

NJBK6
Motor Protection Relay

1. General

NJBK6-36 motor protector (hereinafter referred to as the protector) is applicable to the protection of overload, loss of phase, three-phase current unbalance and blocking of none-stop or intermittent duty AC motors with AC frequency 50Hz, rated insulation voltage below 690V and rated operating current 1A~36A.
Standards:IEC 60947-4-1

2. Type designation

N JBK 6 - 36 / □

- Setting current code
- Frame size
- Design sequence No.
- Motor protection relay
- Company code

3. Operating conditions

Table 1 Ambient Conditions

Normal use conditions	Ambient temp.: -5℃ ~+40℃ ; average value within 24h not exceeding +35℃ ; altitude not exceeding 2,000m.
Atmospheric conditions	RH shall not exceed 50% when maximum temperature is +40℃ ; in case of lower temperature, higher RH is allowed. Measures should be taken against occasional condensation due to temperature change.
Installation category	Ⅲ
Transport and storage conditions	-25℃ ~+55℃

Table 2 Product Specifications and Main Technical Parameters

Model	**NJBK6-36/3**	**NJBK6-36/9**	**NJBK6-36/24**	**NJBK6-36/36**
Setting current (A)	3	9	24	36
Current setting range (A)	1~3	3~9	8~24	12~36
Motor power (kW)	0.5~1.5	1.5~4.5	4~12	6~18
Installation method	Plug installation (supported by a contactor of specified model)			
Setting method	Knob			
Display method	Indicator (green light is on in normal operation; red light is on in phase loss; red light is on in overload)			
Protection function	Protection of overload, loss of phase, three-phase current unbalance and blocking			
Number of contacts	1 group of change-over			

Table 3 Main Circuit Technical Parameters

Product Model	**NJBK6-36/3**	**NJBK6-36/9**	**NJBK6-36/24**	**NJBK6-36/36**
Rated insulation voltage	690V			
Rated control supply voltage Us , frequency	85%Us~110%Us ,AC220V、AC380V，50Hz			
Rated impulse withstand voltage Uimp	4kV			
Rated conditional short-circuit current	3kA			
Contactor model	CJX2-25/NC1-25			CJX2-32/NC1-32
Enclosure protection class (if applicable)	IP20			
Pollution class	Class 3			
Rated duty	8h duty or non-stop duty			
Electromagnetic environment	B			

CE

3.1 Motion characteristic

3.1.1 See Table 5 for the motion characteristic of overload protection

Table 5 Motion Characteristic of Overload Protection

Setting current multiple	Motion time	Starting condition	Ambient air temperature (℃)
1.05	No motion within 2h	Cold	
1.2	Motion within 2h	Thermal	+20
1.5	Motion within 2min		
7.2	2s < Tp≤10s	Cold	

3.1.2 Motion characteristic of phase loss protection: When any one of the three-phase currents of the main circuit is open, the protector motions for 3s, with a relative error of ± 20%.

3.1.3 Motion characteristic of three-phase unbalance protection: When the three-phase current of the main circuit conforms to the following formula, the protector motions for 3S with a relative error of ± 20%.

$$\frac{M^3ax \mid Ii\text{-}Iavg \mid}{Iavg} \times 100\% > 30\%$$

Where: I_i——Effective current value of each phase.

I_{vag}——Mean value of effective three-phase current values.

3.1.4 Motion characteristic of blocking protection: The blocking current set in the protector is 6Ie. When the current of the main circuit is greater than the blocking current, the protector motions for 3s with a delay and a relative error of ± 20%.

3.2 Reset characteristic

After the protector motions, the protector's reset mode is manual reset when the rated control power supply voltage is normal; the protector is immediately reset when the rated control power supply voltage is disconnected.

4. Connection diagram

The connection diagrams in case the control supply voltage is AC220V and AC380V are shown in Figure 1 and Figure 2.

Figure 1

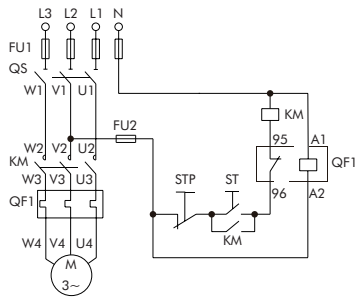
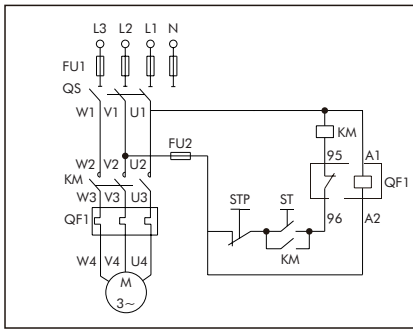


Figure 2



5. Installation and commissioning

5.1 Before installation, read the operating instructions carefully. Then, connect the wires in accordance with the connection diagram.

5.1.1 Terminals A1 and A2 are the control power supply input terminals of the protector; 95 and 96 are the output control terminals (N/C), 95 and 98 are N/O contacts.

5.1.2 Plug the protector into the outlet terminal of the contactor and connect the control circuit in accordance with Figure 2 and Figure 3.

5.2 Adjustment of setting current value

Adjust the setting value of the protector using the setting knob with indicating arrow and the setting current value on the label plate according to the rated current marked on the motor nameplate and the load conditions of the motor. Adjust the setting current value of the protector to the scale equal to the rated current value marked on the motor nameplate.

5.3 Commissioning: After checking the connection and setting, switch on the power supply and operate the start button. The motor should run normally and the (green) running indicator on the protector panel should light up. If the red indicator flashes, finely adjust the setting value until the red indicator stops flashing.

6. Structure and principle

6.1 Operating principle: The protector detects the current of the main circuit of the motor by means of the current transformer and judge if overload or phase failure has occurred in the motor. In case of overload, it simulates the heat accumulation state of the motor by means of the singlechip and, when the heat accumulation reaches the set limit, disconnects the N/C contact of the built-in electromagnetic relay.

6.2 Structural features

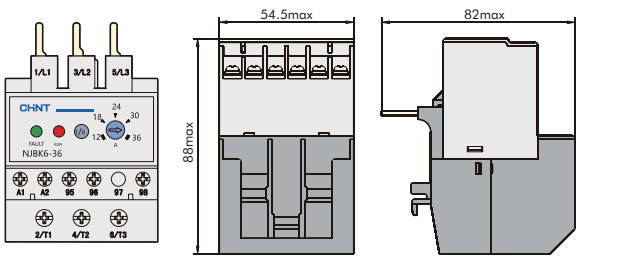
6.2.1 Has phase failure, overload, three-phase current unbalance and locked rotor protection functions.

6.2.2 Has two indicators indicating running and fault states.

6.2.3 Has a setting curent quantified continuously adjustable device.

6.2.4 The main circuit uses plug-in connection for use in combination with the specified model of contactor.

7. Overall and mounting dimensions (mm)



8. Environmental conditions for the storage of the protector

8.1 Temperature: -25℃ ~+40℃

8.2 Relative humidity (at 25℃): should not exceed 85%

8.3 Protect from rain and snow

8.4 The guaranteed storage period of the product is 18 months. Products exceeding the storage period must be reinspected before being put into use.