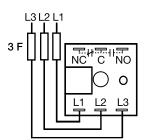
TVM SERIES



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Wiring Diagram



L1 = Phase A L2 = Phase B L3 = Phase C NO = Normally Open NC = Normally Closed C = Common, Transfer Contact

Relay contacts are isolated.

F = 2A Fast acting fuses are recommended, but not required

Ordering Information

MODEL	LINE VOLTAGE	VOLTAGE UNBALANCE	TRIP DELAY	RESTART DELAY
TVM208A100.5S3S	208VAC	10%	0.5s	3s
TVM230A101S1S	230VAC	10%	1s	1s
TVM460A41S5M	460VAC	4%	1s	5m
TVM460A75S2M	460VAC	7%	5s	2m
TVM480A45S5S	480VAC	4%	5s	5s
TVM480A100.5S3S	480VAC	10%	0.5s	3s

If you don't find the part you need, call us for a custom product 800-843-8848

Description

The TVM Series Provides protection for motors and other sensitive loads. Continuously measures the voltage of each of the three phases using a microcomputer circuit design that senses under and overvoltage, voltage unbalance, phase loss, and phase reversal. Protection is provided even when regenerated voltages are present. Includes a trip delay to prevent nuisance tripping and a restart delay to prevent short cycling after a momentary power outage.

Operation

Upon application of line voltage, the restart delay begins. The output relay is de-energized during restart delay. Under normal conditions, the output energizes after restart delay. Undervoltage, overvoltage, and voltage unbalance must be sensed for continuous trip delay period before the output is de-energized. The output will not de-energize if a fault is corrected during the trip delay. The restart delay begins as soon as the output relay de-energizes. If the restart delay is completed when the fault is corrected, the output relay will energize immediately.

The output relay will not energize if a fault or phase reversal is sensed as 3-phase input voltage is applied.

Reset: Reset is automatic upon correction of a fault.

LED Operation

The LED flashes green during the restart delay, then glows green when the output energizes. It flashes red during the trip delay then glows red when the output de-energizes. It flashes red/green if phase reversal is sensed.

Features & Benefits

FEATURES	BENEFITS
Proprietary microcontroller based circuitry	Constant monitoring to protect against phase loss, phase reversal; over, under, and unbalanced voltage; short cycling
Compact design measures 2 in. (50.8mm) square	Perfect for OEM applications where cost, size and ease of installation are important
LED indication	Provides diagnostics of relay, fault and time delay status
Encapsulated	Protects against shock, vibration and humidity

TVM SERIES



Accessories



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



P1015-13 (AWG 10/12), **P1015-64** (AWG 14/16), **P1015-14** (AWG 18/22) **Female Quick Connect** These 0.25 in. (6.35 mm) female terminals are constructed with an insulator barrel to provide strain relief.



P1023-20 DIN Rail Adapter Allows module to be mounted on a 35 mm DIN type rail with two #10 screws.



VRM6048 Voltage Reduction Module Allows the voltage monitor to monitor a 3-phase 550 to 600VAC Line.

Specifications

Line Voltage Type

Input Voltage AC Line Frequency Phase Sequence Power Consumption

Overvoltage, Undervoltage,

& Voltage Unbalance Overvoltage & Undervoltage

Uvervoltage & Undervoltage

Undervoltage Trip Point88 - 92Reset Voltage $\approx +3\%$ Overvoltage Trip Point109 - 1Reset Voltage $\approx -3\%$ Trip Variation vs Temperature $\leq \pm 2\%$ Voltage UnbalanceFactorReset On Balance ≈ -0.79 Trip Delay RangeFixed f

Restart Delay Range

Phase Reversal & Phase Loss Response Phase Loss Output Type Rating 208 to 240VAC (55°C)

380 to 480VAC

Life

Protection Phase Reversal/Failure Motors and Generators Surge Dielectric Breakdown 208 to 240VAC 380 to 480VAC Mechanical Mounting Dimensions

Termination

Environmental Operating/Storage Temperature Humidity Weight 3-phase delta or wye with no connection to neutral 208 to 480VAC 50 - 100 Hz ABC Approx. 2W for 240V units Approx. 3W for 480V units

Voltage detection with delay trip & automatic reset 88 - 92% of the selected line voltage \approx +3% of trip voltage 109 - 113% of the selected line voltage \approx -3% of trip voltage \leq ±2% Factory fixed from 4 - 10% \approx -0.7% unbalance Fixed from 0.2 - 100s ±15% or ±0.1s, whichever is greater Fixed from 0.5s - 999m ±15% or ±0.2s, whichever is greater

≤ 200ms; automatic reset ≥ 25% unbalance

Isolated SPDT relay contacts

10A resistive @ 125VAC, 5A @ 250VAC, 1/4 hp @ 125VAC 10A resistive @ 240VAC, 1/4 hp @ 125VAC, 1/3 hp @ 250VAC, max. voltage 277VAC Mechanical - 1 x 10⁶; Electrical - 1 x 10⁵

ASME A17.1 Rule 210.6 NEMA MG1 14:30, 14:35 IEEE C62.41-1991 Level B

 \geq 1500V RMS input to output terminals \geq 2500V RMS input to output terminals

Surface mount with one #8 (M5 x 0.8) screw H 50.8 mm (2.0"); W 50.8 mm (2.0"); D 31.75 mm (1.25") 0.25 in. (6.35 mm) male quick connect terminals

-40° to 55°C / -40° to 85°C 95% relative, non-condensing \approx 2.8 oz (79 g)