WVM SERIES

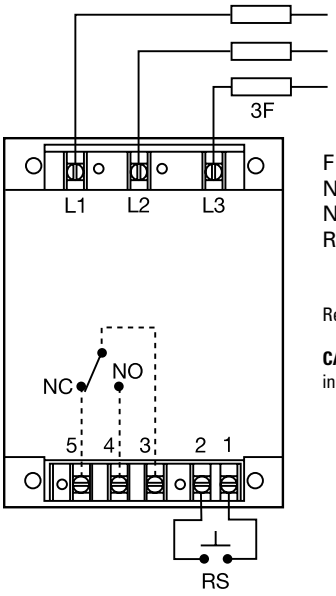
OBSOLETE



Description

The WVM Series provides protection against premature equipment (motor) failure caused by voltage faults on the 3-phase line. The WVM's microcontroller design provides reliable protection even if regenerated voltages are present. It combines dependable fault sensing with a 10 fault memory and a 6 LED status display. Part instrument, part control, the WVM protects your equipment when you're not there and displays what happened when you return. The WVM is fully adjustable and includes time delays to prevent nuisance tripping and improve system operation. Time delays include a 0.25 to 30s adjustable trip delay, an adjustable 0.25 to 64m (in 3 ranges) restart delay, plus a unique 3 to 15s true random start delay. The random start delay prevents voltage sags caused by simultaneous restarting of numerous motor loads after a power outage.

Wiring Diagram



F = Fuses
NO = Normally Open
NC = Normally Closed
RS = Optional Remote Reset Switch

Relay contacts are isolated.

CAUTION: 2 amp max fast acting fuses must be installed externally in series with each input. (3)

Features & Benefits

FEATURES	BENEFITS
Proprietary microcontroller based circuitry	Constant monitoring to protect against phase loss, phase reversal, over voltage, under voltage, unbalance, and short cycling
Fault memory	Stores the 10 most recent faults, which provides diagnostics for troubleshooting
LED indication	Provides visual indictation of existing relay/fault status or faults stored in memory.
Switch selectable automatic restart, delayed automatic restart, and manual reset	Allows user adjustment to handle unique application requirements
Random start delay	Prevents voltage sags caused by simultaneous restarting of multiple motor loads after a power outage

Operation

The output relay is energized when all conditions are acceptable and the WVM is reset. A restart and/or random start delay may occur before the output relay is energized.

Field Adjustment: Select the line voltage listed on the motor's name plate. This automatically sets the over and undervoltage trip points. No further adjustment should be required to achieve maximum equipment protection.

Ordering Information

MODEL	LINE VOLTAGE	UNBALANCE	TRIP DELAY	SWITCH SELECTABLE RESET METHOD	RESTART DELAY
WVM011AL	500 to 600VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	0.25 - 64s
WVM611AH	200 to 240VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	0.25 - 64m
WVM611AL	200 to 240VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	0.25 - 64s
WVM611RL	200 to 240VAC	2 - 10%	0.25 - 30s	Auto restart upon fault correction	0.25 - 64s
WVM811AH	355 to 425VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	0.25 - 64m
WVM811RL	355 to 425VAC	2 - 10%	0.25 - 30s	Auto restart upon fault correction	0.25 - 64s
WVM911AH	400 to 480VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	0.25 - 64m
WVM911AL	400 to 480VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	0.25 - 64s
WVM911AL-60	400 to 480VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	0.25 - 64s, no random start delay
WVM911AN	400 to 480VAC	2 - 10%	0.25 - 30s	Auto restart upon fault trip	6 - 300s
WVM911RH	400 to 480VAC	2 - 10%	0.25 - 30s	Auto restart upon fault correction	0.25 - 64m
WVM911RL	400 to 480VAC	2 - 10%	0.25 - 30s	Auto restart upon fault correction	0.25 - 64s
WVM911RN-60	400 to 480VAC	2 - 10%	0.25 - 30s	Auto restart upon fault correction	6 - 300s, no random start delay

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Read Memory: Fault(s) stored in the memory are indicated when the yellow LED is flashing, up to 10 faults are noted.

Memory Reset: To clear the memory of all faults stored, rotate selector to Clear Memory for 5 seconds. The yellow LED will turn off.

Memory Overload: Only the 10 most recent faults are retained.

Random Start Delay: A new 3 to 15s random start delay is selected by the microcontroller when a fault is corrected and when the operating voltage (L1, L2, L3) is applied to the WVM. A random start delay does not occur when the reset is manual.

Automatic Restart: Upon fault correction, the output will re-energize after a random start delay.

Automatic Restart Upon Fault Trip: When a fault is sensed for the full trip delay, the output de- energizes and a restart delay is initiated. This delay locks out the output for the delay period. Should the fault be corrected by the end of the restart delay, the output will re-energize after a random start delay. A restart delay will also occur when operating voltage (L1, L2, L3) is applied to the WVM.

Manual Reset: After a fault condition is corrected, the WVM can be manually reset. There are two methods; a customer supplied remote switch, or the onboard selector switch.

Manual Reset (Onboard): Rotate selector switch from the Manual Reset position to Auto Restart w/Delay then back again to Manual Reset within 3 seconds. The output will immediately energize.

Remote Reset: Reset (Restart) is accomplished by a momentary contact closure across terminals 1 & 2. The output will immediately energize. Remote switch requirements are ≥10mA @ 20VDC and the reset terminals are not isolated from line voltage. A resistance of ≤20KΩ across terminals 1 & 2 will cause immediate automatic restart.

Automatic Restart Upon Fault Correction: (P/N includes an R) When a fault is sensed for the full trip delay, the output relay de-energizes. Upon correction of the fault, a restart delay begins. At the end of this delay, the output will re-energize after a random start delay. If a fault occurs during restart timing, the restart time delay will be reset to zero, and the output will not energize until the restart delay is completed.

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



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

Operating Voltage	**Model**	**Adj. Line Voltage Range**
	240	200-240VAC
	380	355-425VAC
	480	400-480VAC
	600	500-600VAC

AC Line Frequency	50/60 Hz

Overvoltage, Undervoltage, & Voltage Unbalance

Overvoltage Trip Point	109-113% of adjusted voltage
Reset Voltage	-2% of trip point
Undervoltage Trip Point	88-92% of adjusted voltage
Reset Voltage	+2% of trip point
Voltage Unbalance	Adjustable from 2-10%*
Trip Delay	Adjustable from 0.25 - 30s ±15%
Phase Loss	≥ 15% unbalance
Response Time	≤ 200 ms
Random Start Delay Range	3 - 15s

Reset (Restart) Delay

Low Range	0.25-64s ±15%
Normal Range	6-300s ±15%
High Range	0.25-64m ±15%

Fault Memory

Type	Nonvolatile RAM
Capacity	Stores last 10 faults
Status Indicators	6 LEDs provide existing status & memory readout ***Note: 50% of operating line voltage must be applied to L1 & L2 for operation of status indicators***

Output

Type	Electromechanical relay
Form	Isolated, SPDT
Rating	10A resistive @ 250VAC; 6A inductive (0.4 PF) @ 250VAC
Life	Mechanical - 1 x 10^7

Protection

Phase Reversal/Failure	ASME A17.1 Rule 210.6
Motors and Generators	NEMA MG1 14:30, 14:35
Surge	IEEE 62.41-1991 Level B
Isolation Voltage	≥ 2500V RMS input to output

Mechanical

Mounting	Surface with 2 or 4 #8 (M4 x 0.7) screws
Dimensions	**H** 175.3 mm (6.9"); **W** 111.8 mm (4.4"); **D** 61.0 mm (2.4")
Termination	Screw terminals with captive wire clamps for up to #12 AWG (3.2 mm^2) wire

Environmental

Operating/Storage Temperature	-40° to 65°C / -40° to 85°C
Weight	≅ 25 oz (709 g)

* Unbalance reset is 90% of the unbalance setting (i.e. VUB at 5% reset is 4.5%)

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