

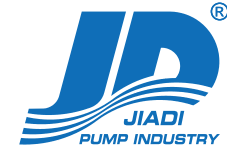
DEEP IN WELL, DEEP IN HEART



ISO9001

Intelligent Controller

For Single Phase Pump



1988
SINCE

Installation & Operation Manual



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ISO9001



Conventions used in this manual

In the manual the following symbols will be used:

 Generic danger Failure to comply with the safety regulations that follow can irreparably damage the controller or equipment.

 Electric shock risk Failure to comply with the safety regulations that follow can cause death or serious personal injury.

WARNINGS

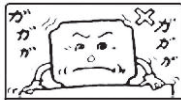
Read this manual carefully before any operation.
Please keep this manual for future use.

WARNING!!

- Before carrying out any installation or maintenance operation, protector must be disconnected from the power supply;
- Don't open the cover during running the protector;
- Don't put wire ,metal bar filaments etc into the protector;
- Don't splash water or other liquid over the protector;

CAUTION

- The electrical and hydraulic connections must be carried out by competent, skilled,qualified personnel;
- Never connect AC power to output C/M/A terminals;
- Ensure the motor, protector and power specifications matching;
- Don't install the protector in the following condition;



mechanical shock



corrosive gas or
corrosive liquid



Extreme heat and cold,
acceptable temperature
range: -25℃ +55℃



Salt mist corrosion



flammable material:
solvent

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Intelligent Controller For Single Phase Pump

RESPONSIBILITY

The manufacturer is not liable for malfunctioning if the product has not correctly been installed, damaged, modified, and /or run outside the recommended work range or run outside the recommended work range or in contrast with other indications given in this manual.

The manufacturer declines all responsibility for possible errors in this operation manual, if due to misprints or errors in copying.

The manufacturer reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.

1 INTRODUCTION

Thank you for choosing our products, we will supply you with cordial and well-around service as well as ever.

Intelligent Pump Controller is an easy to use, programmable controlling & protection device for direct start, single phase deep well submersible pump, centrifugal pump, pipeline pump motor etc.

1.1 Applications

The product is useful in all cases we need to protect single pump managing its turn-on and turn off.

Typical usage scenarios include:

- Houses
- Flats
- Holidays houses
- Farms
- Water supply from wells
- Irrigations of greenhouses, gardens, agriculture
- Rain water reuse
- Industrial plants
- Waste water tank / Sewage sink

1.2 Technical parameter & features

Main features:

- Dynamic LCD displaying pump running state
- Protect the pump against many faults
- Memory Function when Power Off&Power Recovery
- Visual &Audio Alarm For Fault Prompt
- Push Button Calibration
- Reserved space for installing internal start capacitor
- IP54 protection grade

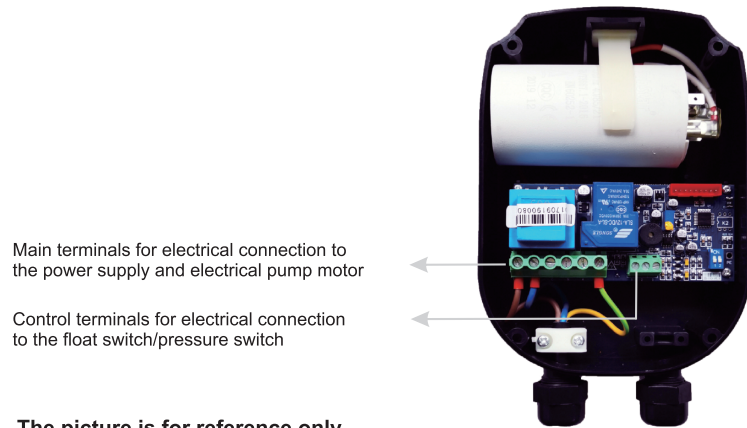
Intelligent Controller For Single Phase Pump

The following chart shows main technical parameters of the product

Main technical data	
Rated output power	refer to the nameplate
Rated input voltage	refer to the nameplate
Trip response time of over load	5sec-5min
Trip response time of short circuit	≤0.1sec
Trip response time of under / over voltage	≤5sec
Trip response time of dry run	6sec
Recovery time of over load	30min
Recovery time of under / over voltage	5min
Recovery time of dry run	30min
Trip voltage of over voltage	115% of rated input voltage
Trip voltage of under voltage	80% of rated input voltage
Protection function	Dry run Over load Under voltage Over voltage Pump stalled Short circuit
Main installation data	
Working temperature	-25℃ -- +55℃
Working humidity	20% - 90%RH, no drips concreted
Degree of protection	IP54
Install position	Wall mounting
Unit dimensions (L x W x H)	152 × 125 × 70mm
Unit weight (net)	380g

Intelligent Controller For Single Phase Pump

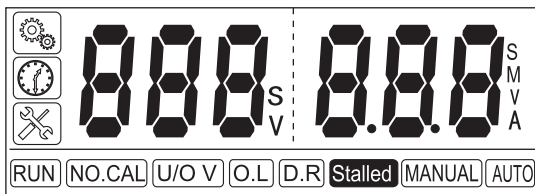
1.3 Controller components



The picture is for reference only. Please refer to the object.

NOTE:Start Capacitor not included - optional

LCD Screen



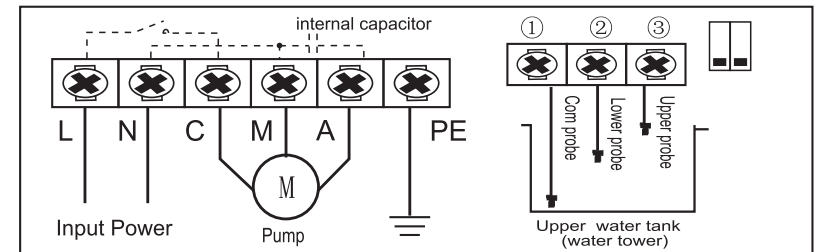
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Meaning of the icons shown on the LCD

Icon	Meaning/Description
V	voltage
M	minute
S	second
H	hour
A	ampere
O.L	over load
NO.CAL	pump no calibration
U/O V	under voltage or over voltage
D.R	dry run
Stalled	pump stalled
Manual	pump off
Auto	pump on

2 INSTALLATION

2.1 Electrical connection to the power supply line and electrical pump



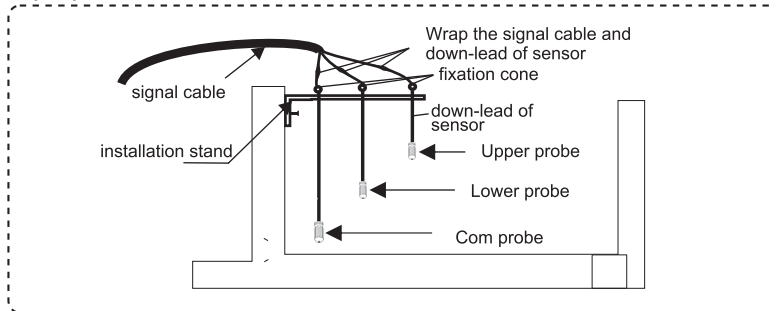
DANGER Electric shock risk

- ⚠ Before carrying out any installation or maintenance operation, the product should be disconnected from the power supply and one should wait at least 2 minutes before opening the appliance.
- ⚠ Never connect AC power to output C/M/A terminals.
- ⚠ Don't put wire, metal bar filaments etc into the controller.
- ▲ Ensure the motor, protector and power specifications matching.
- ▲ The electrical and hydraulic connections must be carried out by competent, skilled, qualified personnel.

Intelligent Controller For Single Phase Pump

2.2 Installation of liquid probe & float switch

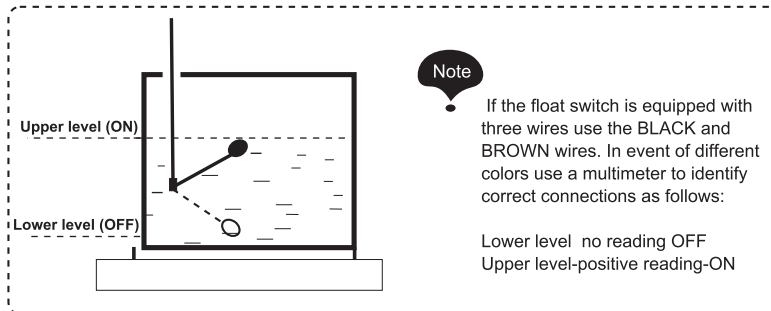
Liquid probe installation



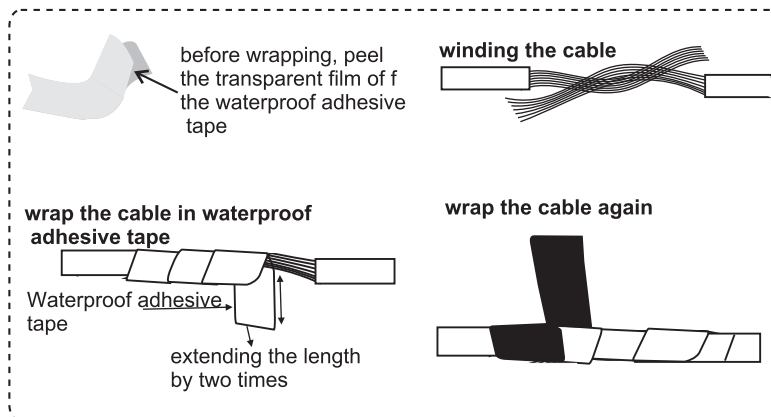
Installing a float switch

Follow the float switch supplier's installation and connection instructions.

Float switch installation



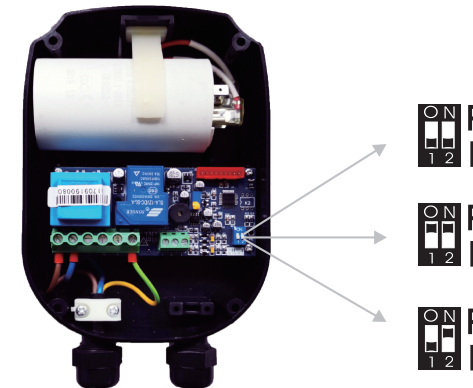
▲ DO NOT ENCASE SENSOR LEADS, FLOAT SWITCH WIRE OR SIGNAL CABLES IN METAL PIPES. USE PVC OR PE TUBING.



Intelligent Controller For Single Phase Pump

2.3 Function switch setting

Pump users can set the function switch to meet different application requirement, before setting the function switch, the controller should be disconnected from the power supply, after completing the conforming setting, apply power to controller and observe the application sign displayed on the LCD to the following list.



Item	Switch position	Messages & in voltage displaying area	Application
1		000	Applied for water supply by liquid level control through float switch
2		222	Applied for booster by pressure control through pressure switch & pressure tank
3		111	Applied for drainage by liquid level control through float switch

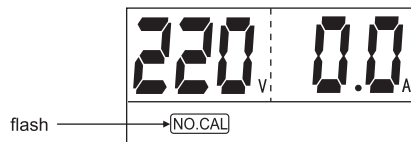
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2.4 Parameter Calibration setting & erasing

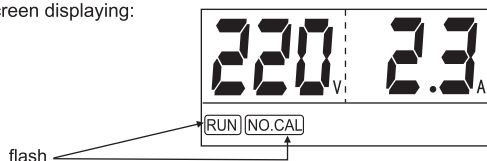
To achieve best level of protection of the motor, it is essential that parameter calibration must be done immediately after successful pump installation or pump maintenance.

Setting the parameter calibration

- Make sure the pump not running and LCD screen displaying:

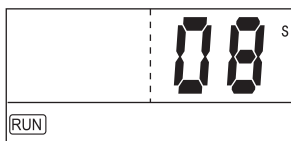


- Press the **START** key to run pump, confirm the pump and all pipe network in normal working state (including voltage, running ampere etc); LCD screen displaying:



- Hold Press the **START** key and release, the product makes a "Di" sound and starts countdown, LCD

screen displaying:



- Pump stops running and parameter calibration completed, LCD screen displaying:

product is ready for running.



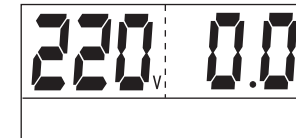
Intelligent Controller For Single Phase Pump

Erasing former parameter calibration

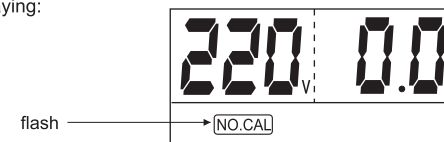
When pump is reinstalled after maintenance or new pump is installed, user must erase the former parameter calibration and a new calibration must be done.

Erasing the parameter calibration

- Make sure the pump not running and LCD screen displaying:



- Hold pressing the **STOP** key and release till product makes a "Di" sound, product recover the default factory setting and LCD screen displaying:

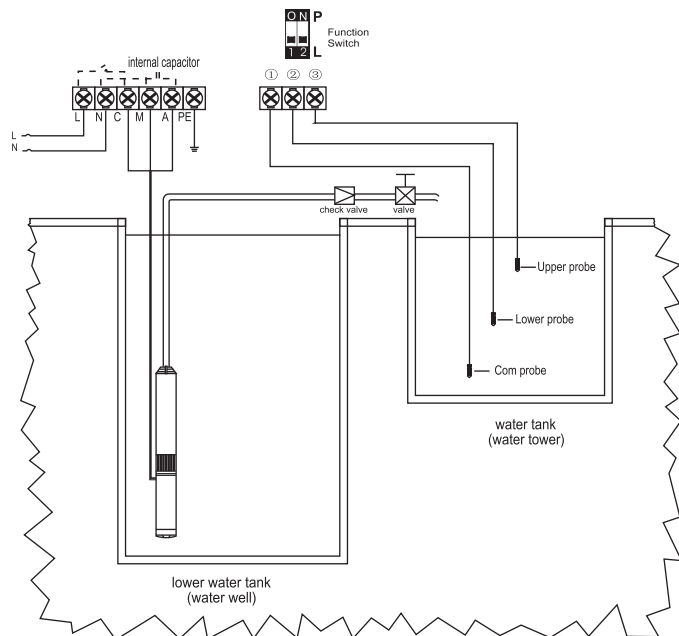
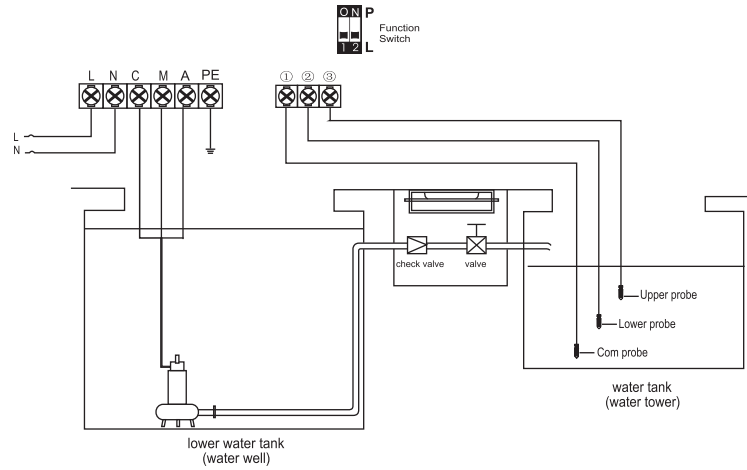


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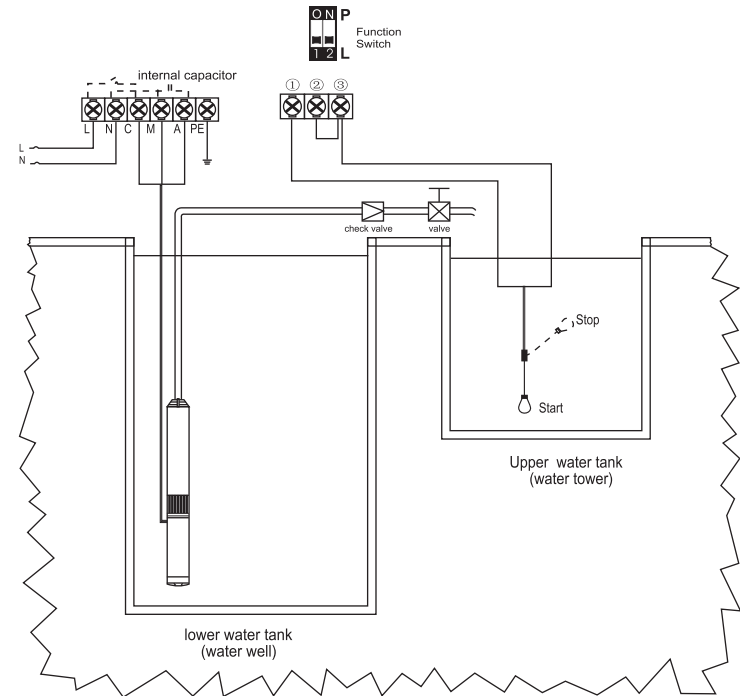
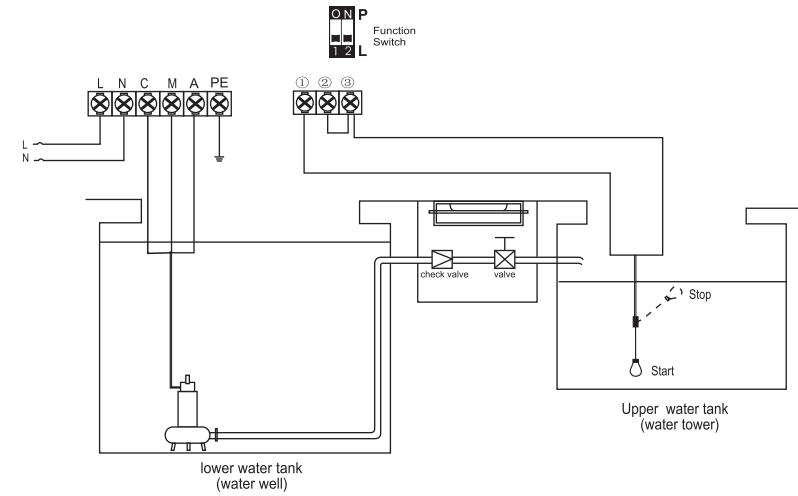
3 ELECTRICAL CONNECTION

3.1 Electrical connection for different application

3.1.1 Water supply by liquid level control through float switch or liquid probe



Intelligent Controller For Single Phase Pump



Intelligent Controller For Single Phase Pump

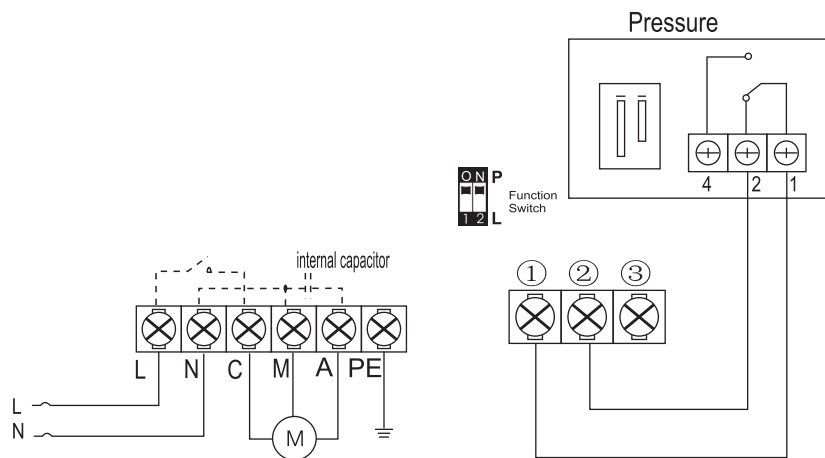
1). Starting condition

liquid level in the water tank is below Lower probe (float switch: Down level) and liquid level in the water well is above Lower probe (float switch: Up level), the controller will run pump;

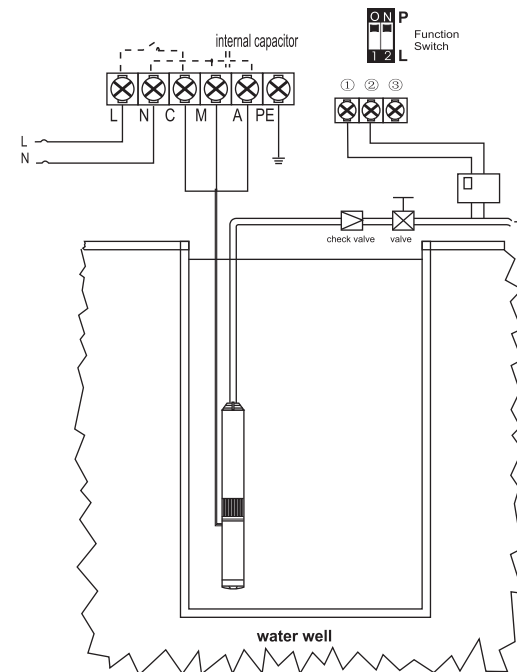
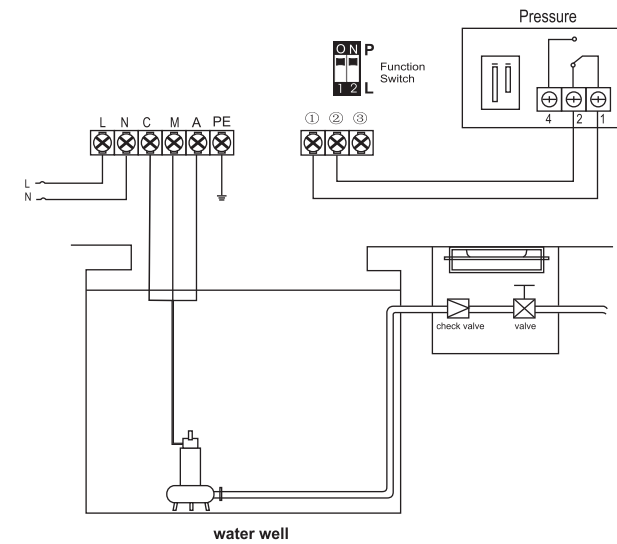
2). Stop condition

liquid level in the water tank reaches Upper probe (float switch: Up level) or liquid level in the water well is below Lower probe (float switch: Down level); the controller will stop pump running;

3.1.2 Booster by pressure control through pressure switch & pressure tank



Intelligent Controller For Single Phase Pump



Intelligent Controller For Single Phase Pump

1). Starting condition

There is no pressure in the pipeline or pressure tank, contacting point of pressure switch is ON and liquid level in the water well is above Lower probe (float switch: Up level), the controller will run pump;

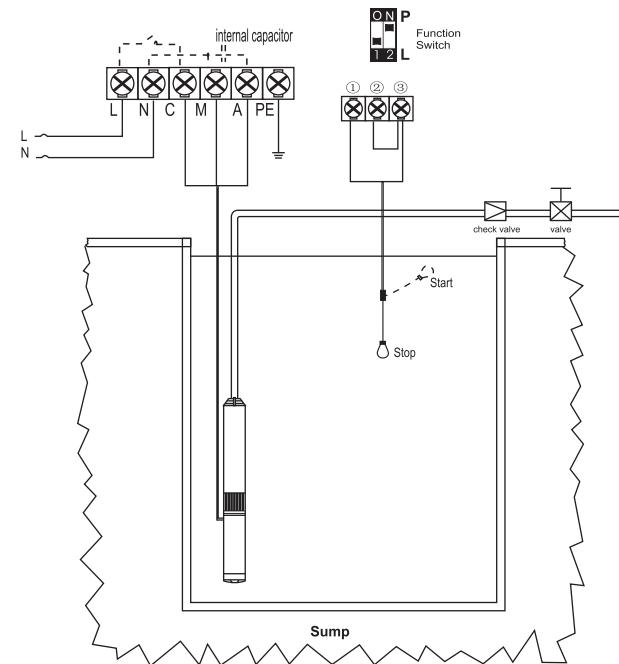
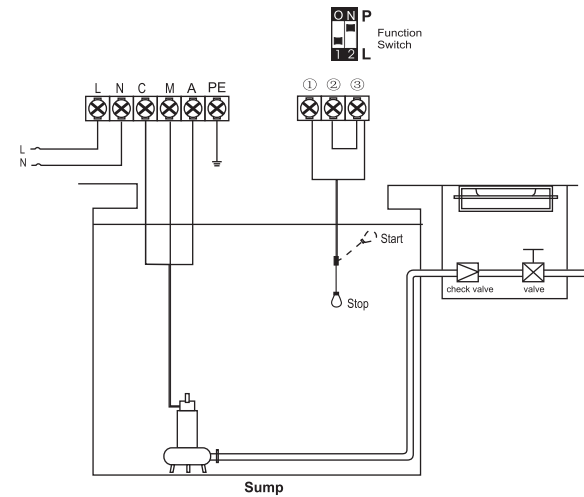
2). Stop condition

There is full pressure in the pipeline or pressure tank, contacting point of pressure switch is OFF, the controller will stop pump running;

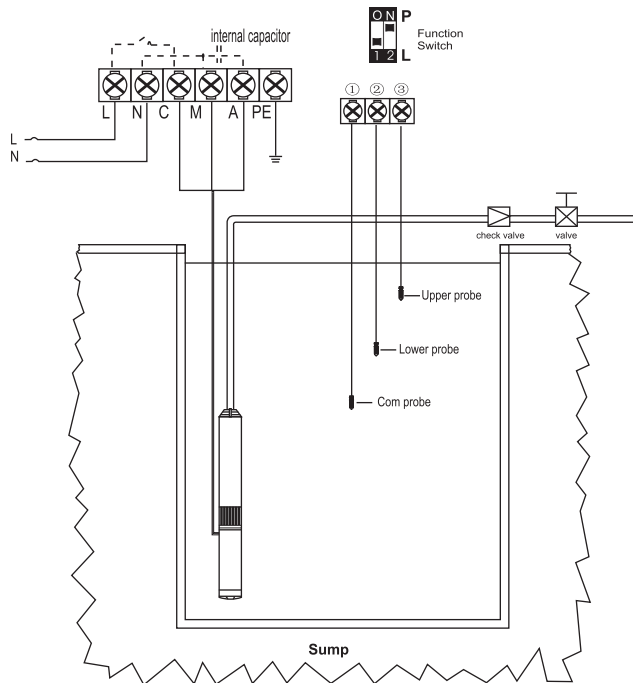
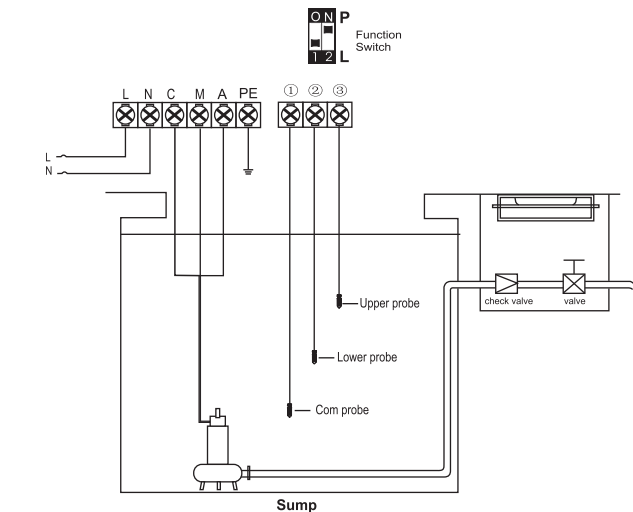
Note: pressure switch with N/C (normal close) contacting point:
no pressure, contacting point is ON; meet the pressure setting, contacting point is OFF

Intelligent Controller For Single Phase Pump

3.1.3 Drainage by liquid level control through float switch & liquid probe



Intelligent Controller For Single Phase Pump



Intelligent Controller For Single Phase Pump

1. Starting condition

liquid level in the sump reaches Upper probe (float switch A: Up level), the controller will run pump;

2. Stop condition

liquid level in the sump is below Lower probe (float switch A: Down level), the controller will stop pump running;

4 BASIC OPERATION

4.1 Switching to MANUAL mode

Press the **MODE** key to switch to manual state, the controller is under the manual control state;

under manual state, press the **START** key to run pump; press the **STOP** key to stop pump running;

Note: under manual state, the controller can not receive the signal from float switch or pressure switch.

4.2 Switching to AUTO mode

Press the **MODE** key to switch to auto state, the controller is under the auto control state; under auto state, the controller will run or stop the pump according to the signal from float switch or pressure switch.

Note: under auto state, if the pump is running and pump user wants to stop pump running compulsory, press the **MODE** key to switch to manual state and pump stops running;

Note: under auto state, if the input power being cut off and recovery power again, the controller will enter operation state after 10seconds countdown;

Note: no matter the controller is under auto or manual state, if the input power being cut off and recovery power again, the controller will resume its operation state as the operation state before power being cut off;

4.3 Pump protection

During pump running, if dry run, over load, under voltage, over voltage etc failures happened, the controller will immediately shut down the pump running and automatically execute a check for restarting conditions after a built in time delay has elapsed. The controller will not recover automatically until all the abnormal situation(s) have been cleared.

5 TROUBLE SHOOTING GUIDE

Fault Message	Possible Cause	Solutions
flashing of UNDER V	the real running voltage is lower than the calibrated voltage, pump is in under voltage protection state	report low line voltage to the power supply company
		product will attempt to restart the pump every 5minutes until line voltage is restored to normal
flashing of OVER V	the real running voltage is higher than the calibrated voltage, pump is in over voltage protection state	report high line voltage to the power supply company
		product will attempt to restart the pump every 5minutes until line voltage is restored to normal
flashing of OVER LOAD	the real running ampere is higher than the calibrated running ampere, pump is in over load protection state	product will attempt to restart the pump every 30minutes until running ampere is restored to normal
	pump impeller is jammed / pump motor dragging / pump bearing broken	check pump impeller or bearing
flashing of NO CALIBR	parameter calibration not completed	refer to parameter calibration setting
flashing of DRY RUN	liquid level in the well / sump is below the pump intake, pump stops running	product will attempt to restart the pump every 30minutes until liquid level above the pump intake
flashing of STALLED	pump motor running ampere increasing was greater than the normal running ampere (calibrated ampere) by more than 200%	cut off power supply & repair or replace pump immediately

6 User Information and Feedback

1. If the performance consistent with the label _____
2. After-sales service _____
3. Suggestions for improvement _____

User profile

Name:	
Telephone:	
Purchase Model:	
Product No.:	
Purchase Date:	
Address:	

