NJBK5 Series Motor Protection Relays

1. General

NJBK5 series motor (hereinafter referred to as the protector) is mainly applied in the circuit with AC 50Hz, rated operating voltage 380V and rated control power up to 11kW (current up to 22A) to control the direct start and stop of water pumps or motors. It can protect the motor from overload and phase loss, and can also realize the automatic control of liquid level in civil water towers, water reservoirs and etc.

This product does not apply to the liquid level control of oil, purified water, flammable and explosive chemical liquid, corrosive liquid and sewage with high density.

Standards:IEC/EN 60947-4-1

2.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	NJBK5-10				NJBK5-10D			
Current setting range (A)	0.72~2.4	3.5~11	10~16	20~25	0.72~2.4	3.5~11	10~16	20~25
Installation method	Device type							
Setting method	knob							
Display method	Indicator light							
Protection function	Overload, phase failure							

Table 3 Main Circuit Technical Parameters

Product Model			NJBK5-10 0.72A~2.4A NJBK5-10D 0.72A~2.4A	NJBK5-10 3.5A~11A NJBK5-10D 3.5A~11A	NJBK5-10 10A~16A NJBK5-10D 10A~16A	NJBK5-10 20A~25A NJBK5-10D 20A~25A
Rated insulation voltage			660V			
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			
Max rated power (kW)	AC-3	380V	1.1	5.5	7.5	11
		220V	0.55	3	4	5.5
Operation frequency (times / hour)		AC-3	1200			
		AC-4	300			
Conventional thermal current (A)			2.4	12	16	25
Model of supportive AC contactor			NXC-06/ CJX2-1210	NXC-12/ CJX2-1210	NXC-16/ CJX2-1810	NXC-25/ CJX2-2510
Model of supportive AC contactor			JD-8 0.5A~5A	JD-8 2A~20A	JD-8 2A~20A	JD-8 20A~80A
Number of feedthru windings			5	1	1	1
Enclosure protection class (if applicable)			IP55			
Pollution class			Class 3			
Rated duty			8h duty, non-stop duty or intermittent periodic duty			
Electromagnetic environment			B			
Liquid level control electrode lead distance			Up to 200m			
Requirements on controlled liquid			General civil water or sewage with good conductivity			
Mounting type			Installation type			

3. Protection characteristics of the controller

3.1 Phase failure protection characteristics of the controller: In case of failure of any phase of the three-phase main circuit passing through the center hole of the motor comprehensive protector in the controller, the motor comprehensive protector operates for a period of ≤5s.

3.2 Overload protection characteristics of the controller under balanced three-phase load.

No.	Setting current multiple	Operation time			Starting conditions
1	1.05	No action within 2h			Cold state start
2	1.2	Action within 2h			Start after No.1
3	1.5	Tripping class	30	≤12min	Start after applying a 1.0 times setting current for 2h
4	7.2	Tripping class	30	9s<Tp≤30s	Cold state start

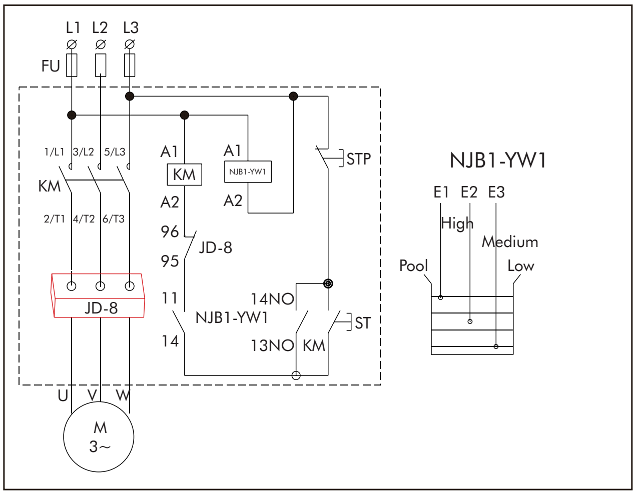
4. Features

The controller consists of a NXC or CJX2 series AC contactor, a JD-8 series motor comprehensive protector and an NJB1-YW1 liquid level relay in a protective enclosure and is divided into two types, with liquid level relay and without liquid level relay. Products with liquid level relay are used to control the start and stop and automatic pumping and drainage of water pumps and provide overload and phase failure protection. Products without liquid level relay are used to control the start and stop of motors and provide overload and phase failure protection.

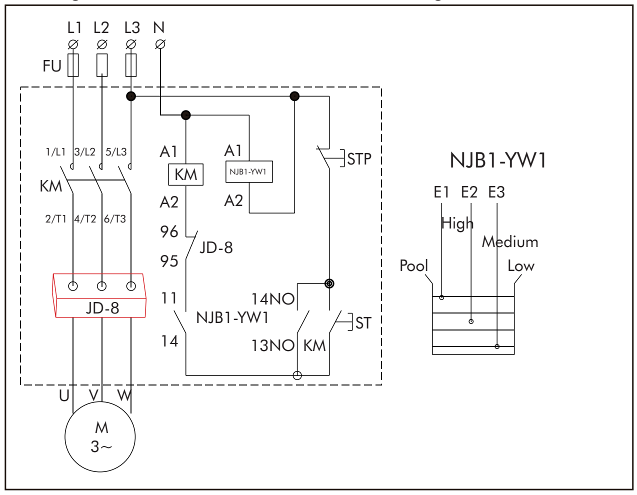
Setting of the motor comprehensive protector in the controller is required before it is connected and put into use.

5. Wiring diagram

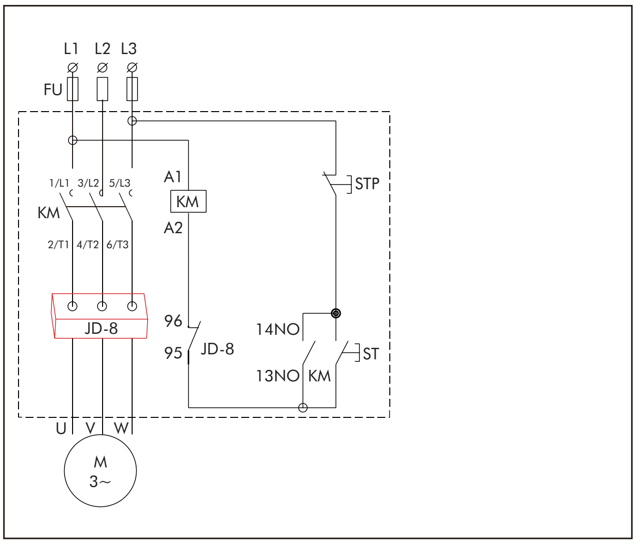
a. Connection diagram of NJBK5-10 in case both the control circuit voltage and the main circuit voltage are AC380V



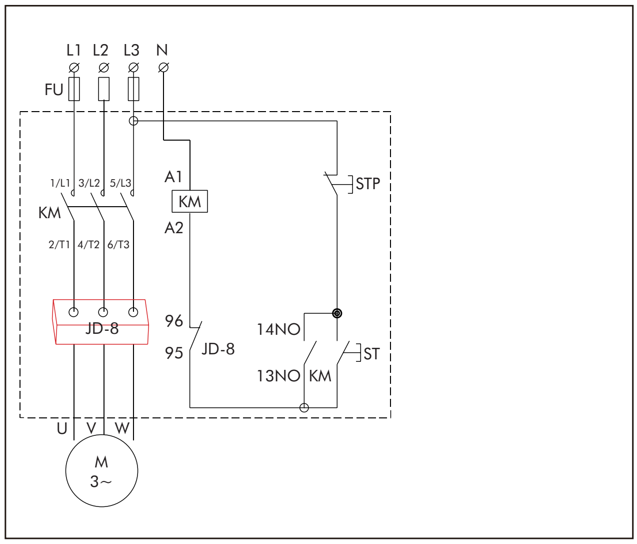
b. Connection diagram of NJBK5-10 in case the main circuit voltage is AC380V and the control circuit voltage is AC220V



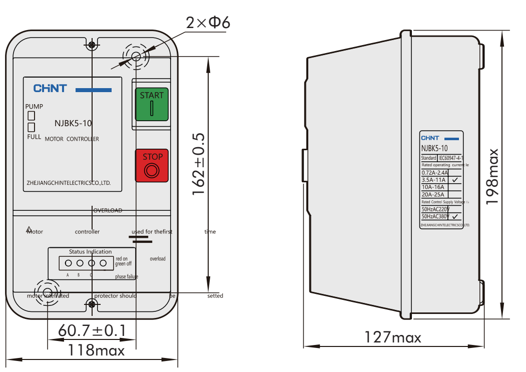
a.Connection diagram of NJBK5-10D in case both the control circuit voltage and the main circuit voltage are AC380V



b.Connection diagram of NJBK5-10D in case the main circuit voltage is AC380V and the control circuit voltage is AC220V



6. Overall and mounting dimensions (mm)



NJBK5	-	10	D	10A-16A	AC220V
Product series		Frame size	Functional code	Setting current	Contact voltage
			Blank: with liquid level relay D: without liquid level relay	0.72A-2.4A 3.5A-11A 10A-16A 20A-25A	AC220V AC380V

Setting current	Maximum motor power	Control voltage	Liquid level relay	Description	Code
0.72A-2.4A	1.1kW	AC220V	Yes	NJBK5-10 0.72A-2.4A AC220V	281107
3.5A-11A	5.5kW	AC220V	Yes	NJBK5-10 3.5A-11A AC220V	281108
10A-16A	7.5kW	AC220V	Yes	NJBK5-10 10A-16A AC220V	281109
20A-25A	11kW	AC220V	Yes	NJBK5-10 20A-25A AC220V	281110
0.72A-2.4A	1.1kW	AC380V	Yes	NJBK5-10 0.72A-2.4A AC380V	281111
3.5A-11A	5.5kW	AC380V	Yes	NJBK5-10 3.5A-11A AC380V	281112
10A-16A	7.5kW	AC380V	Yes	NJBK5-10 10A-16A AC380V	281113
20A-25A	11kW	AC380V	Yes	NJBK5-10 20A-25A AC380V	281114
0.72A-2.4A	1.1kW	AC220V	/	NJBK5-10D 0.72A-2.4A AC220V	281115
3.5A-11A	5.5kW	AC220V	/	NJBK5-10D 3.5A-11A AC220V	281116
10A-16A	7.5kW	AC220V	/	NJBK5-10D 10A-16A AC220V	281117
20A-25A	11kW	AC220V	/	NJBK5-10D 20A-25A AC220V	281118
0.72A-2.4A	1.1kW	AC380V	/	NJBK5-10D 0.72A-2.4A AC380V	281119
3.5A-11A	5.5kW	AC380V	/	NJBK5-10D 3.5A-11A AC380V	281120
10A-16A	7.5kW	AC380V	/	NJBK5-10D 10A-16A AC380V	281121
20A-25A	11kW	AC380V	/	NJBK5-10D 20A-25A AC380V	281122