

TGR1 Series Thermal Relay

1 Overview



TGR1 Series Thermal Relay (hereinafter referred to “thermal relay”) is used in the AC 50Hz/60Hz long-term continuously working or intermittently working AC motor with the operating voltage of 690V and below and with the current up to 100A (under the rated operating voltage 380V) as the overload protection and open phase protection.

The thermal relay complies with IEC 60947-4-1 and IEC 60947-5-1 standard.

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

F Z 1 - □

F: Independent mounting seat
 Z: Design code.
 1: Frame current:
 18: For TGR1-18
 38: For TGR1-38
 95: For TGR1-95, TGR1-100
 □: Accessory code

3 Technical Parameters

Item		TGR1-18, 38, 95, 100		
Working temperature limit		-25°C ~ +50°C		
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 2,000 meters.
- 4.2 Environmental temperature: The ambient air temperature is ranged -5°C ~ +40°C, and the average value within 24 hours does not exceed +35°C
- 4.3 Atmospheric conditions: The relative humidity does not exceed 50% when the maximum temperature is +40°C; higher relative humidity is allowed at a lower temperature, and the mean monthly minimum temperature of the wettest month does not exceed +25°C; 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 degree: 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

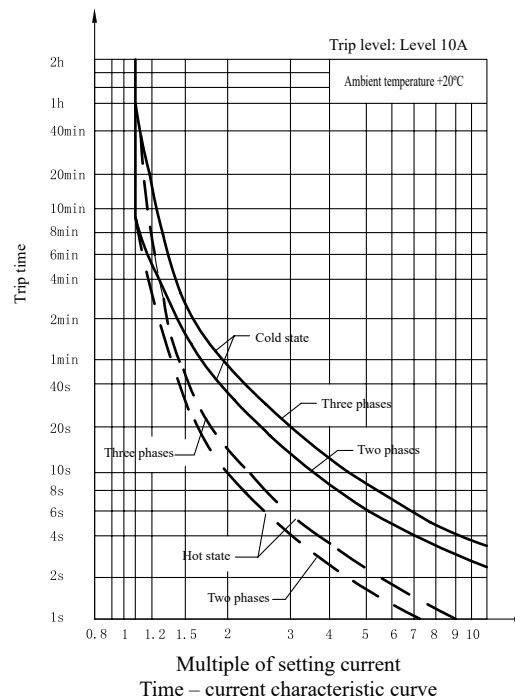
6.1 The action features when the loads of all phases of thermal relay are balanced shall comply with the table below:

No.	Multiple of setting current	Action time	Initial condition	Ambient air temperature, C
1	1.05	$\geq 2h$	Cold state starts	20±5
2	1.2	$< 2h$	Hot state (after Item 1 test) starts	
3	1.5	$< 2 \text{ min}$		
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	$\geq 2h$	Cold state starts	20±5
2	1.15	0	$< 2h$	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	
 TGR1-100	23 ~ 32	63	6	 TGCA-40, TGCA-50, TGCA-65, TGCA-75, TGCA-85, TGCA-100 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	
	86 ~ 100	160		

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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, TGR1-100

9 Outline and Installation Dimensions

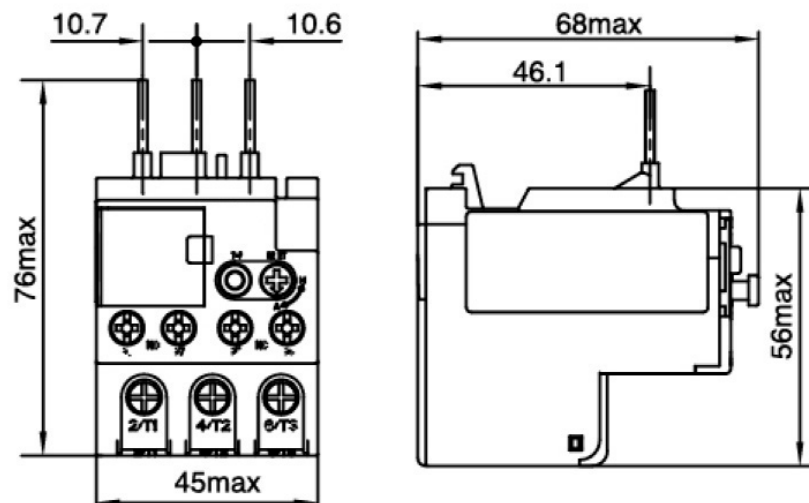


Fig. 1 TGR1-18 combined installation

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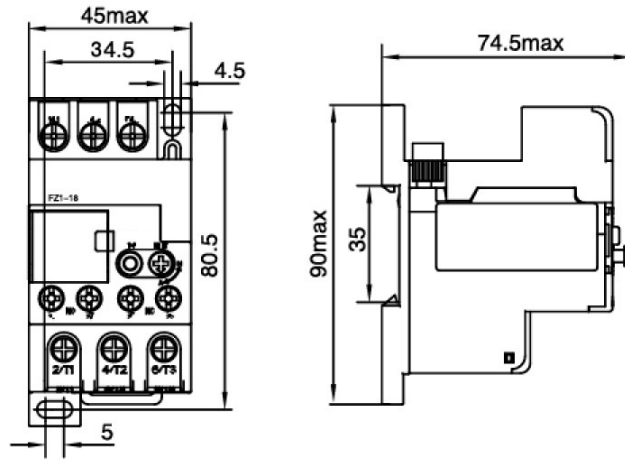


Fig. 2 TGR1-18 independent installation

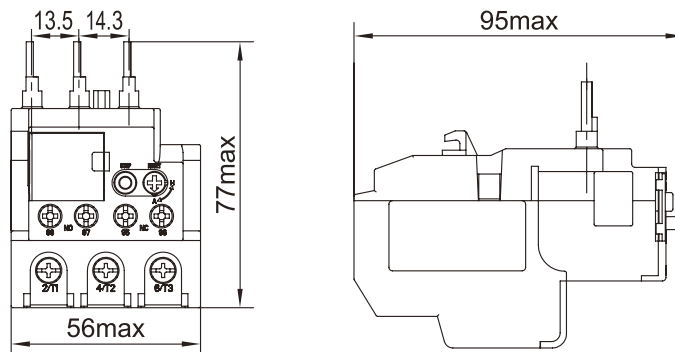


Fig. 3 TGR1-38 combined installation

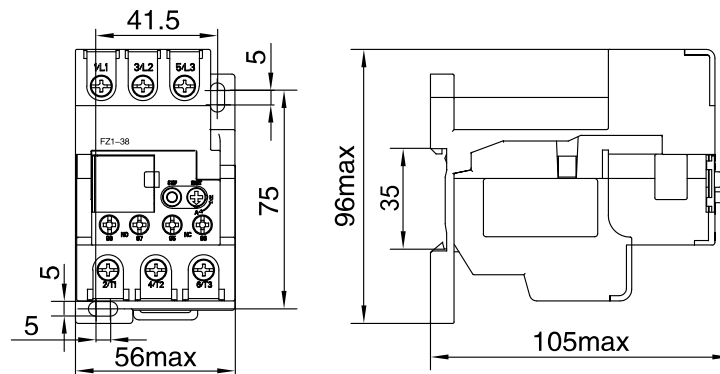


Fig. 4 TGR1-38 independent installation

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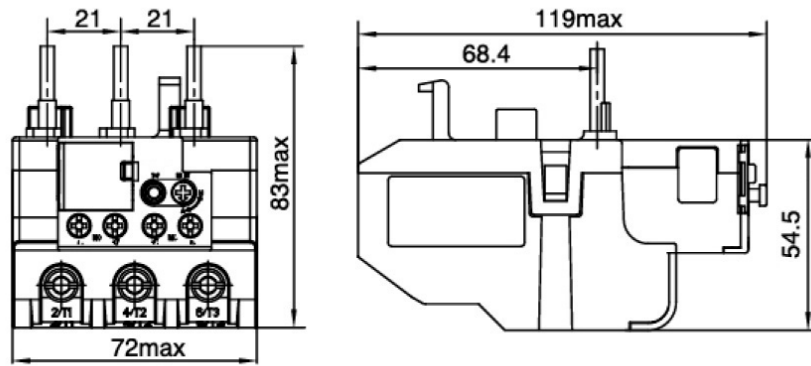


Fig. 5 TGR1-95, TGR1-100 stand-alone installation

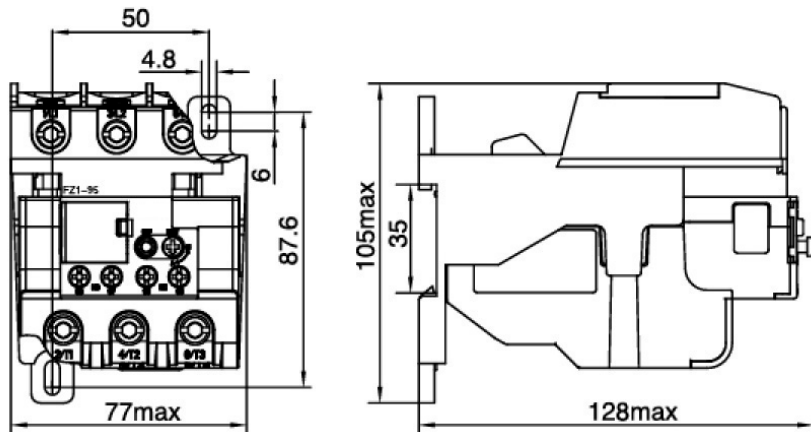


Fig. 6 TGR1-95, TGR1-100 combined installation

10 Ordering Notice

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.