


# PHASE MONITOR RELAYS

## PHASE LOSS, PHASE REVERSAL, PHASE UNBALANCE, AND UNDER/OVER VOLTAGE PMP SERIES PLUG-IN

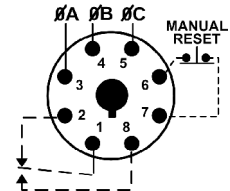


- ◆ Universal voltage range of 208-480V on PMPU provides the flexibility to cover a variety of applications with one unit
- ◆ Protects against phase loss, phase reversal, phase unbalance, undervoltage and overvoltage
- ◆ Variety of user-selectable and adjustable settings for the ultimate in three-phase protection
- ◆ Automatic & Manual Reset in Same Unit
- ◆ Multi-Color LED indicates normal condition and provides specific fault indication to simplify troubleshooting
- ◆ Compact plug-in case utilizing industry-standard 8 pin octal socket
- ◆ 10A SPDT output contacts
- ◆  (with appropriate socket)

The PMP Series Phase Monitor Relays utilize a microprocessor-based design to provide protection against phase loss, phase reversal, phase unbalance, undervoltage and overvoltage. The PMPU is a universal voltage product that works on any three-phase system voltage from 208-480V (a separate 120V version is available). These devices are designed to be compatible with most Wye or Delta systems with no connection to Neutral required. PMP Series products protect against unbalanced voltages or single phasing regardless of any regenerative voltages.

The relay is energized when the phase sequence and all voltages are correct. Any one of five fault conditions will de-energize the relay. As standard, re-energization is automatic upon correction of the fault condition. Manual reset is available if a momentary N.C. switch is wired to the appropriate terminals. A multi-color LED indicates normal condition and also provides specific fault indication to simplify troubleshooting.

The PMP Series offers a variety of user-adjustable settings. The percent phase unbalance is adjustable from 2-10%, and also has a "Disable" setting for those applications where poor voltage conditions could cause nuisance tripping. The undervoltage drop-out can be set at 80-95% of operating voltage (overvoltage setting is fixed at 110% of nominal). The adjustable time delay drop-out on undervoltage (0.1-20 seconds) eliminates nuisance tripping caused by momentary voltage fluctuations. There is also an adjustable time delay (1-300 seconds) on both power up and restart after a fault has been cleared.

PROTECTS AGAINST	NOMINAL VOLTAGE▲ 50/60 Hz	PRODUCT NUMBER	WIRING/SOCKET ■
Phase Loss, Phase Reversal, Phase Unbalance, Undervoltage & Overvoltage	120V  208-480V	PMP120  PMPU *	8 Pin Octal <b>70169-D</b>  <b>DIAGRAM 104</b>

▲ Phase-to-Phase (Line-to-Line).

\* Requires a 600V-rated socket when used on system voltages above 300V.

■ See Pages 80 & 81 for **Sockets & Accessories**.



**800-238-7474**

**www.macromatic.com**  
**sales@macromatic.com**

# PHASE MONITOR RELAYS

## PHASE LOSS, PHASE REVERSAL, PHASE UNBALANCE, AND UNDER/OVER VOLTAGE

### PMP SERIES PLUG-IN APPLICATION DATA & DIMENSIONS

#### APPLICATION DATA

##### **Phase Loss:**

Unit trips on loss of any Phase A, B or C.

##### **Phase Reversal:**

Unit trips if rotation (sequence) of the three phases is anything other than A-B-C.

##### **Undervoltage:**

Adjustable from 80-95% of nominal voltage. Unit trips when the average of all three lines is less than the adjusted set point for a period longer than the adjustable time delay drop-out.

##### **Overvoltage:**

Fixed at 110% of nominal voltage. Unit trips when the average of all three lines is greater than the fixed set point for a period longer than the time delay drop-out.

##### **Phase Unbalance:**

Adjustable from 2 - 10% 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. There is also a "Disable" setting adjustment that will turn off the Phase Unbalance Protection if nuisance tripping is a problem.

##### **Output Contacts:**

SPDT: 10A @ 240V AC/30V DC, 1/2HP @ 240V AC

##### **Life:**

Mechanical: 10,000,000 operations

Full Load: 100,000 operations

##### **Response Times:**

Power Up & Restart After Fault: 1 - 300 seconds adjustable

Drop-out Due to Fault:

Phase Loss & Reversal	100ms fixed
Phase Unbalance	2 seconds fixed
Undervoltage	0.1 - 20 seconds adjustable
Overvoltage	Fixed Time Based on Inverse Time Curve

**Hysteresis:** 2 - 3%

**Load (Burden):** Less than 3VA

**Temperature:** -28° to 65°C (-18° to 149°F)

##### **Mounting:**

Uses an 8 pin octal socket. Requires a 600V-rated socket when used on system voltages greater than 300V (Macromatic Product Number 70169-D--see Page 80).

##### **Indicator LED:**

LED Status	Indicator
Green Steady	Normal / Relay ON
Green Flashing	Power Up / Restart Delay
Red Steady	Unbalance
Red Flashing	Undervoltage / Overvoltage
Amber Steady	Reversal
Amber Flashing	Loss
Green / Red Alternating	Undervoltage / Overvoltage Trip Pending
Red / Amber Alternating*	Nominal Voltage Set Error

\* Applies to 208-480V units only.

##### **Reset:**

As standard, reset is automatic upon correction of fault. When a momentary-contact N.C. switch is wired across the Manual Reset terminals (6 & 7), the unit switches to manual reset mode and remote manual reset is available.

##### **Approvals:**

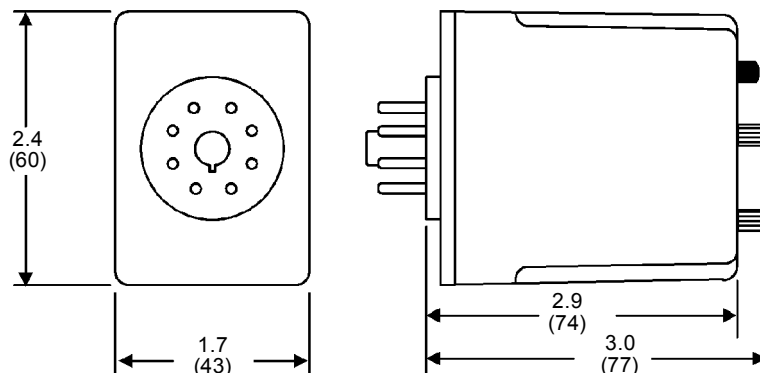


Low Voltage & EMC Directives  
EN60947-1, EN60947-5-1



with  
appropriate  
socket  
File #E109466

#### DIMENSIONS



All Dimensions in  
Inches (Millimeters)