Liquid Level Controller

LLCA-2M-1-U-CE



Features :

- Used for single and dual tank conductive Liquid level monitoring
- Pump protection from dry run and Overflow condition
- Specially designed sensors
- Adjustable trip & Recovery time delay settings
- Manual start switch facility
- Conductive liquid levels & Trip indication LED's

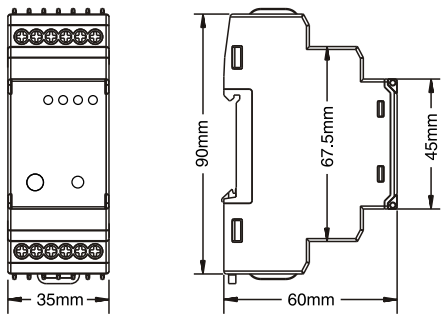
Certifications : CE

Technical specifications

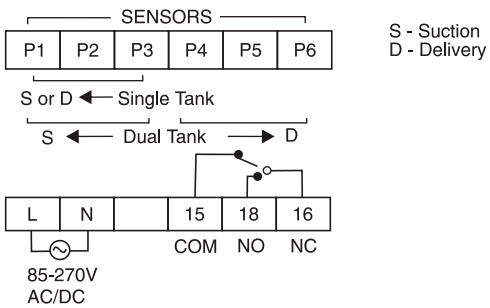
Display specifications		
Type	Analog	
No. of LED	4	
No. of knob	1	
LED indication chart		
LED number	**LED colour**	**Notation**
LED1	Green	Power ON
LED2	Yellow1	Suction tank level indication
LED3	Yellow2	Delivery tank level indication
LED4	RED	Relay trip indication
Condition	**Indication**	
Healthy	ON	
Suction / Delivery	Continuously ON when all sensors is in conduction, Slow blinking when liquid level is in between sensor P2 & P3 or P5 & P6, Fast blinking when only ref sensor is under liquid.	
Relay trip	ON	
Input specifications		
Modes	Liquid level detection - Suitable for 6x sensor input For suction or delivery mode : Use P1, P2, P3 sensors & P4, P5, P6 sensors kept open. For dual mode : Use all sensors	
Sensitivity	Automatic liquid sensitivity (fixed) 0Ω to 500KΩ	
Sensor details	Conductive sensor probes : Stainless steel SS304, Suitable for 6 sensor input	
Manual start	If liquid level in lower tank is greater than low level & Liquid level in upper tank is below high level then by pressing a switch, Relay can be switched ON manually. Trip & Recovery time delay is not applicable with manual start switch operation	
Timing parameters		
Input sensing debounce time (sensor sensing time)	Adjustable (0.5 - 10Sec)	
Recovery time	Adjustable (0.5 - 10Sec)	
Power ON delay	NA	
Reset	Automatic	
Hysteresis	NA	
Timing accuracy	±5% of set value	

Output specifications	
Sensor detection	Yes
Module healthy	NO - COM short i.e relay ON
Output	1 nos. SPDT relay
Output rating	6A 277V AC
Mechanical life	5x10^7
Auxiliary supply specifications	
Supply voltage	85 - 270V AC/DC
Power consumption	4VA max
Rated frequency	50 / 60Hz
Rated impulse withstand voltage	4 KV
Rated insulation Voltage [Ui]	300 Ui (V) AC
Environmental specifications	
Temperature	Operating temperature : 0° to 50 °C Storage temperature : -20° to 70 °C
Humidity (non - condensing)	Upto 95% RH
Pollution degree	2
For PCB	3
For product	3
Mechanical specifications	
Housing	Selec ggrey
Size	2M
Accessories (in separate packing)	1 in 3x nos sensor
IP	IP20 for terminal
	IP40 for casing
	IP50 for faceplate
Screw tightening torque	0.5 Nm
Mounting	Din rail

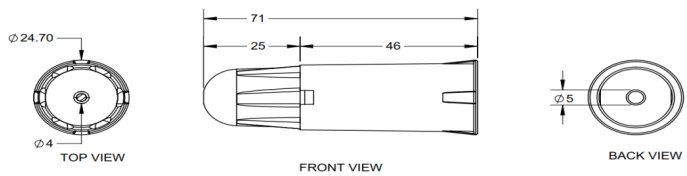
Dimensions (all are in mm)



Terminal connections



Input sensor dimensions



1. Single tank mode:

Suction logic – Single level, Two level
Delivery logic - Single level, Two level

2. Dual tank mode:

FUNCTION OF SINGLE TANK MODE (SUCTION OR DELIVERY LOGIC)

When product is to be used in with single tank mode with suction / Delivery Logic,

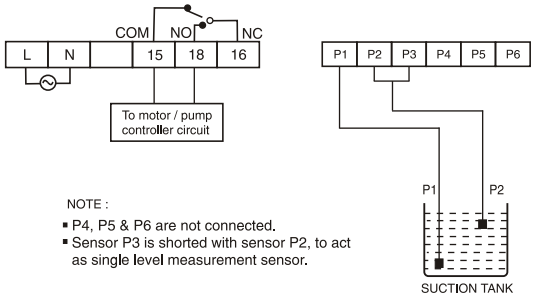
- Sensors P4, P5 & P6 are not connected / kept open.
- Lower and upper liquid level measurement is done with sensor P2 & P3 respectively, considering P1 as reference.

FUNCTION OF TWO TANK MODE (SUCTION AND DELIVERY LOGIC)

When product is to be used in two tank logic,

- The system starts up whenever liquid is to be supplied to delivery tank and suction tank has suffcient 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 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.

Single tank single level suction logic :

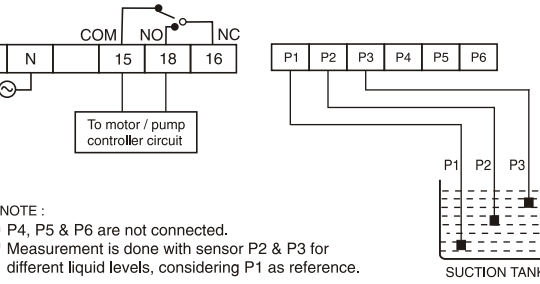


NOTE :
- P4, P5 & P6 are not connected.
- Sensor P3 is shorted with sensor P2, to act as single level measurement sensor.

Testing chart :

Sr. No.	P1	P2= P2+P3	Trip Status	LED1	LED2	LED3	LED4
				Power ON	Suction	Delivery	Relay
1	IN	OUT	OFF	ON	Fast Blinking	OFF	OFF
2	IN	IN	ON	ON	ON	OFF	ON

Single tank two level suction logic :

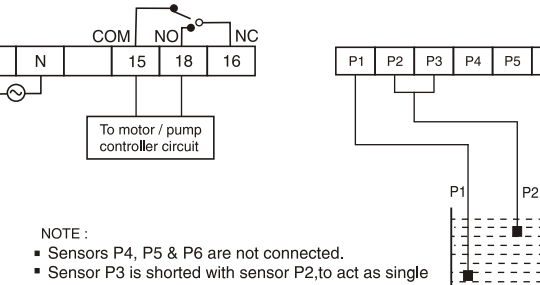


NOTE :
- P4, P5 & P6 are not connected.
- Measurement is done with sensor P2 & P3 for different liquid levels, considering P1 as reference.

Testing chart :

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

Single tank single level delivery logic :

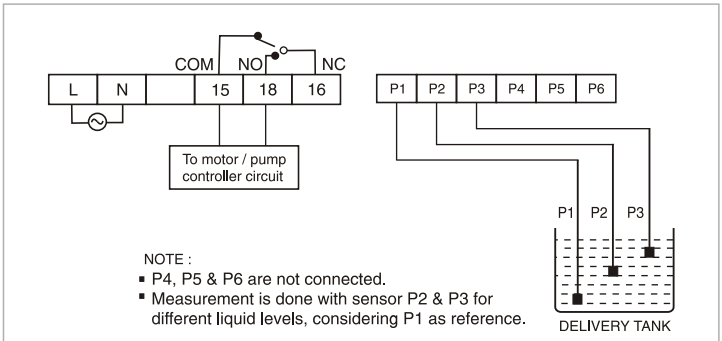


NOTE :
- Sensors P4, P5 & P6 are not connected.
- Sensor P3 is shorted with sensor P2,to act as single level measurement sensor.

Testing chart

Sr. No.	P1	P2= P2+P3	Trip Status	LED1	LED2	LED3	LED4
				Power ON	Suction	Delivery	Relay
1	IN	OUT	ON	ON	OFF	Fast Blinking	ON
2	IN	IN	OFF	ON	OFF	ON	OFF

Single tank two level delivery logic :

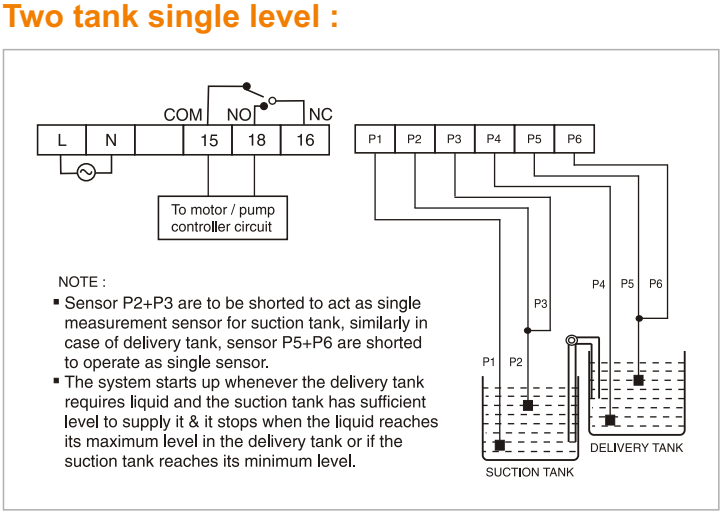


NOTE :
- P4, P5 & P6 are not connected.
- Measurement is done with sensor P2 & P3 for different liquid levels, considering P1 as reference.

Testing Chart :

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

Two tank single level :

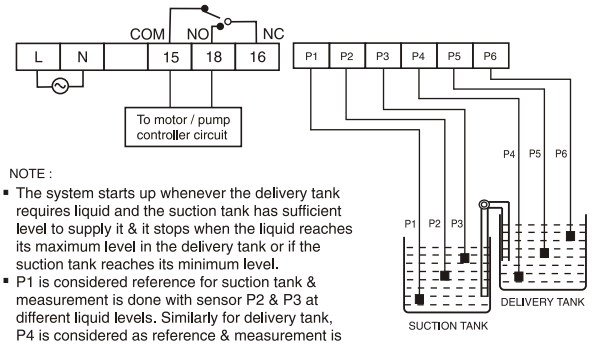


NOTE :
- Sensor P2+P3 are to be shorted to act as single measurement sensor for suction tank, similarly in case of delivery tank, sensor P5+P6 are shorted to operate as single sensor.
- The system starts up whenever the delivery tank requires liquid and the suction tank has sufficient level to supply 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	LED1	LED2	LED3	LED4
	P1 (Ref1)	P2= P2+P3	P4 (Ref2)	P5= P5+P6		Power ON	Suction	Delivery	Relay
1	IN	OUT	IN	OUT	OFF	ON	Fast Blinking	Fast Blinking	OFF
2	IN	IN	IN	OUT	ON	ON	ON	Fast Blinking	ON
3	IN	IN	IN	IN	OFF	ON	ON	ON	OFF
4	IN	OUT	IN	IN	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.	SUCTION			DELIVERY			Trip Status	LED1	LED2	LED3	LED4
	SENSOR CONDITION										
	P1 (Ref1)	P2	P3	P4 (Ref2)	P5	P6		Power ON	Suction	Delivery	Relay
1	IN	OUT	OUT	IN	OUT	OUT	OFF	ON	Fast Blinking	Fast Blinking	OFF
2	IN	IN	OUT	IN	OUT	OUT	OFF	ON	Slow Blinking	Fast Blinking	OFF
3	IN	IN	IN	IN	OUT	OUT	ON	ON	ON	Fast Blinking	ON
4	IN	IN	OUT	IN	IN	OUT	ON	ON	Slow Blinking	Slow Blinking	ON
5	IN	IN	IN	IN	IN	OUT	ON	ON	ON	Slow Blinking	ON
6	IN	IN	IN	IN	IN	IN	OFF	ON	ON	ON	OFF
7	IN	IN	OUT	IN	IN	IN	OFF	ON	Slow Blinking	ON	OFF
8	IN	OUT	OUT	IN	IN	IN	OFF	ON	Fast Blinking	ON	OFF
9	IN	OUT	OUT	IN	IN	OUT	OFF	ON	Fast Blinking	Slow Blinking	OFF

Ordering information

Product code	Supply voltage	Certification
LLCA-2M-1-U-CE	85 to 270V AC / DC	CE