

# Voltage Monitoring Relays

## 601-CS-D-P1 Series

Monitors a zero-sequence CT for high accuracy ground fault protection



### Description

The 601-CS-D-P1 series is a fully programmable, electronic, three-phase, power monitor designed to monitor three-phase systems. This unit has a single relay that can be configured as a general purpose network output or to trip on ground faults. The 601-CS-D-P1 monitors ground-fault current, phase currents, phase voltages, power factor, and frequency. The RS485MS-2W communications module allows the 601-CS-D-P1 to communicate using the Modbus RTU protocol. The Modbus connection can be used to monitor power parameters, set up the device or control the fault relay. A DeviceNet\* communications I/O module (CIO-601CS-DN-P1) is also available. This CIO module only works with the 601-CS-D-P1 unit. It is used for sending the information from the 601-CS-D-P1 over a DeviceNet\* network. It also provides I/O capabilities and the ability to set the parameters of the 601-CS-D-P1.

The 601-CS-D-P1 includes a built-in display that offers a visual indication for programming and viewing real-time parameters for nominal voltage, voltage unbalance, current, current unbalance, ground-fault warning, ground-fault trip, and ground-fault motor acceleration.

Note: This product must be used with an external zero-sequence CT (not included) for proper operation.

### Features & Benefits

| FEATURES                                                | BENEFITS                                                                                                                                               |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Built-in display</b>                                 | Visual indication for programming and viewing real-time parameters such as nominal voltage, voltage unbalance, current unbalance, ground-fault warning |
| <b>15 programmable parameters to control operations</b> | Allows the user to customize the protection required for a specific system                                                                             |
| <b>Two programmable trip delay timers</b>               | Program separate trip delay time for motor acceleration and ground fault                                                                               |
| <b>Network communications capability</b>                | Compatible with Modbus RTU and DeviceNet* protocols with the use of separate communications module                                                     |

### Applications

- For monitoring a zero-sequence current transformer for ground-fault protection

\*DeviceNet is a trademark of its respective owner.

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### Specifications

#### Input Characteristics

|                            |                                             |
|----------------------------|---------------------------------------------|
| Line Voltage               | 200–480 V ac                                |
| Frequency                  | 50/60 Hz                                    |
| Motor Full Load Amp Range  | 0.5–175 A (direct) 176–800 A (CTs required) |
| Input Ground Fault Current | 0.5–10 A                                    |

#### Functional Characteristics

|                              |                                              |
|------------------------------|----------------------------------------------|
| Output Contact Rating (SPDT) | Pilot Duty 480 VA @ 240 V ac                 |
| General Purpose              | 10 A @ 240 V ac                              |
| Expected Life                |                                              |
| Mechanical                   | 1 x 10 <sup>6</sup> operations               |
| Electrical                   | 1 x 10 <sup>5</sup> operations at rated load |

#### General Characteristics

|                           |                                       |
|---------------------------|---------------------------------------|
| Ambient Temperature Range |                                       |
| Operating                 | -20° to 70 °C (-4° to 158 °F)         |
| Storage                   | -40° to 80 °C (-40° to 176 °F)        |
| Accuracy at 25 °C (77 °F) |                                       |
| Voltage                   | +/-1%                                 |
| Current                   | +/-3% (<175 A direct)                 |
| GF Current                | +/-3%                                 |
| Repeatability             |                                       |
| Voltage                   | +/-0.5% of nominal voltage            |
| Current                   | +/-1% (<175 A direct)                 |
| Maximum Input Power       | 10 W                                  |
| Pollution Degree          | 3                                     |
| Class of Protection       | IP20                                  |
| Relative Humidity         | 10–95%, non-condensing per IEC 68-2-3 |
| Terminal Torque           | 7in.-lbs.                             |

#### Standards Passed

|                                      |                                                                                  |
|--------------------------------------|----------------------------------------------------------------------------------|
| Electrostatic Discharge (ESD)        | IEC 61000-4-2, Level 3, 6 kV contact, 8 kV air                                   |
| Radio Frequency Immunity Conducted   | IEC 61000-4-6, Level 3 10 V                                                      |
| Radio Frequency Immunity, Radiated   | IEC 61000-4-3, Level 3, 10 V/m                                                   |
| Fast Transient Burst                 | IEC 61000-4-4, Level 3, 3.5 kV input power                                       |
| Short Circuit Rating                 | 100 kA rms, SYM, 600 V ac max.                                                   |
| Surge                                |                                                                                  |
| Immunity                             | IEC IEC 61000-4-5, Level 3, 2 kV line-to-line; Level 4, 4 kV line-to-ground      |
| ANSI/IEEE                            | C62.41 Surge and Ring Wave Compliance to a level of 6 kV line-to-line            |
| High Potential Test                  | Meets UL508 (2 x rated V +1000V for 1 minute)                                    |
| Max Conductor Size (with insulation) | 0.65"                                                                            |
| Dimensions                           | <b>H</b> 77.47 mm (3.05"); <b>W</b> 97.79 mm (3.85"); <b>D</b> 128.27 mm (5.05") |
| Weight                               | 1.2 lbs. (19.2 oz., 544.31 g)                                                    |
| Mounting Method                      | Surface mount (4 - #8 screws) or DIN-rail mount                                  |

### Certification & Compliance

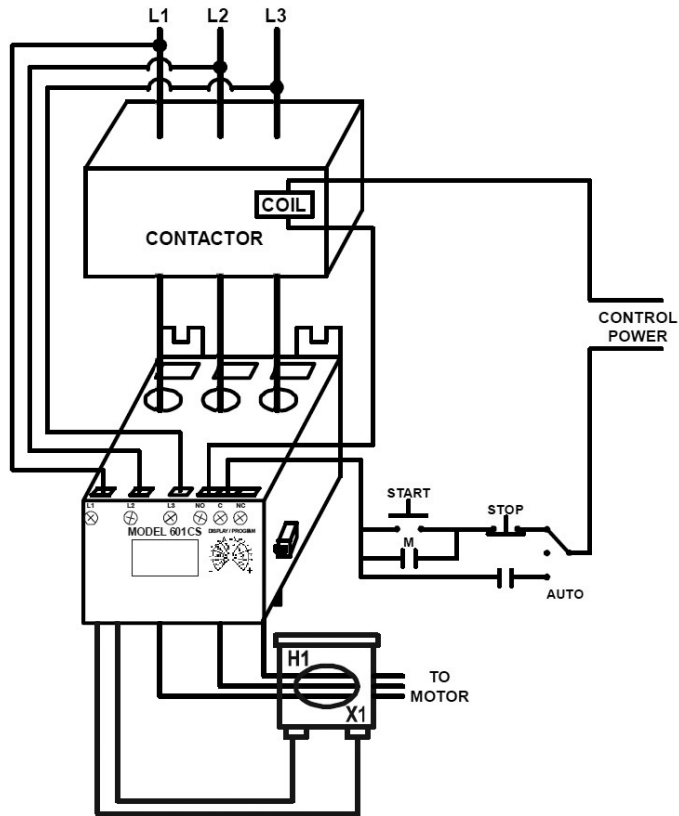
|    |                            |
|----|----------------------------|
| UL | UL508 (File #E68520)       |
| CE | IEC 60947-1, IEC 60947-5-1 |



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## Wiring Diagram



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