



TECHNICAL SPECIFICATION

Auxiliaries Supply	: 90 - 450 VAC
Consumption	: 3 VA
Display type	: 7 Segment , 4 digit
Resolution (45-65Hz)	: resolution 2 decimal point
Input Voltage	
Input Type	: 1 PHASE / 3 PHASE
Frequency Range	: 45-55 Hz
Measurement	
PF Accuracy	: ± 0.05
Current Accuracy	: $\pm 2\%$ (FS.)
Input Current	: 0.1 - 40 A (Direct) : 2% of Primary - 9999 A (With External CT)
Delay Timer	
External Input (DI)	: 0 - 10 Sec.
OFF Delay Time (DT)	: 0 - 9999 Sec.
Start Time (ST)	: 0 - 9999 Sec.
Recovery Time (RT)	: 0 - 9999 Sec.
Relay Output	
Maximum Rating	: Alarm NO 5 A, 250 VAC / 5 A, 30 VDC : Output NO 5 A, 250 VAC / 5 A, 30 VDC NC 3 A, 250 VAC / 3 A, 30 VDC
Digital Input	
External Input (Start & Stop Motor)	: Dry Contact
Reset Input (Push Switch)	: Dry Contact
Environment	
IP Protection Class	: IP 30
Operating Temperature	: 0 - 60 °C
Operating Humidity	: 10 - 85 % RH
Enclosure	: DIN Rail mounting ABS - V0 (UL -94 V)
Size	: 90 x 120 x 95 mm.

WIRING DIAGRAM

Diagram PM-007-N1 (1 Phase Direct)

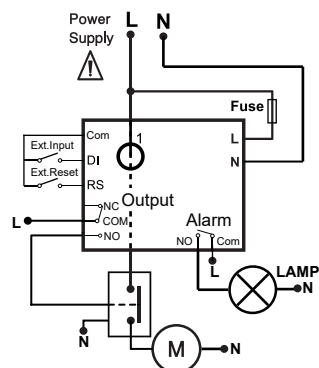


Diagram PM-007-N1 (3 Phase Direct)

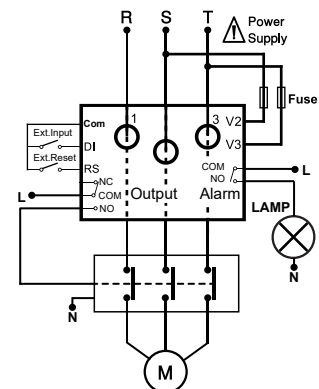


Diagram PM-007-N1 (1 Phase With CT)

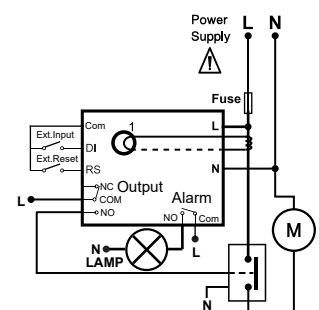
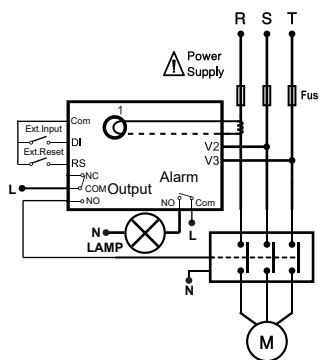
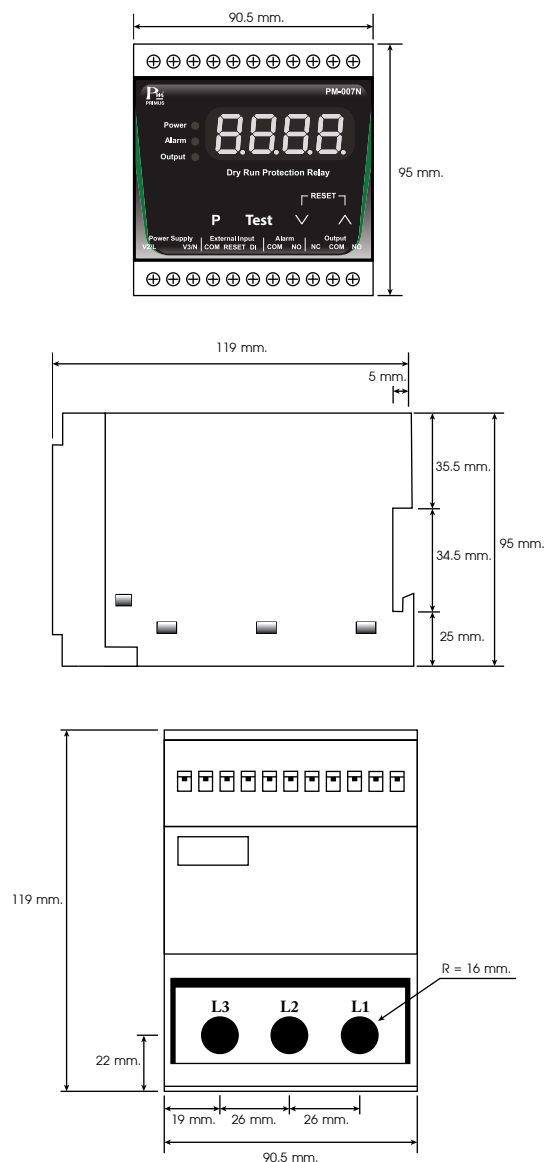


Diagram PM-007-N1 (3 Phase With CT)



DIMENSION



DESCRIPTION

- a motor load protection device that prevents damage from dry-running or motor's gear from overload conditions.
- Able to choose display between PF (Cos ϕ) or Current Amp
- 7-Segment 4 LED main display screen.
- Support 1 Phase and 3 Phase Motor.
- Start Delay Timer delays start time and Off Delay Timer 0-9999 Sec. when it starts.
- Input for Start-Sptop, Reset Alarm orders from devices.
- Compatible with direct CT (maximum 40A) or external CT with configurable CT ratio.

OPERATION

When the user connects the circuit according to the diagram and supplies power to the PM-007-N1, the relay output will activate to start the motor and initiate the Start Delay Timer. After the delay period, the device will begin monitoring for abnormalities. It can choose two types of the abnormal conditions detecting, as described below.

1. Power Factor (PF or Cos ϕ) Abnormality Detection: This function is suitable for use with 3-phase motors. When the load changes its operation, the power factor (Cos ϕ) also changes—often more than the current. For example, in cases of a low-load water pump (such as water shortage or dry running) or a motor with a high gear ratio and low speed, gear will receive load burden. When it has abnormalities, the current does not change significantly. However, the PF (Cos ϕ) value will change obviously.

2. Current (Amp) Abnormality Detection: This function is suitable for single-phase motors. Most single-phase motors are capacitor-type motors, in which the power factor (Cos ϕ) is unstable due to the capacitor connected in the circuit.

PM-007-N1 can choose the operation of Relay Output by 3 functions are

1. Under-Protection Function: This function activates when the measured value falls below the Setpoint Low ($SP.L\phi$) as configured. The relay output will command the motor to stop after the OFF Delay Time (DT) has elapsed. This feature is designed for water pump system from damage of Dry Run incident.

2. Over-Protection Function: This function activates when the measured value exceeds the Setpoint High ($SP.H\phi$) as configured. The relay output will command the motor to stop after the OFF Delay Time (DT) has elapsed. This function is designed for applications using high rate and low round gear motors, where excessive load can cause damage to the gear.

3. Range Limit Protection Function: This function activates when the measured value exceeds the Setpoint High (SP.Hi) or falls below the Setpoint Low ($SP.L\phi$) as configured. The relay output will command the motor to stop after the OFF Delay Time (DT) has elapsed. This function is intended for operations that require protection from both under and over conditions.

Ext. Input is designed for connection with start&stop motor circuit, level switches, or other types of sensors for When Ext. Input circuit is close circuit, the relay output will activate after the configured delay time (Δt), allowing the pump/motor to operate. When the Ext. Input circuit is open circuit, the relay output will deactivate, causing the pump or motor to stop, as no operation command is present.

Recovery time (RT) range 0-9999 sec. This is used to set the delay time before the unit commands the system to operate again after a dry-run condition. For example, in a submersible pump that draws groundwater, prolonged operation may cause the ground water to run out, resulting in a dry run. This causes the PM-007N to stop the pump. If the (**rt**) is set to 30 minutes, the pump will automatically resume operation after 30 minutes because the groundwater level will have increased after the pump stops. This function is useful because it eliminates the need to manually start the pump. However, if the (**rt**) is set to 0 minutes, this function will not operate, and the user must reset the unit by pressing and holding the and buttons for 3 seconds, or by resetting through the External Reset Input.

The Ext. Reset Input is used for connecting to a push-button switch to reset and restart the operation. It is used in cases where Auto Reset by the (**rt**) function is not desired.

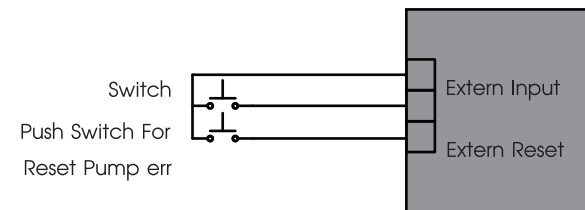
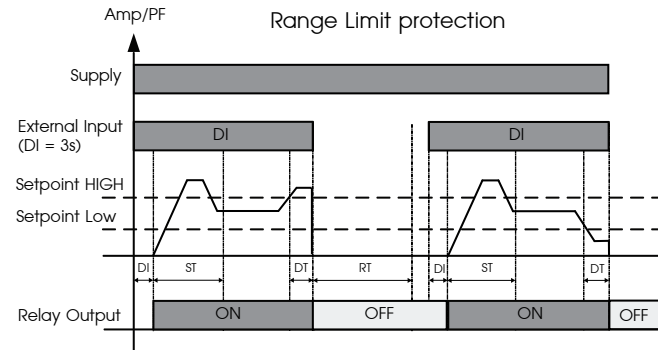
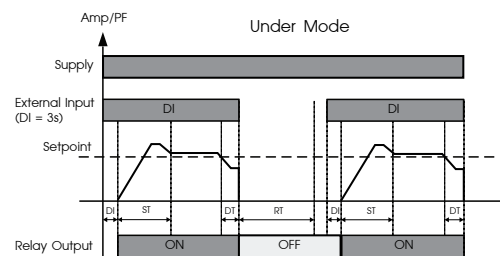
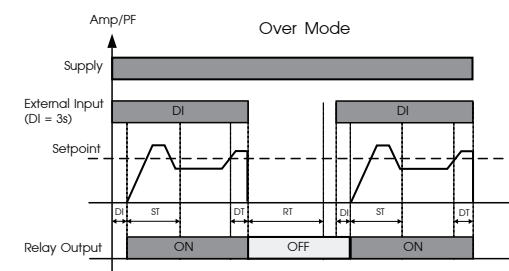
There are two modes of Reset Alarm operation:

1. Reset without an Ext. Input signal The unit will reset the alarm, reset the timer, and enter standby mode, waiting for the next Ext. Input signal.

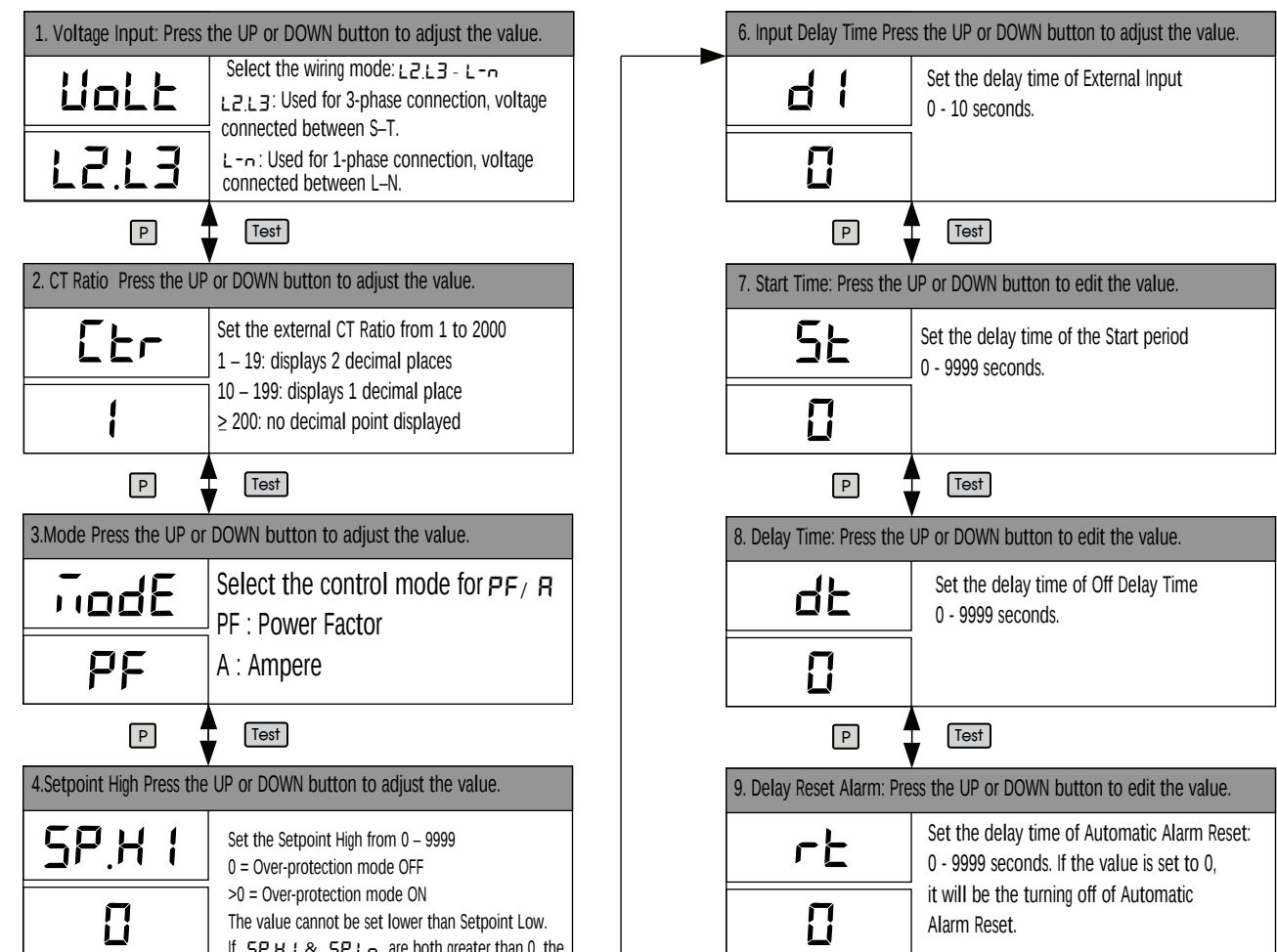
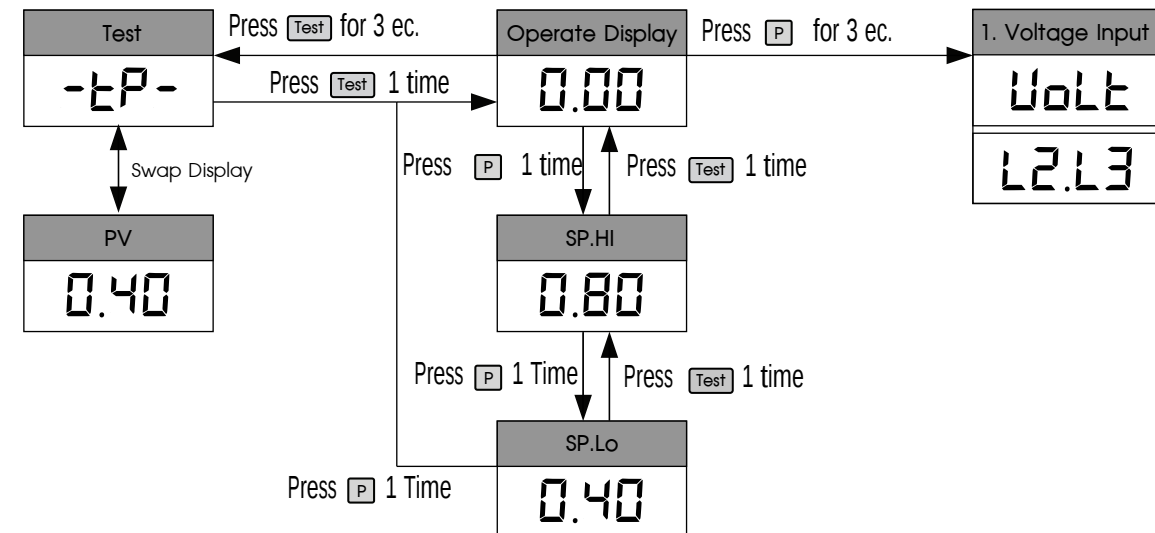
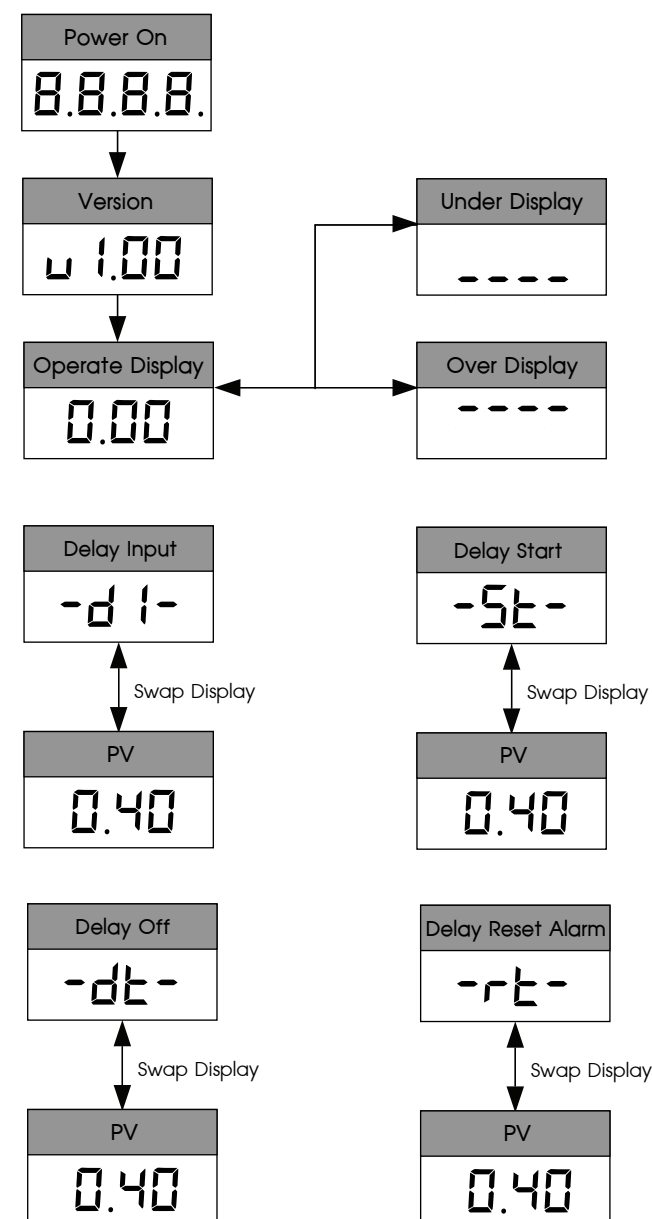
2. Reset with an Ext. Input signal When an Ext. Input signal is received, the unit will reset the alarm and the output will operate immediately without delay from the Ext. Input signal. (**dt**).

External Input Time (**dt**) is used to set the delay time before the Output operates again from the Ext. Input signal, in order to prevent the Output from chattering ON/OFF in cases where the Level Switch operates in an unstable manner.

PM-007-N1 also has a Pump Test function. When the Test button is pressed and held for 3 seconds, “- **LP** -” will be displayed and the output will operate continuously without performing any alarm checks. When the Test button is pressed again, the unit will return to normal operation and the “- **LP** -” message will disappear. This function can be used to force Manual operation in cases where other inputs are inactive.



■ OPERATION SETTING MENU



■ ORDERING CODE

PM-007-N1



PM-007-N1

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