clearly indicated by the extended projection of the reset button.

TIME & CURRENT CHARACTERISTICS :

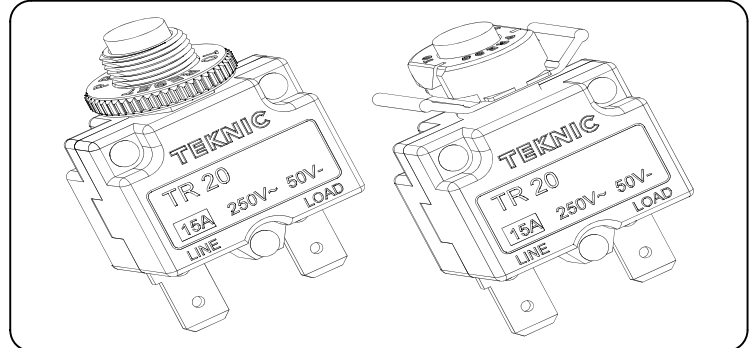
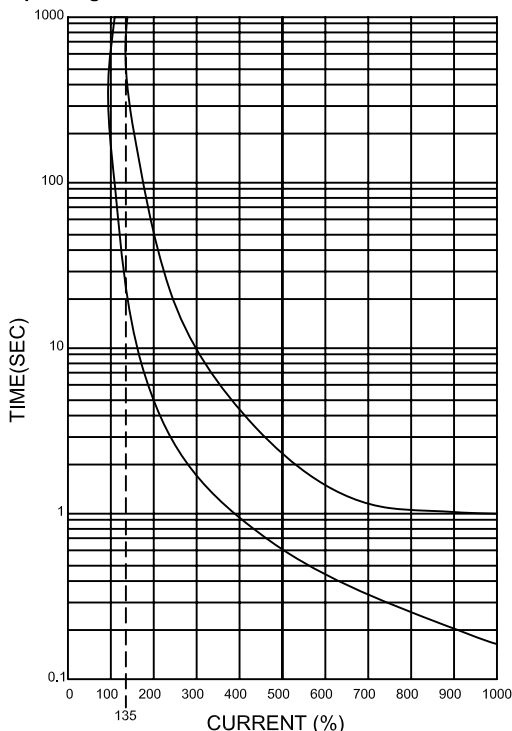
The standard characteristic is valid for an ambient temperature of 25 °C. If the device is to be used in an ambient temperature other than 25°C, allowance must be made when selecting the current rating according to the following guide lines.

Example :

Normal continuous current	: 5.0A
Ambient temperature	: 40°C
Multiplication factor	: 1.1
Selected rated current at +40°C ambient temperature	: 5 X 1.1 =5.5
	: 6.0A (nearest)

AMBIENT MULTIPLEPLICATION FACTOR	TEMP.(°C)						
	-20°C	-10°C	0°C	10°C	25°C	30°C	35°C
3A to 4A	0.8	0.85	0.9	0.9	1	1	1.1
5A to 20A	0.8	0.85	0.88	0.9	1	1.1	1.3

Operating Characteristics :



Technical Data

Application type	: General Industrial Ref.CSA22.2 No.235-04
Function	: SPST
Standard Current Rating in(Amp)	: 3, 4, 5, 6, 7, 8, 10, 12, 15,16 & 20 AC-Inductive DC-Resistive.
Rated Voltage	: 125 / 250V 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 Ω (DC500V)
Dielectric strength	: 1500V AC 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 over load capacity	: 10 times the rated current
Overload capacity	: 2 times rated current for 50 switching cycles min. Ref. : UL 1077
Rated Short Circuit Capacity I _{cn}	: Min 6 times the rated current (6 I _n) for 250V AC (Inductive) Ref. : EN60934 Min 4 times the rated current (4 I _n) for 50V DC (Resistive)
Rated Conditional Short Circuit	: 1000A 125/250V AC 50V DC
Current Capacity I _{nc1} (PC1)	SC : 1kA, C1, 125/250V AC, 50V DC Ref.: EN 60934 Ref.: CSA 22.2 No.235-04, UL1077
Tripping current code (TC)	: TC 2 Ref.: CSA 22.2 No.235-04
Over load rating	: OLO 125/250V AC,50V DC,Ref.: CSA 22.2 No.235-04
Weight	: approx. 17g
Applicable Standards	: UL-1077, CSA 22.2 No. 235-04, EN 60934
Approvals	:

Ordering Example :

TR 20 - C - 63 S - B 1 - A - 7.0A - 2

Product type	Terminal options	Slider Marking	Std. Current Rating
<input checked="" type="checkbox"/> Mounting Bush	<input checked="" type="checkbox"/> Terminal options	<input checked="" type="checkbox"/> Slider Marking	<input checked="" type="checkbox"/> Std. Current Rating
A Plastic 3/8"-27 C Plastic M11 W Wing clip	S Straight L 90° Bend, Left side R 90 Bend, Right side	0 None 1 White, Vertical 2 Black, Vertical 3 White, Horizontal 4 Black, Horizontal	3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 10.0, 12.0, 15.0, 16.0, 20.0
<input checked="" type="checkbox"/> Terminal size	<input checked="" type="checkbox"/> Slider Colour	<input checked="" type="checkbox"/> Mounting Nut	<input checked="" type="checkbox"/> Indicator plate
63 6.3 x 0.8mm	B Black WB White with trip indication	N None or wing clip A Plastic knurled B Metal knurled C Metal Hex Nut D Sealing knurled boot	0 None 1 Black letters on Aluminium Background. 2 Silver Letters on Black Background.