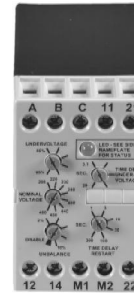
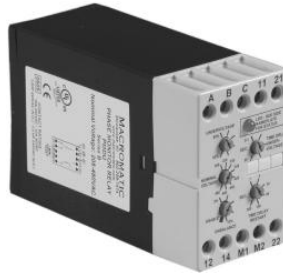


# PHASE MONITOR RELAYS

Phase Loss, Phase Reversal, Phase Unbalance, and Under/Over Voltage  
PMD Series Surface-Mount



- u Universal voltage range of 208-480V on PMDU provides the flexibility to cover a variety of applications with one unit
- u Protects against phase loss, phase reversal, phase unbalance, undervoltage and overvoltage
- u Variety of user-selectable and adjustable settings for the ultimate in three-phase protection
- u Automatic or Manual Reset
- u Multi-Color LED indicates normal condition and defines fault to simplify troubleshooting
- u 45mm DIN-style surface-mount case
- u 10A SPDT & SPNC output contacts



The PMD Series Phase Monitor Relays utilize a microprocessor-based design to provide protection against phase loss, phase reversal, phase unbalance, undervoltage and overvoltage. The PMDU is a universal voltage product that works on any three-phase system voltage from 208-480V (separate 120V & 575V versions are available). These devices are designed to be compatible with most Wye or Delta systems. In Wye systems, a connection to a neutral is not required. PMD 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 PMD 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.

| MOUNTING STYLE | OPERATING VOLTAGE 50/60 Hz | PRODUCT NUMBER u | WIRING n           |
|----------------|----------------------------|------------------|--------------------|
| Surface-Mount  | 120V                       | PMD120           | <p>DIAGRAM 105</p> |
|                | 208-480V                   | PMDU             |                    |
|                | 575V                       | PMD600           |                    |



- u To order PMD units with a second N.O. contact instead of the N.C. (terminals 21-22), add a suffix "-A1" to the Product Number, i.e., PMDU-A1. To order PMD units with DPDT output contacts instead of one SPDT and one SPNC, **but** with no manual reset feature, add a suffix "-A2" to the Product Number, i.e., PMDU-A2.
- n See Page 16 for **Accessories**.

# PHASE MONITOR RELAYS

Phase Loss, Phase Reversal, Phase Unbalance, and Under/Over Voltage  
PMD Series Surface-Mount  
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:

10A SPDT & SPNC @ 240V AC/30VDC,  
1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240V AC (N.C.)

### 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 (-20° to 150°F)

### Mounting:

Does not require a socket. Can either be mounted directly on 35mm DIN track with no additional parts or to a back-panel with two screws.

### 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.

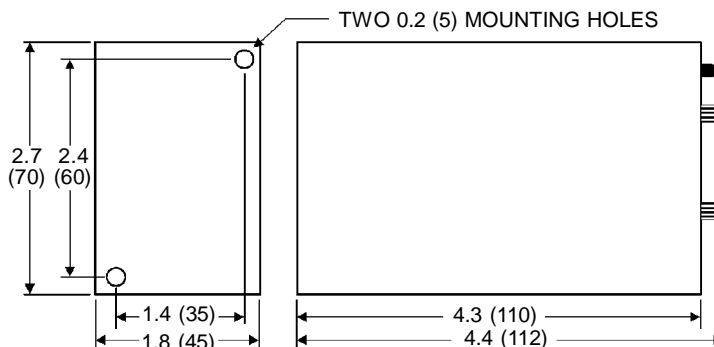
### Reset:

As standard, reset is automatic upon correction of fault. When a momentary-contact N.C. switch is wired across the Manual Reset terminals (5 & 6), the unit switches to manual reset mode and remote manual reset is available.

### Approvals:



## Dimensions



All Dimensions in Inches (Millimeters)