



## PRODUCT PROFILE & FEATURES

- Pump Protection from dry run and overflow condition
- Specially designed sensors
- Trip relay & Alarm relay indication
- 5A SPST output relay (Resistive)
- Manual start switch facility
- Water levels & Trip indication LED's
- Used for Two tank and Single tank water level monitoring
- Selectable Suction and Delivery mode in Single tank operation

## SPECIFICATIONS

|                             |                                                               |
|-----------------------------|---------------------------------------------------------------|
| <b>AUXILIARY SUPPLY</b>     | : 85 – 270V AC/DC                                             |
| <b>FREQUENCY</b>            | : 50Hz/60Hz                                                   |
| <b>POWER RATING</b>         | : 4VA max.                                                    |
| <b>INPUT SENSOR</b>         | : Stainless steel prods                                       |
| <b>TRIP SETTING</b>         | : According to the levels of sensor placed in the water tank. |
| <b>TRIP TIME DELAY</b>      | : 2 sec                                                       |
| <b>RECOVERY TIME</b>        | : 2 sec                                                       |
| <b>RESET</b>                | : Automatic                                                   |
| <b>TIME ACCURACY</b>        | : $\pm 5\%$ of 2sec                                           |
| <b>OUTPUT SPECIFICATION</b> |                                                               |
| Relay Rating                | : 1 N/O(Resistive)<br>5A@250VAC/28VDC                         |

## MECHANICAL SPECIFICATIONS

|                         |                       |
|-------------------------|-----------------------|
| Dimension               | : 35x90x60mm          |
| Mounting                | : 35mm DIN Rail mount |
| Screw tightening torque | : 0.5N.m              |

## ENVIRONMENTAL SPECIFICATIONS

- Impulse Withstand Voltage : 4kV
- Indoor use
- Altitude of up to 2000 meters
- Pollution degree 2
- Operating Temperature : 0° to 50°C
- Storage Temperature : -20° to 70°C
- Humidity : Up to 95% RH, non-condensing

## WEIGHT

|        |              |
|--------|--------------|
| Sensor | : 50gms each |
| Unit   | : 100gms     |

## CERTIFICATION : IEC60947-5-1

## APPLICATIONS

1. This product protects the motor from dry run condition; thus ensures durability.
2. The automatic sensing of levels and controlling algorithm ensures 24 hours water supply without any kind of interruption, which fortunately saves water & human Efforts.
3. This device operates with sensors which are specially designed to monitor the water level in tanks. These sensors are safe, electrically isolated from mains, plastic moulded & non-corrosive so it lasts longer.

## MODE SELECTION AND OPERATION

This product operates in following modes :

1. Single tank mode
  - Suction Logic - Single level, Two level, with/without alarm
  - Delivery Logic - Single level, Two level, with/without alarm
2. Dual tank mode

## FUNCTION OF SINGLE TANK MODE (SUCTION OR DELIVERY LOGIC)

- When product is to be used with Single Tank Mode with Suction/Delivery Logic,
- Sensors P4, P5 & P6 are not connected/kept open.
  - Lower and upper water level measurement is done with sensor P2 & P3 respectively, considering P1 as reference.

## FUNCTION OF TWO TANK MODE (SUCTION AND DELIVERY LOGIC)

When product is to be used in two tank logic,

- The system starts up whenever water is to be supplied to delivery tank and suction tank has sufficient level to supply it & it stops when the water reaches its maximum level in the delivery tank or if the suction tank reaches its minimum level.
- P1 is considered reference for suction tank & measurement is done with sensor P2 & P3 for two level and with sensor P2 for single level.
- Similarly for delivery tank, P4 is considered as reference & measurement is done with Sensor P5 & P6 for two level and sensor P5 for single level.

## FUNCTION OF ALARM LOGIC

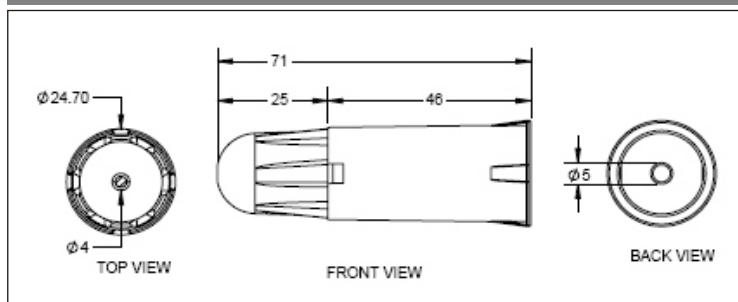
When product is to be used in single tank mode with alarm,

- Sensor P1+P4 are shorted so as to act as single reference.
- Measurement is done with sensor P2 & P3 for different level indication.
- Sensor P5 & P6 are considered to indicate alarm condition.

## INPUT SENSOR

- This product is to be used with Selec sensor prod only.
- The Selec sensor prod has a bolting arrangement for connecting a suitable cable and it is to be suspended from top opening of the water tank.
- Sensor Material : Stainless steel

## INPUT SENSOR DIMENSIONS



## LED INDICATION CHART

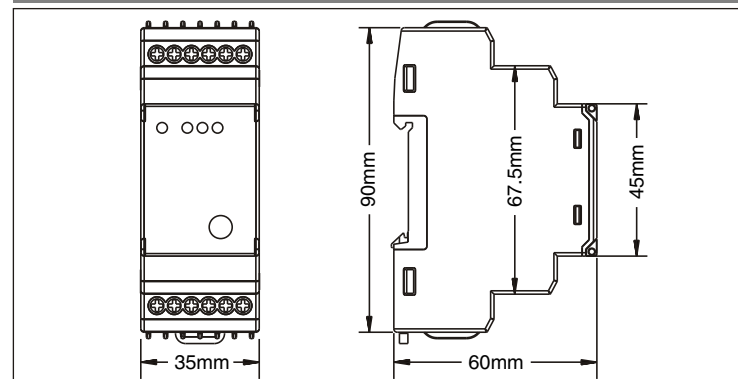
| Sr.No. | LED Color | Notation | Indication                     |
|--------|-----------|----------|--------------------------------|
| 1      | Green     | ON       | Power ON                       |
| 2      | Yellow1   | S        | Suction Tank Level Indication  |
| 3      | Yellow2   | D        | Delivery Tank Level Indication |
| 4      | Red       | R        | Relay Indication               |

## CONFIGURATION SETTING

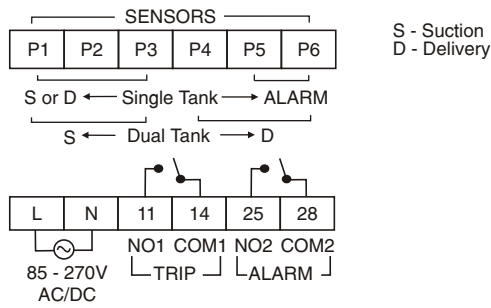
To enter configuration mode, all the sensors should be disconnected from unit or should be out of water. Either of the three modes i.e Single Tank (Suction), Single Tank (Delivery), Two Tank (Suction & Delivery) can be selected. Default mode is Two Tank (S&D).

| Step | Condition                                                                                                                   | START Key                         | LED INDICATION<br>(Once entered config mode) |       |       |       | Duration |
|------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------------|-------|-------|-------|----------|
|      |                                                                                                                             |                                   | ON                                           | S     | D     | R     |          |
| 1    | Enter Configuration                                                                                                         | Press for 5sec                    | ON                                           | Blink | Blink | Blink | 3 sec    |
| 2    | Mode Selection                                                                                                              | Press key to switch between modes |                                              |       |       |       | 10 sec   |
|      |                                                                                                                             | 1. Two Tank (S&D)                 | ON                                           | ON    | ON    | OFF   |          |
|      |                                                                                                                             | 2. Single tank (S)                | ON                                           | ON    | OFF   | OFF   |          |
|      |                                                                                                                             | 3. Single tank (D)                | ON                                           | OFF   | ON    | OFF   |          |
| 3    | Exit Configuration                                                                                                          | -                                 | ON                                           | Blink | Blink | Blink | 3 sec    |
| 4    | After 10secs unit will auto exit configuration mode, considering mode present during the time of exit for further operation |                                   |                                              |       |       |       |          |

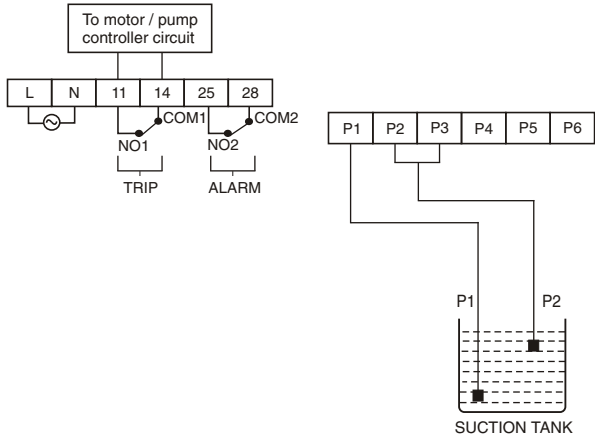
## MECHANICAL INSTALLATION / DIMENSIONS



## ■ TERMINAL CONNECTION



## SINGLE TANK SINGLE LEVEL\_SUCTION LOGIC

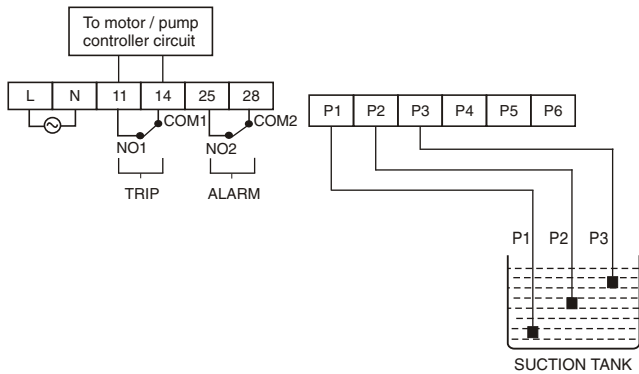


- NOTE :
- P4, P5 & P6 are not connected.
  - Sensor P3 is shorted with sensor P2, to act as single level measurement sensor.

### TESTING CHART

| Sr. No. | P1 | P2= P2+P3 | Trip Status | Alarm Status | LED1     |               |          |       |
|---------|----|-----------|-------------|--------------|----------|---------------|----------|-------|
|         |    |           |             |              | Power ON | Suction       | Delivery | Relay |
| 1       | IN | OUT       | OFF         | ON           | ON       | Fast Blinking | OFF      | OFF   |
| 2       | IN | IN        | ON          | ON           | ON       | ON            | OFF      | ON    |

## SINGLE TANK TWO LEVEL\_SUCTION LOGIC

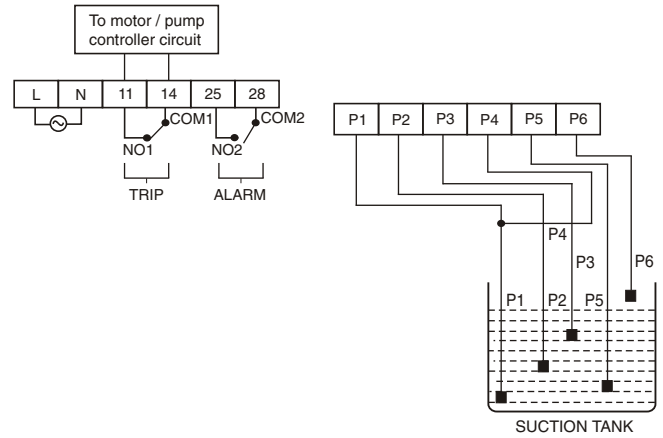


- NOTE :
- P4, P5 & P6 are not connected.
  - Measurement is done with sensor P2 & P3 for different liquid levels, considering P1 as reference.

### TESTING CHART

| Sr.No. | P1 | SENSOR CONDITION |     | Trip Status | Alarm Status | LED1     |               |          |       |
|--------|----|------------------|-----|-------------|--------------|----------|---------------|----------|-------|
|        |    | P2               | P3  |             |              | Power ON | Suction       | Delivery | Relay |
| 1      | IN | OUT              | OUT | OFF         | ON           | ON       | Fast Blinking | OFF      | OFF   |
| 2      | IN | IN               | OUT | OFF         | ON           | ON       | Slow Blinking | OFF      | OFF   |
| 3      | IN | IN               | IN  | ON          | ON           | ON       | ON            | OFF      | ON    |
| 4      | IN | IN               | OUT | ON          | ON           | ON       | Slow Blinking | OFF      | ON    |
| 5      | IN | OUT              | OUT | OFF         | ON           | ON       | Fast Blinking | OFF      | OFF   |

## SINGLE TANK TWO LEVEL\_SUCTION LOGIC (with alarm)

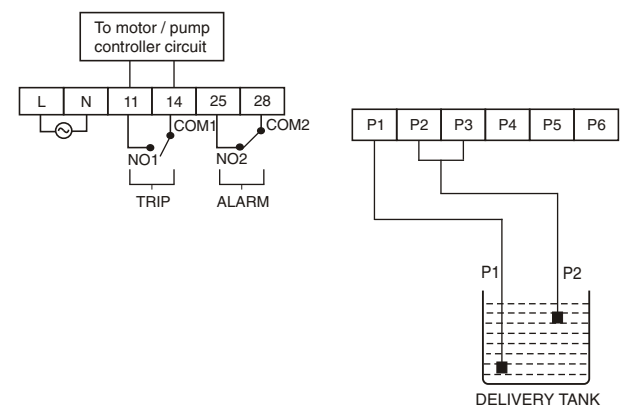


- NOTE :
- Sensor P1+P4 are shorted so as to act as single reference.
  - Sensor P5 & P6 are considered to indicate alarm condition.
  - Measurement is done with sensor P2 & P3 for different level indication.

### TESTING CHART

| Sr.No. | P1= P1+P4 | SENSOR CONDITION |     |     |     | Trip Status | Alarm Status | LED1     |               |          |       |
|--------|-----------|------------------|-----|-----|-----|-------------|--------------|----------|---------------|----------|-------|
|        |           | P2               | P3  | P5  | P6  |             |              | Power ON | Suction       | Delivery | Relay |
| 1      | IN        | OUT              | OUT | OUT | OUT | OFF         | ON           | ON       | Fast Blinking | OFF      | OFF   |
| 2      | IN        | OUT              | OUT | IN  | OUT | OFF         | OFF          | ON       | Fast Blinking | OFF      | OFF   |
| 3      | IN        | IN               | OUT | IN  | OUT | OFF         | OFF          | ON       | Slow Blinking | OFF      | OFF   |
| 4      | IN        | IN               | IN  | IN  | OUT | ON          | OFF          | ON       | ON            | OFF      | ON    |
| 5      | IN        | IN               | IN  | IN  | IN  | ON          | ON           | ON       | ON            | OFF      | ON    |
| 6      | IN        | IN               | IN  | IN  | OUT | ON          | OFF          | ON       | ON            | OFF      | ON    |
| 7      | IN        | IN               | OUT | IN  | OUT | ON          | OFF          | ON       | Slow Blinking | OFF      | ON    |
| 8      | IN        | OUT              | OUT | IN  | OUT | OFF         | OFF          | ON       | Fast Blinking | OFF      | OFF   |
| 9      | IN        | OUT              | OUT | OUT | OUT | OFF         | ON           | ON       | Fast Blinking | OFF      | OFF   |

## SINGLE TANK SINGLE LEVEL\_DELIVERY LOGIC

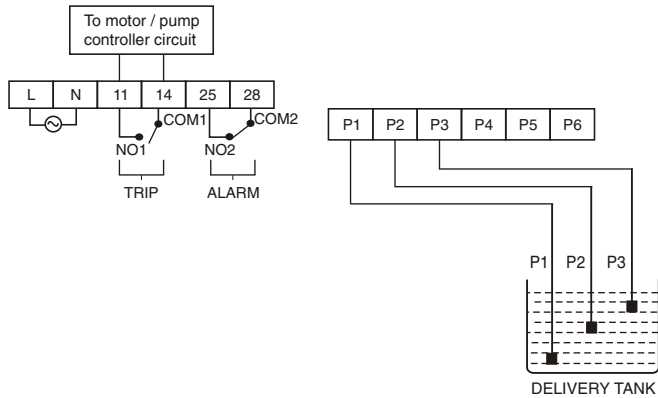


- NOTE :
- Sensors P4, P5 & P6 are not connected.
  - Sensor P3 is shorted with sensor P2, to act as single level measurement sensor.

### TESTING CHART

| Sr. No. | P1 | P2= P2+P3 | Trip Status | Alarm Status | LED1     |         |               |       |
|---------|----|-----------|-------------|--------------|----------|---------|---------------|-------|
|         |    |           |             |              | Power ON | Suction | Delivery      | Relay |
| 1       | IN | OUT       | ON          | ON           | ON       | OFF     | Fast Blinking | ON    |
| 2       | IN | IN        | OFF         | ON           | ON       | OFF     | ON            | OFF   |

## SINGLE TANK TWO LEVEL\_DELIVERY LOGIC

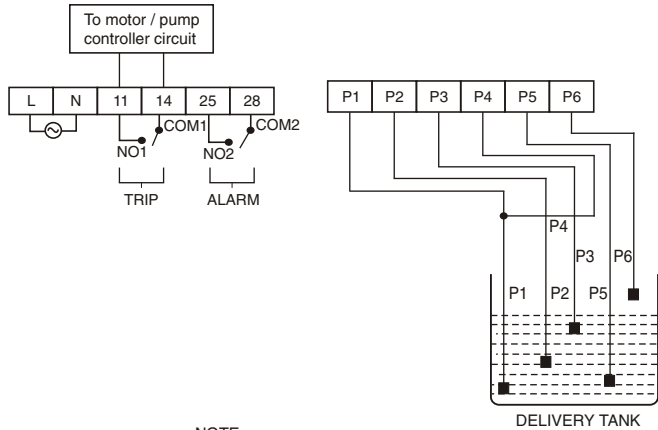


- NOTE :
- P4, P5 & P6 are not connected.
  - Measurement is done with sensor P2 & P3 for different liquid levels, considering P1 as reference.

### TESTING CHART

| Sr.No. | P1 | SENSOR CONDITION |     | Trip Status | Alarm Status | LED1 Power ON | LED2 Suction | LED3 Delivery | LED4 Relay |
|--------|----|------------------|-----|-------------|--------------|---------------|--------------|---------------|------------|
|        |    | P2               | P3  |             |              |               |              |               |            |
| 1      | IN | OUT              | OUT | ON          | ON           | ON            | OFF          | Fast Blinking | ON         |
| 2      | IN | IN               | OUT | ON          | ON           | ON            | OFF          | Slow Blinking | ON         |
| 3      | IN | IN               | IN  | OFF         | ON           | ON            | OFF          | ON            | OFF        |
| 4      | IN | IN               | OUT | OFF         | ON           | ON            | OFF          | Slow Blinking | OFF        |
| 5      | IN | OUT              | OUT | ON          | ON           | ON            | OFF          | Fast Blinking | ON         |

## SINGLE TANK TWO LEVEL\_DELIVERY LOGIC (with alarm)

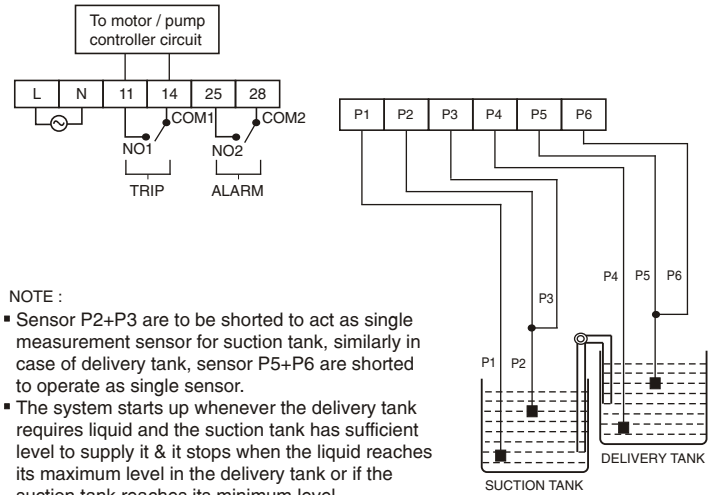


- NOTE :
- Sensor P1+P4 are shorted so as to act as single reference.
  - Sensor P5 & P6 are considered to indicate alarm condition. Measurement is done with sensor P2 & P3 for different level indication.

### TESTING CHART

| Sr. No. | P1=P1+P4 | SENSOR CONDITION |     |     |     | Trip Status | Alarm Status | LED1 Power ON | LED2 Suction | LED3 Delivery | LED4 Relay |
|---------|----------|------------------|-----|-----|-----|-------------|--------------|---------------|--------------|---------------|------------|
|         |          | P2               | P3  | P5  | P6  |             |              |               |              |               |            |
| 1       | IN       | OUT              | OUT | OUT | OUT | ON          | ON           | ON            | OFF          | Fast Blinking | ON         |
| 2       | IN       | OUT              | OUT | IN  | OUT | ON          | OFF          | ON            | OFF          | Fast Blinking | ON         |
| 3       | IN       | IN               | OUT | IN  | OUT | ON          | OFF          | ON            | OFF          | Slow Blinking | ON         |
| 4       | IN       | IN               | IN  | IN  | OUT | OFF         | OFF          | ON            | OFF          | ON            | OFF        |
| 5       | IN       | IN               | IN  | IN  | IN  | OFF         | ON           | ON            | OFF          | ON            | OFF        |
| 6       | IN       | IN               | IN  | IN  | OUT | OFF         | OFF          | ON            | OFF          | ON            | OFF        |
| 7       | IN       | IN               | OUT | IN  | OUT | OFF         | OFF          | ON            | OFF          | Slow Blinking | OFF        |
| 8       | IN       | OUT              | OUT | IN  | OUT | ON          | OFF          | ON            | OFF          | Fast Blinking | ON         |
| 9       | IN       | OUT              | OUT | OUT | OUT | ON          | ON           | ON            | OFF          | Fast Blinking | ON         |

## TWO TANK SINGLE LEVEL



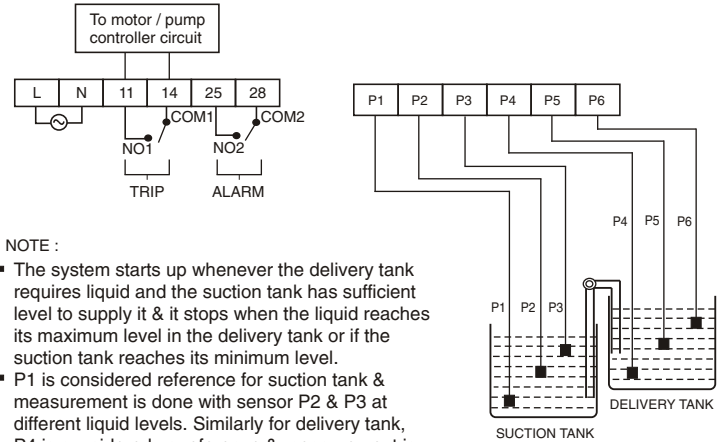
NOTE :

- Sensor P2+P3 are to be shorted to act as single measurement sensor for suction tank, similarly in case of delivery tank, sensor P5+P6 are shorted to operate as single sensor.
- The system starts up whenever the delivery tank requires liquid and the suction tank has sufficient level to supply it & it stops when the liquid reaches its maximum level in the delivery tank or if the suction tank reaches its minimum level.

### TESTING CHART

| Sr. No. | SENSOR CONDITION |          |           |          | Trip Status | Alarm Status | LED1 Power ON | LED2 Suction  | LED3 Delivery | LED4 Relay |
|---------|------------------|----------|-----------|----------|-------------|--------------|---------------|---------------|---------------|------------|
|         | P1 (Ref1)        | P2=P2+P3 | P4 (Ref2) | P5=P5+P6 |             |              |               |               |               |            |
| 1       | IN               | OUT      | IN        | OUT      | OFF         | OFF          | ON            | Fast Blinking | Fast Blinking | OFF        |
| 2       | IN               | IN       | IN        | OUT      | ON          | OFF          | ON            | ON            | Fast Blinking | ON         |
| 3       | IN               | IN       | IN        | IN       | OFF         | OFF          | ON            | ON            | ON            | OFF        |
| 4       | IN               | OUT      | IN        | IN       | OFF         | OFF          | ON            | Fast Blinking | ON            | OFF        |

## TWO TANK TWO LEVEL



NOTE :

- The system starts up whenever the delivery tank requires liquid and the suction tank has sufficient level to supply it & it stops when the liquid reaches its maximum level in the delivery tank or if the suction tank reaches its minimum level.
- P1 is considered reference for suction tank & measurement is done with sensor P2 & P3 at different liquid levels. Similarly for delivery tank, P4 is considered as reference & measurement is done with sensor P5 & P6 at different liquid levels.

### TESTING CHART

| Sr. No. | SENSOR CONDITION |     |     |           |     |     | Trip Status | Alarm Status | LED1 Power ON | LED2 Suction  | LED3 Delivery | LED4 Relay |
|---------|------------------|-----|-----|-----------|-----|-----|-------------|--------------|---------------|---------------|---------------|------------|
|         | P1 (Ref1)        | P2  | P3  | P4 (Ref2) | P5  | P6  |             |              |               |               |               |            |
| 1       | IN               | OUT | OUT | IN        | OUT | OUT | OFF         | OFF          | ON            | Fast Blinking | Fast Blinking | OFF        |
| 2       | IN               | IN  | OUT | IN        | OUT | OUT | OFF         | OFF          | ON            | Slow Blinking | Fast Blinking | OFF        |
| 3       | IN               | IN  | IN  | IN        | OUT | OUT | ON          | OFF          | ON            | ON            | Fast Blinking | ON         |
| 4       | IN               | IN  | OUT | IN        | IN  | OUT | ON          | OFF          | ON            | Slow Blinking | Slow Blinking | ON         |
| 5       | IN               | IN  | IN  | IN        | IN  | OUT | ON          | OFF          | ON            | ON            | Slow Blinking | ON         |
| 6       | IN               | IN  | IN  | IN        | IN  | IN  | OFF         | OFF          | ON            | ON            | ON            | OFF        |
| 7       | IN               | IN  | OUT | IN        | IN  | IN  | OFF         | OFF          | ON            | Slow Blinking | ON            | OFF        |
| 8       | IN               | OUT | OUT | IN        | IN  | IN  | OFF         | OFF          | ON            | Fast Blinking | ON            | OFF        |
| 9       | IN               | OUT | OUT | IN        | IN  | OUT | OFF         | OFF          | ON            | Fast Blinking | Slow Blinking | OFF        |

#### Manual Start Switch:

If water level in lower tank is greater than low level & water level in upper tank is below high level then by pressing a switch, relay can be switched ON manually.

### SAFETY PRECAUTIONS

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.

If there is physical damage to the unit then do not use it.

Read complete instructions prior to installation and operation of the unit.

### ■ CAUTION

- 1) Ensure the connection as per terminal diagram.
- 2) To be handled only by authorized and technical person.
- 3) Do not install any heat sources like burner, electric arc, etc near unit.
- 4) Install as near to the starter as possible.
- 5) The sensor prods are suspended from the top opening of the water tank in a suitable PVC conduct piping. Metal pipes should not be used.
- 6) The sensor prods should not be wall mounted on metallic water tank.

### WARRANTY / LIMITATIONS OF LIABILITY

Selec warrants the products to be free from defects in the materials and workmanship for a period of one year (or other period specified, if any) from the date of sale by Selec.

The warranty does not apply to defects resulting from any action of the buyer, including but not limited to improper handling, operating the product outside the specification limits or unauthorized disassembling / altering of the product. The warranty shall be VOID if the product shows evidence of having been tampered or being damaged due to usage in corrosive environment ; or current, heat, moisture or vibration ; improper specification wrong usage in an application; misuse or other operating conditions outside of Selec's control.

Selec shall not be responsible for special, indirect or consequential damages, loss of profits or commercial loss in any way connected with the products, whether such claim is based on contract, warranty, negligence or strict liability.

In no event shall the responsibility of Selec for any act exceed the individual price of the product on which liability is asserted.

In no event shall Selec be responsible for warranty or other claims regarding the products unless Selec's analysis confirms that the products were properly handled, stored, installed and maintained and not subjected to contamination, abuse, misuse or inappropriate modification or repair.

### ORDER CODE INFORMATION

| PRODUCT             | SUPPLY          | CERTIFICATION                                                                         |                                                                                       |
|---------------------|-----------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|                     |                 |  |  |
| <b>WLCA-2M-U-CE</b> | 85 – 270V AC/DC | ▪                                                                                     | —                                                                                     |

(Specifications are subject to change, since development is a continuous process.)

#### Selec Controls Pvt. Ltd., India

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