

### 3 Phase Voltage Monitor DLM Series Motor Protector



TEN YEAR WARRANTY

ANSI Device #27/47/59

- Protects Against: Phase Loss, Phase Reversal, Overvoltage, Undervoltage, and Voltage Unbalance
- 35 mm DIN Rail or Surface Mounting
- SPDT Isolated 10 A Relay Contacts
- LED Glows when All Conditions are Acceptable
- Line Voltage 200 ... 600 V AC, in 3 Ranges
- Simple 3 Wire Connection for Delta or Wye Systems

#### Description

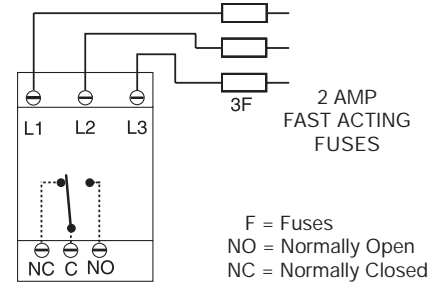
The DLM Series continuously measures the voltage of each of the three phases. It separately senses under and over voltage, voltage unbalance including phase loss and phase reversal. Protection is assured during periods of large average voltage fluctuations, or when regenerated voltages are present. Both Delta and Wye systems can be monitored; no connection to neutral required.

#### Operation

The output relay is energized and the LED glows when all voltages are acceptable and the phase sequence is correct. Undervoltage, overvoltage, and voltage unbalance must be sensed for 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:

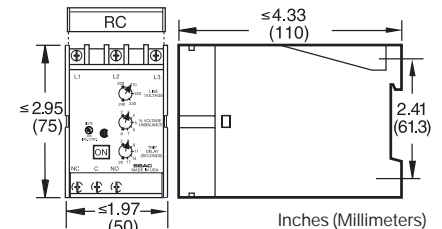


**CAUTION:** 2 amp max fast acting fuses must be installed externally in series with each input. (3) (Bussman KTK-2 or equivalent)

**Field Adjustment:** Set voltage, delay period, and voltage unbalance percentage (consult equipment manufacturer's specifications). Make connection to all three line phases as shown in the connection diagram. Apply power. If the relay fails to energize, check the wiring of all 3 phases, voltage, and phase sequence. If phase sequence is incorrect, swap any two wires. No further adjustment should be required to achieve maximum equipment protection.

Reset on Balance	
Selected Unbalance	Reset %
2	1.8
3	2.7
4	3.6
5	4.5
6	5.4
7	6.3
8	7.2

**Note:** 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.)



RC = Removable Terminal Cover

#### Mounting Note:

Adequate ventilation must be provided. The Ambient Temperature can not exceed 60° C. In some installations at 480 and 600 V AC, there must be up to 0.5 in. (12.2 mm) of space between the DLM and other components.

#### Accessories

- Midget Fuse
- Fast acting fuse for use with voltage monitors. Rated 2 A at 500 V AC.
- 1.5 x 0.41 in. (38.1 x 10.3 mm)
- P/N: P0600-11

Three phase fuse block disconnect designed for use with HRC midget fuses [1.5 x 0.41 in.] (38.1 x 10.3 mm) rated up to 25 A at 500 V AC. Surface or 35mm DIN rail mountable. 3.9 x 2.09 x 2.2 in. (99 x 53.1 x 55.9 mm)

P/N: P0700-241

DIN rail  
P/Ns: C103PM (Al)  
017322005 (Steel)

See accessory pages for specifications.

Line Voltage	Voltage Unbalance	Trip Delay	Part Number
240 V AC	2 ... 8%	2 ... 20 s	DLM611
480 V AC	2 ... 8%	2 ... 20 s	DLM911
600 V AC	2 ... 8%	2 ... 20 s	DLM011

Also Available for 380 V AC

#### Technical Data

<b>Line Voltage</b>		3 phase Delta or Wye with no connection to neutral	
Type			
<b>Operating Voltage</b>	<b>Line Voltage Range</b>	<b>Line Voltage Max.</b>	<b>Calibration Frequency</b>
240	200 ... 240 V AC	270 V AC	60 Hz
480	400 ... 480 V AC	530 V AC	60 Hz
600	500 ... 600 V AC	600 V AC	60 Hz
Line Frequency	50 ... 60 Hz		
Phase Sequence	ABC		
<b>Overvoltage, Undervoltage, &amp; Voltage Unbalance</b>			
Type	Voltage detection with delayed trip & automatic reset		
Overvoltage & Undervoltage:			
Undervoltage Trip Point	88 ... 92% of adjusted line voltage		
Reset Voltage	+3% of trip voltage		
Overvoltage Trip Point	109 ... 113% of adjusted line voltage		
Reset Voltage	-3% of trip voltage		
Voltage Unbalance:			
Trip Unbalance	Adjustable from 2 ... 8%		
Trip Delay:	Range	Adjustable from 2 ... 20 s	
	Tolerance	Adjustable-guaranteed range	
<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	10 A resistive @ 240 V AC; 1/4 hp @ 125 V AC; 1/3 hp @ 250 V AC; max. voltage 277 V AC		
Life	Mechanical -- 1 x 10 <sup>6</sup> ; Electrical -- 1 x 10 <sup>5</sup>		
<b>Protection</b>	Surge	IEEE C62.41-1991 Level B	
Isolation Voltage	≥ 2500 V RMS input to output		
Circuitry	Encapsulated		
<b>Mechanical</b>			
Mounting	Surface with 2 #8 (M4 x 0.7) screws or 35 mm DIN rail		
Package	4.33 x 2.95 x 1.97 in. (110 x 75 x 50 mm)		
Termination	Screw terminals with captive wire clamps for up to #14 AWG (2.5 mm <sup>2</sup> ) wire		
	Touch proof terminal covers are included		
<b>Environmental</b>			
Operating/Storage Temperature	-40°C ... +60°C / -40°C ... +85°C		
Humidity	95% relative, non-condensing		
Weight	120 & 240 V AC	≅ 8.6 oz (244 g)	
	480 ... 600 V AC	≅ 16.3 oz (462 g)	