

NJBK2 Motor Protection Relay

1. General

NJBK2 series motor protector(hereinafter referred to as the protector) is applicable to the protection of overload, blocking, loss of phase, three-phase current unbalance, grounding and PTC temperature of none-stop or intermittent duty AC motors with AC frequency 50Hz , rated insulation voltage below AC 690V and rated operating current 1A~800A. The protector is generally used along with an AC contactor. Standards:IEC 60947-4-1

2. Type designation

N JBK 2 - □ /□

- Specification of rated current
- Rated current of the casing
- Design sequence No.
- Motor protection relay
- Company code

3.Key Technical Parameters

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	**NJBK2-200/10**	**NJBK2-200/50**	**NJBK2-200/200**	**NJBK2-400/400**	**NJBK2-800/800**
Setting current (A)	10	50	200	400	800
Current setting range (A)	2~10	10~50	40~200	160~400	320~800
Motor power (kW)	1~5	5~25	20~100	80~200	160~400
Installation method	Guide rail type, device type				
Setting method	Digital dial				
Display method	LED and Nixie tube				
Protection function	Protection of overload, blocking, loss of phase, three-phase current unbalance,grounding, and PTC temperature				
Number of contacts	1 group normally open, 1 group normally closed (95 and 96 are NC contacts, 97 and 98 are NO contacts)				

Table 3 Main Circuit Technical Parameters

Product Model	**NJBK2-200/10**	**NJBK2-200/50**	**NJBK2-200/200**	**NJBK2-400/400**	**NJBK2-800/800**
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	30kA			40kA	50kA
Enclosure protection class (if applicable)	IP20				
Pollution class	Class 3				
Rated duty	8h duty or non-stop duty				
Electromagnetic environment	B				

Table 4 Auxiliary Circuit Technical Parameters

Product model	**NJBK2-200,NJBK2-400,NJBK2-800**
Rated insulation voltage (V)	415
Rated impulse withstand voltage Uimp (kV)	2.5
Contact capacity	Ue/Ie:415V/0.95A,240V/1.5A;Ith:5A

4. Design features

4.1 Equipped with functions of overload, locked-rotor, phase-failure, three-phase unbalance, earthing and PTC temperature protection etc.
4.2 Six indicators indicate status of power supply, operation, phase-failure (three phase unbalance), overload, earthing and temperature, respectively. Equipped with function of fault memory.
4.3 Four kinds of trip class.
4.4 Digital dial-up settings with high precision.
4.5 Three kinds of reset modes: manual reset, remote manual reset and automatic reset.4.6 Installation mode: installation in parts and integral installation. Transformer Installation: bolts installation and Track installation. Relay Installation: Rapid Track installation through meter.
4.7 Equipped with function of six times of current to test [Test by 6 times of the current].

5. Protection characteristics

5.1 Operation characteristics under three-phase balanced-load status

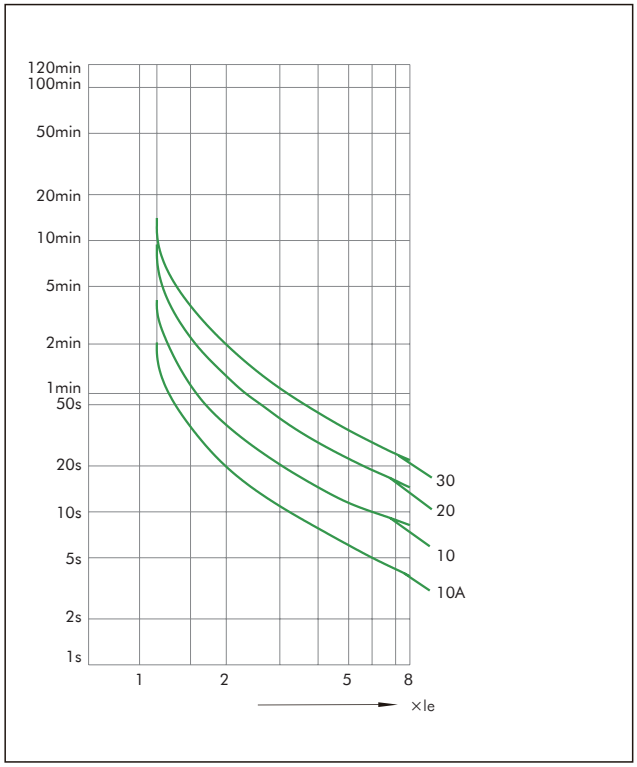
S.N.	Times of setting current	Trip class	Operation time	Test condition	Ambient temperature℃
1	1.05	10A	<2h non-tripping	Start from cold status	
		10			
		20			
		30			
2	1.2	10A	<2h tripping	Start right after Item No.1	20±2
		10			
		20			
		30			
3	1.5	10A	<2min	Start right after Item No.1	
		10	<4min		
		20	<8min		
		30	<12min		
4	7.2	10A	2s<tp≤10s	Start from cold status	
		10	4s<tp≤10s		
		20	6s<tp≤20s		
		30	9s<tp≤30s		

5.2 Operation characteristic under phase-failure status

S.N.	Times of setting current		Operation time	Test condition	Ambient temperature℃
	Any two phases	The third phase			
1	1.0	0.9	<2h non-tripping	Start from cold status	20±2
2	0.3~1.0	<Imax×40%	≤5s		
3	0.3~1.0	0	≤5s		

5.3 Tripping feature

NJBK2 current-time characteristic curve

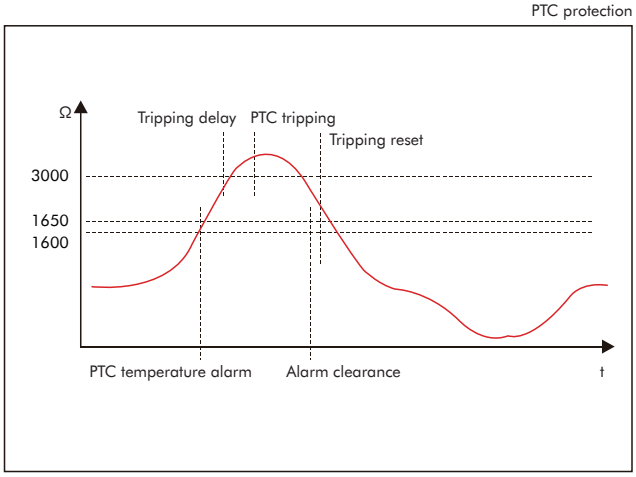


5.4 Performance feature of earthing protection

Serial number	Zero sequence current(A)	Operation time(s)
1	0.5	≤1
2	1	≤1

5.5 Protection feature of pre-buried PTC thermistor in motor:
PTC thermistor protection is carried out by detecting resistance value of thermistor output from PTC detector pre-buried in stator winding or bearing of motor and taking it as protection condition to judge whether motor is overheating, when PTC reaching reacting resistance value, reacting delay<1s.

PTC protection

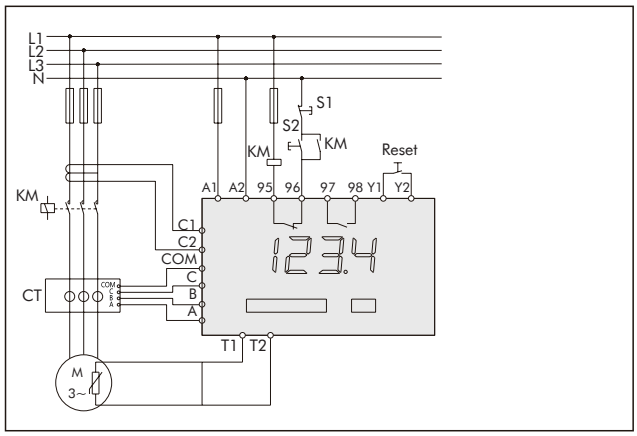


6.6 Reset feature:Manual reset, automatic reset and remote manual reset are available for option Resetting time varies according to different trip class, among the range of 4min to 12min.

7. Wiring diagram

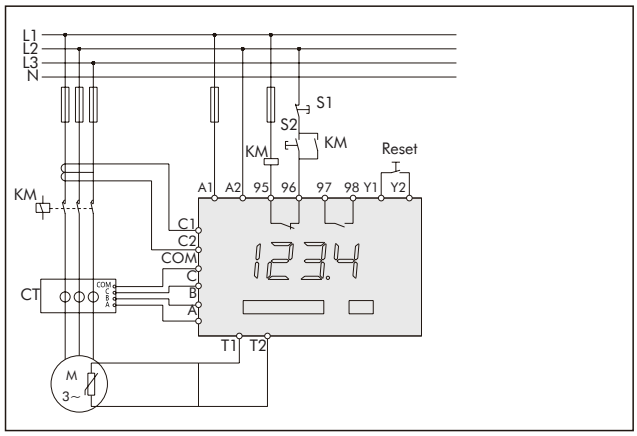
7.1 Wiring diagram for control power supply @ AC220V voltage

Wiring diagram for control power supply @ AC220V voltage



7.2 Wiring diagram for control power supply @ AC380V voltage

Wiring diagram for control power supply @ AC380V voltage

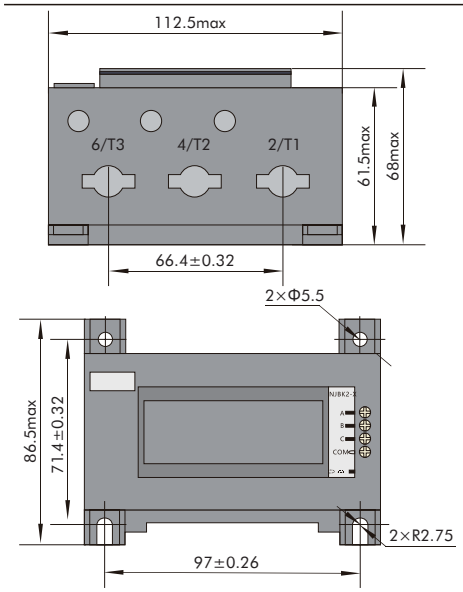


8. Accessory instruction(need)

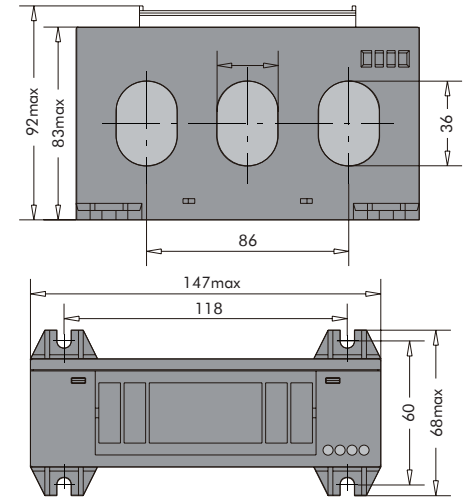
S.N.	Designation	Quantity	Remarks
1	NJBK2-200 conductive bar	3	It is suggested to be used when main circuit current is within the range of 80A-200A.
2	NJBK2 wire holder	2	Instrument installation
3	NJBK2 clamp	1	Instrument installation

9. Overall and mounting dimensions (mm)

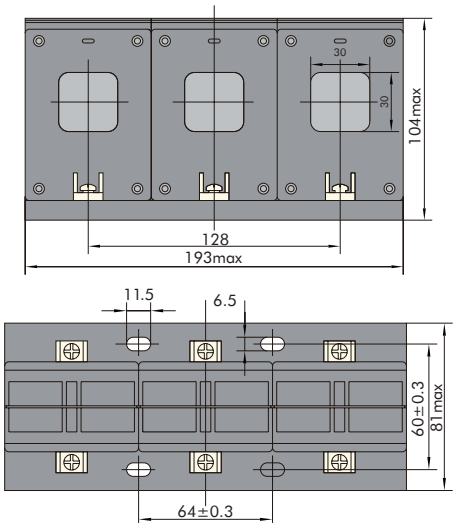
9.1 Overall and Amounting dimensions of NJBK2-200 transformer



9.2 Overall and mounting dimensions of NJBK2-200 macropore transformer

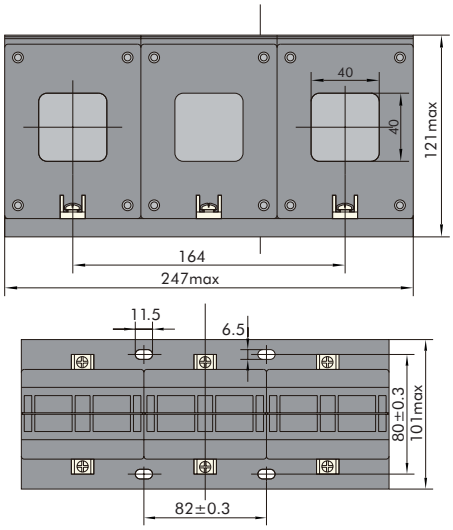


9.3 Overall and Amounting dimensions of NJBK2-400 transformer



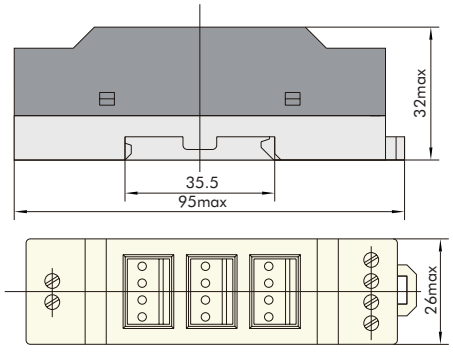
Top view

9.4 Overall and Amounting dimensions of NJBK2-800 transformer



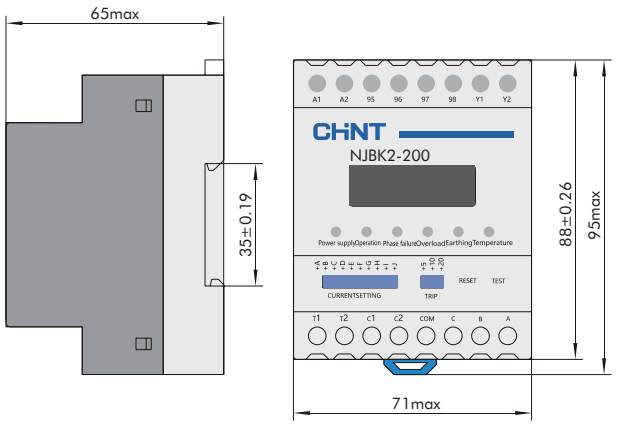
Top view

9.5 Overall and mounting dimensions of module sample



Top view

9.6 Overall and mounting dimensions of relay of protector



9.7 Overall and mounting dimensions of relay of protector

