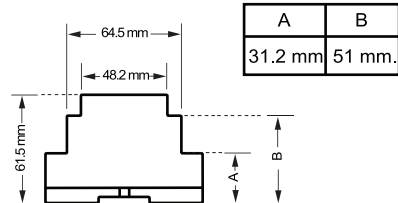
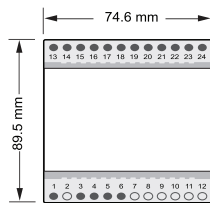




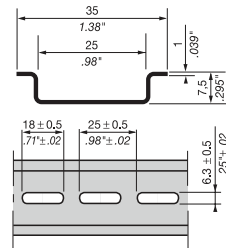
TECHNICAL SPECIFICATION

Model		PM-021N-2	PM-021N-2-1	PM-021N-2-3
Power Supply		115 VAC $\pm 15\%$ 50-60 Hz		
		230 VAC $\pm 15\%$ 50-60 Hz		
Power Consumption		2.5 VA		
Display		LED Status Supply, Level, O.F, S.F, PL, PS, OV UV, Output, AL		
Input	Voltage Protection	-	1 Phase	3 Phase
			220 VAC	380 VAC
			% Over Voltage 105-120 %	
			% Under Voltage 80-95 %	
	Probe	6 Electrode Switch (2 Float Switch)		
		Voltage Detector 2VAC, 50 Hz		
Output		Sensitive 0-100 %		
		Pump SPST 5A 250 VAC		
		Alarm SPDT 5A 250 VAC		
Ambient Operation	Temperature	-10 °C to 60 °C		
	Humidity	85 % RH Non-Condensing		
Ambient Storage	Temperature	-20 °C to 80 °C		
	Humidity	85 % RH Non-Condensing		
Protection Degree		IP30		
Installation		DIN-RAIL		
Material		ABS-VO		
Size		89.5 x 74.6 x 61.5 mm.		
Weight		355 g.		

DIMENSION



A	B
31.2 mm	51 mm.



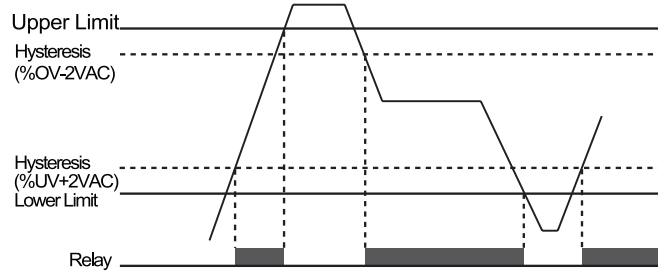
DESCRIPTION

- PM-021N-2 is a Single Pump Relay for controlling single phase and three phase power pumps.
- Choice of Water Supply and Drainage (Charging and Discharging)
- Water Well and Water Tank can be checked for use.
- Level Sensor Electrode, Float Switch, Pressure Switch
- Alarm Output when Overflow (O.F.) or Overvoltage
- Level Sensor Fault (S.F.) LEDs of Water Well and Water Tank
- Over and Under Voltage Protection. The output relay will stop if the voltage is abnormal. Beyond the set value.
- 1 Phase System, Over (OV) and Under (UV) Voltage Range 80 - 120% of Nominal Voltage
- 3 Phase System, Over (OV) and Under (UV) Voltage, Phase Sequence (PS), Phase Loss (PL) Range 80 - 120% Nominal Voltage

OPERATION

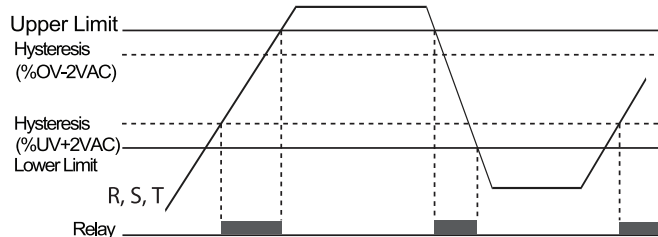
The PM - 021N-2 is a control unit that controls one of the water pumps to work between the levels of the water well and the water tank. There is also a Function for Voltage Protection for detect voltage fault which the pump will be damaged. The voltage level must be normal. Pump is running (Relay ON) and can select 1-Phase and 3-Phase

Overvoltage and Overvoltage If the voltage is between the low limit and the upper limit, the output relay is ON and the pump is running. If the voltage is lower than the low limit or higher than the upper I limit set, the output relay will be OFF and the LED will display the fault status



1-Phase Under and Over Protection working method

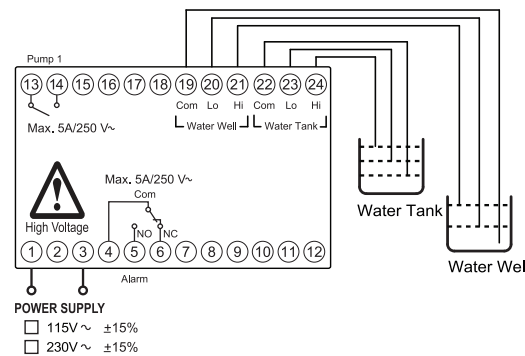
3-Phase, Over and Under Voltage, Phase Sequence and Phase Loss When the voltage is in the normal state, it is between the lower limit and the upper limit set. The phase sequence is valid for all phases (R, S, T). Relay Output Will ON and order the pump to work. If the voltage is lower than the lower limit or higher than the upper limit or phase sequence is incorrect. All outputs are not energized. Relay output is OFF and LED displays the status of voltage fault



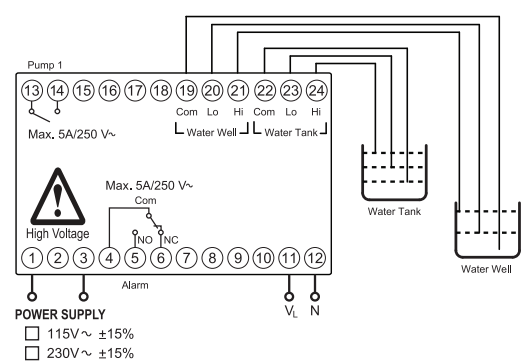
3-Phase Under and Over Voltage Protection working method

WIRING DIAGRAM

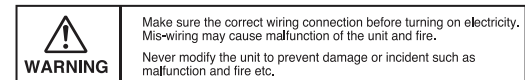
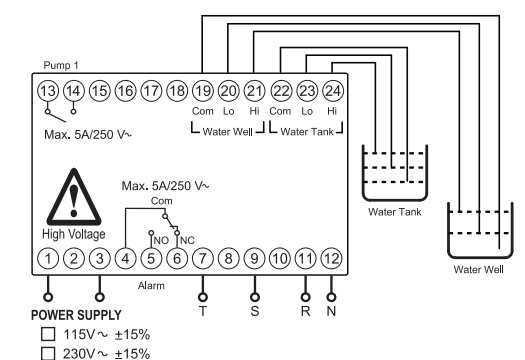
PM-021N-2 Single Pump Relay



PM-021N-2-1 Single Pump Relay With Single Phase Protection



PM-021N-2-3 Single Pump Relay With 3 Phase Protection



Water Supply Systems

The water tank in the water tank is lowered to the level of Probe L of Electrode B (Float Switch B = Low Level is ON, Pressure Switch = Normally Close (NC) is lower than Set Point). Output Relay works and instructs the pump to run. After the pump is running, the water level in the water tank increases to the level of Probe H of Electrode B (Float Switch B = High Level is OFF Pressure Switch = Normally Open (ON) is higher than Set Point) Output Relay Stop and stop the pump. In case of water well below the level of Probe L of Electrode A (Float Switch A = Low Level is OFF). Output Relay is also OFF to prevent the pump going empty without water

The water supply system can be connected to either the Electrode, Float Switch or Pressure Switch as follows

Diagram 1. Water Supply System With Electrode Level Switch

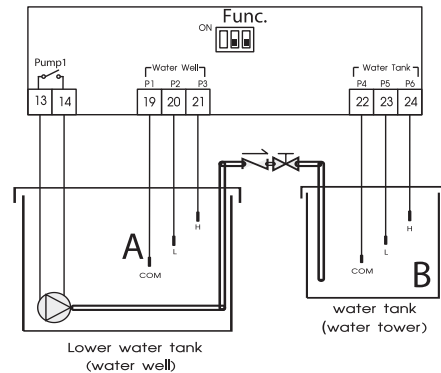


Diagram 2. Water Supply System With Float Switch & Electrode Level Switch

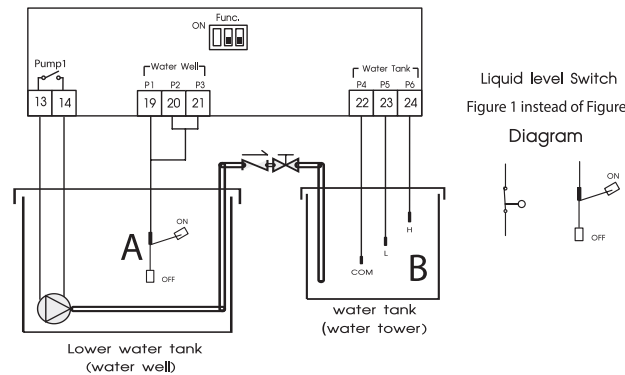


Diagram 3. Water Supply System With Float Switch

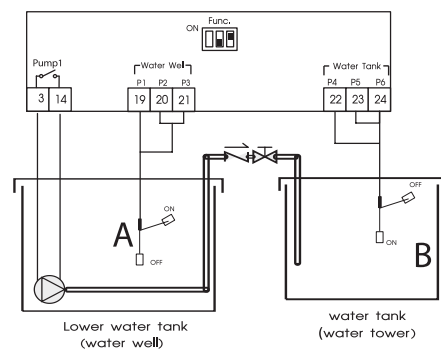


Diagram 4. Water Supply System With Electrode Level Switch & Float Switch

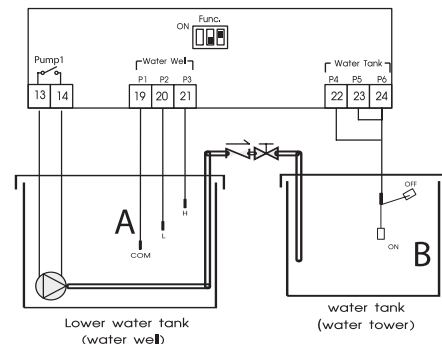


Diagram 5. Water Supply System With Float Switch & Pressure Switch

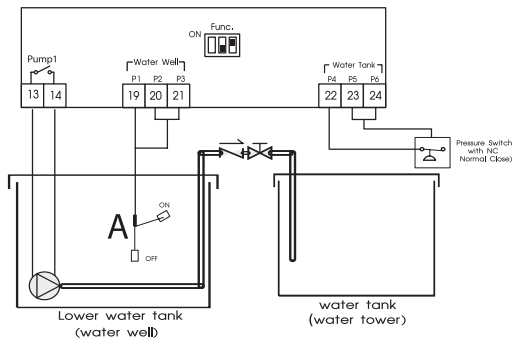
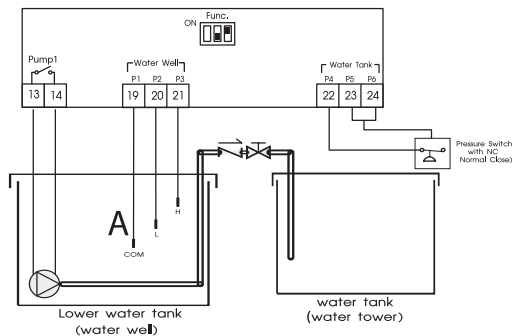


Diagram 6. Water Supply System With Electrode Level Switch & Pressure Switch



If the user does not want to check the water level in the water well, it can be done by following the diagram below

Diagram 7. Water Supply System No Dry Run Protection With Electrode Level Switch

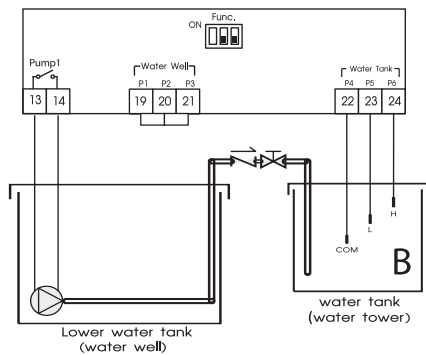
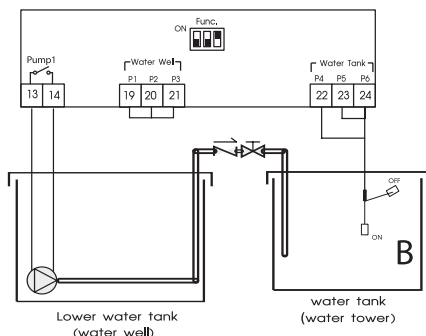


Diagram 8. Water Supply System No Dry Run Protection With Float Switch



Working for water drainage system

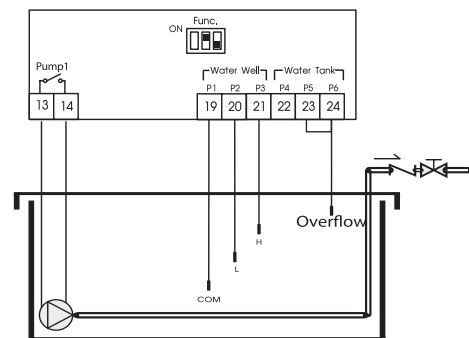
Normal operation

When the water level in the pond ElectrodeProbe H (Float Switch A = High Level is ON), Output Relay works and the pump is running. After the pump works, The water level in the pond. The water level is reduced to the level of Electrode Probe L (Float Switch A = Low Level is OFF). Output Relay has stopped and the pump stopped

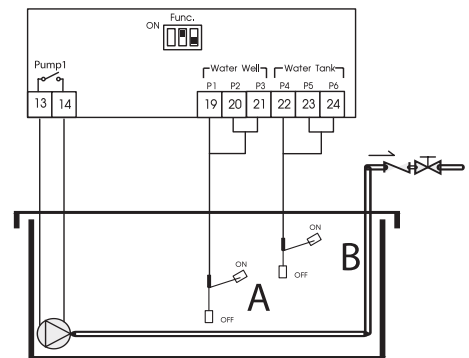
Overflow operation

If the pump works. But the water level in the pond. Floating Switch B = High Level is ON. Alarm Output is active and will stop when the water level drops to Probe H of Electrode (Float Switch A = Low Level Is OFF)

Drain Water System With Electrode Level Switch



Drain Water System with Float Switch



Sensor Fault (S.F) operation

Sensor Probe input is detected by the higher probes. For example, Probe H works before the Probe L. The alarm output is activated

Suggestion

Water supply system

1. Float Switch used for Water Tank is Normally Closed (NC)
2. Pressure Switch for Water Tank Normally Closed (NC)
3. Float Switch for Water Well is Normally Open (NO)

Water drainage system

Float Switch is Normally Open (NO)

To be able to operate without depending on the Water Tank's Level Sensor

Can be done by

- Probe L + H of Electrode B together and cut into Probe Com.
- If the L + H Probe (Close) is connected to the pump, it will stop working.
- If cut (Open) Probe L + H with Com pump will work

Table 1. Function Switch Setting

1 2 3 [ON] [OFF] [OFF]	Disable phase protection
1 2 3 [ON] [ON] [OFF]	Enable phase protection
1 2 3 [ON] [OFF] [OFF]	Used water supply system
1 2 3 [ON] [ON] [ON]	Used water drainage system
1 2 3 [ON] [OFF] [ON]	Sensor Type normally open for water tank
1 2 3 [ON] [ON] [ON]	Sensor Type normally close for water tank

Table 2. Function Switch Setting

1 2 [ON] [OFF]	Used water supply system
1 2 [ON] [ON]	Used water drainage system
1 2 [ON] [OFF]	Sensor Type normally open for water tank
1 2 [ON] [ON]	Sensor Type normally close for water tank

Work settings

1. Select or not use Phase Protection according to Table 1 and adjust% OV% UV at R Pot (for mode Is with Phase Protection only).
2. Select the Water Supply or Water Drainage pump model according to Table 1 or 2 (for models without Phase Protection).
3. Select the Water Tank Sensor Type.
 - 3.1 In case of Electrode, only Sensor Type is Normally Close.
 - 3.2 In case of Float Switch or Pressure Switch, the Water Tank can be both Normally Closed and Normally Open in Table 1 or 2 (for models without Phase Protection).

ORDERING CODE

VOLTAGE PROTECTION		POWER SUPPLY	
PM-021N-2 – []		– []	
VOLTAGE PROTECTION		POWER SUPPLY	
None	None Voltage Protection	None	230 VAC
1	1 Phase, Over&Under Voltage	115	115 VAC
3	3 Phase, Over&Under Voltage, Phase Sequence and Rphase Loss		