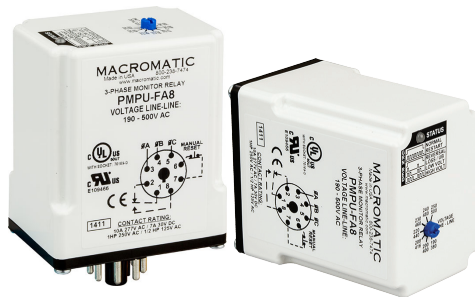


# PHASE LOSS, PHASE REVERSAL, PHASE UNBALANCE, UNDERVOLTAGE & OVERVOLTAGE

## 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
- ◆ 10A SPDT output contacts



Better. By Design.

**800.238.7474**

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The PMPU-FA8 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, the PMPU-FA8 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 Series is a true universal product, with three units 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. They utilize an industry-standard 8 pin octal socket.

### 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	CATALOG 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.
- 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

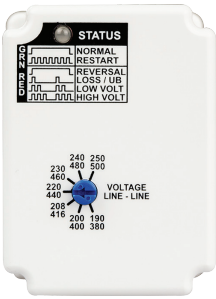
## PMPU-FA8 SERIES

### APPLICATION DATA

#### Voltage Requirements:

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

#### Three-Phase Line-Line Voltage:



The Voltage Line-Line knob on the PMPU-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:** SPDT 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
	NORMAL (RELAY ON)
	RESTART (DELAY)
	REVERSAL
	LOSS/UB (UNBALANCE)
	LOW VOLT (UNDERVOLTAGE)
	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. **Note:** When the unit is in the Manual Reset mode, the N.C. switch must be opened after each Power-up to reset the relay and resume normal operation.

#### Approvals:

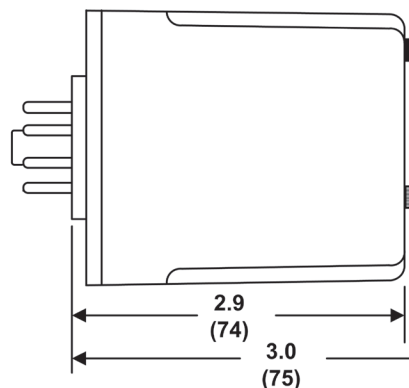
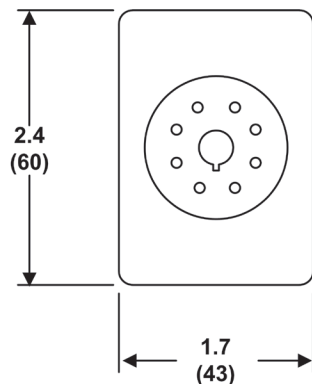


File #E109466

with appropriate socket File #E109466

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

### DIMENSIONS



All Dimensions in Inches (Millimeters)