

Intelligent Pump Controller

Installation & Operation Manual

Intelligent Pump Controller + Plus

with remote control monitor

FOR TWO PUMPS



Control Panel For Booster Pump

www.golpumps.com
info@golpumps.com



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, controller must be disconnected from the power supply;
- Don't open the cover during running the controller;
- Don't put wire, metal bar filaments etc into the controller;
- Don't splash water or other liquid over the controller;



CAUTION

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



mechanical shock



corrosive gas or corrosive liquid



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



Salt mist corrosion



Rain and Moisture



flammable material:
solvent



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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 single pumps with direct start, three phase deep well submersible pump, centrifugal pump, pipeline pump etc.

The controller has many operation modes by adopting different electric installations. An important feature that makes the difference between the controller and common On/Off pump control box is the probe / sensor free in the well. Our special design makes it a very reliable and sensitive protection against pump dry run without installation probe / sensor in the well.

1.1 Applications

The controller is useful in all cases we need to control and protect single pump managing its turn-on and turn off by different electric installations.

Typical usage scenarios include:

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

1.2 Technical parameter & features

Main features:

- Built in function switch to apply different application
- Automatic stops the pump in the case of water shortage, protecting it from dry running without installing float switch or liquid probe in the well
- Auto / Manual Switch
- Pump shaft anti rust
- RS485 communication
- Wifi module (Optional)
- Pump start time delay (Time settable)
- Pump stop time delay (Time settable)
- Protect the pump against many faults
- Dynamic LCD displays pump running information
- Pump accumulative running time displaying
- Pump last five fault record displaying
- Starts and stops the pumps in accordance with the different liquid level or pressure setting



The following chart shows main technical parameters of the controller

Main technical characteristic	
Control characteristic	double liquid level control pressure control
Control method	Manual / Auto
Liquid level control characteristic	pulse electrode probe & float switch&level transmitter
Pressure control characteristic	pressure switch (n/c) & pressure tank& pressure transmitter
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 open phase	<2sec
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	5min
Recovery time of under / over voltage/three phase unbalance	2min
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
Liquid level transfer distance	≤1000m
Protection function	Dry run Over load Under voltage Over voltage Open phase Pump shaft rust protection Pump stalled Short circuit Over temp Three phase unbalance Phase reversal Repeated start
Main installation data	
Working temperature	-25℃ -- +55℃
Working humidity	20% - 90%RH
Degree of protection	IP54
Install position	Vertical
Unit dimensions (L x W x H)	30.2 x 24x 12cm
RS485 technical data	
Physics Interface	RS485 Bus Interface: asynchronism semiduplex
Baud rate	1200 bps、2400 bps、4800 bps、9600bps Default: 9600bps
Protocol type	MODBUS Protocol (RTU)



Product data sheet

GPL-912plus / GPL-932plus



DUPLEX PUMP CONTROL PANEL

MODEL: GP-L912 plus & GP-L932 plus

Supporting Connecting

- 1-Pressure Transmitter 4-20 mA
- 2-Float Switch
- 3-Pressure Switch
- 4-PTC Thermal control
- 5-Overload controller
- 6-Moisture leakage Sensor on Sewage Pump



General details

Model

GP-L912 plus

GP-L932 plus

Main technical data

- Start type
- Qty of controlled pump
- Rated input voltage
- Rated output power

DOL(Direct on line)

Duplex pump

AC 208 V / AC 230 V Single phase 50HZ/ 60HZ AC 220 V / AC 460 V Three phase 50HZ/ 60HZ
(For customization, please contact the manufacturer.)

0.75kw-7.5kw(1hp-10hp)

0.75kw-5.5kw(1hp-7.5hp)

5.5kw-11kw (7.5hp-15hp)

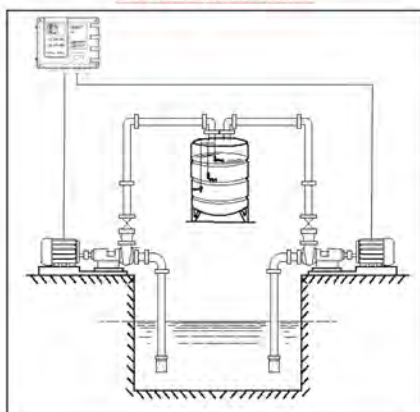
15kw(20hp)

Protection function

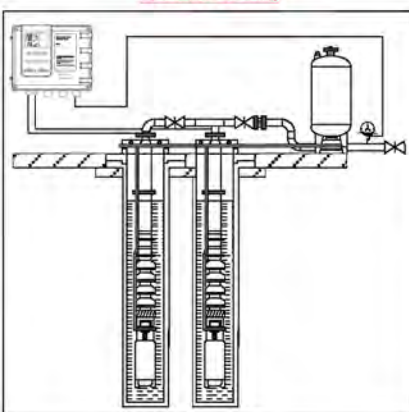
Over load protection
Pump stalled protection
Dry run protection with sensor free
Under voltage protection
Over voltage protection
Repeat start protection
Over temperature protection

Over load protection
Pump stalled protection
Dry run protection with sensor free
Under voltage protection
Over voltage protection
Repeat start protection
Open phase protection
Phase reversal protection
Three phase unbalance protection
Over temperature protection

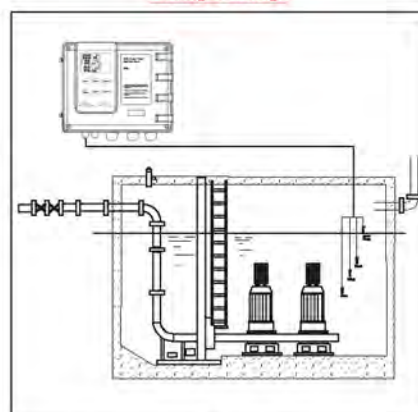
Feed Water / Water transfer



Pressure / Boosting



Drainage / Sewage





General details

Application

Control and protect universal pump

Adopting 4-20mA transmitter, liquid probe, float switch or pressure switch to control pump start and stop

Applied for drainage by level control through 4-20mA level transmitter

Applied for booster by pressure control through 4-20mA pressure transmitter

Applied for water supply by liquid level control through float switch or liquid probe

Applied for booster by pressure control through pressure switch and pressure tank

Applied for drainage by liquid level control through float switch or liquid probe

Applied for sewage pump with piggy-back float switch

Control characteristic

Duplex pump control

Main pump / standby pump automatically alternate

Main pump / standby pump automatically switch against malfunction

Standby pump participates running if required

Other features

Pump last five faults record displaying

Pump accumulative running time displaying

Pump shaft anti-rust

Present RS485 port

Remote control panel(Optional)

Present one passive dry contact point (BA port)

A/B Pump operation enable or disable function

LCD screen locked function under auto state(Settable)

Pump start and stop value can be easily set on the LCD screen (4-20mA transmitter)

LCD screen displaying pump running status

Memory function when power off & recovery

Signal transmission distance up to 1000m

Pump start time delay(Time settable)

Pump stop time delay(Time settable)

Overflow alarm for drainage application

WIFI module(Optional)

Push button calibration

Main installation data

- Working temperature
- Working humidity
- Degree of protection
- Mounting type
- Unit dimension (L x W x H)

-25°C ~ +55°C

20%~90%RH, no drips concentered

IP54

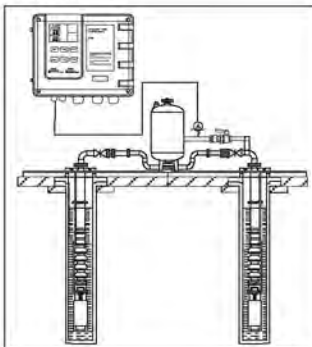
Wall mounting

300×240×120mm

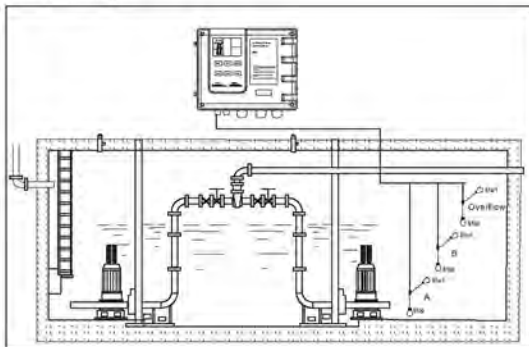
Connectable sensors

4-20mA transmitter / Liquid probe (standard accessory) / Float switch / Pressure switch

Pressure boosting



Drainage / Sewage

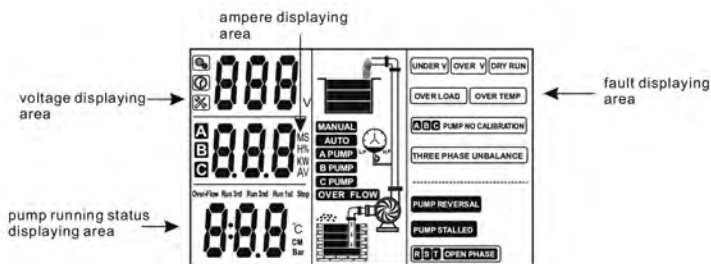




1.3 Controller components



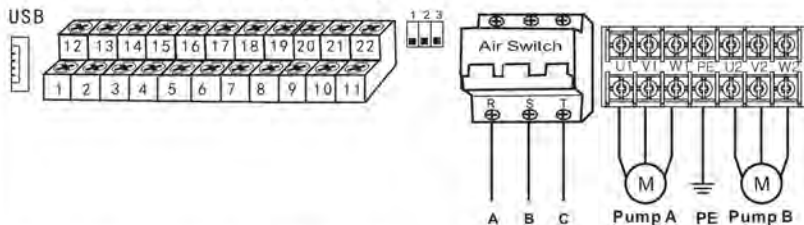
- 1.MCB for electrical connection to the power supply
- 2.Week current terminal / port
- 3.Function switch
- 4.USB port
- 5.Terminal to electrical pump
- 6.AC contactor
- 7.Main board
- 8.Displaying board
- 9.Remote monitor (optional)
- 10.Adaptor + cable for remote monitor
- 11.Wall mounting spares + water proof tape for cable



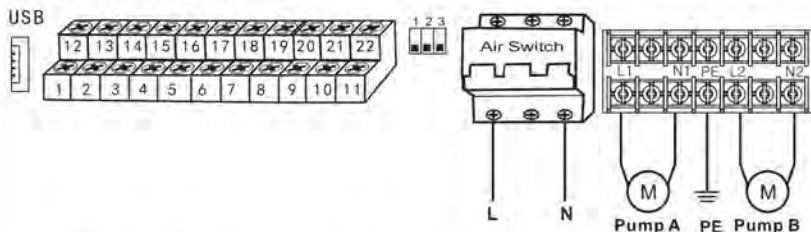


2.1 Electrical connection to the power supply line and electrical pump

2.1.1 Three phase input and output wiring:



2.1.2 Single phase input and output wiring:



Week current terminal/port definition sheet

Week current terminal /port No	Definition
1/2/3/4/12/13/14/15	These eight ports are applied for connecting float switch, liquid probe, pressure switch according to different application, port No 1/3/12/14 are com port
9/10	RS485 communication port, port No 9 is A+, port No 10 is B-
11/22	Dry (passive) contact point for serious failure and over flow alarm
16/17	A Pump leakage protection sensor with N/O contacting point
18/19	A Pump Over temperature protection switch with N/C contacting point
5/6	B Pump leakage protection sensor with N/O contacting point
7/8	B Pump Over temperature protection switch with N/C contacting point
20/21	4-20mA transmitter, port No 20 is P+, port No 21 is P-



DANGER Electric shock risk



Before carrying out any installation or maintenance operation, the controller 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 U1 V1 W1 U2 V2 W2 terminals.
Never connect AC power to output L1 N1 L2 N2 terminals.



Don't put wire, metal bar filaments etc into the controller.



Ensure the motor, controller and power specifications matching.



The electrical and hydraulic connections must be carried out by competent, skilled, qualified personnel.

2.2 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 complete the setting, apply power to controller and observe the application sign displayed on the LCD conforming to the following list.





Meaning of the icons shown on the LCD

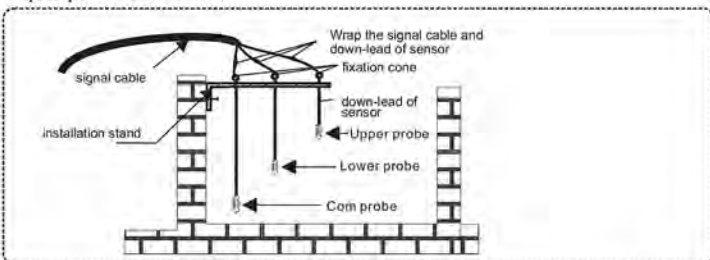
Icon	Meaning/Description
	pump parameter configuration icon, when this icon appears, pump control box is in parameter adjusting manual;
	time displaying icon, when this icon appears, it means pump control box is displaying some parameter of time, eg: pump accumulative running time (unit: hour); counting down etc
	pump fault icon, when this icon appears, it means pump control box is displaying some fault information;
 ON LINE	network connection error icon, when this icon appears, it means there is no network connections or network connection error between pump control box and SC(slave controller) or computer;
 ON LINE	network normal connection icon, when this icon appears, it means the network connection between pump control box and SC (slave controller) or computer is normal;
V	voltage
M	minute
S	second
H	hour
%	percent
A	ampere
	pump running
	pump stops running
	low pressure or lack of pressure in the pipeline or pressure tank
	high pressure or full of pressure in the pipeline or pressure tank
A	pump A
B	pump B



Item	Switch position	Messages & Graphic	Application
1			Applied for irrigation / sewage / drainage with overflow alarm
2			Applied for booster through pressure switch & pressure tank
3			Applied for water supply by level control
4			Applied for sewage pump with piggy-back float switch
5			Applied for Booster by connection with pressure transmitter
6			Applied for Drainage by connection with level transmitter
7			Applied for Water transfer by connection with level transmitter

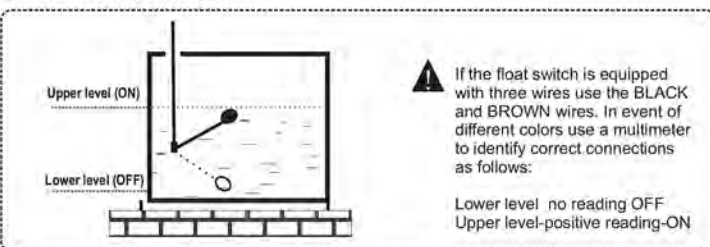


Liquid probe installation



! In event of high risk of electric storms (lightning) or when liquid medium in well or tank or sump is very dirty it is recommended float switch is used.

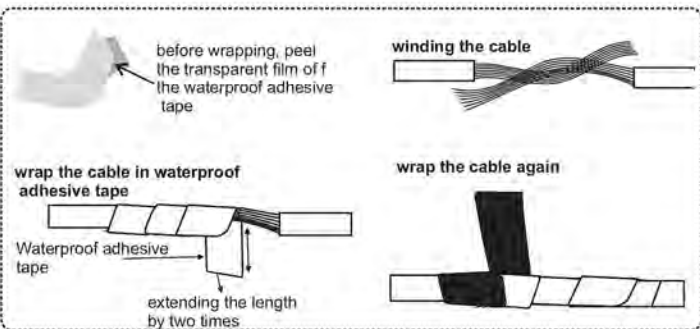
Float switch installation



! If the float switch is equipped with three wires use the BLACK and BROWN wires. In event of different colors use a multimeter to identify correct connections as follows:

Lower level - no reading OFF
Upper level - positive reading ON

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





2.4 Sensor connections for different function switch setting

ITEM 1 Applied for irrigation / sewage / drainage

Function switch setting:

LCD displaying:

Sump

Sump

- 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;
- 3). **Over Flow alarm**
when pump is draining water, liquid level in the sump is still rising to Overflow probe (float switch B: Up level), the controller will sound the overflow alarm to warn pump user to take further action.
- 4). **Auto Patrol (Anti-rust) function**
Under Auto state, if control box inspects double pumps not running for ten days, control device will order pump to run for 3 seconds and stop.

Auto Patrol can prevent pump rusty and impeller jammed owing to long time no running



ITEM 2 Applied for booster by pressure switch

Function switch setting:

LCD displaying:

Water well

Water well

Note 1: suppose the pressure setting of Pressure Switch B is higher than Pressure A

Note 2: pressure switch with N/C (normal close) contacting point, no pressure, contacting point is ON; meeting the pressure setting, contact point is OFF

Note 3: user can set the pressure value of the two pressure switches by themselves, but there must be pressure difference between pressure switch A&B

1). Normal pressure demanding
 pressure in the pipeline is lower than the setting of pressure switch B, control box will order single pump to run; pressure in the pipeline reaches the setting of pressure switch B, single pump stops running; control box will alternate double pumps running automatically when pressure in the pipeline varies in the range of pressure switch B

2). Extra pressure demanding
 single pump is running, pressure in the pipeline still decrease to the setting of pressure switch A, control box will order the other pump to run simultaneously, till pressure in the pipeline reaches the setting of pressure switch B, double pumps will not stop running;

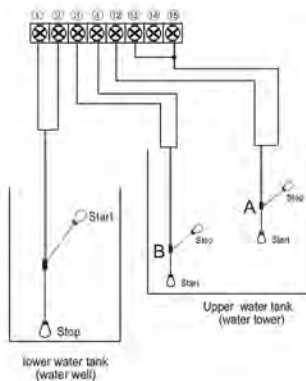
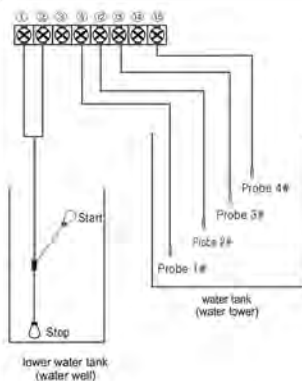
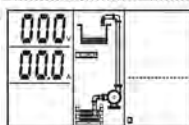


ITEM 3 Applied for water supply from down tank to overhead tank

Function switch setting:



LCD displaying:



1). Normal water demanding

liquid level in the water storage tank is lower than Probe 1 # (float switch A: Down level), control box will order single pump to run; Liquid level reaches probe 4 # (float switch A: Up level), single pump stops running; control box will alternate double pumps running automatically when liquid level varies from Probe 1 # & Probe 4 #, (Float Switch A: Down level Up level Down level)

2). Extra water demanding:

when single pump is running, liquid level is still decreasing to Probe 2# (Float Switch B: Down level), control box will order another pump to run simultaneously, until liquid level reaches Probe 4# (Float Switch A & B: Up level), double pumps will not stop running;



HD-YLBSQ High Cost -Effective Pressure Transmitter

Description

YLBSQ pressure transmitter uses UPX19 piezo-resistive silicon sensor as sensing element. It adopts the latest DSP digital signal conditioning algorithm circuit, the circuit features with high anti-jamming & anti-impact performance, also with good non-linearity correction for sensors, this makes YLBSQ have excellent linearity characteristics. YLBSQ is designed with full stainless steel construction, and its installation is very easy.

With the mass production of the housing and the circuit, the production cost of YLBSQ is decreased much. It is a good cost-effective product.

This product is widely used for pressure measurement and control of petroleum, chemical-industry, metallurgy, power station and hydrology, etc.

Features

- High cost performance, highly cost-effective
- Full digital circuit, good performance
- Strong anti-jamming
- Wide measuring pressure range:-1...0~0.1...1000bar

Specifications

pressure medium	gas or liquid compatible with stainless steel
pressure ranges	-1...0~0.1...1000bar
overload pressure	150%FS
output signal	4~20mA, 0~5V, 0~10V, 1~5V
accuracy	0.25%FS(standard),0.5%FS
load resistance	$R_L = (U - 9V) / 0.02A$ (4~20mA current output) U—loop voltage (V)
long-term stability	<0.2%FS/year
supply voltage	5-24VDC
compensated temperature range	-10~70℃
operating temperature range	-30~+100℃
measured media temperature range	-40~+125℃
temperature coefficient of zero	0.2%FS/10℃
temperature coefficient of span	0.2%FS/10℃
insulation resistance	100MΩ@50VDC
process connection	NPT OR G 1/4" OR 3/8" OR 1/2"
electrical connection	hirschmann connector or others
material of wetted part	304 stainless steel
material of pressure membrane	316L stainless steel
material of housing	304 stainless steel

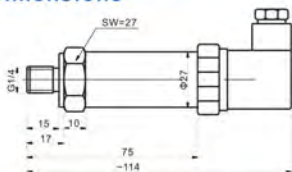




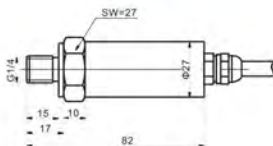
GPL-912 plus / GPL-932 plus

HD-YLBSQ High Cost -Effective Pressure Transmitter

Dimensions



Hirschmann Connector



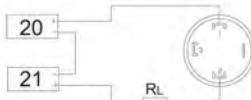
PG7 Connector

Electrical connection

Connection Cable color(pin)

Power "+" Red(20)+

Signal "+" Blue(21)-



Wiring drawing of 2-wire 4~20mA output(hirschmann connector)

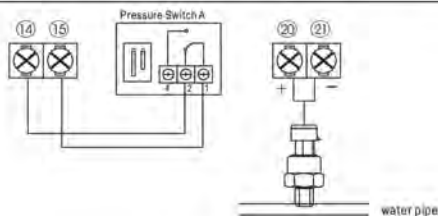




ITEM 5 Applied for Booster by connection with pressure transmitter and pressure setting .

Function switch setting:

LCD displaying:



- 1) Pressing **MODE** button Switch controller to Manual mode ,hold pressing **STORE** button for at least 5seconds, till controller makes a buzzer sound.loosen **STORE** button and enter into parameter adjusting manual
- 2) after entering into parameter manual, press **STORE** button to select the parameter code, reach to item 020
- 3) press **START** button to add or press **STOP** button to decrease the parameter setting value according to the user's specific technical requirement;

Code	Default setting	Definition	Function switch setting
020	25Bar	Pressure trasmitter measure range	001
021	8Bar	Cut off pressure value setting	001
022	4Bar	1st Pump cut in pressure value setting	001
023	22Bar	Pressure value for over pressure setting	001

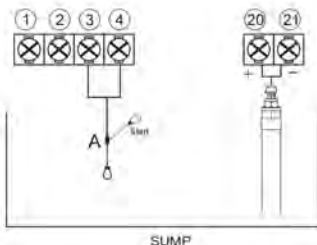
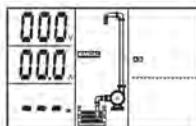
- 4) after adjusting completed, hold pressing **STORE** button for at least 5seconds, till controller makes a buzzer sound loosen **STORE** button, adjusting store completed
- 5) REMARK: ⑭ ⑮ is connection of pressure switch(optional),if pressure transmitter get broken , controller can stop pump to be mandatory.



ITEM 6 Applied for Drainage by connection with level transmitter



LCD displaying



- 1) Pressing **MODE** button Switch controller to Manual mode ,hold pressing **STORE** button for at least 5seconds, till controller makes a buzzer sound .loosen **STORE** button and enter into parameter adjusting manual
- 2) after entering into parameter manual, press **STORE** button to select the parameter code, reach to item 022.
- 3) press **START** button to add or **STOP** press button to decrease the parameter setting value according to the user's specific technical requirement;

Code	Default setting	Definition	Function switch setting
020	200cm	the largest measure range for the level transmitter default setting is 2meter	011
021	10cm	Cut off pressure value setting	011
022	20cm	1st Pump cut in pressure value setting	011
023	60cm	Depth value for over flow alarm setting	011

- 4) after adjusting completed, hold pressing **STORE** button for at least 5seconds, till controller makes a buzzer sound loosen **STORE** button, adjusting store completed
- 5) REMAR: ③ ④ are connection of float switch(optional),if level transmitter get broken ,controller can start pump to be mandatory.



3 BASIC OPERATION

3.1 Switching to MANUAL mode

Press the **MODE** key to switch to manual state, 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 sensor.

3.2 Switching to AUTO mode

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

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 10 seconds 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 same as the operation state before power being cut off;

3.3 Parameter Calibration setting & erasing

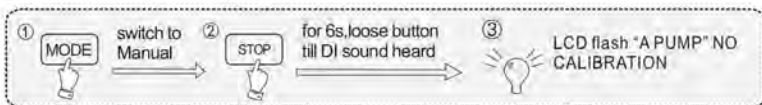
To achieve best level of protection of the pump, it is essential that parameter calibration must be done immediately after successful pump installation or pump maintenance.

parameter calibration setting

Pump/s must be able to pump water to enable correct calibration. If pump/s are calibrated without water, overload and pump stalled errors may occur later.



parameter calibration erasing

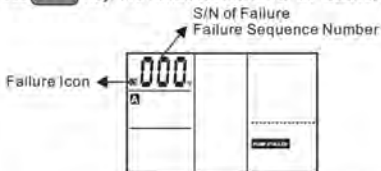




3.4 Pump last five failure record displaying

Displaying the pump A last five failure record

- Press the **MODE** key to switch to manual state, make sure the pump not running
- Hold pressing **STOP** key and press **MODE** key, the controller makes a "Di" sound, the controller displays pump failure record;



THE LATEST FAILURE OF PUMPS PUMP STALLED

- Press the **MODE** key to display prior failure
- Press **STOP** key to quit the failure record displaying;

3.5 Pump accumulative running time displaying

- Press the **MODE** key to switch to manual state, make sure the pump not running.
- Hold pressing **STORE** key and press **STOP** key, the controller makes a "Di" sound, the controller displays pump failure record;



THE PUMP HAS RUN FOR 23 HOURS

- Press **STOP** key to quit the accumulative running time displaying;



3.6 Parameter adjusting procedure

Step 1:

Press **MODE** button to switch to manual state;

Step 2:

Hold pressing **STORE** button for at least 5seconds, till controller makes a buzzer sound, loosen button and enter into parameter adjusting manual;

Step 3:

After entering into parameter manual, press **STORE** button to select the parameter code;

Step 4:

Press button to **START** add or press **STOP** button to decrease the parameter setting value according to the user's specific technical requirement;

Step 5:

After adjusting completed, hold pressing **STORE** button for at least 5seconds, till controller makes a buzzer sound loosen button, adjusting store completed.

Parameter setting table:

The default setting as per controller specification (The data in the table only for reference)

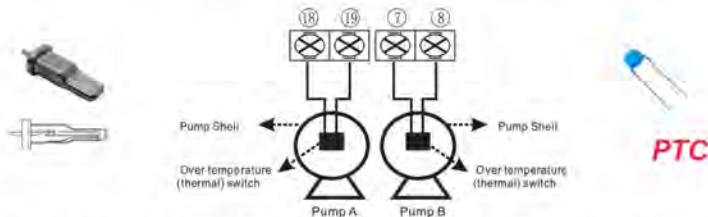
Item	Default setting	Definition	Remark
001	01	The controller ID	Applied into all function switch setting
002	04	RS 485 Speed, 01 on behalf of 1 200, 02 on behalf of 2400 , 03 on behalf of 4800, 04 on behalf of 9600	
003	00	Parity Check0= None parity; 1=Odd parity; 2=Even parity; default setting is 0=None parity	
004	06s	Dry run protection trip response time ,unit is second(s) Default setting value is 6 seconds	
005	30m	Recovery time for dry run protection ,unit is minute(M) Default setting value is 30 minutes	
006	05m	Recovery time for over load protection,unit is minute (M) default setting is 5minutes.g: if pump stopped operation because of over load, controller will start to run the pump after every 5minutes till ampere return to normal	
007	02m	Recovery time for under voltage, over voltage & three phase unbalance protection,unit is minute (M)default setting is 2minutes.g: if pump stopped operation because of under/over voltage or three phase unbalance ,controller will start to run the pump after every 2minutes till voltage or ampere return to normal	
008	40A	The rated output power of pump A is 40A Defalut setting is 40A	
009	70%	The trip response ratio of dry running protection is 70% of rated current . Default setting is 70%	



Item	Default setting	Definition	Remark
010	135%	The trip response ratio of over load protection is 135% of rated current Default setting is 135%	Applied into all function switch setting
011	170%	The trip response ratio of pump stalled protection is 170% of rated current Default setting is 170%	
012	03	Phase reversal protection, Open phase protection. 00= both function non activated 01= phase reversal protection function activated, open phase non activated 02=phase reversal protection function non activated ,open phase function activated 03=both function activated	
013	18%	Trip ratio of phase unbalance protection, unit is percentage(%) 0%= phase reversal protection function non activated default setting is 18%"	
014	304V	Trip voltage of Under voltage protection, unit is voltage (V), when running voltage is below this value, controller will be in under voltage protection state Default setting value is 304V	
015	437V	Trip voltage of Over voltage protection , unit is voltage (V), when running voltage is over this value, controller will be in over voltage protection state default setting value is 437V	
016	240h	When for drainage ,it is auto patrol time	
017	00	LCD & button operation lock function 00= LCD & button operation function non activated 01= LCD & button operation function activated default setting is 00 = non activated. eg: if this function activated, when controller under auto state, it will lock the button operation, pump users can hold pressing MODE button	
018	00s	Delay time for starting pump, unit is second(S) e.g: if setting at 02, under auto control state, when controller meets starting conditions, controller will have 2seconds delay to start pump operation	
019	00s	Delay time for stopping pump, unit is second(S) e.g: if setting at 02, under auto control state, when controller meets stopping conditions, controller will have 2seconds delay to stop pump operation	



4 ELECTRICAL CONNECTION FOR PUMP MOTOR WINDING OVER TEMPERATURE PROTECTION

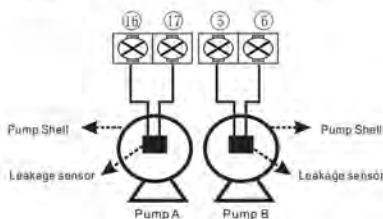


Noted 1: to realize the pump motor winding over temperature protection, it requires there must be over-temp switch embedded in the pump motor winding;

Note 2: the over-temp switch with N/C (normal close) contacting point;

Note 3: if the pump without over-temp switch, please use jumper to connect terminal 18 & 19, terminal 7, 8 separately;

5 ELECTRICAL CONNECTION FOR PUMP MECHANICAL SEAL LEAKAGE PROTECTION



Note 1: to realize the pump mechanical seal leakage protection, it requires there must be leakage sensor embedded in the pump mechanical seal

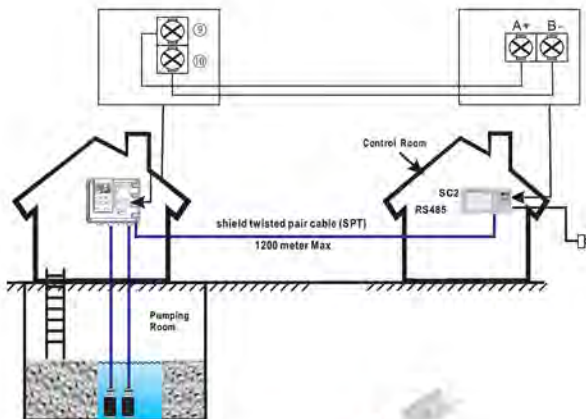
Note 2: if the pump without mechanical leakage sensor installed, please do not use jumper to connect terminal 16 & 17, terminal 5 & 6, make sure the four terminals are in N/O state (normal open)



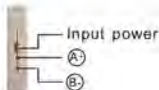
6 COMMUNICATION LINK

The controller has communication interface, To adopting simple peripheral equipment (Slave Controller), pump users can realize long distance monitoring function.

This function is applied for controller installed in the basement, pumping room etc, but pump users require to monitor and control the pump on the ground or in the control room.



6.1 Basic Function



Slave Controller, model SC with communication interface can realize long distance monitoring function. In the control room, pump users can realize all functions of controller (Master Controller) through SC, including:

voltage & ampere displaying, pump fault displaying, auto / manual switch, pump start/ stop switch, pump running status displaying etc

6.2 Special Application

As adopting communication interface, the wire communication distance is less than 1200metres. For those installation environment which require long distance communication, say: mine, water tower, across railway, road and bridge etc, users can adopt RS485 extender, wireless communication or GSM system.

Please contact the manufacturer for more information.



6.3 Technical parameter

The following chart shows main technical parameters of communication link between controller & Slave Controller (SC)

Main technical data	
Physics Interface	RS485 Bus Interface: asynchronism semiduplex
Data format	1start bit 8data bit, 1stop bit, no verify 1start bit 8data bit, 2stop bit, no verify Default: 1start bit 8data bit, 1stop bit, no verify
Baud rate	1200 bps, 2400 bps, 4800 bps, 9600bps Default: 9600bps
Communication address	Setting range of controller address: 1-126 127: broadcast address, Host computer broadcasting, Slave machine resposnion forbidden
Protocol type	MODBUS Protocol (RTU)
Rated input voltage for SC:	AC220V/50Hz, Single phase
Main installation data	
wire communication distance	1200meters max by shield twisted pair cable (STP) for RS485 & CAN 5000meters max by STP and RS485 extender
STP	STP-120U one pair 20AWG for RS485 & CAN
RS485 extender	5000meters (9600bps)



7 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
		controller 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
		controller will attempt to restart the pump every 5minutes until line voltage is restored to normal
flashing of PUMP 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
flashing of OVER LOAD	the real running ampere is higher than the calibrated running ampere, pump is in over load protection state	controller 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 OPEN PHASE	power supply lose phase	report to the power supply company
	controller inlet wire or pump cable broken	repair inlet wire or pump cable
flashing of PUMP NO CALIBRATION	parameter calibration not completed	refer to parameter calibration setting



Fault Message	Possible Cause	Solutions
flashing of DRY RUN	liquid level in the well / sump is below the pump intake, pump stops running	controller will attempt to restart the pump every 30minutes until liquid level above the pump intake
flashing of THREE PHASE UNBALANCE	the real voltage (ampere) between three phase (R/S/T) is not same and the difference is more than $\pm 15\%$	report to the power supply company controller will attempt to restart the pump every 5minutes until the voltage (ampere) between three phase s restored to normal
flashing of PHASE REVERSAL	sequence of the three phase input voltage (R/S/T) error	change the sequence of the three phase (R/S/T)
flashing of REPEATED START	pump starts more than 5times per minutes	The most common cause for the rapid cycle condition is a waterlogged tank, Check for a ruptured bladder in the water tank. Check the air volume control or snifter valve for proper operation. Check the setting on the pressure switch and examine for defects. Cut off the power supply & repair the water tank, pressure switch or valve
flashing of OVER TEMP	The temperature in pump motor winding is high and the contacting point of the thermal switch is in open circuit state	Waiting the temperature in pump motor winding cooling down, the contacting point of the thermal switch is close circuit state
 ON LINE	no communication link between SC / computer and controller	connecting the controller to SC / computer to realize long distance monitoring



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