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

PMPU-FA8X & PMPU-FA12X 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
- 5A SPDT/SPNO (PMPU-FA8X) or 5A DPDT (PMPU-FA12X) output provides isolated contact for alarm circuits

c US CE c UL us
with appropriate socket

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The PMPU-FA8X & PMPU-FA12X Series Three-Phase Monitor Relays continuously monitor all voltages to protect motors and equipment from expensive damage due to phase loss, phase reversal, phase unbalance, undervoltage and overvoltage. These products detect single phasing and unbalanced voltages regardless of any regenerative voltages.

Utilizing an advanced microprocessor-based design allows true RMS voltage measurement with full wave monitoring. This provides a more accurate method to measure the voltages, regardless of load type or wave shape, and results in improved protection across more applications.

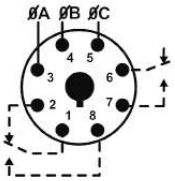
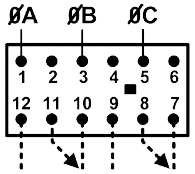
True RMS voltage measurement ensures accurate sensing in most generator and other applications with non-sinusoidal wave forms, eliminating nuisance tripping. Full wave monitoring provides a more accurate method to measure the voltages, regardless of load type or wave shape, resulting in improved protection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

Unlike similar three-phase monitor relays, these products 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-FA8X & PMPU-FA12X Series are true universal products that work on a wide variety of adjustable line-line voltages to cover more global applications. All other settings for undervoltage trip point, trip delay, restart delay and unbalance trip point are fixed for ease of setup. Both these products offer more than the standard SPDT output contacts. An extra NC contact can provide an isolated output for alarm circuits. The PMPU-FA8X uses a standard 8 pin octal socket even with the extra contact, and the PMPU-FA12X uses a 12 pin square socket (see www.macromatic.com/fa8x).

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. Re-energization of the relay is automatic upon correction of the fault condition. A bi-color status LED indicates normal condition and also provides specific fault indication to simplify troubleshooting.

PMPU-FA8X & PMPU-FA12X Series

PROTECTS AGAINST	LINE-LINE VOLTAGE▲ 50/60 Hz	CATALOG NUMBER	WIRING/SOCKET
Phase Loss, Phase Reversal, Phase Unbalance, Undervoltage & Overvoltage	190-500V	PMPU-FA8X ● ■	8 Pin Octal **70169-D**  **DIAGRAM 175**
Phase Loss, Phase Reversal, Phase Unbalance, Undervoltage & Overvoltage	190-500V	PMPU-FA12X ● ■	12 Pin Square **SD12-PC**  **DIAGRAM 174**

▲ Phase-to-Phase (Line-to-Line).
● Requires a 600V-rated socket when used on system voltages above 300V.
■ Dual range unit auto-senses between the 190-250V AC and 350-500V AC ranges (see Application Data on next page).

Sockets & Accessories available

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

PMPU-FA8X & PMPU-FA12X Series

Application Data

Voltage Requirements:

RANGE (50/60Hz ±5%)	MIN VOLTAGE	MAX VOLTAGE	CATALOG NUMBER
190-500V AC (see below)	156V AC	550V AC	PMPU-FA8X PMPU-FA12X

Three-Phase Line-Line Voltage:

The Voltage Line-Line knob on the PMPU-FA8X & PMPU-FA12X 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: 5A @ 277V AC / 5A 30V DC; 1/3HP @ 120/240V AC, B300 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 (8 pin) or SD12-PC (12 pin).

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: Reset is automatic upon correction of fault.

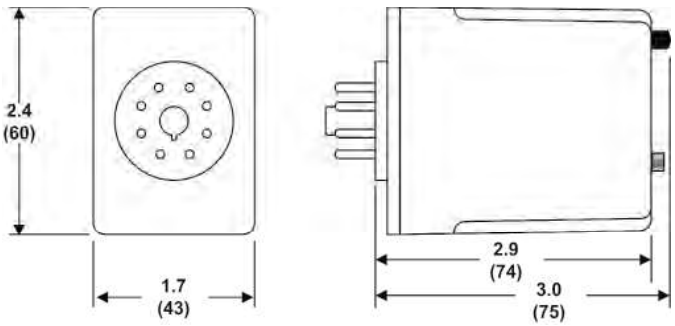
Approvals:

c UL us File #E109466

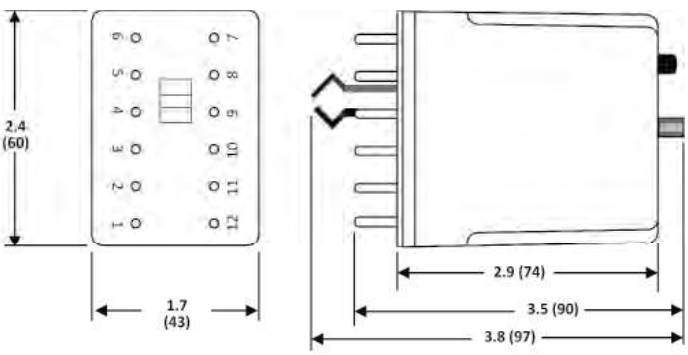
c UL us LISTED IND. CONT. EQUIP. SCH17 with appropriate socket File #E109466

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

Dimensions



PMPU-FA8X



PMPU-FA12X

All Dimensions in Inches (Millimeters)