GOL PUMPS TECHNOLOGY INC

G.P.T.CO

Installation & Operation Manual

Intelligent Pump Controller

with remote control monitor

SPL932

((0.75kw - 15kw))
220V , 460V
50Hz / 60Hz
Three Phases

SPL912

((0.75kw - 5.5kw))
110V , 220V
50Hz / 60Hz
Single Phase

" Best Quality "

Made in China

CONTROL PANEL FOR BOOSTER PUMP

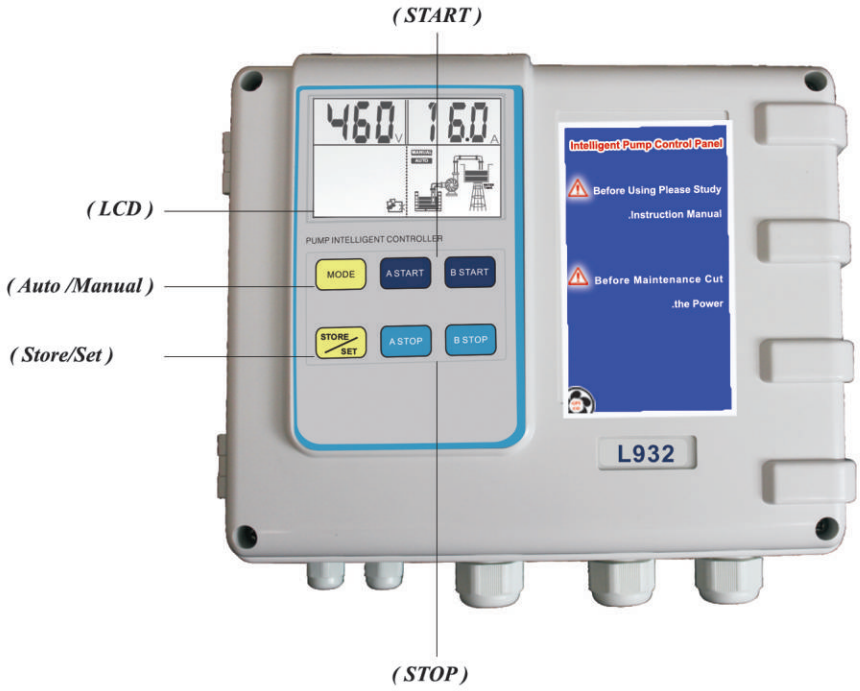
Read Manual Carefully Before Any Operation

www.golpumps.com
Info@golpumps.com

Brief Introduction :

The intelligent pump control panel model SPL932/912 is designed and produced to control and run duplex pumps . this box is able to control the liquid level or tank level . it also controls the pressure of liquid by pressure key simultaneously with high power . the best application of this box is for running submersible pumps, drainage pumps and sewage pumps

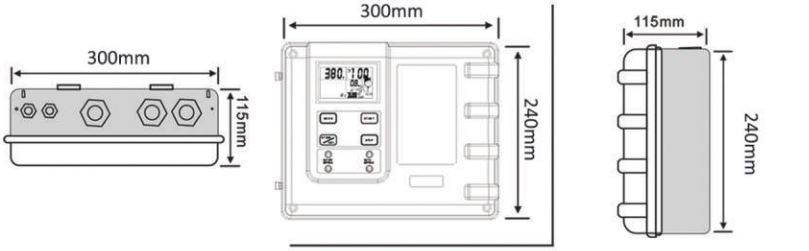
Its unique feature makes it very reliable and sensitive protective system against pump failure due to dry running , open phase , over/under current and electrical shocks . it also controls liquid level in tanks by mechanical floater or sensitive probes .



CAUTION

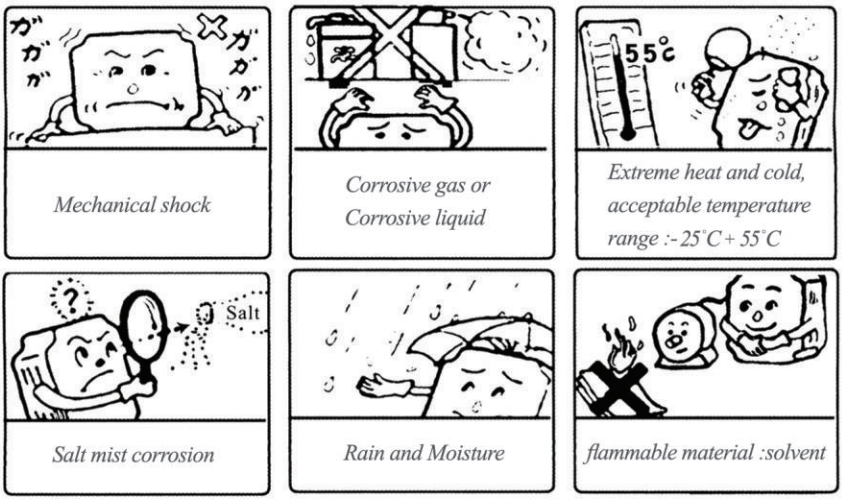
- *The electrical and hydraulic connections must be carried out by competent, skilled and qualified personnel;*
- *Never connect AC power to output C/M/A terminals;*
- *Ensure the motor, controller and power specifications matching;*

1 - Dimension

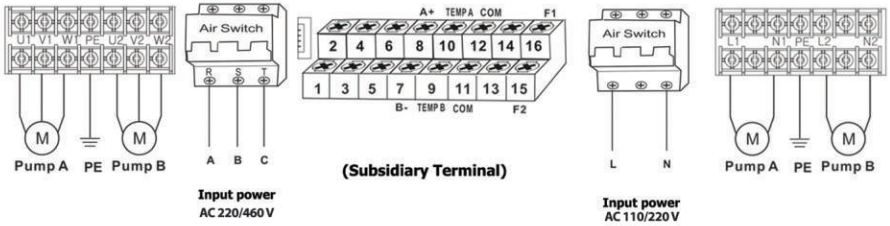


Attn: To avoid injury to the panel , please fix and install it in a proper place.

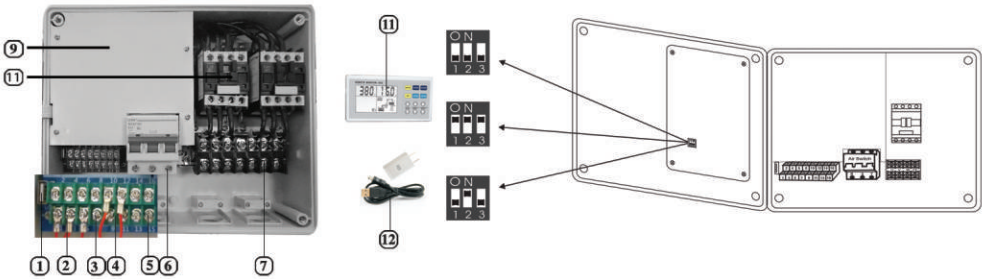
2 - Don't install the controller in the following condition;



1- Install and wiring

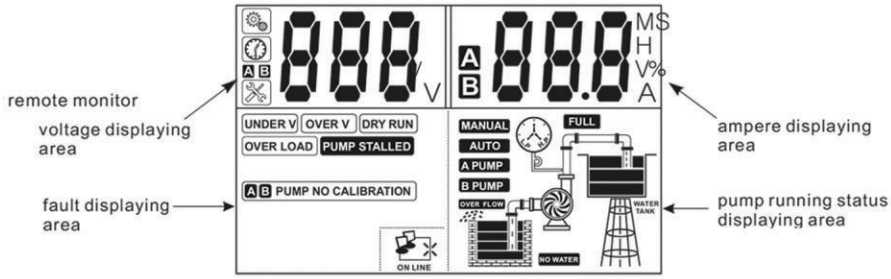


2-1 Controller Component



Item	Swith position	Messages & Graphic	Application
1	ON 1 2 3	WATER TANK	Applied for water supply or drainage by liquid level control through float switch or liquid sensor
2	ON 1 2 3		Applied for water supply by pressure control through pressure switch & pressure tank
3	ON 1 2 3		Applied for drainage by liquid level control through float switch & liquid probe

1. USB port For Remote Connection .
2 .Control terminals for electrical connection to float switch / probe / pressure switch
3. RS 485 terminals for communication link (remote monitor)
4. Terminals for temperature probe
5. Passive dry contacting point
6. MCB for electrical connection to the power supply
7. Terminals to electrical pump
8. Displaying board
9. Main board+Transformer board
10. AC contactor
11. Remote monitor
12. Adaptor + cable for remote monitor (SC2)
13. Wall-mounting spares+ waterproof tape for the cable(optional)



Specification and Different Models Of Control Panels SPL912&932

MODEL	Voltage	Phase	Power (Kw)	Capacitor (µf)
SPL912/2.2	110	1	0.37- 2.2	-
SPL912/5.5	220	1	3 - 5.5	-
SPL932/4	220	3	0.37- 4	-
SPL932/5.5	460	3	0.37- 4	-
SPL932/11	460	3	5.5 - 11	-
SPL932/15	460	3	11 - 15	-

3 - Main Technical Specifications for SPL 932/ 912

Rated input voltage in single phase	110 V - 220 V
Rated input voltage in three phase	220 V - 460 V
Rated frequency	50 Hz - 60 Hz
Rated output power of motor in single phase	0.37 Kw – 5.5 Kw
Rated output power of motor in three phase	0.75 Kw – 15 Kw
Over / Under voltage trip	±%15
Dry running trip (under load)	%70
Pump stalled trip	%200
Overload trip	%125
Rapid cycle trip	4
Trip response time of over load	3-300 sec
Trip response time of pump stalled	0.5 sec
Trip response time of dry run	6 sec
Trip response time of under / over voltage	5 sec
Trip response time of open phase	<2sec
Recovery time of overload protection	30 min
Recovery time of dry running protection	30 min
Recovery time of under/over voltage protection	5 min
Liquid level transfer distance	≤1000m

Attn 1 : *If the rated input voltage is 220V , the under voltage trip is 187V and the over voltage trip is 253V . if the rated input voltage is 460V , the under voltage trip is 390V and over voltage trip is 525V*

Attn 2 : *Current decrease rate for overload trip is %70 of calibrated ampere rate i.e if the running ampere of pump motor is 10A , the pump stalled trip ampere is7A .* ***Attn 3 :*** *Current increase rate for overload trip is %200 of calibrated ampere rate i.e if the running ampere of pump motor is 10A , the pump stalled trip ampere is 20A)*

Attn 4 : *The higher current rate , the shorter overload trip time*

Operating Environment conditions :

Degree of protection : IP54
Working temperature : -25C - +55C
Working humidity : 20% - 90% RH
Max altitude : 3000 meter over sea level
Max vibration : > 0.6 G

4 - Features and specifications of intelligent control panel SPL 912/932

1- Applied for water supply by liquid level control through float switch or liquid probe for upper tank .

2- Applied for water supply by liquid level control through float switch or liquid probe for lower tank .

3- Applied for water supply by pressure control through pressure switch and pressure tank .

4- Auto / Manual Switch

5 - 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

6 - Under/over voltage protection

7- Over current protection

8 - Pump motor stalled protection

9 - Open phase protection in three phase model

10 - Dynamic LCD displays pump running information

11 - Push button calibration

12 - Pump accumulative running time displaying

13 - Calibrating all protective parameters in each pump

14 – Installed operation label on control panel body and operation manual in two English & Chinese languages .

15 – Integrated design , small size and easy to install

16 – Programmable and controled by PC .

17 – Usable with SC1digital panel and remote control

18 – Multi-colour LCD with 16bit CPU and using assured elements

19 – Usable with booster pump sets .

20 – Repeated start protection

21 – Pump last five fault record displaying

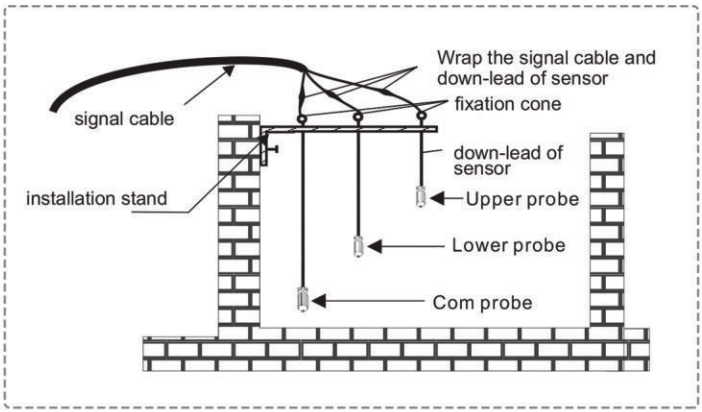
22 – Pump shaft anti rust

23 – RS 485 communication

5 – Instructions

5.1- Installing Liquid Sensor

Installation and Wiring Diagram



Attn 1: *In event of high risk of electric storms (lightning) or when liquid medium in well , tank or sump is very dirty it is recommended float switch is used .*

Attn 2 : *In the time of buying , pay attention to float switch selection , its quality and the installation of added adhesive waterproof tape . the water penetration in the unsuitable float switch can cause difficulty .*

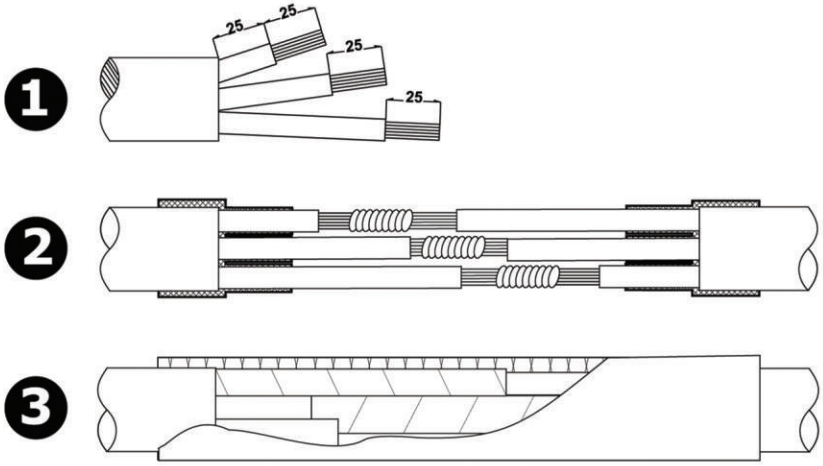
5-2 Sealing cable

Cut off about 100mm insulating rubber at each side of the cable . then cut the three stand core wires about 25mm and connect wires with the same color to each other and tighten them . Clean the oxide layer on the surface of the copper wire with a stripper or sand cloth . then cover each stand of core wire with two layers of insulating tape . cut the special rubber for sealing cable in 2 cm width and 2mm diameter then cover wires with it observing three following cases:

1- the half of previous wrapped tape should be covered when you wrap a new layer of insulating tape .

2- approximately 5 cm of cable should be covered with the wrapped tape .

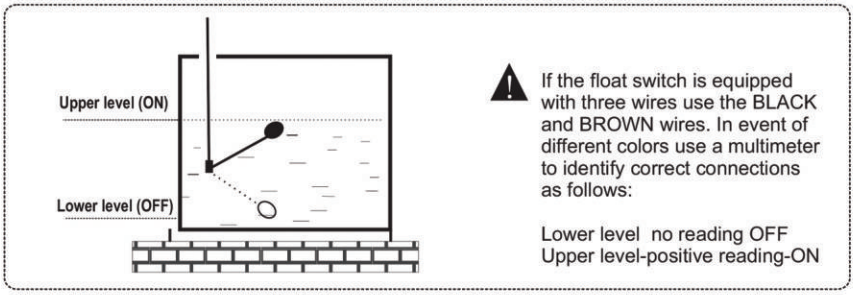
3- After sealing cable , wrap it with three layers of PVC tapes to make it resistance against water penetration .



6-3 Installing float switch

Generally , float switch is supplied with installation & connection manual , so read the manual carefully before doing any operations .

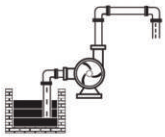
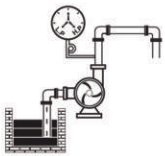
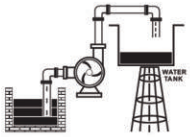
Note :There is two kinds of floater in the market . single – contact N.C/N.O and two – contact N.C/N.O/N.C floaters .



• Don't encase sensor leads or floater cable in metal pipes . use PE tubing .

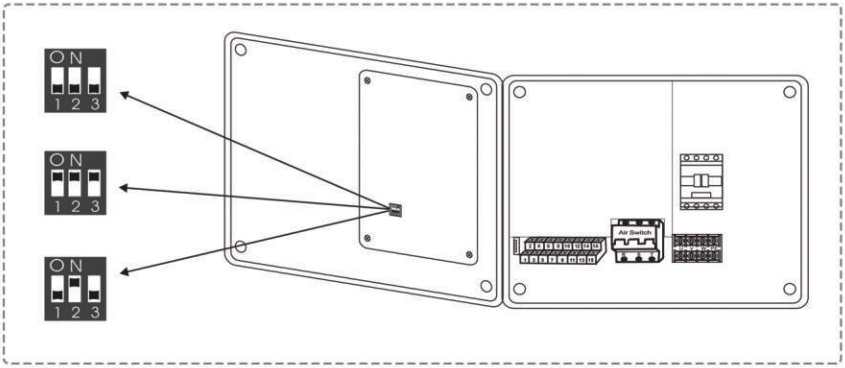
Attn : *To control discharge and filling tanks , single – contact floater should be used . if two – contact floater is selected , create a situation conforming with single – contact floater by selecting suitable wires .*

5-4 Function switch setting for different application (float switch / pressure switch)

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 water supply by booster pumping system 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

Attn 1 : *To see wiring diagram in details , please refer to next pages .*

Attn 2 : *having completed the switch setting , turn the control panel on then message and icon displayed on LCD screen indicate operation mode .*

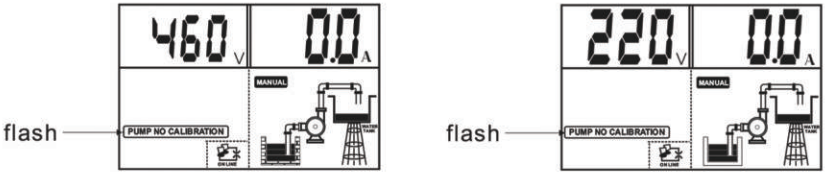


6 - Parameter Calibration setting & erasing

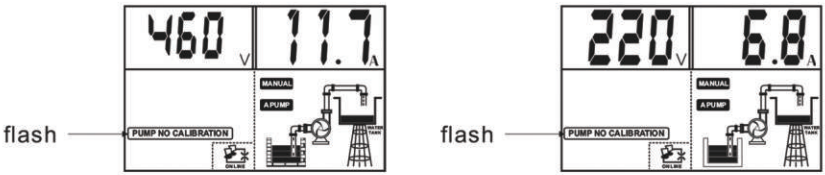
To achieve the best level protection of pumps , it is essential that parameter calibration must be done immediately after successful pump installation or Pump maintenanc.e

Setting the parameter calibration(Pump A)

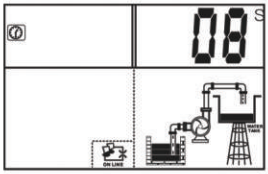
*Press the key **MODE** to switch to manual state, make sure the pump not running and **LCD** screen displaying*



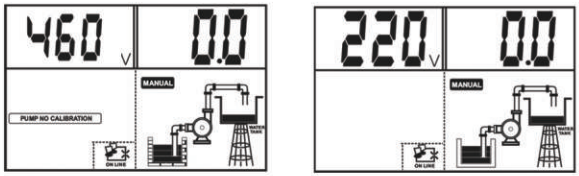
*Press the key **A START** to run pump, confirm the pump and all pipe network in normal working state (including voltage, running ampere et); **LCD** screen displaying:*



*Press the **STORE** button ; The **L932** makes a" **Di** "sound and starts countdown, **LCD** screen displaying :*



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



Pump A is ready for running

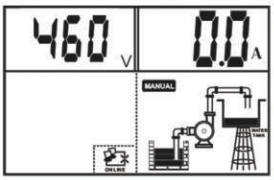
Note : *parameter calibration of pump* ***B*** *is the same as pump* ***A*** *, just by pressing* ***B START*** *button instead of* ***A START*** *.*

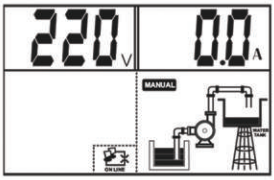
Erasing former parameter calibration

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 .

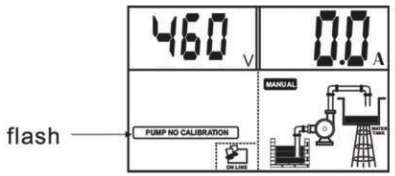
Method of Erasing former parameter calibration

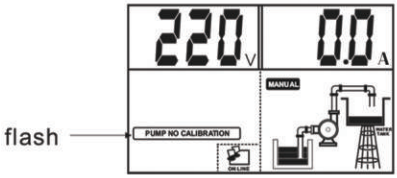
Press the key MODE to switch to manual state, make sure the pump not running and ***LCD*** *screen displaying:*





Press the A STOP key and release till ***L932*** *makes Di sound , L932 recovers the default factory setting and* ***LCD*** *screen displaying :*

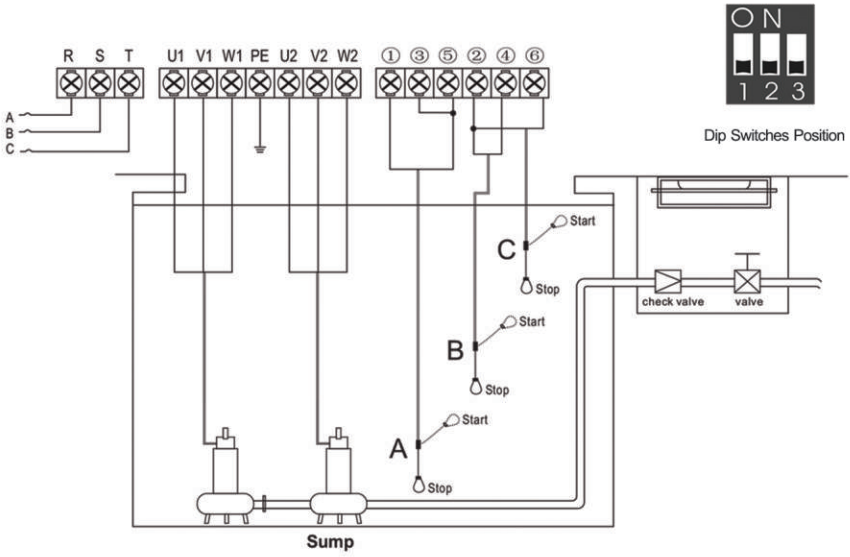




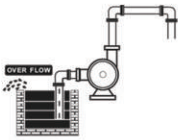
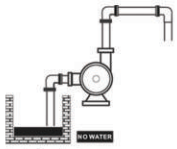
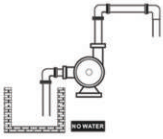
7- Wiring Diagrams For Different Application

7-1 Draining sump by double pumps set :

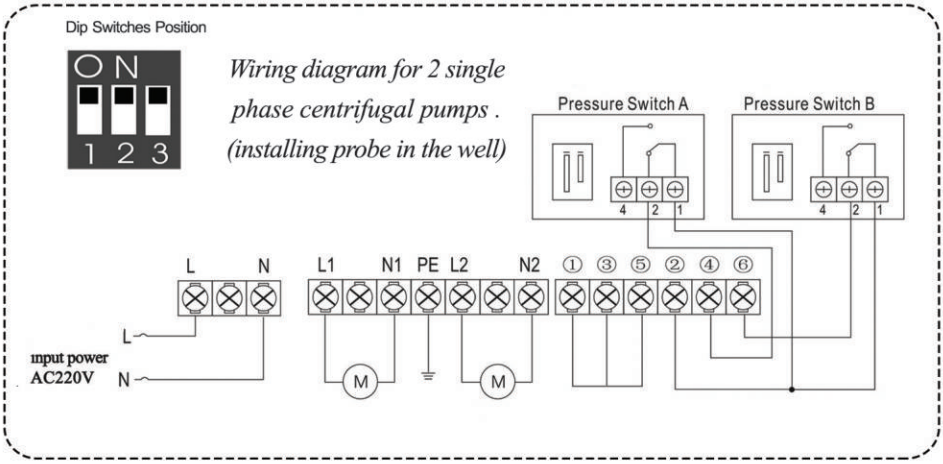
When floater a is down and the sump water is low , the control panel will turn double pumps off . when water level keeps floater a up , pump a will be turned on .when water level keeps floater b up , pump b will be turned on . as long as both floaters a&b are up , double pumps will not stop running. when water level moves floater c upside , it means the sump is overflow and the panel alarms this by turning on light FULL .



Meaning and solution of the fault messages shown on the LCD screen

solution	Description	Fault message/icon
By decreasing liquid level to floater switch C (Down Level),Control panel stops sending overflow alarm.	Liquid level in the sump reaches float switchC (UP Level) . Control panel sends overflow alarm.	 Overflow in Sump A pump + B pump RUN
When liquid level in the sump reaches floater switch A (Up Level) . Control panel will order single pump to run .	Liquid level in the sump decreases to floater switch A (Down Level) . Control panel will order single pump to stop .	 Lack of water in sump A pump + B pump off
Check floater A . Control panel will restart pumps automatically after 30 minutes .	Liquid level in the sump is lower than the inlet surface of pump . control panel will turn pumps off.	 Dry-Run A pump + B pump off

7-2 Water supply by booster pumping system through pressure switch/pressure tank



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

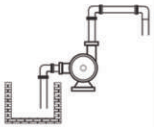
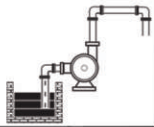
1) Normal pressure demanding

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***

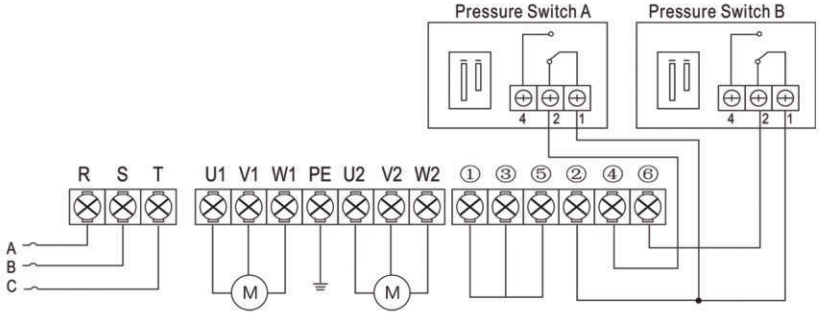
2) Extra pressure demanding

single pump is running, pressure in the pipeline still decrease to the setting of pressure switch ***A,*** *control box will order another pump to run simultaneously, till pressure in the pipeline reaches the settingof pressure switch* ***B,*** *double pumps will not stop running;*

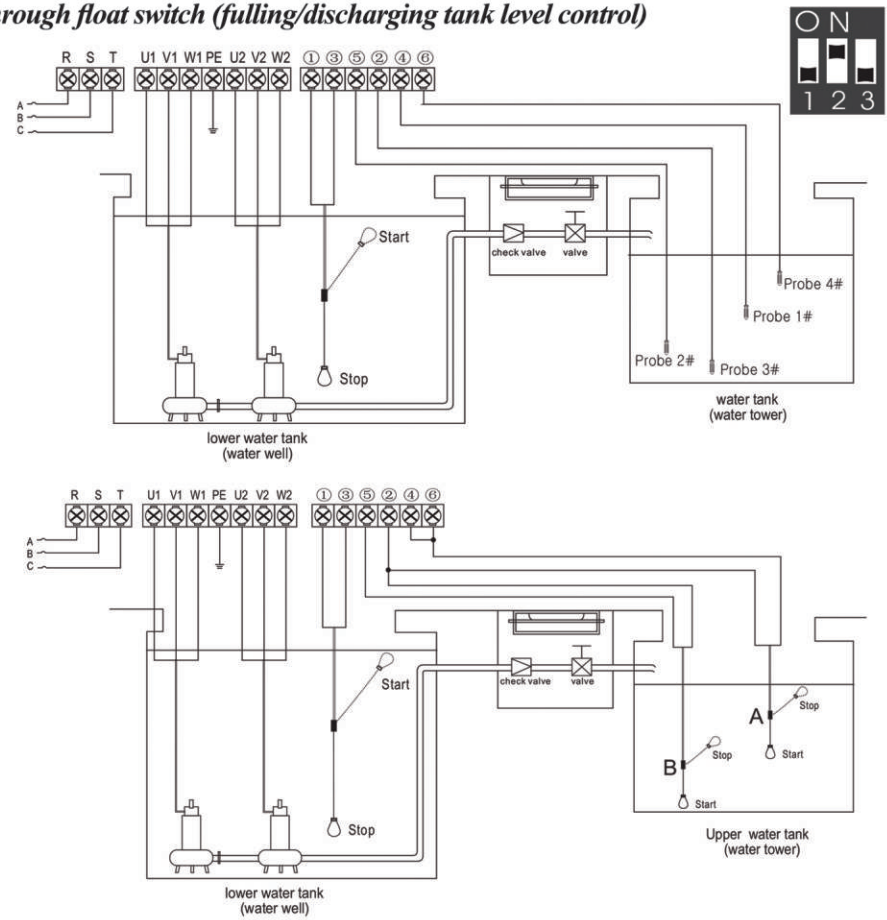
Meaning of the messages & graphic shown on the LCD screen

Messages & Graphic	Description	Messages & Graphic	Description
	Lack of water in water well		Full of pressure in pipeline or pressure tank
	Full of water in water well		Lack of pressure in pipeline or pressure tank

Wiring diagram for 2 three-phase centrifugal pumps.



8-3 Water supply & providing more water demanding by booster pumping system through float switch (fulling/discharging tank level control)



A PUMP RUN

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)

A PUMP + B PUMP RUN

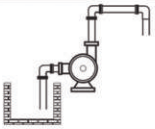
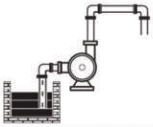
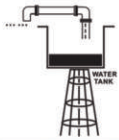
2) Extra water demanding:

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;

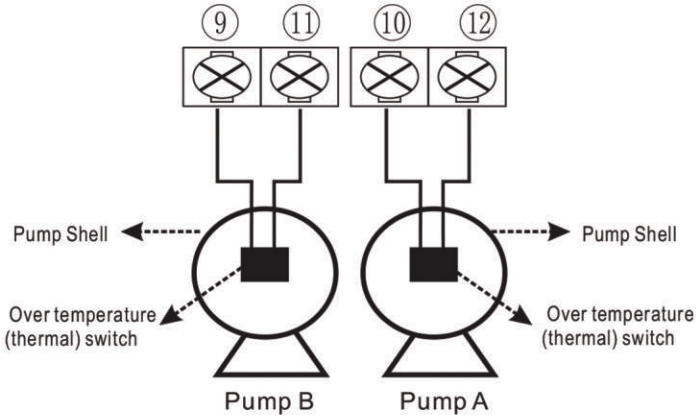
A PUMP + B PUMP OFF

3) Dry running protection :

During the pump running , once the liquid level in the water well declines to certain level (floater switch : down level) , panel will stop all pumps running and wait for the water level in the well recovers .

Messages & Graphic	Description
	Lack of water in water well
	Full of water in water well
	Lack of water in water tank
	Full of water in water tank

8- Electrical Connection for pump motor winding over temperature protection



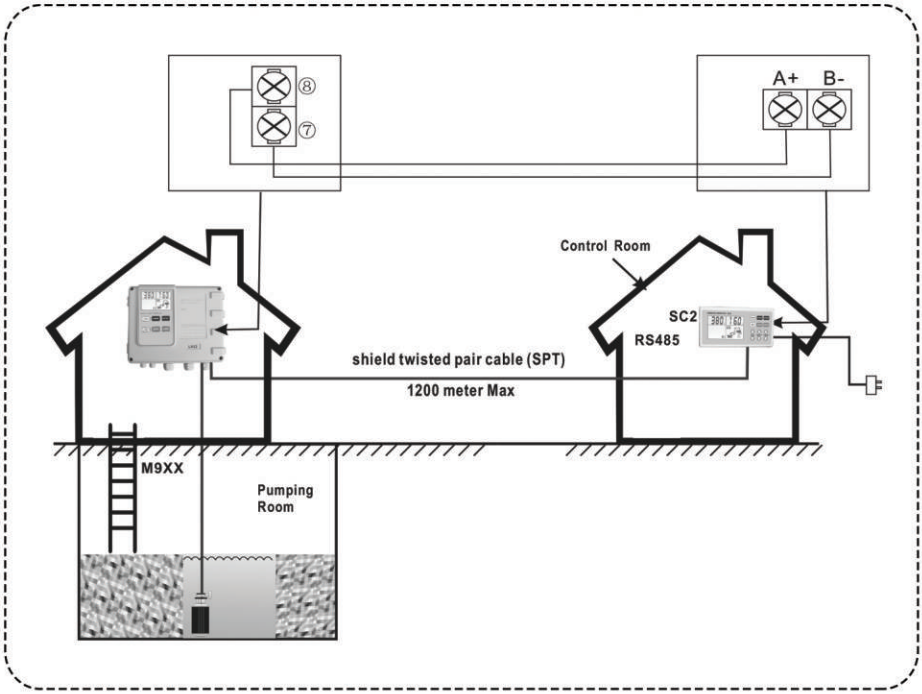
Note 1: *to realize the pump motor winding over temperature protection,it requires there must be over-temp switch embedded in the pump motor winding;*

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 9 & 11, terminal 10, 12 separately;*

9 - COMMUNICATION LINK

*Model **L932** has communication interface, To adopting simple peripheral equipment (Slave Controller), pump users can realize long distance monitoring function.This function is applied for **L932** 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.*



9 -1 BASIC FUNCTION

Slave Controller, model SC2 with communication interface can realize long distance monitoring function. In the control room, pump users can realize all functions of ***L932*** *(Master Controller) through* ***SC2****, including: voltage & ampere displaying, pump fault displaying, auto / manual switch, pump start/ stop switch, pump running status displaying etc.*

9-2 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.*

9-3 TECHNICAL PARAMETER

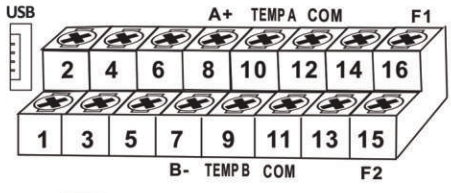
The following chart shows main technical parameters of communication link between ***L932*** *& Slave Controller* ***(SC)***

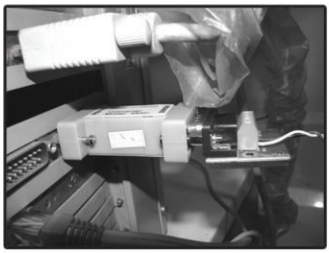
Main technical data	
Physics Interface	RS485 Bus Interface: asynchronism semiduplex
Data format	1start bit 8data bit, 1stop bit, no verify 1start bit 8data bit, 2stop bit, no verify Default: 1start bit 8data bit, 1stop bit, no verify
Baud rate	1200 bps、2400 bps、4800 bps、9600bps **Default: 9600bps**
Communication 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)

10- Controlling Spico Digital Panels Via Computer

The digital panels model ***SPL9*** *can be controlled by computer.*
The instruction for connecting control panel to computer and installing firmware needed is brought inside the control panel ***CD*** *.*
To control the panel through computer , user must connect two wires and a converter ***RS232/RS458*** *to the computer observing the following cases :*
a) *converter* ***RS232/RS458*** *has a input terminal and a output port which can be connect to computer easily* ***(Fig 1)*** *. the converter is available in two different models :*

- *without power supply which is used for* ***50 m*** *communication distance .*
- *supplied with power supply which is used for longer communication distance* ***(Fig 2).***





(Fig 1- connecting port to computer)

(Fig 2- RS232/RS485 port supplied with power supply 5VDC)

b) *Control panel* ***CD*** *includes Long Distance Firmware which can be installed easily . password is 1111 .*

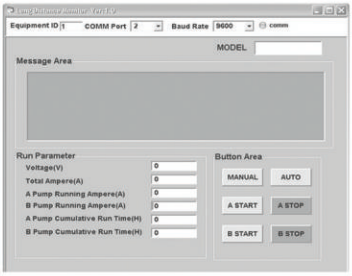
c) *Regarding wiring diagram , make sure the control panel is connected to the computer properly . then press small miniature 1,2,3 buttons of terminal down. Connect the panel to power and turn the computer on . at this time , the computer can read the panel by Windows firmware and then a green light turns on indicating communication.*

In the main page of the firmware on the left , there is a space named "Equipment ***ID" (Fig 4)*** *which can be set between* ***1-127*** *. the panel must be also set on the same* ***ID*** *number to be read .*

There is a another space named "Comm Port" which is related to output port and port 2 is generally considered for this output port .

There is a "bond rate" space in the main page of the firmware which must be set on 9600 .

make sure the bond rate of the control panel is also set on 9600.In the case of proper communication , there is a "model" space in which the model name of the control panel is shown . for example : ***SPH 912***



(Fig 4- The main page of Firmware)

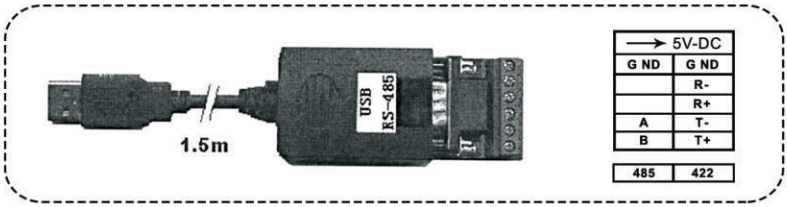
In the "Message area" space , error states is shown and user can be informed of pump status.

In the "Run parameter " space , all data related to current , voltage and operation time is shown .

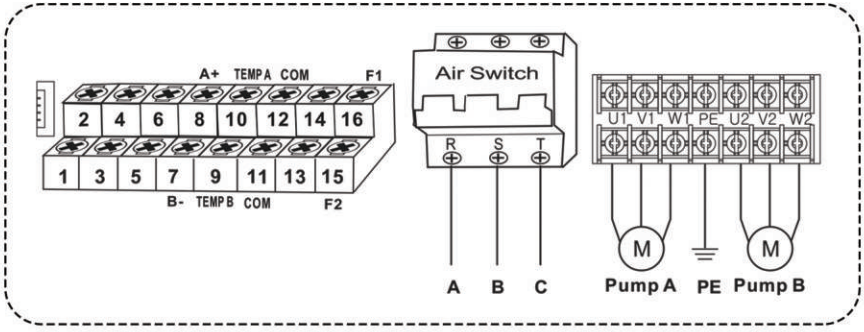
In the bottom of the main page on the right there is a ***"Bottom area"*** *space including three Start , Stop and Auto-manual buttons . if the control panel is for single pump , there are Start and Stop buttons .*
but if the panel is for booster pump there are +A Start , -B Start , +A Stop , -B Stop buttons .

So providing the control panel is set on 9600 bond and 1-127Comm port, you can control the control panels model SPL9 through the computer by setting computer on t he same setting as the control panels. It should be mentioned the computer and the panel must be communicated by means of ***RS232/RS485*** *ports.*
If the ***RS232/RS485*** *port is used for mouse , you should use* ***PSTWO*** *port for mouse and set* ***RS232/RS485*** *port on port* ***2*** *.*

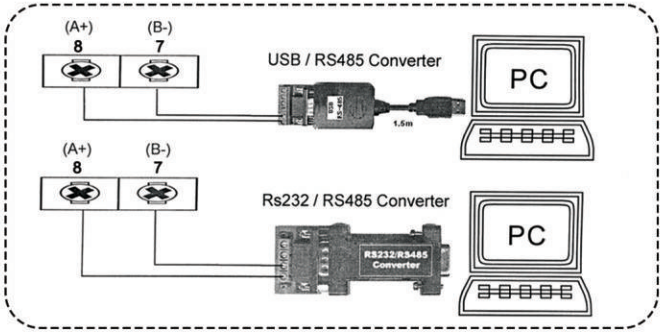
Note : RS485 *protocol is a amplifier model ModBus which is connected between computer and device or remote control .*



All information and controls can be viewed and changed in monitor separately



*Wiring diagram for **RS485** communication*



11- Basic Operation

*Press the Mode key, user can alternate between Manual/Automatic modes which will be indicated by the related **LCD**.*

11-1 Switching to AUTO mode

Press the MODE key to switch to auto state, L932 is under the auto control state;under auto state,L932 will run or stop the pump according to the signal from liquid level probe or pressure switch.

- ***Pumps alternate running :***

Under Auto mode , if pump A starts running firstly , when it stops running, control panel will order pump B to run .

- ***Pumps participate running :***

Under Auto mode , if single pump running can not meet the demanding , the panel will order another pump to participate running .

- ***Pumps switch running :***

During pump running, if dry run, over load, under voltage, etc failures happened, the L932 will switch running to another pump .

***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 mode , if the input power being cut off and recovery power again , the panel will enter operation state after 10 seconds countdown .*

12-2 Switching to MANUAL mode

Press the MODE key to switch to manual state , the panel is under the manual control state . under manual state , press the A START/B START key to run pump and press the A STOP/B STOP key to stop pump running.

Note : *under manual state , the panel can not receive any signal from level probe or pressure switch .*

11-3 Pump Protection

During pump running , if dry run , over load , under voltage , etc failures happened , the panel will immediately shut down the pump running and automatically execute a check for restarting conditions after a built in time delay has elapsed . the panel will not recover automatically untill all the abnormal situation have been cleared . if the panel is subjected to short circuit , the control unit will immediately shut the power off and will resume control after the malfunction has been obviated .

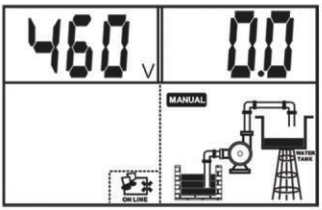
Note : *under manual state , the panel can not receive any signal from level probe or pressure switch and the user is obligated to control liquid level or pressure settings .*

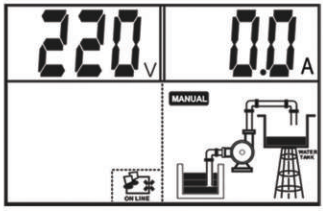
Pump last five failure record displaying

The L932 can memorize the last five failures of pump, so it is very convenient for the pump users to analyse the pump running conditions.

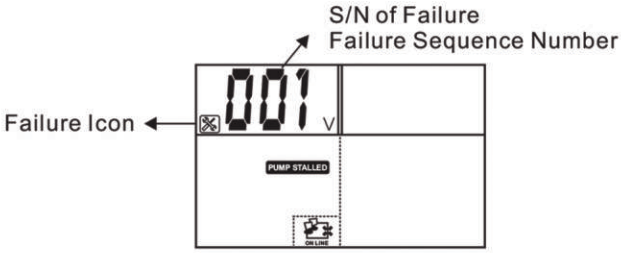
Displaying the pump A last five failure record

*Press the **MODE** key to switch to manual state, make sure the pump not running and **LCD** screen displaying:*





*Hold pressing **A STOP** key and press MODE key , the **L932** makes a Di sound the **L912** displays pump failure records*



THE LATEST FAILURE OF PUMPA IS PUMP STALLED

Press A STOP key to quit the failure record displaying;

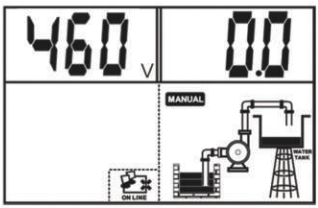
***Note** : Displaying the pump B last five failure record is the same as pump A , just by pressing B STOP button instead of A STOP .*

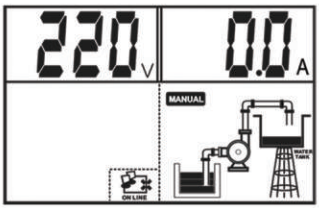
Pump accumulative running time displaying

*The **L932** can memorize how many hours of pump running, so it is very convenient for the pump users to analyse the pump running conditions and do maintenance.*

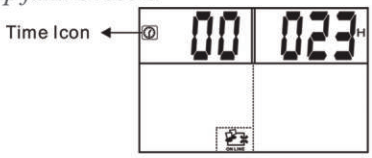
Displaying the pump A accumulative running time

Press the MODE key to switch to manual state, make sure the pump not running and LCD screen displaying:





Hold pressing ***STORE*** *button and press* **A STOP** *key, the L932 makes a "Di" sound, the* ***L932*** *displays pump failure record*



THE PUMP A HAS RUN FOR 23 HOURS

Press A STOP key to quit accumulative running time displaying

Note : *Displaying the pump B accumulative running time is the same as pump A , just pressing B STOP button instead of A STOP .*

13- Trouble Shooting

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 powersupply company
		L932 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
		L932 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	L932 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	L932 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 L932 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 L932	connecting the L932 to SC / computer to realize long distance monitoring

Meaning of the icons shown on the LCD

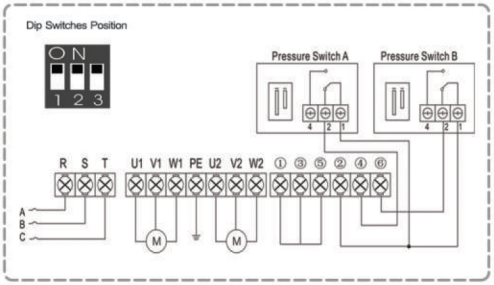
Icon	Meaning/Description
	pump parameter configuration icon, when this icon appears, pump control box is in parameter adjusting manual;
	time displaying icon, when this icon appears, it means pump control box is displaying some parameter of time, eg: pump accumulative running time (unit: hour); counting down etc
	pump fault icon, when this icon appears, it means pump control box is displaying some fault information;
	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;
	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

SP-L912

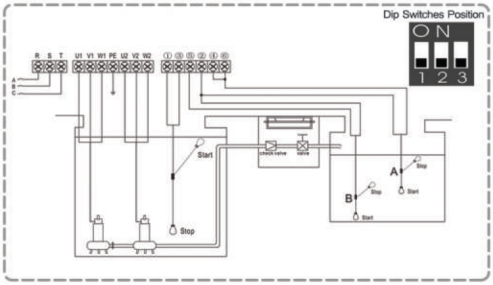
((0.75kw - 5.5kw))
110V , 220V
50Hz / 60Hz
Single Phase

SP-L932

((0.75kw - 15kw))
220V , 460V
50Hz / 60Hz
Three Phases



Wiring diagram for 2 Three phases centrifugal pumps



Wiring diagram for 2 Three phases sewage pump

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