PLMU11

Voltage Monitor

Description
The PLMU11 continuously measures the voltage of each of the three phases to provide protection for 3-phase motors and sensitive loads. Its microcontroller senses under and overvoltage, voltage unbalance, phase loss, and phase reversal. Protection is provided even when regenerated voltages are present. Universal voltage operation and standard base connection allows the PLMU11 to replace hundreds of competitive part numbers.

Operation
Upon application of power, a 0.6s random start delay begins and the PLMU11 measures the voltage levels and line frequency and selects the voltage range. The output relay is energized and the LED glows green when all voltages are acceptable and the phase sequence is correct. LED flashes green during trip delay, glows red when output de-energizes. Undervoltage, overvoltage, and voltage unbalance must be sensed for continuous trip delay before the relay de-energizes. Re-energization is automatic upon fault correction. The output relay will not energize if a fault condition is sensed as 3-phase input voltage is applied. The LED alternately flashes red/green when phase reversal is sensed. Line voltage is selected with the knob, setting the over and under voltage trip points. Voltage range is automatically selected by the microcontroller.

LED Indicator

<table>
<thead>
<tr>
<th>LED Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady Green</td>
<td>Energized</td>
</tr>
<tr>
<td>Steady Red</td>
<td>De-energized (tripped on fault)</td>
</tr>
<tr>
<td>Flashing Green</td>
<td>Trip Delay</td>
</tr>
<tr>
<td>Alternate Flashing Red</td>
<td>Phase Reversal</td>
</tr>
</tbody>
</table>

Features & Benefits

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quick octal 8-pin mounting</td>
<td>Small footprint with universal mounting; ideal replacement for hundreds of competitive part numbers.</td>
</tr>
<tr>
<td>Proprietary microcontroller based circuitry</td>
<td>Constant monitoring of single-phase, low voltage, high voltage, voltage unbalance, phase reversal.</td>
</tr>
<tr>
<td>LED diagnostics</td>
<td>Quick visual indicator for cause of trip. LED indications include: normal operation, trip delay, phase reversal, fault</td>
</tr>
<tr>
<td>Isolated, 10A, SPDT output contacts</td>
<td>Allows control of loads for AC voltages</td>
</tr>
<tr>
<td>Simple 3-wire connection for delta or wye systems</td>
<td>Allows flexibility across wide range of systems</td>
</tr>
<tr>
<td>ASME A17.1 Rule 210.6</td>
<td>Complies with safety codes for elevators, escalators, moving walkways</td>
</tr>
<tr>
<td>NEMA MG1 14:30, 14:35</td>
<td>Complies with safety codes for motors and generators</td>
</tr>
<tr>
<td>IEEE C62.41-1991 Level B</td>
<td>Complies with safety codes for surge and voltage protection</td>
</tr>
</tbody>
</table>

Wiring Diagram

F = Fuses
ØA = Phase A = L1
ØB = Phase B = L2
ØC = Phase C = L3
NO = Normally Open
NC = Normally Closed

2A fast acting fuses recommended for safety (not required).
Relay contacts are isolated
Accessories

BZ1 Front Panel Mount Kit
Provides an easy method of through-the-panel mounting of 8-pin or 11-pin plug-in timers, flashers, and other controls.

OT08PC Octal 8-pin Socket
8-pin 35mm DIN rail or surface mount. Rated at 10A @ 600VAC. Surface mounted with two #6 screws or snaps onto a 35 mm DIN rail.

LPSM003ZXID (Indicating), LPSM003Z (Non-indicating) Fuse Holders
Littelfuse POWR-SAFE Dead Front holders provide optimum protection to personnel for Class CC and Midget-Style fuses. 600 VAC/DC

0KLK002.T Midget Fuse (2 Amp)
10 x 38 fast acting, high-interrupting capacity, current-limiting type fuse. 600 Vac/500 Vdc

C103PM (AL) DIN Rail
35 mm aluminum DIN rail available in a 36 in. (91.4 cm) length.

Specifications

Line Voltage
Type
3-phase delta or wye with no connection to neutral

Line Voltage
Adjustable Voltage Ranges
(Automatic Range Selection)
200 to 240VAC, 50/60 Hz
340 to 420VAC, 50 Hz
400 to 480VAC, 60 Hz

Maximum Voltage
Phase Sequence
525VAC
ABC

Power Consumption
≤ 5W

Overvoltage, Undervoltage, & Voltage Unbalance
Type
Voltage detection with delayed trip and automatic reset

Overvoltage & Undervoltage
Undervoltage Trip Point
88 - 92% of adjusted line voltage
Reset Voltage
+2% of trip voltage

Overvoltage Trip Point
109 - 113% of adjusted line voltage
Reset Voltage
-2% of trip voltage

Voltage Unbalance Trip Point
Adjustable from 2 - 10%

Reset on Balance (%)
2 3 4 5 6 7 8 9 10
1.5 2.5 3.5 4.5 5.4 6.3 7.2 8.1 9

Trip Delay Range
Adjustable from 0.25 - 30s

Severe Unbalance - 2X Selected Unbalance
0.25 - 2s; disabled when the trip delay is less than 2s

Random Start Delay
0.6s

Phase Reversal & Phase Loss Trip Time
≤ 150ms

Phase Loss Setpoint
≥ 15% unbalance

Reset Type
Automatic

Output Type
Energized when voltages are acceptable

Type
Electromechanical relay

Form
Isolated, SPDT

Rating
10A resistive @ 240VAC, 1/4 hp @ 125VAC;
1/3 hp @ 250VAC, max. 277VAC

Life
Mechanical - 1 x 10^6; Electrical - 1 x 10^5

Protection
Surge
IEEE C62.41-1991 Level B

Isolation Voltage
≥ 2500V RMS input to output

Mechanical
Mounting*
Plug-in socket rated 600VAC

Termination
Octal 8-pin plug-in

Dimensions
H 77.0 mm (3.03”); W 60.7 mm (2.39”);
D 45.2 mm (1.78”)

Environmental
Operating/Storage Temperature
-40° to 60°C / -40° to 85°C

Weight
8.6 oz (244 g)

*CAUTION: Select an octal socket rated for 600VAC operation.