

### 3 Phase Voltage Monitor RLM Series Motor Protector



TEN YEAR WARRANTY

ANSI Device #47/27

- Protects Against: Phase Loss, Phase Reversal, Undervoltage, & Unbalance Voltages
- Industrial Packaging with Encapsulated Circuitry
- Fully Adjustable or Factory Fixed
- SPDT Isolated 8 A Contacts
- LED Glows When All Conditions are Acceptable
- Line Voltages 200 ... 480 V AC, in 3 Ranges

#### Description

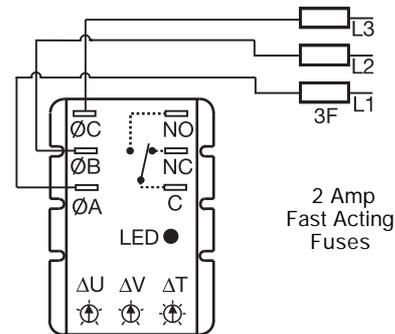
The RLM Series of encapsulated three phase voltage monitors continuously measures the voltage of each of the three phases. Its circuit design separately senses Phase Reversal, Undervoltage, and Voltage Unbalance including Phase Loss. Protection is assured during periods of large average voltage fluctuations, or when regenerated voltages are present. Both Delta and Wye systems can be monitored; no connection to neutral is required.

#### Operation

The output relay is energized and the LED glows when all voltages are acceptable and the phase sequence is correct. Undervoltage and voltage unbalance 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:



2 Amp Fast Acting Fuses

- F = Fuses
- ØA = Phase A = L1
- ØB = Phase B = L2
- ØC = Phase C = L3
- ΔU = Unbalance Adjustment
- ΔV = Line Voltage Adjustment
- ΔT = Trip Delay Adjustment

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

#### Ordering Table

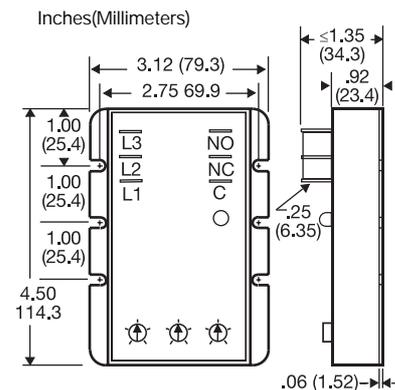
RLM Series	X Line Voltage	X Voltage Unbalance	X Trip Delay
	-6 - 240 V AC	-1 - Adjustable: 2 ... 6 %	-1 - Adjustable: 2 ... 20 s
	-9 - 480 V AC	-Fixed: Specify: 4, 5, 6, 7, or 8 %	-Fixed: Specify delay in s, 2 ... 20 s in 1 s increments (insert 0 before 2 ... 9)
	-8 - 380 V AC	-1 - Adjustable: 2 ... 8 % (380 V AC only)	
		-Fixed: Specify: 4, 5, 6, 7, or 8 %	

Example P/N: **RLM611** Fixed - **RLM9405**

#### Technical Data

<b>Line Voltage</b>		3 phase Delta or Wye with no connection to neutral	
Type			
Operating Voltage:			
UL CSA Model	Adj. Line Voltage Range	Line Voltage Max.	Calibration Frequency
• 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>Undervoltage and Voltage Unbalance</b>			
Type		Voltage detection with delayed trip & automatic reset	
Undervoltage:	Trip Voltage	88 ... 92% of adjusted line voltage	
	Reset Voltage	+3% of trip voltage	
Voltage Unbalance:	Trip Unbalance	240 & 480 V AC Adj. 2 ... 6%; 380 V AC Adj. 2 ... 8%; or fixed at 4, 5, 6, 7, or 8%	
Reset on Balance (%): Selected Unbalance		2	3 4 5 6 7 8
Reset		1.8	2.7 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	Adjustable or Factory fixed from 2 ... 20 s	
	Tolerance	Adjustable: Guaranteed range: Factory fixed: +/-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; max. voltage 277 V AC	
<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 mount with two #8 (M4 x 0.7) screws	
Termination		0.25 in. (6.35 mm) male quick connect terminals	
<b>Environmental</b>			
Operating Temperature		-40°C ... +60°C	
Storage Temperature		-40°C ... +85°C	
Humidity		95% relative, non-condensing	
Weight		≈ 8.7 oz (247 g)	

**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.



#### Accessories

<p>Female quick connect P/Ns: P1015-13 (AWG 10/12) P1015-64 (AWG 14/16) P1015-14 (AWG 18/22)</p>	<p>Fuse 2A fast acting 1.5" x 13/32" (38.1 mm x 10.3 mm) P/N: P0600-11</p>	<p>3-phase fuse block/disconnect P/N: P0700-241</p>
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See accessory page at the end of this section.