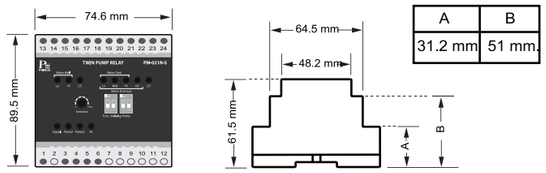
PM-021N-3 TWIN PUMP RELAY

Primus
User Manual

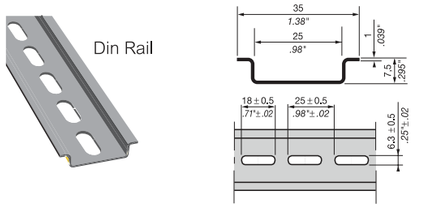
■ TECHNICAL SPECIFICATION

Model		PM-021N-3	PM-021N-3-1	PM-021N-3-3
Power Supply		115 VAC ±15 % 50-60 Hz		
		230 VAC ±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	7 Electrode Switch (3 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.



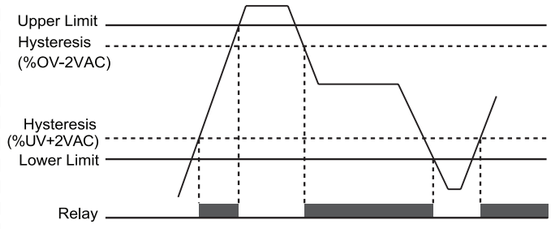
■ DESCRIPTION

- PM-021N-3 is a Twin Pump Relay for controlling two pumps in Single phase and three phase.
- 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
- Latching Function with Memory to switch between two pumps when Electrical drop
- DIP Switch can be disconnected from the system. In case that one of the pumps is broken.
- Booster Function for two pumps running simultaneously. In the case of very low water levels.
- Alarm output when overflow or abnormal voltage.
- Status LEDs for Output, Level and Alarm
- Water Well and Water Tank Level Sensor Fault Indicators
- Over and Under Voltage Protection. The output relay will stop if the voltage exceeds the set value
- 1 Phase System, Over and Under Voltage Range 80 - 120 % of Nominal Voltage
- 3 Phase System, Over and Under Voltage, Phase Sequence, Phase Loss Range 80 - 120 % Nominal Voltage

■ OPERATION

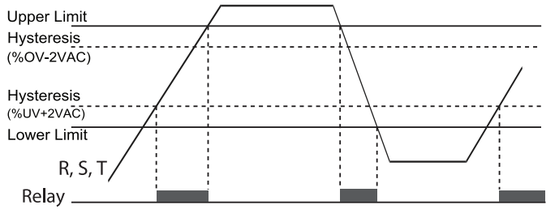
The PM - 021N-3 is a control unit that controls two water pumps to switch between the waterwell and the water tank. There is also a Function for Voltage Protection. Handle voltage abnormalities The pump will be damaged by both parts work together. The water level and the voltage must be normal. The pump will work (Relay ON) is available for both 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 limit set, the output relay will be OFF and the LED will display the fault status



1-Phase Under and Over vattage 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 phases not ready together. Relay output is OFF and LED displays the status of voltage fault



3-Phase Under and Over Voltage Protection working method

Water Supply Systems

Normal Operation

When the water in the water tank is lowered to the level of Probe M of Electrode B (Float Switch C = Low Level is ON, Pressure Switch C = Normally Close (NC) is lower than Set Point). 1st Pump Output will enabled and command to the 1st pump running after the 1st pump runs the water level in the water tank to rise to the Probe H of the Electrode B (Float Switch C = High Level is the OFF Pressure Switch C = Normally Open (ON) is higher than Set Point.) Output of Pump 1 stops and the pump stops also

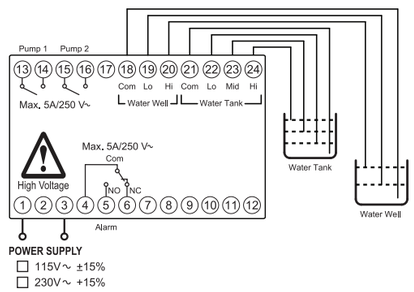
The water tank in the water tank is lowered to the level of Probe M of Electrode B (Float Switch C = Low Level is ON, Pressure Switch C = Normally Close (NC) is the pressure lower than set. Point switches the output of Pump 2 to operate and the second pump runs after the second pump. The water level in the water tank increases to the Probe H level of Electrode B (Float Switch C = High Level OFF, pressure switch C = Normally Open (ON) is higher than Set Point). Output of Pump2 Stop and stop the pump . Both pumps are switched on at the same time as the water level increases and decreases. If the water well is below the Probe L level of the Electrode A (Float Switch A = Low Level is OFF), the output of Pump1 and Output Pump 2 will also be OFF to prevent the pump going blank. No water And will return when the water level in the water well is higher than Probe H of Electrode A (Float Switch A = High Level ON)

Booster Operation

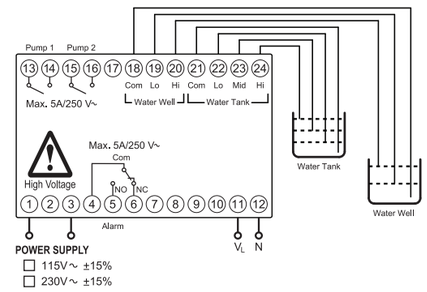
In case one of the pumps is already running. The water level is reduced to the Probe L of Electrode B (Float Switch B = Low Level is ON, Pressure Switch B = Normally Close (NC) is lower than Set Point). Keep the pump 2 running simultaneously, both pumps will stop working. When the water level in the water tank increases to the level of Probe H of Electrode B (Float Switch C = High Level is OFF, Pressure Switch C = Normally Open (ON) is the pressure higher than set point

■ WIRING DIAGRAM

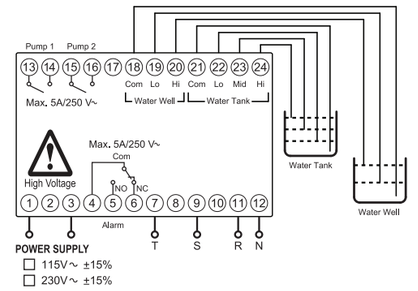
PM-021N-3 Twin Pump Relay



PM-021N-3-1 Twin Pump Relay With Single Phase Protection



PM-021N-3-3 Twin Pump Relay With 3 Phase Protection



WARNING

Make sure the correct wiring connection before turning on electricity. Mis-wiring may cause malfunction of the unit and fire.

Never modify the unit to prevent damage or incident such as malfunction and fire etc.

■ ORDERING CODE

VOLTAGE PROTECTION POWER SUPPLY

PM-021N-3 – [ ] – [ ]

VOLTAGE PROTECTION	
None	None Voltage Protection
1	1 Phase, Over&Under Voltage
3	3 Phase, Over&Under Voltage, Phase Sequence and Phase Loss

POWER SUPPLY	
None	230 VAC
115	115 VAC

PM-021N-3 TWIN PUMP RELAY

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Diagram 1. Water Supply System With Electrode Level Switch

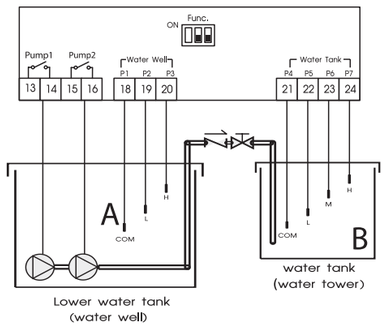


Diagram 2. Water Supply System With Float Switch & Electrode Level Switch

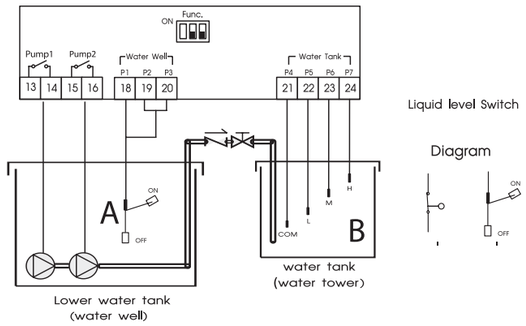


Diagram 3. Water Supply System With Float Switch

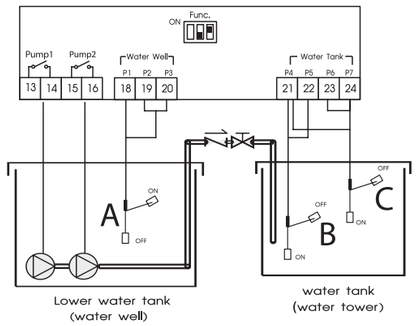


Diagram 4. Water Supply System With Electrode Level Switch & Float Switch

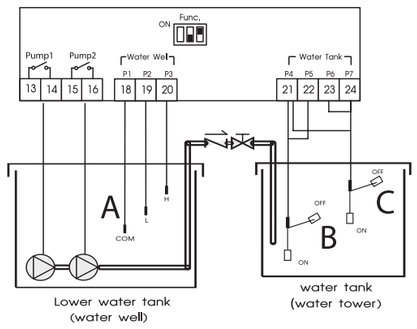


Diagram 5. Water Supply System With Float Switch & Pressure Switch

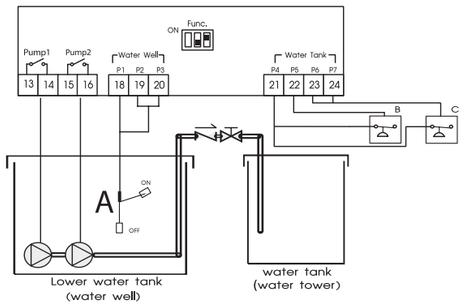
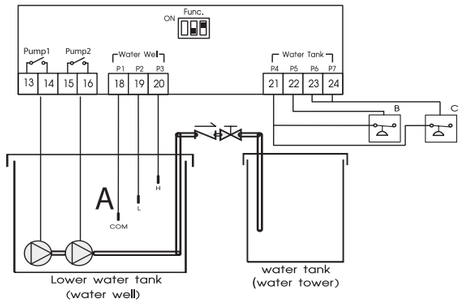


Diagram 6. Water Supply System With Electrode Level Switch & Pressure Switch



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

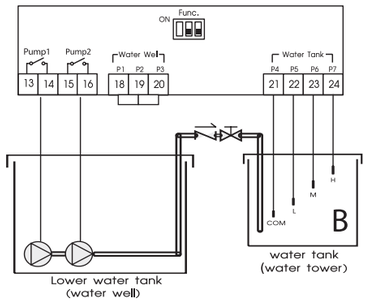
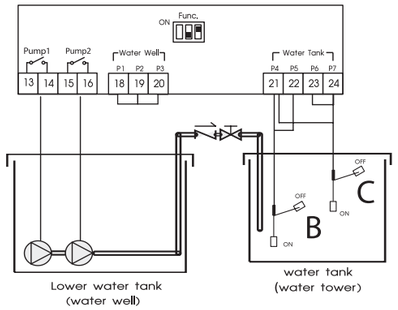


Diagram 8. Water Supply System No Dry Run Protection With Float Switch



Works for Water Supply Systems

Normal Operation

When the water level in the water well or waste water well increases to the level of Probe M of the Electrode (Float Switch A = High Level is ON), the output of Pump 1 runs and the pump starts running after the 1st pump starts running. The water level in the water well or waste water well is reduced to the level of Electrode Probe L (Float Switch A = Low Level is OFF), the output of Pump 1 stopped and stopped the pump

When the water level in the water well or waste water well increases to the level of Probe M of the Electrode again (Float Switch A = High Level is ON), it switches the output of Pump2 to work and instructs the pump to work. The water level in the water well or waste water well is reduced to the level of Electrode Probe L (Float Switch A = Low Level is OFF), the output of Pump 2 stopped and stopped the pump. Both pumps are switched on at the same time as the water level increases and decreases

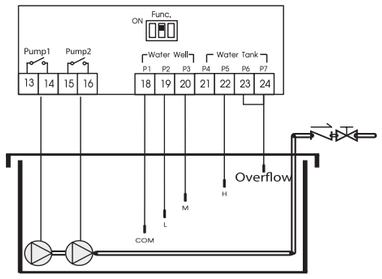
Booster Operation

In case one of the pumps is running. But the water level in the water well or waste water well continues to rise to the level of Probe. H of Electrode (Float Switch B = High Level is ON), it will make another output and work two pumps to work simultaneously with the output of the pump 2 will stop working. When the water level in the water well or waste water well drops to Probe L (Float Switch A = Low Level is OFF)

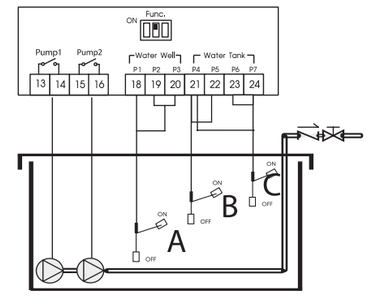
Overflow Operation

If the two pumps work. The water level in the water well or waste water well is increased to the level of the probe overflow of the electrode (Float Switch C = High Level is ON) causes the alarm output to run and stop when the water level drops to the Probe H level of the electrode. Float Switch B = Low Level is OFF)

Drain Water System With Electrode Level Switch



Drain Water System with Float Switch



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)

Table 1. Function Switch Setting

1 2 3	Disable phase protection
1 2 3	Enable phase protection
1 2 3	Used water supply system
1 2 3	Used water drairage system
1 2 3	Sensor Type normally open for water tank
1 2 3	Sensor Type normally close for water tank

Table 2. Function Switch Setting

1 2	Used water supply system
1 2	Used water drainage system
1 2	Sensor Type normally open for water tank
1 2	Sensor Type normally close for water tank

Table 3. Pump Switch Setting

1 2	Disable pump No. 1
1 2	Enable pump No. 1
1 2	Disable pump No. 2
1 2	Enable pump No. 2

Settings

1. Determine the pump to be used. If the booster operation is required, both pumps must be activated. See Table 3 for settings.
2. Choose whether to use Phase Protection as shown in Table 1 and adjust% OV. % UV at R Pot (for models with Phase Protection only)
3. Choose a pump model Water Supply or Water Drainage. Refer to Table 1 or 2 (for models without Phase Protection).
4. Choose a Water Tank Sensor Type
   - 4.1 In case of Electrode, only Sensor Type is Normally Close.
   - 4.2 In the case of a 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)

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