

### 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 10 A Relay Contacts

#### Description

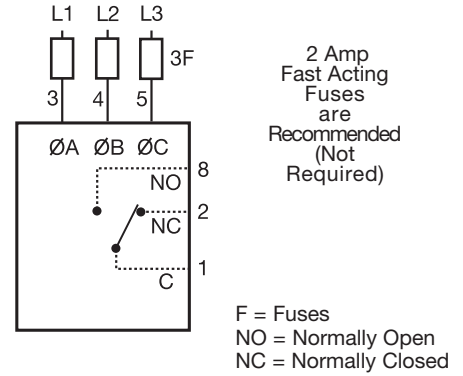
The PLM Series continuously measures the voltage of each of the three phases. The PLM Series uses a new microcontroller circuit design that senses Undervoltage, Voltage Unbalance, Phase Loss, and Phase Reversal. Protection is assured when regenerated voltages are present. Both Delta and Wye systems can be monitored; no connection to neutral is required.

#### Operation

The output relay is energized and the LED glows green when all voltages are acceptable and the phase sequence is correct. Under and unbalanced voltages must be sensed for a continuous trip delay period before the relay de-energizes. Reset is automatic upon correction of the fault condition. The output relay will not energize if a fault condition is sensed as power is applied. The LED flashes red during the trip delay, then glows red when the output de-energizes. The LED flashes green/red if phase reversal is sensed.

US Pat #6541954  
ASME A17.1 rule 210.6, NEMA MG1 14:30, 14:35,  
IEEE C62.41-1991 Level B

■ Approvals:



Relay Contacts are Isolated  
Dashed lines are internal connections.

#### Ordering Table

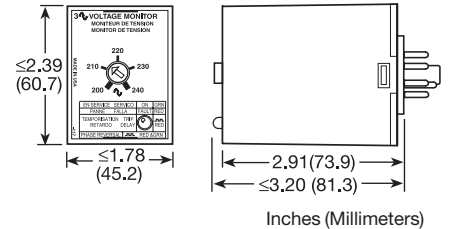
<b>PLM Series</b>	<b>X</b>	<b>X</b>	<b>X</b>
	<b>Line Voltage</b>	<b>Voltage Unbalance (Fixed)</b>	<b>Trip Delay (Fixed)</b>
	6 - 240 V AC	Specify: 4, 5, 6, 7, or 8%	Specify from 2 ... 20 s in 1 s increments (Insert 0 before 1 ... 9)
	8 - 380 V AC		
	9 - 480 V AC		

Example P/N: **PLM6405**

#### Technical Data

<b>Line Voltage</b>		3 phase Delta or Wye with no connection to neutral	
Type			
Operating Voltage:	<b>Model</b>	<b>Adj. Line Voltage Range</b>	<b>Line Voltage Max.</b>
	240	200 ... 240 V AC	270 V AC
	380	360 ... 430 V AC	480 V AC
	480	400 ... 480 V AC	530 V AC
Line Frequency	50 ... 100 Hz		
Phase Sequence	ABC		
Power Consumption	Approx 2W for 240 V units Approx 3W for 480 V units		
<b>Low Voltage and Voltage Unbalance</b>			
Type	Voltage detection with delayed trip & automatic reset		
Low Voltage:	<b>Trip Voltage</b>	88 ... 92% of adjusted line voltage	
	<b>Reset Voltage</b>	Plus 3% of trip voltage	
Voltage Unbalance:	<b>Trip Unbalance</b>	Factory fixed from 4 ... 8%	
	<b>Reset on Balance :</b>	-0.7% unbalance typical	
Trip Delay:	<b>Range</b>	Factory fixed from 2 ... 20 s	
	<b>Tolerance</b>	+/-15%	
<b>Phase Reversal and Phase Loss</b>			
Response Time -- Phase Reversal	≤ 200 ms		
	<b>Phase Loss</b>	≤ 200 ms	
Phase Loss	≥ 35% unbalance		
Reset	Automatic		
<b>Output</b>			
Type	Electromechanical relay		
Form	Isolated Single pole double throw (SPDT)		
Rating	10 A resistive at 240 V AC, 277 V AC Max. 1/2 Hp at 240 V AC; 1/4 Hp at 120 V AC Mechanical -- 1 x 10 <sup>7</sup> ; Electrical 1 x 10 <sup>5</sup>		
Life			
<b>Protection</b>			
Surge	IEEE C62.41-1991 Level B		
Isolation Voltage	≥ 2500 V RMS input to output		
<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	-40°C ... +60°C		
Storage Temperature	-40°C ... +85°C		
Weight	4.4 oz (125g)		

**Field Adjustment:** Set voltage adjustment knob at the desired operating line voltage for the equipment. This adjustment automatically sets the undervoltage trip point. Apply power. If the PLM fails to energize, (LED glows green) check wiring of all 3 phases, voltage, and phase sequence. If phase sequence is incorrect, the LED flashes green/red. To correct this, swap any two line voltage connections at the mounting socket. 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 like OT08.