

TGR1 Series Thermal Overload Relay



1 Product overview

TGR1 series thermal overload relay (hereafter referred to as “thermal relay”) is suitable for overload protection and phase loss protection of in AC 50Hz/60Hz AC motor working for a long time or interruptedly working for a long time with a working voltage up to 690V and below and with a current up to 95A. The thermal relay complies with IEC 60947-4-1 and IEC 60947-5-1 standards. The thermal relay can be inserted into the contactor, and a mounting seat is provided for independent installation.

2 Type designation

TG R □ - 18

TG Thermal overload relay
 R Enterprise code
 □ Design code.
 (I, H, K: named according to the different sales channels)
 - 18 Rated Frame current

F Z 1 - □

FZ 1 - □ Frame current:
 18: For TGR1-18
 38: For TGR1-38
 95: For TGR1-95
 □ Design code.
 - Independent mounting seat
 □ Accessory code

3 Product parameters

Item	TGR1-18、38、95			
Working temperature limit	-25℃ ~ +50℃			
Trip level	10A			
Rated impulse voltage, U_{imp} kV	6			
Rated insulation voltage, U_i V	690			
Overload protection	Yes			
Phase loss protection	Yes			
Manual reset	Yes			
Automatic reset	Yes			
stop button	Yes			
Test button	Yes			
Trip indicator	Yes			
Inclination between installation surface and vertical surface	±5°			
Installation method	Combined type, independent type			
Auxiliary circuit	Rated insulation voltage U_i V	380		
	Use category	AC-15	DC-13	
	Rated working voltage U_e V	220	380	220
	Rated working current I_e A	1.64	0.95	0.15
	Resistive current I_{th} A	Normal open	5	5
Normal closed		5	5	5
Certificate	CCC、CE			

4 Normal operation conditions and installation conditions

- 4.1 Altitude: Not exceed 2000m.
- 4.2 Environmental temperature: The ambient air temperature is ranged -5℃ ~ +40℃, and the average value within 24 hours does not exceed +35℃
- 4.3 Atmospheric conditions: The relative humidity does not exceed 50% when the maximum temperature is +40℃; higher relative humidity is allowed at a lower temperature, and the mean monthly minimum temperature of the wettest month does not exceed +25℃; the mean monthly maximum relative humidity of this month does not exceed 90%. Special measures should be taken for occasionally occurred condensation.
- 4.4 Pollution level: 3.
- 4.5 Installed at the normal working position, the inclination between the mounting surface and the vertical surface does not exceed 5°.
- 4.6 Installed at a place where a rain and snow prevention device is provided not full of water steam.
- 4.7 The installation site shall be free of significant shaking, shock and vibration.
- 4.8 Installed at a place without explosive dangerous medium not containing gas and conductive dust to cause corrosion to the metal and damage to the insulation.

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5 Structure features

In addition to the overload protection and phase loss protection, the thermal relay has the following structure features:

Three-phase dual-metal sheet type, with trip level of 10A.

With manual and auto reset buttons.

With action indicator.

With stop button.

With a setting current continuously adjustable device.

With one normally open contact and one normally closed contact that can be separately electrically.

Installation method: Plugged in the contactor or independently mounted.

6 Protection features

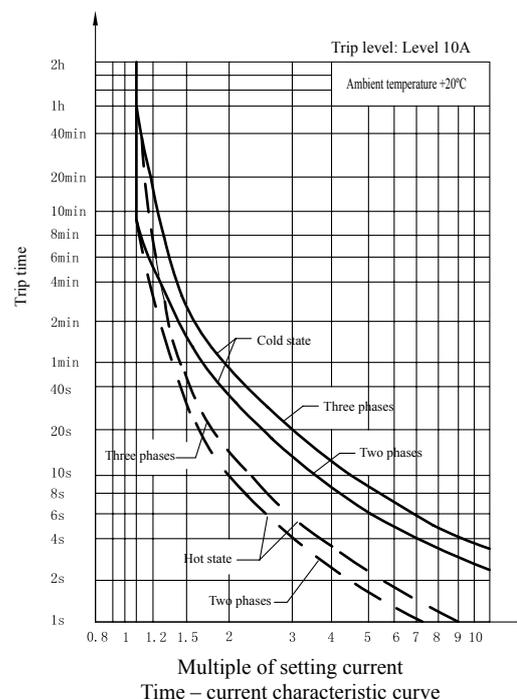
6.1 The action features when the loads of all phases of thermal relay are balanced shall comply with the table below:

No.	Multiple of setting current	Action time	Initial condition	Ambient air temperature, C
1	1.05	No action within 2h	Cold state starts	20±5
2	1.2	Action within 2h	Hot state (after Item 1 test) starts	
3	1.5	Action within 2 minutes		
4	7.2	$2s < T_p \leq 10s$	Cold state starts	

6.2 The action features when the loads of all phases of thermal relay are imbalanced shall comply with the table below:

No.	Multiple of setting current		Action time	Initial condition	Ambient air temperature, C
	Any two phases	Third phase			
1	1.0	0.9	No action within 2h	Cold state starts	20±5
2	1.15	0	Action within 2h	Hot state (after Item 1 test) starts	

6.3 Thermal relay trip characteristic curve seen the figure below



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7 Selection and ordering data

Appearance	Rated current (A)	Matched fuse specification (RT16) A	Connecting wire specification mm ²	Model of matched contactor
 TGR1-18	0.1 ~ 0.16	2	1	 TGC1-06, TGC1-09 TGC1-12, TGC1-18 Combined installation, with mounting seat provided for independent installation
	0.16 ~ 0.25	2		
	0.25 ~ 0.4	2		
	0.4 ~ 0.63	2		
	0.63 ~ 1	4		
	1 ~ 1.6	4		
	1.6 ~ 2.5	6		
	2.5 ~ 4	10		
	4 ~ 6	16		
	5.5 ~ 8	20		
	7 ~ 10	20	1.5	
9 ~ 13	25	2.5		
12 ~ 18	32			
 TGR1-38	9 ~ 13	25	2.5	 TGC1-25, TGC1-32 TGC1-38 Combined installation, with mounting seat provided for independent installation
	12 ~ 18	32		
	17 ~ 25	50	4	
	23 ~ 32	63	6	
	30 ~ 38	80	10	
 TGR1-95	23 ~ 32	63	6	 TGC1-40, TGC1-50, TGC1-65, TGC1-80, TGC1-95 Combined installation, with mounting seat provided for independent installation
	30 ~ 40	80	10	
	37 ~ 50	100		
	48 ~ 65	125	16	
	55 ~ 70	125	25	
	63 ~ 80	160		
	80 ~ 95	160	35	

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8 Accessories description

Accessory appearance	Name	Purpose
	FZ1-18	Form an independent installation product with TGR1-18
	FZ1-38	Form independent installation product with TGR1-38
	FZ1-95	Form an independent installation product with TGR1-95

9 Outline and installation dimension

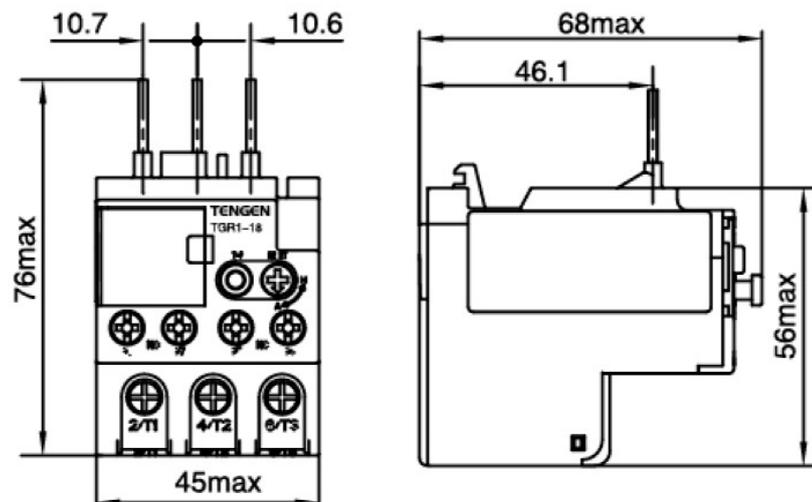


Fig. 1 TGR1-18 combined installation

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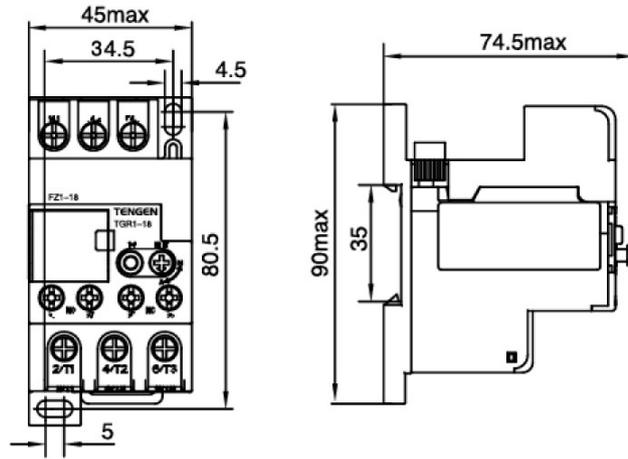


Fig. 2 TGR1-18 independent installation

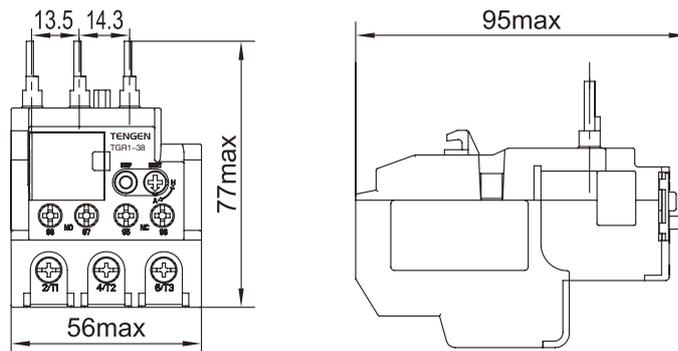


Fig. 3 TGR1-38 combined installation

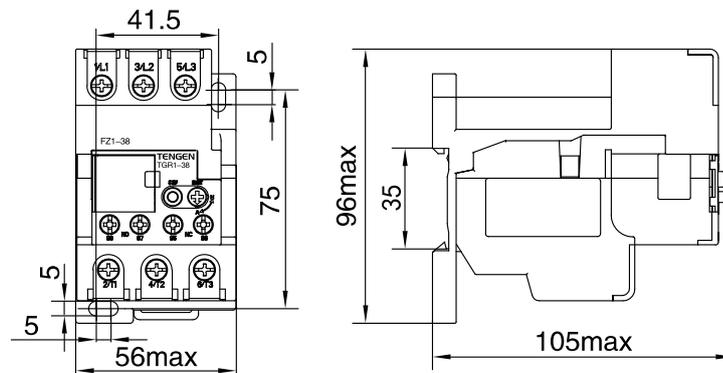


Fig. 4 TGR1-38 independent installation

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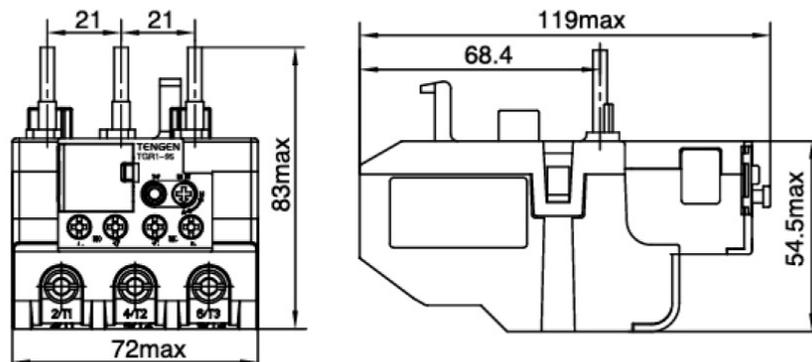


Fig. 5 TGR1-95 stand-alone installation

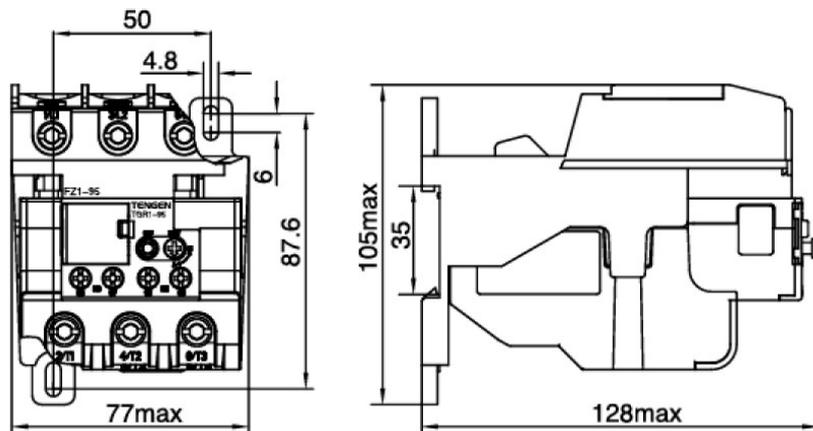


Fig. 6 TGR1-95 combined installation

10 Order information

Please specify the model, rated working current, thermal element setting current range and order quantity of the thermal relay when ordering. If independent installation is required, the corresponding mounting seat must be ordered.

For example: Combined installation thermal relays TGR1-18 2.5-4A 20 sets.

Independent installation TGR1-18 2.5-4A 10 sets, FZ1-18, 10 sets.