

# 3 Phase Voltage Monitor PLM Series Motor Protector



ANSI Device #47/27

- Protects Against: Phase Loss, Phase Reversal, Undervoltage, & Unbalanced Voltages
- 8 Pin Plug-in Base
- Adjustable Low Voltage Trip Point
- Factory Fixed Unbalance and Trip Delay
- Line Voltages 200 ... 480 V AC, in 3 Ranges
- SPDT Isolated 8 A Relay Contacts

## Description

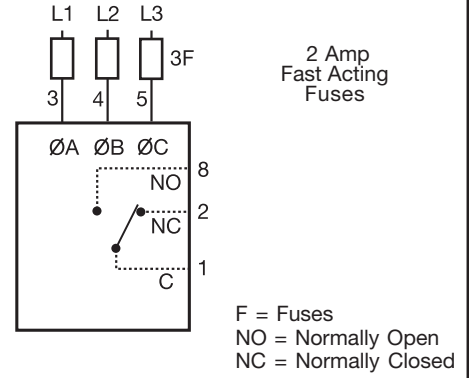
The PLM Series continuously measures the voltage of each of the three phases. It separately senses Undervoltage, Voltage Unbalance (including Phase Loss), and Phase Reversal. Protection is assured during periods of large average voltage fluctuations, or when regenerated voltages are present. Both Delta and Wye systems can be monitored; no connection to neutral is required. 380 V AC and 480 V AC units are encapsulated.

## Operation

The output relay is energized and the LED glows when all voltages are acceptable and the phase sequence is correct. Under and unbalanced voltages (including phase loss) must be sensed for a continuous trip delay period before the relay and the LED are de-energized. Re-energization is automatic upon correction of the fault condition. The output relay will not energize if a fault condition is sensed as power is applied.

ASME A17.1 rule 210.6, NEMA MG1 14:30, 14:35, IEEE C62.41-1991 Level B

- Approvals:



Dashed lines are internal connections.

**CAUTION:** 2 amp max fast acting fuses must be installed externally in series with each input. (3) (Bussman KTK-2 or equivalent)

## Ordering Table

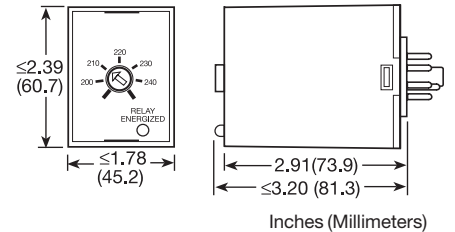
<b>PLM Series</b>	<b>X</b>	<b>X</b>	<b>X</b>
<b>Line Voltage</b>	<b>Voltage Unbalance (Fixed)</b> Specify: 4, 5, 6, 7, or 8%	<b>Trip Delay (Fixed)</b> Specify from 2 ... 20 s in 1 s increments (Insert 0 before 1 ... 9)	
6 - 240 V AC			
8 - 380 V AC			
9 - 480 V AC			

Example P/N: **PLM6405**

## Technical Data

<b>Line Voltage</b>		3 phase Delta or Wye with no connection to neutral	
Type			
Operating Voltage:			
<b>UL CSA Model</b>	<b>Adj. Line Voltage Range</b>	<b>Line Voltage Max.</b>	<b>Calibration Frequency</b>
• 240	200 ... 240 V AC	270 V AC	60 Hz
• 380	360 ... 430 V AC	480 V AC	50 Hz
• 480	400 ... 480 V AC	530 V AC	60 Hz
Line Frequency		50 ... 60 Hz	
Phase Sequence		ABC	
<b>Low Voltage and Voltage Unbalance</b>		Voltage detection with delayed trip & automatic reset	
Type			
Low Voltage:	Trip Voltage	88 ... 92% of adjusted line voltage	
	Reset Voltage	Plus 3% of trip voltage	
Voltage Unbalance:			
	Trip Unbalance	Factory fixed from 4 ... 8%	
	Reset on Balance (%):	Selected Unbalance 4 5 6 7 8 Reset 3.6 4.5 5.4 6.3 7.2	
<b>Note:</b> A 60 Hz unit used on 50 Hz will shift by -1. A 50 Hz unit used on 60 Hz will shift by +1. (Ex: 4% unbalance on 60 Hz would be 3% unbalance on 50 Hz.)			
Trip Delay:	Range	Factory fixed from 2 ... 20 s	
	Tolerance	+/-15%	
<b>Phase Reversal</b>			
Response Time -- Phase Reversal		≤ 100 ms	
Reset		Automatic	
<b>Output</b>			
Type		Electromechanical relay	
Form		Single pole double throw (SPDT)	
Rating		8 A resistive at 240 V AC	
<b>Protection</b>			
Surge		IEEE C62.41-1991 Level B	
Isolation Voltage		≥ 2500 V RMS input to output	
Circuitry		Encapsulated (380 & 480 V units only)	
<b>Mechanical</b>			
Mounting*		8 pin plug-in socket rated 600 V AC	
Package		3.2 x 2.39 x 1.78 in. (81.3 x 60.7 x 45.2 mm)	
<b>Environmental</b>			
Operating Temperature		240 & 380 V AC: -40°C ... +60°C 480 V AC: -40°C ... +50°C	
Storage Temperature		-40°C ... +85°C	
Weight		240 V AC ≅ 6.1 oz (173 g) 380 & 480 V AC ≅ 9.3 oz (264 g)	

**Field Adjustment:** Set voltage adjustment knob at the desired operating line voltage. Apply power. If the relay fails to energize, check wiring of all 3 phases, voltage, and phase sequence. If phase sequence is incorrect, swap any two wires. No further adjustment should be required.



## Accessories

Panel mount kit  
P/N: BZ1

Octal 8-pin socket  
P/N: OT08PC

3-phase fuse block/disconnect  
P/N: P0700-241  
2 AMP fuse  
P/N: P0600-11

DIN rail P/Ns:  
**C103PM (Al)**  
17322005 (Steel)

\*CAUTION: Select an octal socket rated for 600 V AC operation.

See accessory page at the end of this section.