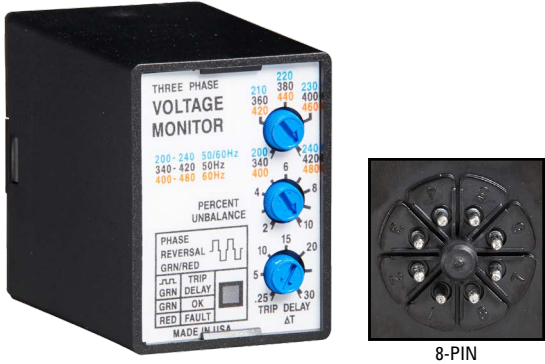


# Protection Relays

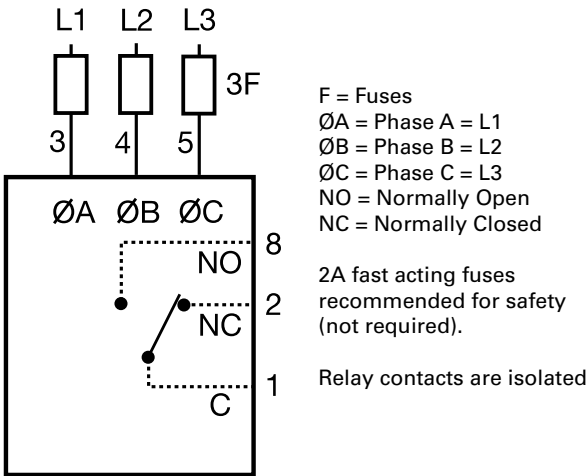
## Voltage Monitoring Relays

### PLMU11

#### Voltage Monitor



#### Wiring Diagram



#### 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	
Steady Green	Energized
Steady Red	De-energized (tripped on fault)
Flashing Green	Trip Delay
Alternate Flashing Red/Green	Phase Reversal

#### Features & Benefits

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

# PLMU11

## 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



### OKLK002.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

200 to 480VAC  $\pm 15\%$ , 50/60 Hz  $\pm 2$  Hz

### Adjustable Voltage Ranges

#### (Automatic Range Selection)

200 to 240VAC, 50/60 Hz  
340 to 420VAC, 50 Hz  
400 to 480VAC, 60 Hz

### Maximum Voltage

552VAC

### Phase Sequence

ABC

### Power Consumption

$\leq 5W$

### 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 (%)

##### Selected Unbalance

2	3	4	5	6	7	8	9	10
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##### Reset

1.5	2.5	3.5	4.5	5.4	6.3	7.2	8.1	9
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### 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

$\approx 0.6s$

### Random Start Delay

### Phase Reversal & Phase

#### Loss Trip Time

$\leq 150ms$

#### Phase Loss Setpoint

$\geq 15\%$  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

Mechanical -  $1 \times 10^6$ ; Electrical -  $1 \times 10^5$

### Life

### Protection

#### Surge

IEEE C62.41-1991 Level B

#### Isolation Voltage

$\geq 2500V$  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

$\approx 8.6$  oz (244 g)

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