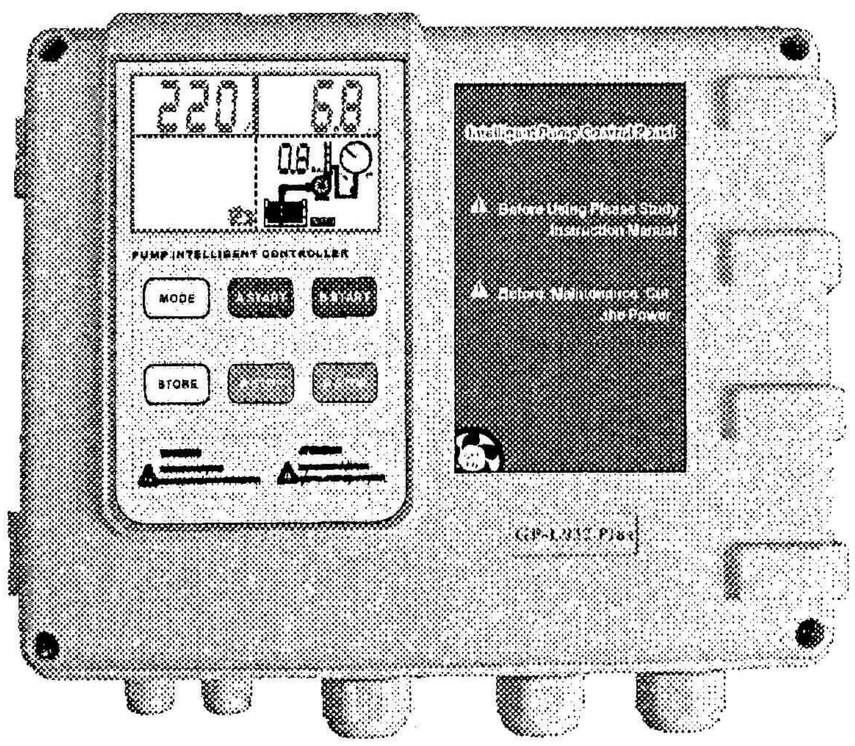
G.P.T.CO

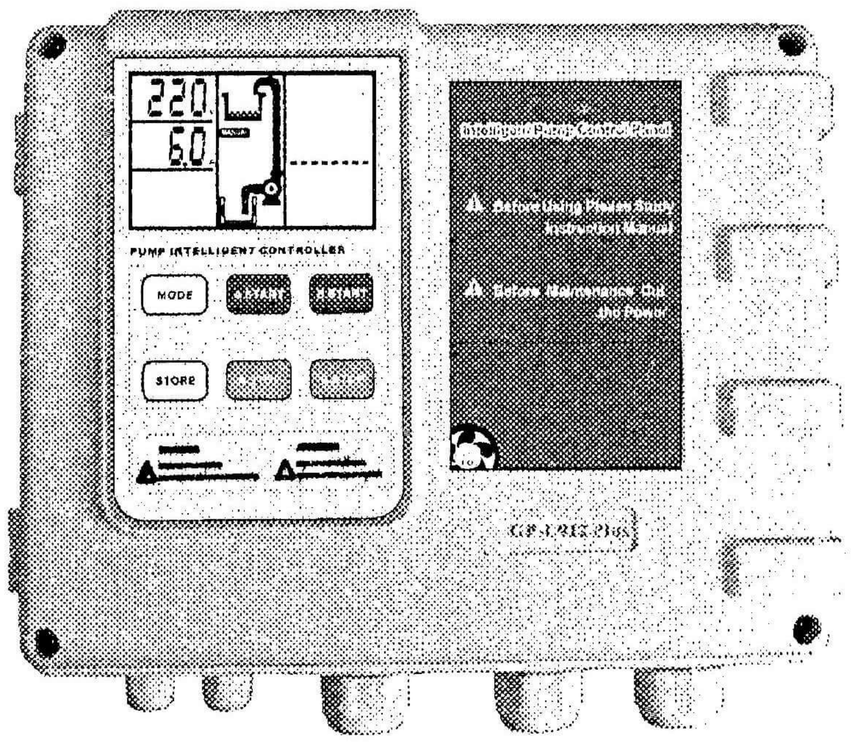
GOL PUMPS TECHNOLOGY INC

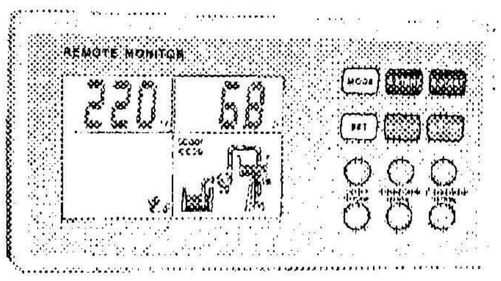
Installation & Operation Manual

Intelligent Pump Controller

with remote control monitor





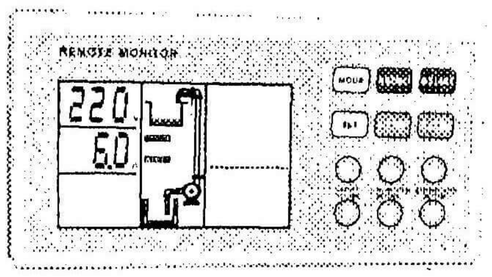


GP-L932 Plus

1-10hp 220V

7.5-20hp 460V

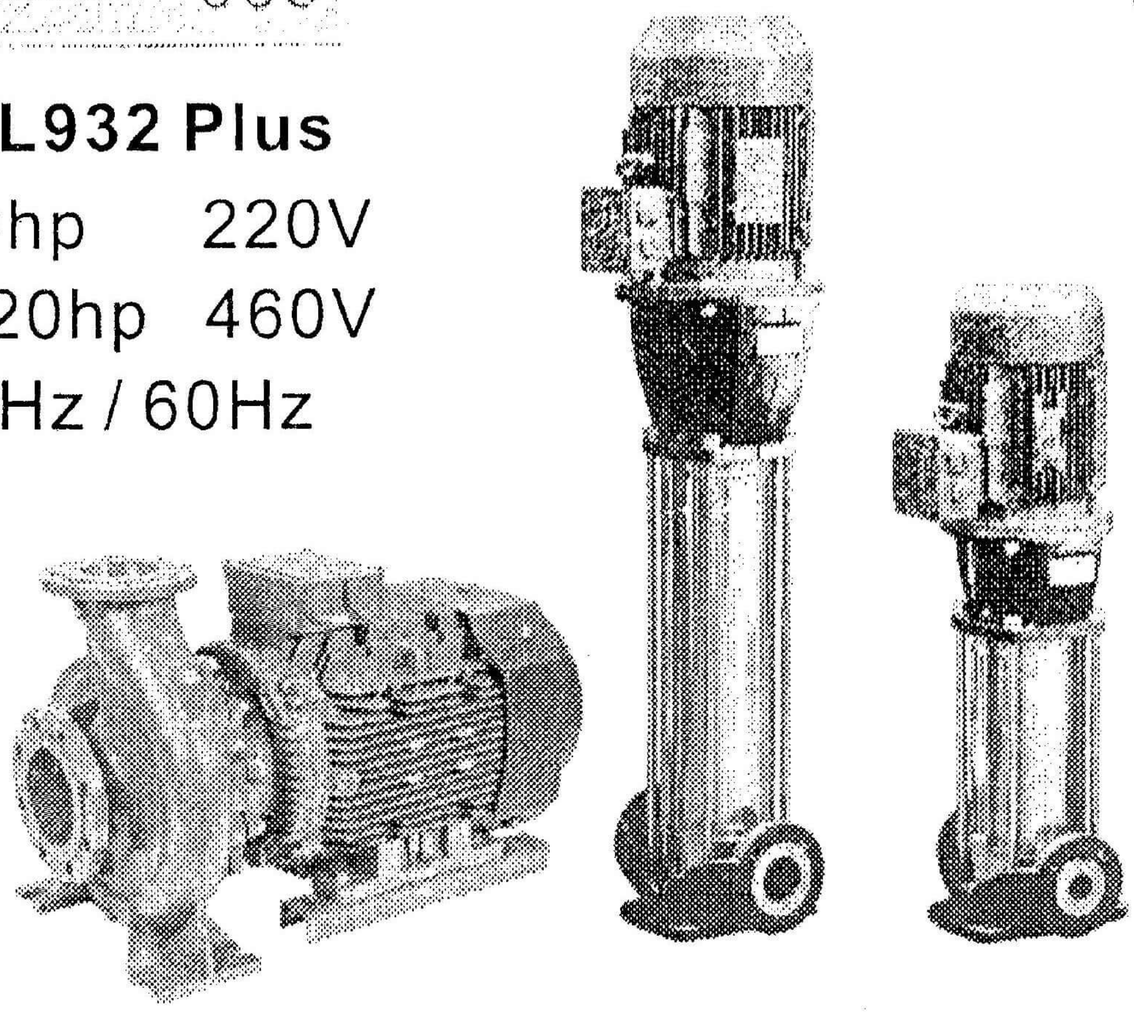
50Hz / 60Hz



GP-L912 Plus

1-10hp 220V

50Hz / 60Hz



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Made in China

Read Manual Carefully Before Any Operation

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

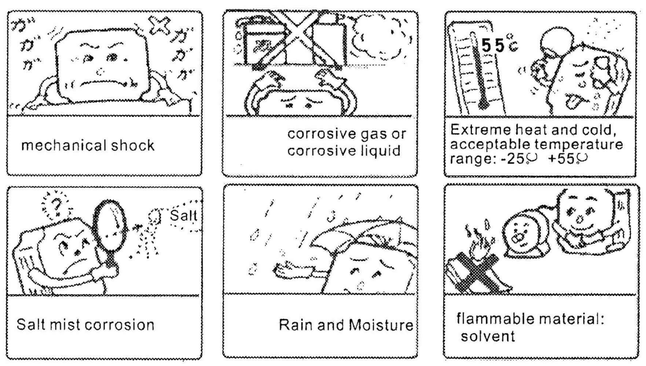
Read this manual carefully before any operation.
Please keep this manual for future use.

WARNING!!

- Before carrying out any installation or maintenance operation, controller must be disconnected form the power suppiy;
- 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.qualfied 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;



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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 duplex 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 duplex 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

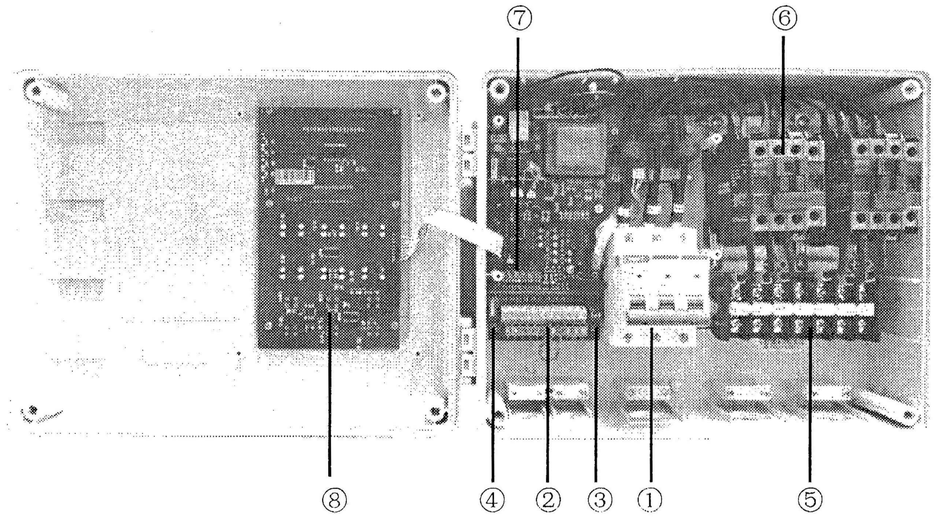
Main features:

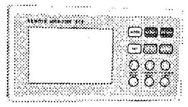
- Built in function switch to apply different application
- Double pumps control
  main pump / standby pump automatically alternate
  main pump / standby pump automatically switch against malfunctions
  standby pump participate running if required
- Automatic stops the pump in the case of water shortage, 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
- A/B pump operation enable or disable function
- 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

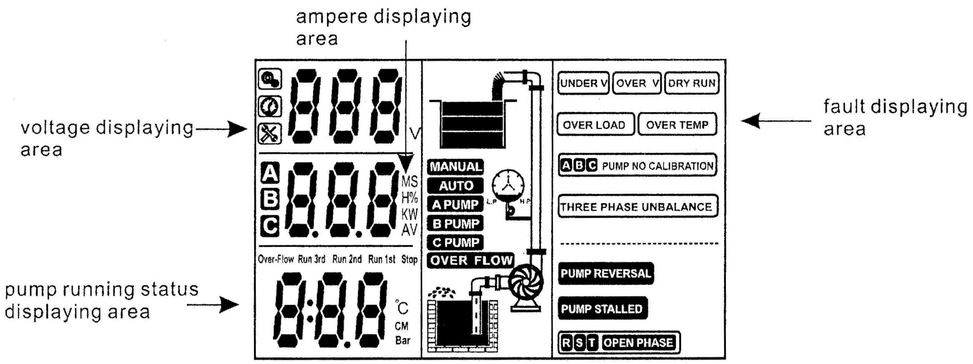
Main technical characteristic	
Control characteristic	double liquid level control
	pressure control
Control method	Manual / Auto
Liquid level control characteristic	pulse electrode probe & float switch&level transmitter
Pressure control characteristic	pressure switch (n/c) & pressure tank& pressure transmitter
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)

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



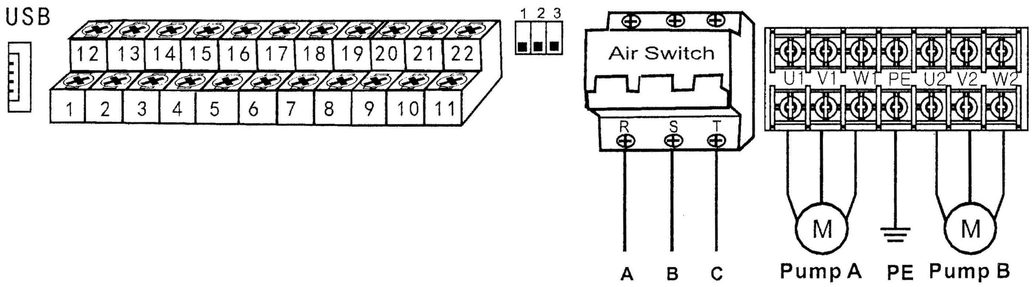
Meaning of the icons shown on the LCD

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

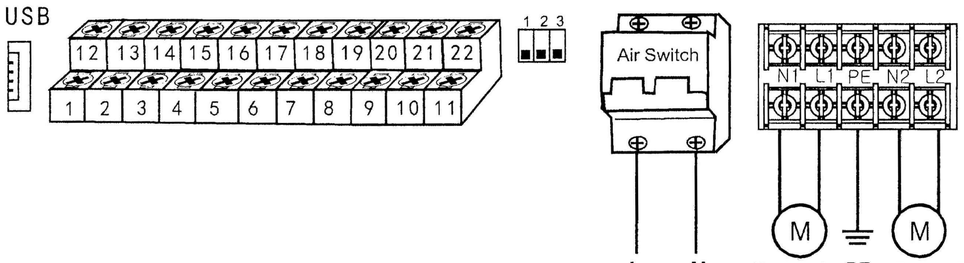
2 INSTALLATION

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.

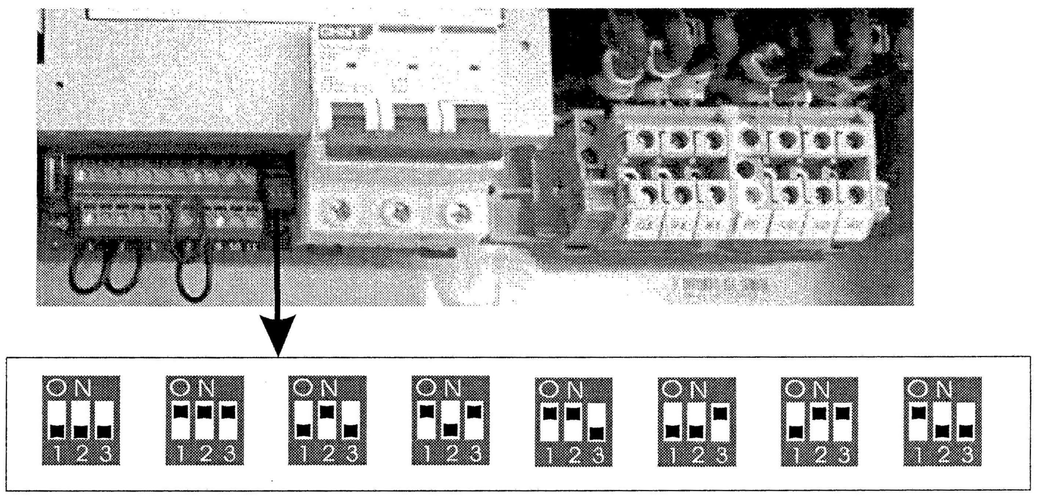
Don't put wire, metal bar filaments etc into the controller.

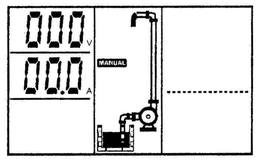
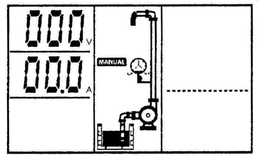
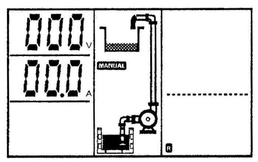
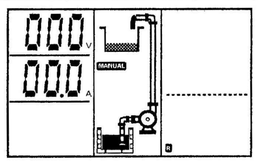
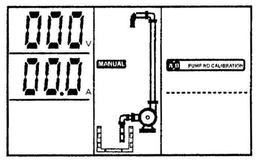
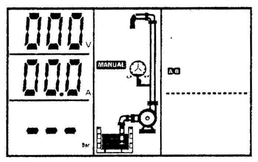
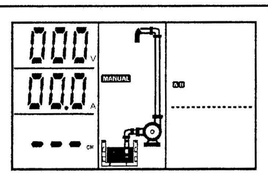
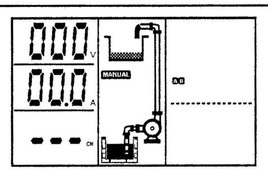
Ensure the motor, controller and power specifications matching.

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

2.2 Function switch setting

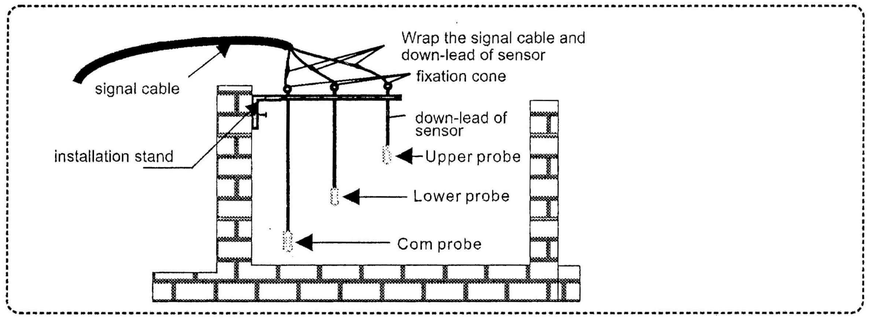
Pump users can set the function switch to meet different application requirement, before setting the function switch, the controller should be disconnected from the power supply, after complete the setting, apply power to controller and observe the application sign displayed on the LCD conforming to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



Item	Swith position	Messages & Graphic	Application
1			Applied for irrigation / sewage /drainage with overflow alarm, supporting duplex pump running together if extra water flowing
2			Applied for booster through pressure switch& pressure tank, supporting duplex pump running together if more pressure demanding
3			Applied for water supply by level control, supporting duplex pump running together if more water demanding
4			Applied for water supply by level control ,supporting AB pump alternation only without running together.
5			Applied for sewage pump with piggy-back float switch
6			Applied for Booster by connection with pressure transmitter
7			Applied for Drainage by connection with level transmitter
8			Applied for Water transfer by connection with level transmitter

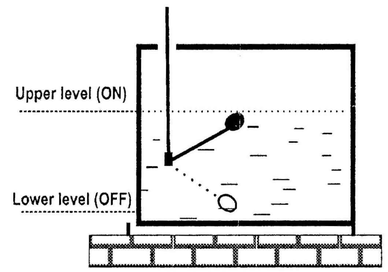
2.3 Installing liquid probe&float switch&Transmitter

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.

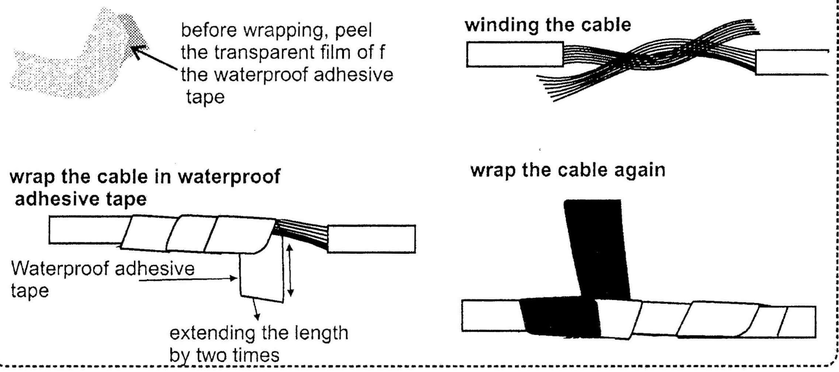
Float switch installation



⚠ 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.**



Level transmitter and PVC pipe installation

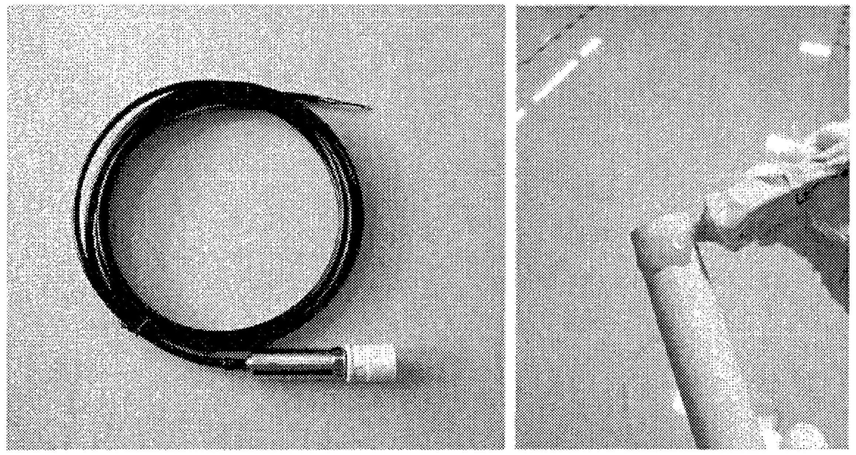
Technical parameter

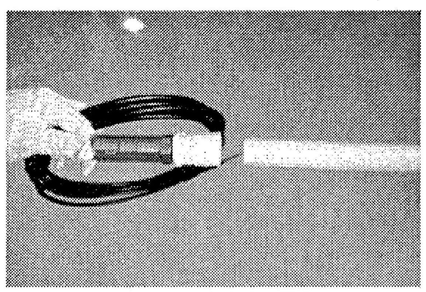
The following chart shows the main the technical parameters of level transmitter

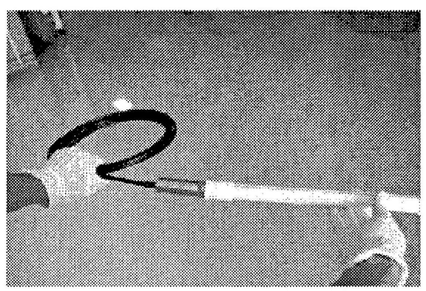
Main Technical Data	Value
Measurement	0--20KPA
Accuracy	0.50%
Overload Pressure	60KPA
Breakdown Pressure	1.2MPA
Power Supply	24VDC
Output Signal	4-20mADC
Compensation Temperature	0--70℃
Working Temperature	-20℃-80℃
Pressure Port	G1/2
Protection Grade	IP68
Material	304

Step 1

Apply glue on the PVC pipe, insert the PVC pipe into the level transmitter

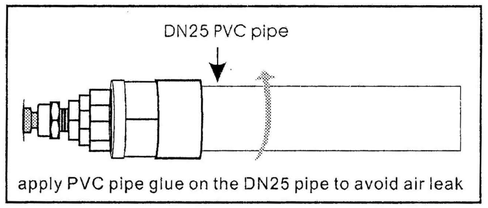


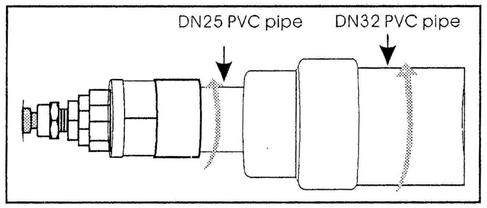




Step 2

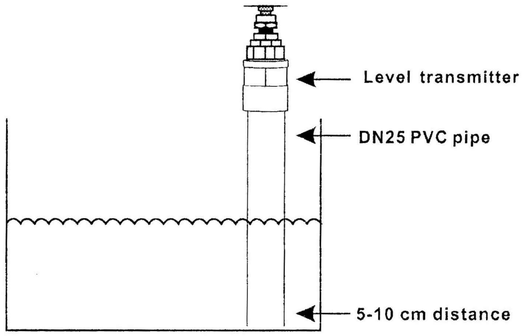
Rotate the PVC pipe to make sure the inner wall of PVC pipe is covered with glue, so it can avoid air leakage

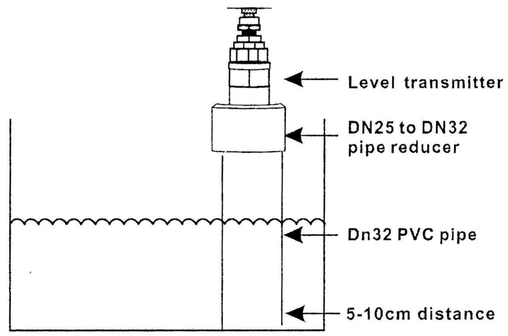




Step 3

How to install the pipe in the sewage tank



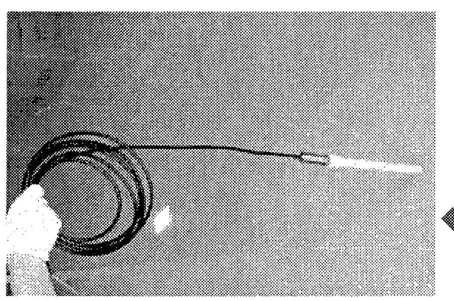


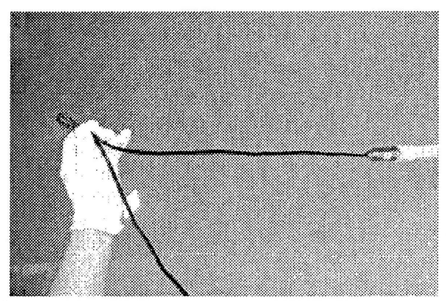
Installation notes:

1) The bottom of the PVC pipe and sewage pool keep 5-10 cm distance.

2) If in sewage pool the impurities or sludge thicker, users can use DN25 to DN32 pipe reducer connected to the large diameter PVC pipe, it can effectively prevent wrong pressure measurement if the sludge attached on the inner wall of the pipe

3) do not bend the hose during the pipe installation





Pressure transmitter installation

Technical parameter

The following chart shows the main the technical parameters of pressure transmitter

Main Technical Data	Value
Measurement	0--2.5MPA
Accuracy	0.25%
Overload Pressure	7.5MPA
Breakdown Pressure	12MPA
Power Supply	24VDC
Output Signal	4-20mADC
Working Temperature	-40℃-150℃
Pressure Port	G1/2
Protection Grade	IP65
Material	304

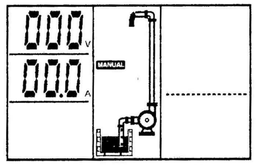
Installation steps

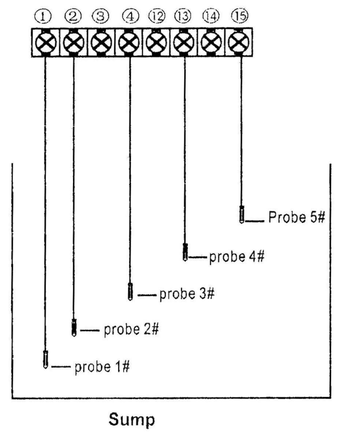
1.Twine 6-10 layers PTFE tape on the pressure transmitter
2. Fix the pressure transmitter on the pipe network
3. Connect the pressure transmitter to sensor terminal number ⑳ ,㉑
4. Pay attention to the leak-proof treatment
5. Keep the 3 wires against from twining

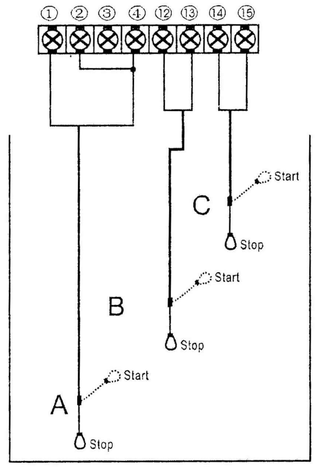
2.4 Sensor connections for different function switch setting

ITEM 1 Applied for irrigation / sewage /drainage

Function switch setting:

LCD displaying: 





1). Normal liquid level in the sump

liquid level reaches Probe 3# (Float Switch A: Up Level), control box will order single pump to run;liquid level declines to Probe 2# (Float Switch A:Down Level), single pump stop running; Control box will alternate double pumps running automatically when the liquid level varies from Probe 2# & Probe 3# (Float Switch A: Up level- Down level)

2). Extra flowing in the sump

when single pump is running to drainage, liquid level in the sump still increase to Probe 4# (Float Switch B: Up Level), control box will order another pump to run simultaneously to drainage, until liquid level declines to Probe 2# (Float Switch A&B:Down Level), double pumps will not stop running.

3). Overflow in the sump

when double pumps are running simultaneously, liquid level in the sump still increase to Probe 5#(Float Switch C: Up level), control box will sound warning alarm; When liquid level declines to Probe 5# (Float Switch C Down Level), control box stop sounding warning alarm

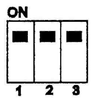
4).Auto Patrol (Anti-rust) function

Under Auto state, if control box inspects double pumps not running for ten days, control device will order pump A to run for 3 seconds and stop, after 10seconds interval, control device will order pump B to run for 3 seconds and stop.

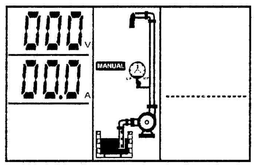
Auto Patrol can prevent pump rusty and impeller jammed owing to long time no running

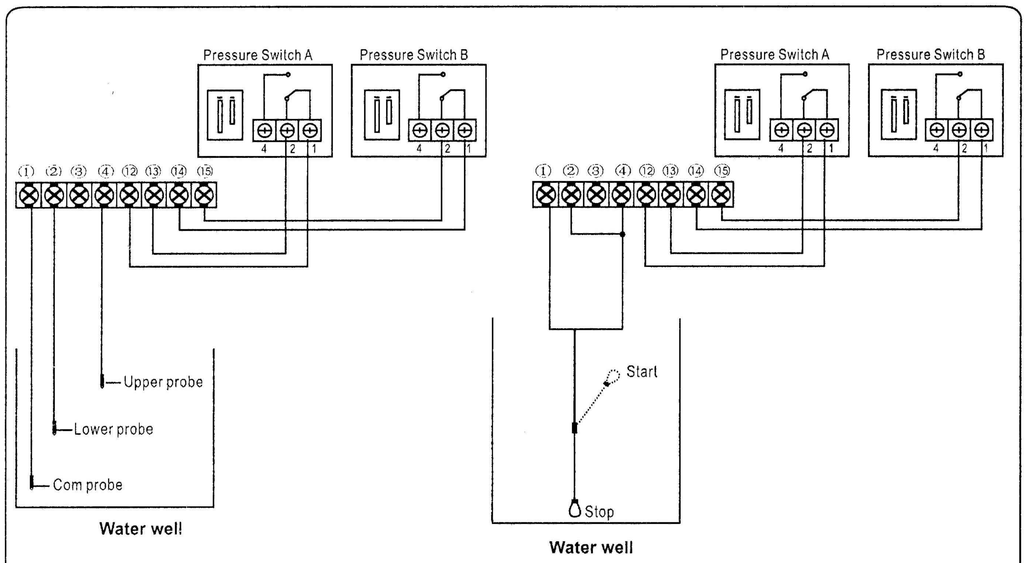
ITEM 2 Applied for booster by pressure switch

Function switch setting:



LCD displaying:





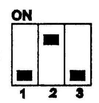
Note 1: suppose the pressure setting of Pressure Switch B is higher than Pressure A
Note 2: pressure switch with N/C (normal close) contacting point, no pressure, contacting point is ON;meeting the pressure setting, contact point is OFF
Note 3: user can set the pressure value of the two pressure switches 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

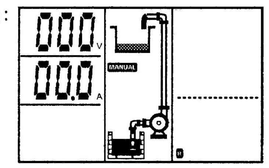
2). Extra pressure demanding
single pump is running, pressure in the pipeline still decrease to the setting of pressure switch A, control box will order the other pump to run simultaneously, till pressure in the pipeline reaches the setting of pressure switch B, double pumps will not stop running;

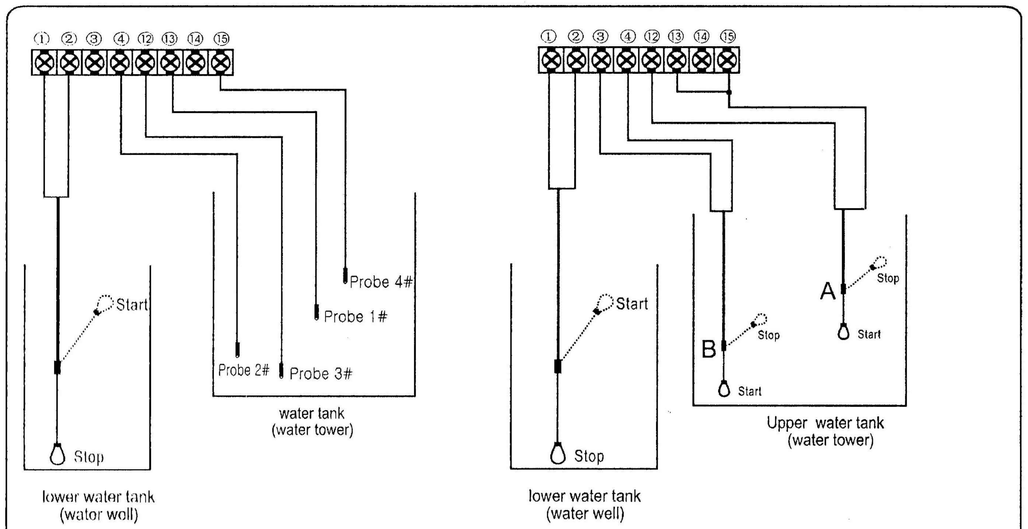
ITEM 3 Applied for water supply from down tank to overhead tank

Function switch setting:



LCD displaying:



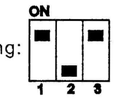


1). Normal water demanding
liquid level in the water storage tank is lower than Probe 1 # (float switch A: Down level), control box will order single pump to run; Liquid level reaches probe 4 # (float switch A: Up level), single pump stops running;control box will alternate double pumps running automatically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

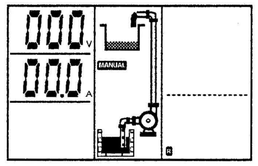
2). Extra water demanding:
when single pump is running, liquid level is still decreasing to Probe 2# (Float Switch B: Down level), control box will order another pump to run simultaneously, until liquid level reaches Probe 4# (Float Switch A & B: Up level), double pumps will not stop running;

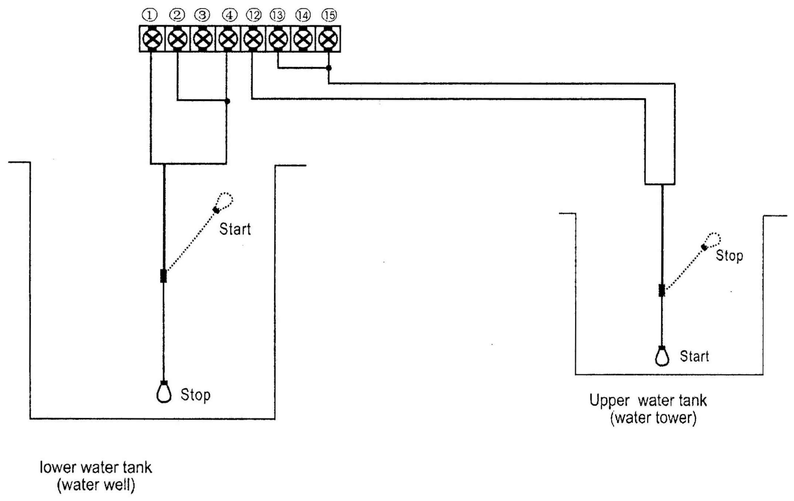
ITEM 4 Applied for water supply from down tank to overhead tank (AB pump alternation only)

Function switch setting:



LCD displaying:



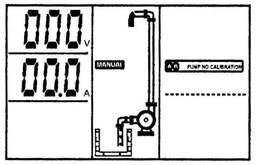


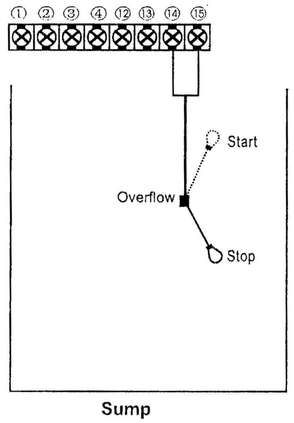
1） Liquid level in the upper water tank is lower than float switch Down level ,control box will order single pump to run ;Liquid level reach to float switch Up level ,single pump stops running ; Control box will alternate double pumps running automatically always when liquid level varied from float switch (Down level ,up level ,down level).

ITEM 5 Applied for sewage pump with piggy-back float switch

Function switch setting:

LCD displaying:





1). Main pump /standby pump automatically alternate
when water level raises and float switch attached with Pump rise to up level,the 1st pump start running .Water level falls and float switch attached with pump decline to down level, 1st pump stops.when water level raises again and float switch rises to up level, 2 nd pump start running . In this situation ,only allow one pump working at one time .

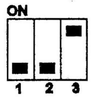
2). Main pump/standby pump automatically switch against malfunction
when one pump breaks down in the course of operation, automatically switch to the other pump.

3). Standby pump participates running if required
When1st pump is running,water level still raises and overflow float switch rises to up level, controller will order 2nd pump start running simultaneously.

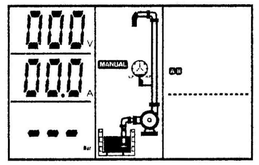
At the same time, the control panel will sound the alarm to warn the user to take further action.

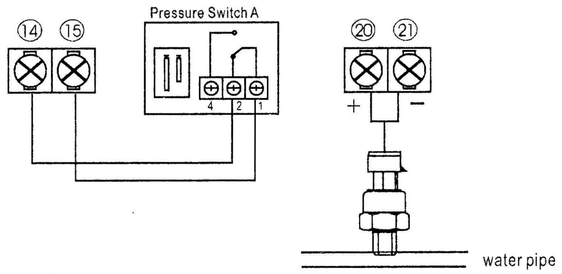
ITEM 6 Applied for Booster by connection with pressure transmitter and pressure setting .

Function switch setting:



LCD displaying:





1) 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 A.START button to add or A.STOP press button to decrease the parameter setting value according to the user's specific technical requirement;

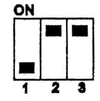
Code	Default setting	Definition	Function switch setting
022	25Bar	Pressure trasmitter measure range	001
023	8Bar	Cut off pressure value setting	001
024	4Bar	1st Pump cut in pressure value setting	001
025	2Bar	2nd Pump cut in pressure value setting	001
026	22Bar	Pressure value for over pressure setting	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

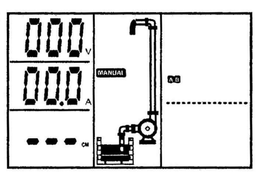
REMARK: ⑭ ⑮ is connection of pressure switch(optional),if pressure transmitter get broken , controller can stop pump to be mandatory.

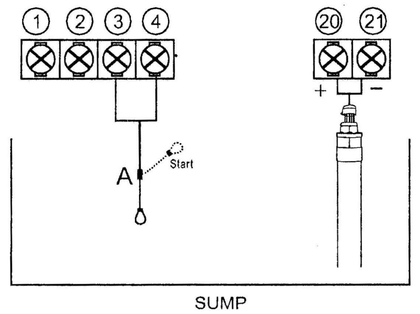
ITEM 7 Applied for Drainage by connection with level transmitter

Function switch setting:



LCD displaying:





1) 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 A.START button to add or A.STOP press button to decrease the parameter setting value according to the user's specific technical requirement;

Code	Default setting	Definition	Function switch setting
022	200cm	the largest measure range for the level transmitter default setting is 2meter	011
023	20cm	Cut off pressure value setting	011
024	40cm	1st Pump cut in pressure value setting	011
025	100cm	2nd Pump cut in pressure value setting	011
026	150cm	Depth value for over flow alarm setting	011

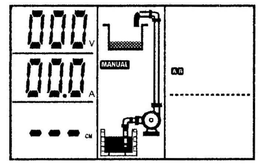
4) after adjusting completed, hold pressing STORE button for at least 5seconds, till controller makes a buzzer sound loosen STORE button, adjusting store completed

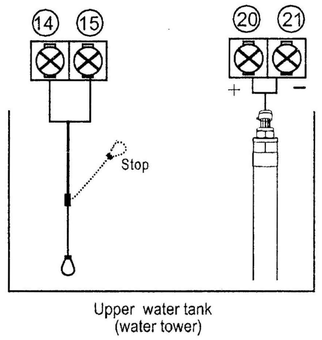
REMAR: ③ ④are connection of float switch(optional),if level transmitter get broken ,controller can start pump to be mandatory.

ITEM 8 Applied for Water transfer by connection with level transmitter

Function switch setting:

LCD displaying:





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

Code	Default setting	Definition	Function switch setting
022	200cm	the largest measure range for the level transmitter	100
023	100cm	Cut off depth value setting	100
024	40cm	1st Pump cut in value setting	100
025	20cm	2nd Pump cut in depth value setting	100
026	150cm	Depth value for over flow alarm setting	100

4) after adjusting completed, hold pressing STORE button for at least 5seconds, till controller makes a buzzer sound loosen STORE button, adjusting store completed

REMARK: ⑭ ⑮ is connection of float switch (optional),if level transmitter get broken,controller can stop 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 A START / B START key to run pump; press the A STOP / B 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 10seconds countdown;

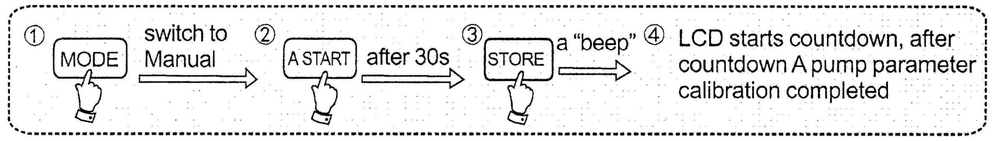
Note: no matter the controller is under auto or manual state, if the input power being cut off and recovery power again, the controller will resume its operation state same as the operation state before power being cut off;

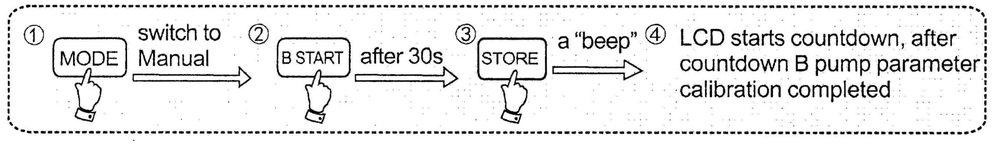
3.3 Parameter Calibration setting & erasing

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.

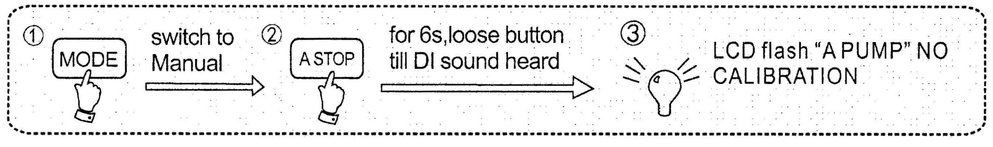
⚠ parameter calibration setting

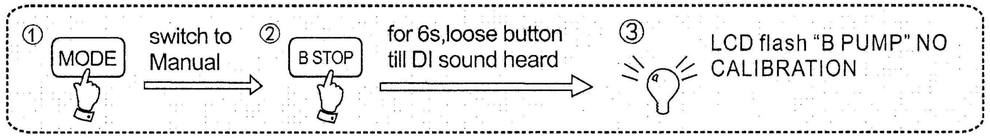
Pump/s must be able to pump water to enable correct calibration. If pump/s are calibrated without water,overload and pump stalled errors may occur later.





⚠ parameter calibration erasing





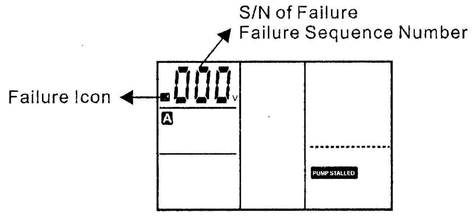
Note 1: Parameter calibration of pump B is same as pump A,just by pressing B START button instead of A START

Note 2: Erasing the Parameter calibration of pump B is same as pump A, just by pressing B STOP button instead of A STOP

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 A STOP key and press MODE key, the controller makes a "Di" sound, the controller displays pump failure record;



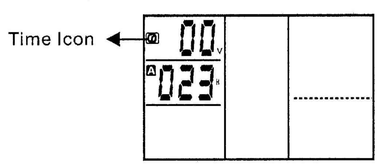
THE LATEST FAILURE OF PUMP A IS PUMP STALLED

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

Note: displaying the pump B last five failure record is same as pump A, just by pressing B STOP button instead of A STOP .

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 A STOP key, the controller makes a "Di" sound, the controller displays pump failure record;



THE PUMP A HAS RUN FOR 23 HOURS

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

Note:displaying the pump B accumulative running time is same as pump A, just by pressing B STOP button instead of A STOP

3.6 Parameter adjusting procedure

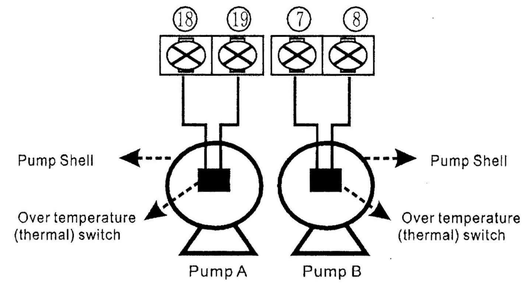
Step 1:
Press MODE button to switch to manual state;
Step 2:
Hold pressing STORE button for at least 5seconds, till controller makes a buzzer sound,loosen button and enter into parameter adjusting manual;
Step 3:
After entering into parameter manual, press STORE button to select the parameter code;
Step 4:
Press button to A START add or press A 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 1200, 02 on behalf of 2400 , 03 on be half of 4800, 04 onbehalf 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 5minutese.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 2minutese.g: if pump stopped operation because of under/over voltage or three phase unbalance ,controller will start to run the pump after every2minutes till voltage or ampere return to normal	
008	26A	The rated output power of pump A is 26A Defalut setting is 26A	
009	26A	The rated output power of pump B is 26A Defalut setting is 26A	
010	70%	The trip response ratio of dry running protection is 70% of rated current .Default setting is 70%	

Item	Default setting	Definition	Remark
011	135%	The trip response ratio of over load protection is 135% of rated current Default setting is 135%	Applied into all function switch setting
012	170%	The trip response ratio of pump stalled protection is 170% of rated current Default setting is 170%	
013	03	Phase reversal protection,Open phase protection. 00= both function non activated 01= phase reversal protection function activated, open phase non activiated 02=phase reversal protection function non activated ,open phase function activated 03=both function activated	
014	18%	Trip ratio of phase unbalance protection, unit is percentage(%) 0%= phase reversal protection function non activated defaut setting is 18%	
015	304V	Trip voltage of Under voltage protection, unitis voltage (V), when running voltage is below this value, controller will be in under voltage protection state Default setting value is 304V	
016	437V	Trip voltage of Over voltage protection , unitis voltage (V), when running voltage is over this value, controller will be in over voltage protection state Default setting value is 437V	
017	240H	When for drainage application,it is auto patrol time	
018	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	
019	00	A/B Pump operation enable/disable function & controlling state adjusting 00 = A & B Pump operation both enable 01 = A pump operation enable, B pump operation disable 02 = B pump operation enable, A pump operation disable 03 = A pump in auto state, B pump in manual state 04 = A pump in manual state, B pump in auto state	
020	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	
021	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

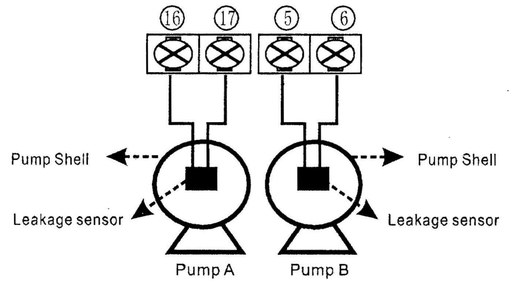


Noted 1: to realize the pump motor winding over temperature protection, it requires there must be over-temp switch embedded in the pump motor winding;

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



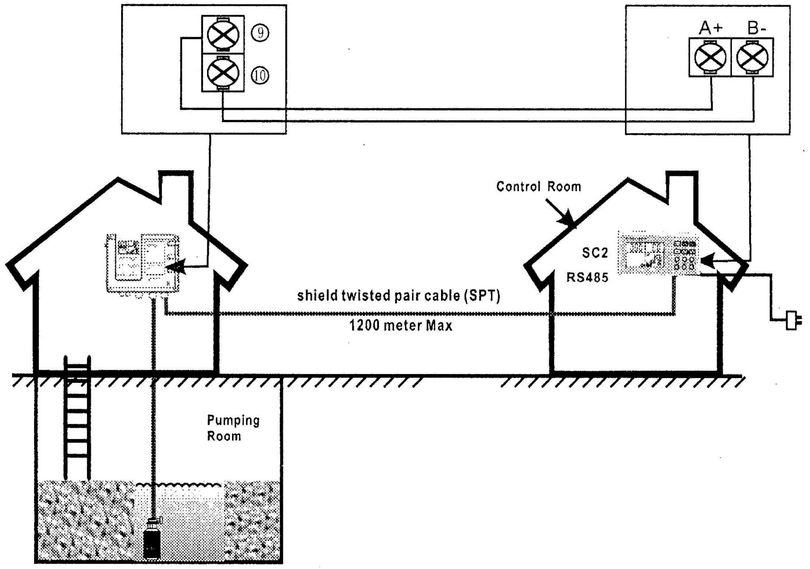
Note 1: to realize the pump mechanical seal leakage protection, it requires there must be leakage sensor embedded in the pump mechanical seal

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)

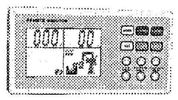
6 COMMUNICATION LINK

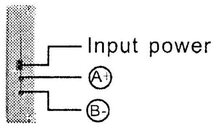
The controller has communication interface, To adopting simple peripheral equipment (Slave Controller), pump users can realize long distance monitoring function.

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 responsion 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-120Ù one pair 20AWG for RS485 & CAN
RS485 extender	5000meters (9600bps)

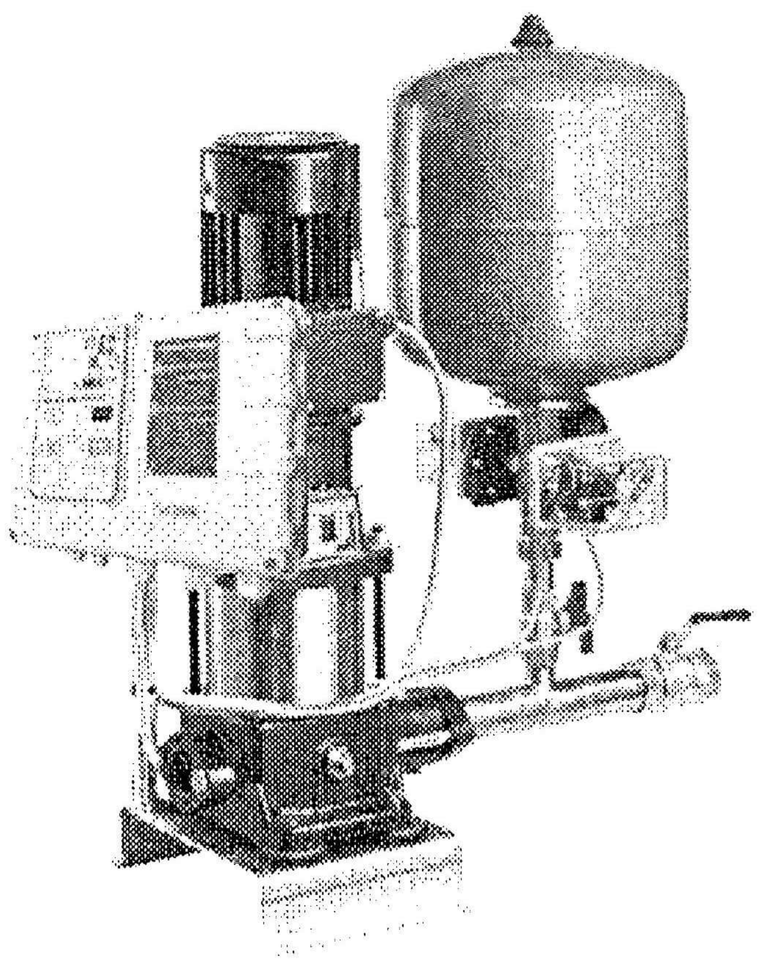
7 TROUBLE SHOOTING GUIDE

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) betweenthree phase(R/S/T) is not same and the difference is more than ±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 switchand 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

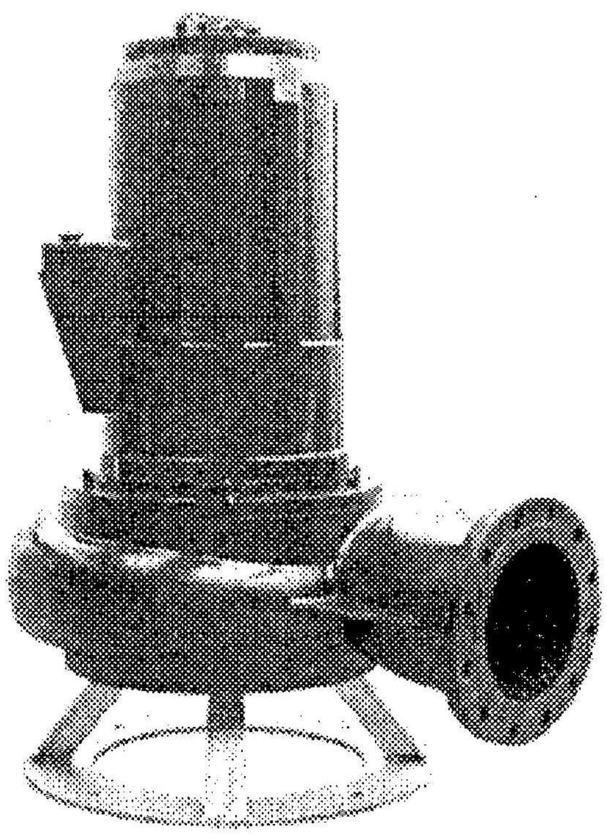
GP-L932 Plus

1-10hp 220V
7.5-20hp 460V
50Hz / 60Hz
Three phase



GP-L912 Plus

1-10hp 220V
50Hz / 60Hz
Single phase



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