PHASE LOSS, PHASE REVERSAL, PHASE UNBALANCE, UNDERVOLTAGE & OVERVOLTAGE

PMPU-FA8 Series

- Protects against phase loss, phase reversal, phase unbalance, undervoltage, overvoltage & rapid cycling
- Universal voltage range of 190-500V—greater range that covers more global applications
- True RMS voltage measurement ensures accurate sensing across more applications
- Retains fault indication and continues monitoring all voltages even with a lost phase
- Full fault indication on top of unit for easy troubleshooting
- Manual reset option works with external switch to reset the relay from outside the enclosure
- Compact plug-in case utilizing industry-standard 8 pin octal socket
- 10A SPDT output contacts

c US CE c UL us
with appropriate socket

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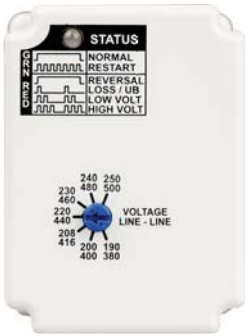
The PMPU-FA8 Three-Phase Monitor Relays continuously monitor all voltages of a three-phase system. They are used to protect motors and equipment from expensive damage due to phase loss, phase reversal, phase unbalance, undervoltage and overvoltage faults as well as rapid cycling. These products detect single phasing and unbalanced voltages regardless of regenerative voltages.

The PMPU-FA8 Series incorporate a microprocessor-based design capable of advanced signal processing including True RMS voltage measurement. Innovative analog-to-digital sensing circuitry allows for true full-wave monitoring of all three phases, delivering the highest level of protection possible.

True RMS voltage measurement ensures accurate sensing in most generator and other applications with non-sinusoidal wave forms, eliminating nuisance tripping. Full wave monitoring provides a more accurate method to measure the voltages, regardless of load type or wave shape, resulting in improved protection across more applications.

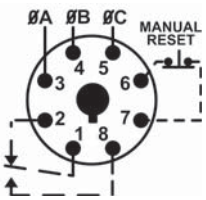
Unlike similar three-phase monitor relays, the PMP Series will continue to function even with a lost phase. They are the only line-powered units in their class to retain fault indication and continuous monitoring of all voltages during a phase loss, increasing the ease of troubleshooting and the level of protection.



The PMPU-FA8 is a true universal voltage product that works on any three-phase line-line voltage of 190-500V. The Voltage Line-Line knob on the PMPU-FA8 has two ranges: a 190-250V low voltage scale and a 380-500V high voltage scale. The unit auto senses the three-phase line-line voltage when applied and automatically selects the appropriate range.

Operation:
When the proper three-phase line voltage is applied to the unit and the phase sequence (rotation) is correct, the relay is energized after the Restart Delay is completed. Any one of five fault conditions will de-energize the relay after a delay. As standard, re-energization is automatic upon correction of the fault condition. Manual reset is available if an external momentary N.C. switch is connected to pins 6 and 7. A bi-color status LED indicates normal condition and also provides specific fault indication to simplify troubleshooting.

PMPU-FA8 Series

PROTECTS AGAINST	LINE-LINE VOLTAGE▲ 50/60 Hz	PRODUCT NUMBER	WIRING/SOCKET
Phase Loss, Phase Reversal, Phase Unbalance, Undervoltage & Overvoltage	190-500V	PMPU-FA8 ●	8 Pin Octal **70169-D**  **DIAGRAM 104**

▲ Phase-to-Phase (Line-to-Line).
● Requires a 600V-rated socket when used on system voltages above 300V.

Sockets & Accessories available

PHASE LOSS, PHASE REVERSAL, PHASE UNBALANCE, UNDERVOLTAGE & OVERVOLTAGE

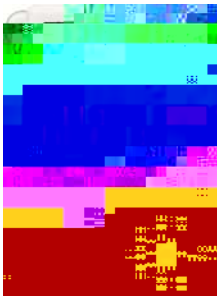
PMPU-FA8 Series

Application Data

Voltage Requirements:

RANGE (50/60Hz ±5%)	MIN VOLTAGE	MAX VOLTAGE	PRODUCT NUMBER
190-500V AC (see below)	156V AC	550V AC	PMPU-FA8

Three-Phase Line-Line Voltage:



The Voltage Line-Line knob on the PM-PU-FA8 has two ranges (left): a 190-250V low voltage scale and a 380-500V high voltage scale. The unit auto senses the 3-phase line-line voltage when applied and automatically selects the appropriate range.

Power Consumption: Less than 40VA.

Phase Loss: Unit trips on loss of any Phase A, B or C, regardless of any regenerative voltages.

Phase Reversal (Out-of-Sequence): Unit trips if sequence (rotation) of the three phases is anything other than A-B-C. It will not work on C-B-A.

Undervoltage: Fixed at 90% of the line voltage setting. Unit trips when the average of all three lines is less than the adjusted set point for a period longer than the fixed 4 second trip delay. It will reset at +3% of the Undervoltage trip setting.

Overvoltage: Fixed at 110% of the line voltage setting. Unit trips when the average of all three lines is greater than the fixed set point for a period longer than the fixed 4 second trip delay. It will reset at 107% of the line voltage setting.

Phase Unbalance: Fixed at 6% unbalance. Unit trips when any one of the three lines deviates from the average of all three lines by more than the adjusted set point for a period longer than the fixed 4 second trip delay.

Response Times:

Restart:	2 seconds fixed
Drop-out Due to Fault:	
Phase Loss and Reversal:	100ms fixed
Undervoltage and Overvoltage:	4 seconds fixed
Unbalance:	
Normal:	4 seconds fixed
Severe (>12%):	0.25 seconds fixed

Output Contacts: 10 A @ 277V AC / 7A @ 30V DC; 1HP @ 250V AC, 1/2HP @ 125V AC, C300 Pilot Duty

Life: Mechanical: 10,000,000 operations; Full Load: 100,000 operations

Temperature: Operating: -28° to 65°C (-18° to 149°F)
Storage: -40° to 85°C (-40° to 185°F)

Mounting: Uses an 8 pin octal socket. Requires a 600V-rated socket when used on system voltages greater than 300V such as Macromatic Catalog Number 70169-D.

Status LED:

	LED STATUS	STATUS
GREEN		NORMAL (RELAY ON)
GREEN		RESTART (DELAY)
RED		REVERSAL
RED		LOSS/UB (UNBALANCE)
RED		LOW VOLT (UNDERVOLTAGE)
RED		HIGH VOLT (OVERVOLTAGE)

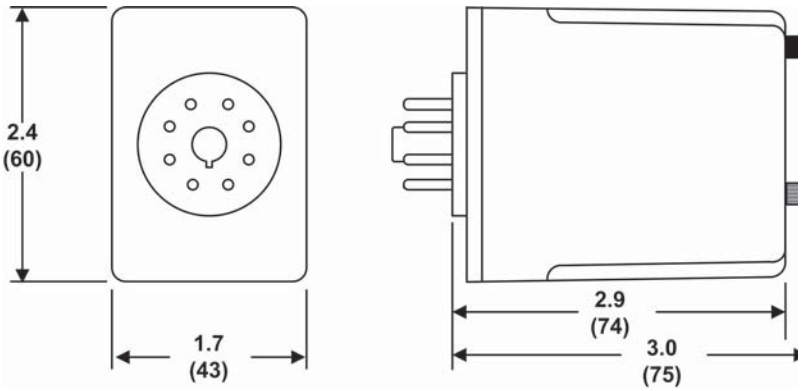
Reset: As standard, the PMPU-FA Series relays are in the Automatic Reset mode. However, they can be set in the Manual Reset mode by connecting an external N.C. switch across terminals 6 and 7. Upon application of line voltage, the PMPU-FA8 Series will go into Manual Reset mode if it recognizes a closure across terminals 6 and 7. After a fault clears, the relay will not reset until the N.C. switch is opened.

Approvals: File #E109466

with appropriate socket File #E109466

Low Voltage & EMC Directives EN60947-1, EN60947-5-1

Dimensions



All Dimensions in Inches (Millimeters)