

ProSense® Voltage Monitor Relays

Overview

Voltage monitor relays monitor AC single-phase (50-60 Hz) or DC voltages to protect equipment from fault conditions. No separate supply is required since each unit is powered by monitored voltage.

ProSense® offers two styles of Voltage Monitor Relays:

Over/Under Voltage Relays - provides protection to equipment where either an over or under voltage condition is potentially damaging. They are designed to energize when monitored voltage reaches a preset value (U_{max}) and drop-out when the monitored voltage drops to a level below the preset value (U_{min}).

Voltage Band Relays - provides protection to equipment that is required to operate within an upper and lower voltage limit. As long as the monitored voltage remains within an OVER (U_{max}) and UNDER voltage (U_{min}) range, the internal relay stays energized. If the monitored voltage falls outside this range, the relay will drop-out.

Features

- Monitors AC single-phase and DC voltages
- True RMS voltage measurement ensures more accurate sensing
- Wide range of user adjustable pick-up voltages
- 8-pin socket mount
- LED indicates output relay status



(with socket 70169-D)



VMR-2C-F-120A



VMR-2C-A-120A



VMR-2C-B-120A

Technical Specifications

| Part Number | VMR-xC-F-xxx | VMR-xC-A-xxx | VMR-xC-B-xxx |
|-----------------------------|---|---|--|
| Input Voltage Range | See selection table on the following page | | |
| Voltage Tolerance | ±50% of nominal AC (50-60Hz, ±5%) or DC voltage No separate input voltage required since unit is powered by monitored voltage. | | |
| Load Burden | Less than 2VA (12-120V); 30VA (240V & 480V) | | |
| Undervoltage | Fixed at 95% of pick-up setting | Adjustable from 75-95% of pick-up setting | 75-95% of over/under voltage setting |
| Overvoltage | Across full range as shown in the product selection table | | |
| Setting Accuracy | Maximum setting (adjustable): +5%, -0% Minimum setting (adjustable): +0%, -50% Fixed Voltage Setting: ±2% | | |
| Repeatability | <1 % | | |
| Sensing Accuracy | Constant conditions within specifications: ±2% Variable conditions within specifications: ±5% (percent base on nominal voltage) | | |
| Temperature | Operating: -28 to 65°C [-18 to 149°F] Storage: -40 to 85°C [-40 to 185°F] | | |
| Indicator LED | Red when relay is energized Green when relay is off | | |
| Response Times | Restart: 1 second (240 & 480V only) Pick-up: 0.5 seconds Drop-out (t): 0.5 seconds (VMR-xC-F-xxx); Adjustable 0.1 - 10 seconds (VMR-xC-A-xxx) | | Restart: 1 second (240 & 480V only) Pick-up: 0.5 seconds Drop-out (t): Adjustable 0.1 - 10 seconds |
| Output Contacts | (All except VMR-1C-x-240A): 10A @ 240 VAC, 7A @ 30 VDC, 1/4HP @ 120/240 VAC, C300 (VMR-1C-x-240A): 5A @ 277 VAC, 5A @ 30 VDC, 1/3HP @ 120/240 VAC, B300 Pilot Duty | | 10A @ 240 VAC, 7A @ 30 VDC, 1/4HP @ 120/240 VAC, C300 |
| Life | Mechanical: 10,000,000 operations; Full Load: 100,000 operations | | |
| Wire Size | 12-22 AWG | | |
| Tightening Torque | 12 in•lbs | | |
| Protection Rating | IP20 | | |
| Reset | Automatic | | |
| Transient Protection | 2000V per IEC 61000-4-5 Level 3 (±2kV) | | |
| Weight (lb) | 0.2 | 0.2 | 0.2 |
| Agency Approvals | cURus, CE, (cULus when used with socket 70169-D) | | |

pro^{sense} Voltage Monitor Relays

| 1-phase Voltage Monitor Relays Selection Table | | | | | | | |
|--|---------|---------------|---------------------|----------------|--|----------------------------|----------------------------|
| Part Number | Price | Input Voltage | Relay Configuration | Contact Rating | Protection Type | Diagram | Drawing Link |
| <u>VMR-2C-F-120A</u> | \$68.00 | 90-150 VAC | DPDT | 10A | overvoltage undervoltage fixed drop-out | 213 | <u>PDF</u> |
| <u>VMR-2C-A-120A</u> | \$68.00 | 90-150 VAC | DPDT | 10A | overvoltage undervoltage adjustable drop-out | | <u>PDF</u> |
| <u>VMR-2C-B-120A</u> | \$68.00 | 90-150 VAC | DPDT | 10A | voltage band | | <u>PDF</u> |
| <u>VMR-1C-F-240A</u> | \$79.00 | 180-300 VAC | SPDT | 10A | overvoltage undervoltage fixed drop-out | 150 | <u>PDF</u> |
| <u>VMR-1C-A-240A</u> | \$79.00 | 180-300 VAC | SPDT | 10A | overvoltage undervoltage adjustable drop-out | | <u>PDF</u> |
| <u>VMR-1C-B-240A</u> | \$79.00 | 180-300 VAC | SPDT | 10A | voltage band | | <u>PDF</u> |
| <u>VMR-1C-F-480A</u> * | \$79.00 | 360-600 VAC | SPDT | 10A | overvoltage undervoltage fixed drop-out | | <u>PDF</u> |
| <u>VMR-1C-A-480A</u> * | \$79.00 | 360-600 VAC | SPDT | 10A | overvoltage undervoltage adjustable drop-out | | <u>PDF</u> |
| <u>VMR-1C-B-480A</u> * | \$68.00 | 360-600 VAC | SPDT | 10A | voltage band | | <u>PDF</u> |
| <u>VMR-2C-F-12D</u> | \$68.00 | 9-15 VDC | DPDT | 10A | overvoltage undervoltage fixed drop-out | | 214 |
| <u>VMR-2C-A-12D</u> | \$68.00 | 9-15 VDC | DPDT | 10A | overvoltage undervoltage adjustable drop-out | <u>PDF</u> | |
| <u>VMR-2C-B-12D</u> | \$68.00 | 9-15 VDC | DPDT | 10A | voltage band | <u>PDF</u> | |
| <u>VMR-2C-F-24D</u> | \$68.00 | 18-30 VDC | DPDT | 10A | overvoltage undervoltage fixed drop-out | <u>PDF</u> | |
| <u>VMR-2C-A-24D</u> | \$68.00 | 18-30 VDC | DPDT | 10A | overvoltage undervoltage adjustable drop-out | <u>PDF</u> | |
| <u>VMR-2C-B-24D</u> | \$68.00 | 18-30 VDC | DPDT | 10A | voltage band | <u>PDF</u> | |
| <u>VMR-2C-F-48D</u> | \$68.00 | 36-60 VDC | DPDT | 10A | overvoltage undervoltage fixed drop-out | <u>PDF</u> | |
| <u>VMR-2C-A-48D</u> | \$68.00 | 36-60 VDC | DPDT | 10A | overvoltage undervoltage adjustable drop-out | <u>PDF</u> | |
| <u>VMR-2C-B-48D</u> | \$68.00 | 36-60 VDC | DPDT | 10A | voltage band | <u>PDF</u> | |
| <u>VMR-2C-F-110D</u> | \$68.00 | 83-138 VDC | DPDT | 10A | overvoltage undervoltage fixed drop-out | <u>PDF</u> | |
| <u>VMR-2C-A-110D</u> | \$68.00 | 83-138 VDC | DPDT | 10A | overvoltage undervoltage adjustable drop-out | <u>PDF</u> | |
| <u>VMR-2C-B-110D</u> | \$68.00 | 83-138 VDC | DPDT | 10A | voltage band | <u>PDF</u> | |

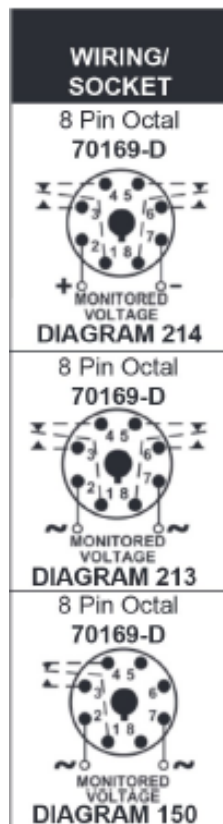
* VMR-1C-x-480A requires part number [70169-D](#), (purchase separately).

pro^{ense} Voltage Monitor Relays

Function Chart

| Catalog Number | Operation | Function Chart |
|---|--|----------------|
| VMR-2C-F-12D VMR-2C-F-24D VMR-2C-F-48D VMR-2C-F-110D VMR-2C-F-120A VMR-1C-F-240A VMR-1C-F-480A | Adjust the pick-up voltage setting (U_{max}) between the full range as shown on the product nameplate. The drop-out voltage setting (U_{min}) is fixed at 95% of the pick-up setting. The relay energizes (and the LED is Red) when the monitored voltage is above the pick-up setting for a period longer than the fixed pick-up time delay of 0.5 seconds. The relay de-energizes (and the LED is Green) when the monitored voltage is below the drop-out setting for a period longer than the drop-out time delay (t) of 0.5 seconds. | |
| VMR-2C-A-12D VMR-2C-A-24S VMR-2C-A-48D VMR-2C-A-110D VMR-2C-A-120A VMR-1C-A-240A VMR-1C-A-480A | Adjust the pick-up voltage setting (U_{max}) between the full range as shown on the product nameplate. Then adjust the drop-out voltage setting (U_{min}) between 75% and 95% of the pick-up setting. The relay energizes (and the LED is Red) when the monitored voltage is above the pick-up setting for a period longer than the fixed pick-up time delay of 0.5 seconds. The relay de-energizes (and the LED is Green) when the monitored voltage is below the drop-out setting for a period longer than the drop-out time delay (t), which is adjustable between 0.1-10 seconds. | |
| VMR-2C-B-12D VMR-2C-B-24D VMR-2C-B-48D VMR-2C-B-110D VMR-2C-B-120A VMR-1C-B-240A VMR-1C-B-480A | Adjust the over voltage setting (U_{max}) between the full range as shown on the product nameplate. Adjust the under voltage setting (U_{min}) between 75% and 95% of the over voltage setting. The relay energizes (and the LED is Red) when the monitored voltage is between the over and under voltage settings for a period longer than the drop-out time delay (t), which is adjustable from 0.1-10 seconds. The relay re-energizes when the monitored voltage returns to a value between the over and under voltage settings for a period longer than the pick-up time delay, which is fixed at 0.5 seconds. | |

Wiring Diagram



proSense® Octal Sockets

Features

- Mounts on 35mm DIN rail
- Screw clamp wire termination



70169-D



70170-D



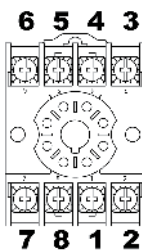
750-2C-SKT

| Octal Sockets for Relays | | | | | |
|--------------------------|--------|--|-----|---------|---------------------|
| Part Number | Price | Description | Qty | Wt (lb) | Drawing Links |
| <u>70169-D</u> | \$5.25 | Macromatic relay socket, 8-pin, 35mm DIN rail or panel mount. For use with ProSense octal relays. | 1 | 0.1 | PDF |
| <u>70170-D</u> | \$6.25 | Macromatic relay socket, 11-pin, 35mm DIN rail or panel mount. For use with ProSense octal relays. | 1 | 0.1 | PDF |
| <u>750-2C-SKT</u> | \$4.75 | AutomationDirect relay socket, 8-pin, 35mm DIN rail or panel mount. For use with 750-2C and H750-2C series octal relays. | 1 | 0.1 | PDF |

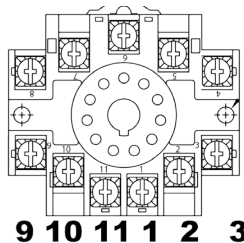
| Octal Sockets Specifications | | | | | | | | |
|------------------------------|----------------|---------|---------|------------|----------------------|--------------|-------------------------------|--------------------------------|
| Part Number | Number of Pins | Voltage | Current | Screw Size | Wire Size (capacity) | Screw Torque | Screw Chassis Mounting Torque | Agency Approval * |
| <u>70169-D</u> | 8 | 600V | 10A | 6-32 | 1 or 2, 12-20 AWG | 12 in-lb | 7 in-lb | UL Recognized E169693, CSA, CE |
| <u>70170-D</u> | 11 | 300V | 10A | 6-32 | 1 or 2, 12-20 AWG | 12 in-lb | 12 in-lb | |
| <u>750-2C-SKT</u> | 8 | 600V | 5A | M3.5 | 1-12 AWG / 1-14 AWG | 9 in-lb | 7 in-lb | UL Recognized E225080, CSA, CE |

* To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.

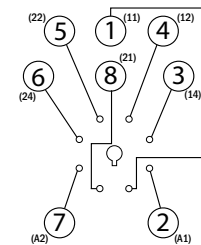
Socket Pinouts



70169-D



70170-D



750-2C-SKT