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

PMD Series

- Protects against phase loss, phase reversal, phase unbalance, undervoltage, overvoltage & rapid cycling
- Universal voltage range of 190-500V on PMDU—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
- Ultimate three-phase protection with a variety of user-selectable and adjustable settings
- 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
- Mounts on 35mm DIN-rail
- 10A DPDT output contacts
- Pilot Duty Rating

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PMD Series 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.

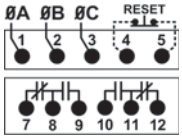
The PMD Series incorporate a microprocessor-based design capable of advanced signal processing including True RMS voltage measurement. Innovative analog-to-digital sensing circuitry allows for true full-wave monitoring of all three phases, delivering the highest level of protection possible.

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 PMD 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 PMDU 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 PMDU 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. The PMD120 and PMD575 have a single adjustable range (see table below).

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 terminals 4 and 5. A bi-color status LED indicates normal condition and also provides specific fault indication to simplify troubleshooting.

PROTECTS AGAINST	NOMINAL VOLTAGE▲ 50/60 Hz	PRODUCT NUMBER	WIRING
Phase Loss, Phase Reversal, Phase Unbalance, Undervoltage & Overvoltage	102-138V	PMD120	
	190-500V	PMDU	
	460-600V	PMD575	**DIAGRAM 800**

▲ Phase-to-Phase (Line-to-Line).

Accessories available

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

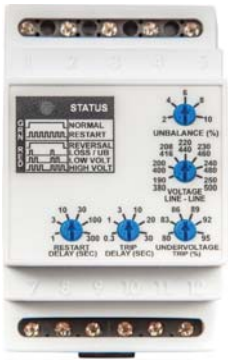
PMD Series

Application Data

Voltage Requirements:

RANGE (50/60Hz ±5%)	MIN VOLTAGE	MAX VOLTAGE	PRODUCT NUMBER
102-138V AC	77V AC	152V AC	PMD120
190-500V AC (see below)	156V AC	550V AC	PMDU
460-600V AC	345V AC	660V AC	PMD575

Three-Phase Line-Line Voltage:



The Voltage Line-Line knob on the PMDU has two ranges (left): 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.

The PMD120 has a single adjustable range of 102-138V and the PMD575 has a single adjustable range of 460-600V.

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: Adjustable from 80-95% 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 adjustable 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 adjustable trip delay. It will reset at 107% of the line voltage setting.

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 for a period longer than the adjustable trip delay.

Response Times:

Restart:	1 - 300 seconds adjustable
Drop-out Due to Fault:	
Phase Loss and Reversal:	100ms fixed
Undervoltage and Overvoltage:	0.3 - 30 seconds adjustable
Unbalance:	
Normal:	0.3 - 30 seconds adjustable
Severe (Twice Knob Setting):	0.3 - 2 seconds

Output Contacts: DPDT 10 A @ 277V AC / 10A @ 30V DC;
1/2HP @ 120/240V AC (N.O.),
1/3HP @ 120/240V AC (N.C.),
B300 Pilot Duty, R300 (N.O.)

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: Mounts on 35mm DIN-rail, recommended terminal tightening torque, 7 in-lbs

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)

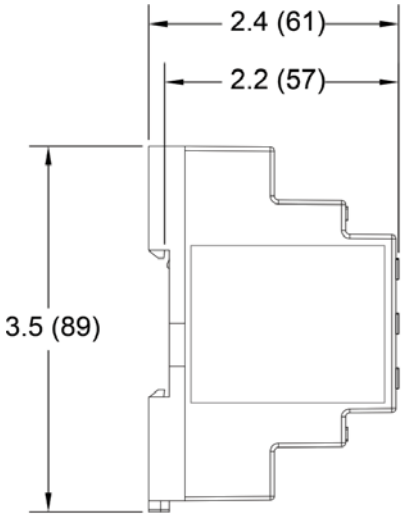
Reset: As standard, the PMD Series relays are in the Automatic Reset mode. However, they can be set in the Manual Reset mode by connecting an external N.C. switch across terminals 4 and 5. Upon application of line voltage, the PMD Series will go into Manual Reset mode if it recognizes a closure across terminals 4 and 5. After a fault clears, the relay will not reset until the N.C. switch is opened.

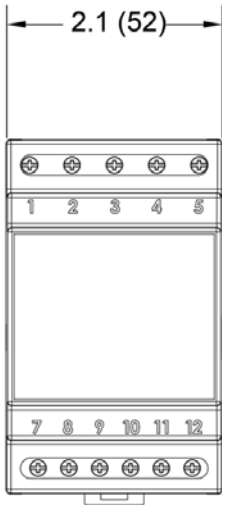
Termination: Cage-clamp screw terminals
Plus-minus screws accept flat and phillips head tools
Recommended tightening torque of 7 in-lbs
Accepts solid or stranded wire 12-30 AWG

Approvals: c UL us
File # E109466

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

Dimensions





All Dimensions in Inches (Millimeters)