

## GRB Type Electric Motor Overheated Protection Apparatus

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### 1.SUMMARIZATION

The GRB type electric motor overheated protection apparatus is specially designed for being used with MZ6 PTC Thermistors, if the electric motor( or some place on the electric motor)is overheating, the resistance of PTC Thermistors will rise, and can be passed to the protection apparatus, the relay contact inside the protection apparatus transforms to push the control circuit(electromagnetic switch and so on)to switch off the main power source, and further to protect the elector motor.

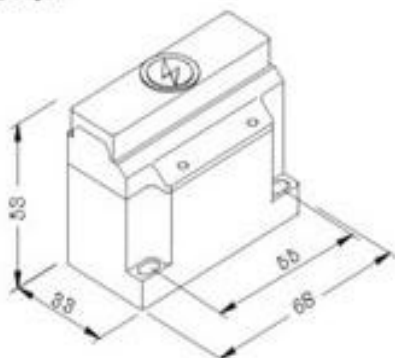
### 2.CHARACTERISTIC

The GRB type electric motor overheated protection apparatus adopted advanced technology is highly reliable, safe, stable in operation and energy-saving(its self-consuming power is 0.5VA), it can work out the rated temperature accurately which is a protection to switch off the main power source.

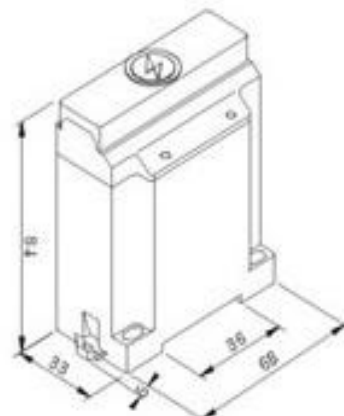
### 3.technical PARAMETER

Operating voltage	24V (AC/DC)	110V AC	220V AC
allowable volt tolerance		±20%	
Frequency		50~60Hz	
Self-consuming power		<0.5VA	
Allowable environment temperature		-30~70℃	
Rated current of switch		7A	
Operating resistance	Single	Three	
	1KΩ × (1±10%)	3KΩ × (1±10%)	
Restoring resistance	Single	Three	
	500~600Ω	1500~1800Ω	
Max.number of PTC thermistors in series connection		1~9	
Weight		0.20Kg	

#### Structure graph



GRB-3 Type Electric Motor Overheated Protection apparatus

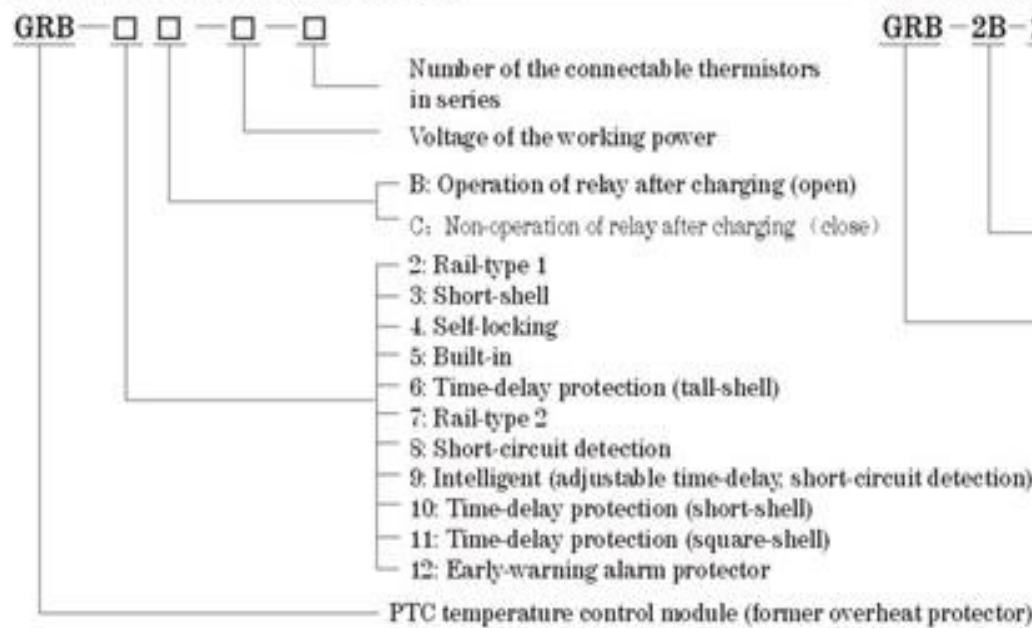


GRB-2 Type Electric Motor Overheated Protection apparatus

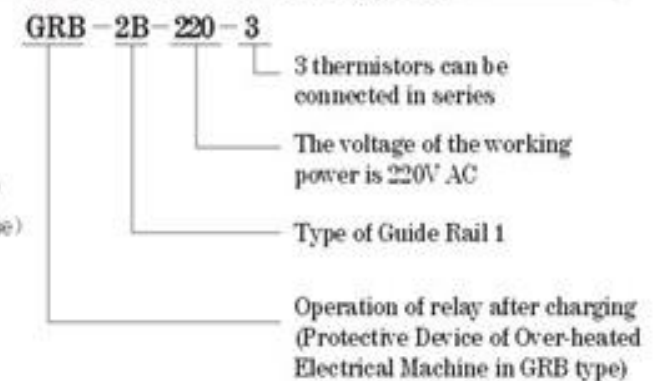
#### IV. Size

Model	Width(mm)	Thickness(mm)	Height(mm)	Distance of the fixed hole(mm)	Size of the Leak
GRB-2	68	33	54	55	35
GRB-3	68	33	53	55	无
GRB-4	90	70.5	39	90	35
GRB-7	81.8	22.5	99	无	35

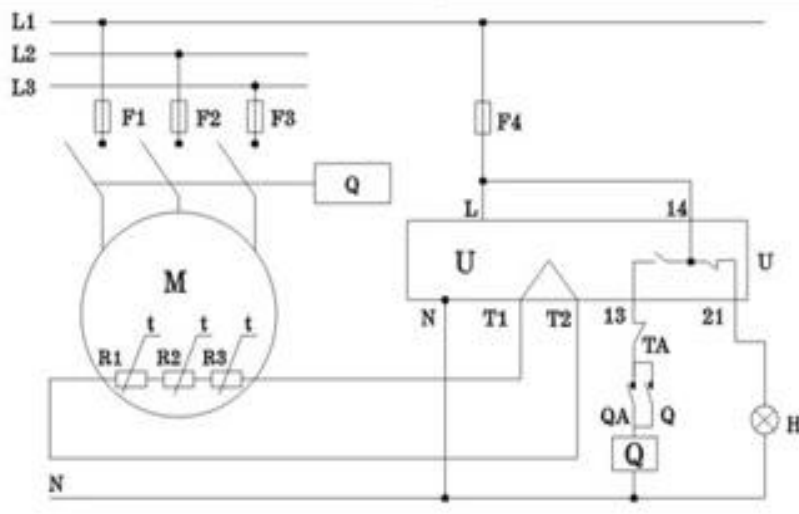
#### V. Specification and model



#### VI. Example of order goods



#### VII. Connection Reference Diagram



M: Electric Machine  
 Q: Switch of Electromagnetism  
 U: PTC temperature controlling module  
 H: Indicator Light in Failure Situation  
 TA: Switch off Button  
 QA: Switch on Button  
 R1, R2, R3: PTC Thermistors

T1	T2	L	N	13	14	21
End Connection of the thermistor		End Connection of Power		Open Connection End	Public Connection End	Closed Connection End

Note: 1. Connection reference is the operation of relay after charging (open)  
 2. If the protective device is the non-operation of relay after charging, then exchanging the connection end 13 with the connection end 21 is OK.

## 8. THE GRB TYPE ELECTRIC MOTOR OVERHEATED PROTECTION APPARATUS OPERATION TEMPERATURE

Base on the curve of thermistor temperature, the temperature of Electric Motor protector, as follows:

Thermistor Tk	The protector's operation resistance		The protector's restoring resistance		The protector's operation temperature	The protector's restoring temperature
	Single	Three in series	Single	Three in series		
Tk	$1K \times (1 \pm 10\%)$	$3K \times (1 \pm 10\%)$	500~600 $\Omega$	1500~1800 $\Omega$	Tk~Tk+5 $^{\circ}C$	$\leq Tk-5^{\circ}C$

Note: Tk is MZ6 Type PTC-Thermistors action temperature.

## 9. INSTALLATION AND USE

### Safety attention

#### ● Installation

##### Attention!

- ※ When installing the protector, the product can not be stricken, prevents the product from being damaged.
- ※ In the course of installation, Product should be far away from the fire. In order to avoid the product reach to the high temperature and cause the product's primary elements being damaged.
- ※ The product should install in the distribution box or the distribution cabinet prevented the product being soaked by the water.
- ※ Before installation, please confirm whether the product specification model conforms to the requirement, prevents the wrong use.

#### ● Wiring

##### Danger!

- ※ Please confirm the input power source is cut off before wiring, in order to avoid getting an electric shock.
- ※ The wiring work must be handled by the special electrician, in order to avoid getting an electric shock.
- ※ Before wiring, the product should be correctly installed, otherwise there may be the danger of getting an electric shock.

##### Attention!

- ※ Must confirm the product rated voltage is consistent with the alternating current supply voltage, in order to avoid damaging the product.

When the electric motor protected by protector works normally, The protector's green signal light is shining. When the electric motor's red signal light is shining, the green signal light goes out.

Do not open the products and change the inside elements.

### 1. Installation

- ※ First please confirm the model of the product conforms to the electrical machinery's matching requirement.
- ※ Install the protector in the equipment's control cabinet, avoid the fire and the rain.

※ The GRB-2 type electric motor overheated protection apparatus's base is equipped with the slot, fix one side of the base slot of protector on one side of the distributing box or distribution cabinet's track, then pull out the protector's set pin, put the protector into the distributing box or distribution cabinet's track, unloose the protector's set pin, then fix the protector into the track. When installing, strain should be made evenly, in order to avoid causing the product damage. Refer to graph 1.

※ The GRB-3 type electric motor overheated protection apparatus is equipped with the fixed hole, fixes the protector in the equipment's distributing box or in the distribution cabinet's distribution board with the screw bolt.

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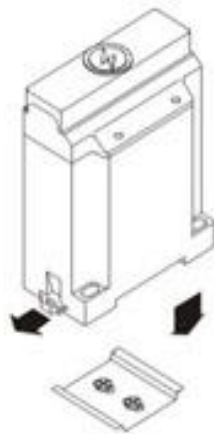


Chart 1

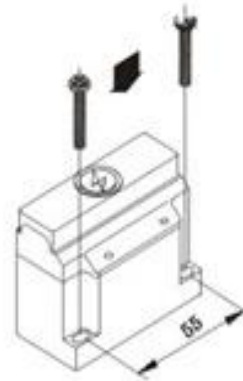
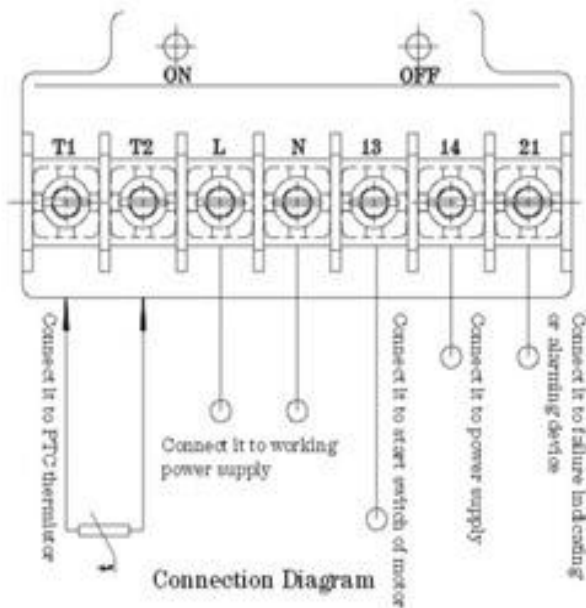


Chart 2

## 2. Connection

(1) Open the connection cover of the PTC temperature control module. (2) Connect terminals L and N to working power supply and connect terminals T1 and T2 to PTC thermistor. Connect terminal 14 to power supply. Connect terminal 13 to start switch of motor. Connect terminal 21 to failure indicating or alarming device.



(3) The connection method is for relay operation after power on, i.e., normally-open relay.

## 3. COMMON BREAKDOWN EXPLANATION

Breakdown phenomenon	Breakdown reason	Processing method
The indicating lamp is not shining	The electric power supply has not been turned on	Turn on the protector power source Correctly
	The terminal contact is not good	Inspect wiring terminal, fasten it
	Protector is damaged	Replace the protector
The protector's red indicating lamp is shining	The protector's temperature is too high	Cool the electrical machinery and self-recovery
	The protector is not connected to the sensor	Connect the protector to the PTC thermistor rightly
	The sensor is damaged	Replace the PTC thermistor
	The element of electric circuit board is damaged	Replace the protector
The protector does not work	Wiring mistake	Inspect protector wiring
	The part of Electric circuit board is damaged	Replace the protector