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

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

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

*DeviceNet is a trademark of its respective owner.
## 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 10^6 operations
  - **Electrical**: 1 x 10^5 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
  - **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 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**: 
  - **H**: 77.47 mm (3.05”);
  - **W**: 97.79 mm (3.85”);
  - **D**: 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

---

©2023 Littelfuse, Inc.
Specifications are subject to change without notice.
Revised: 07/06/2023
## Accessories

**CIO-601CS-DN-P1 Module**
Convenient, cost-effective DeviceNet* interface device capable of providing discrete control and monitoring of motor starters, drives and other devices over a DeviceNet* network.

## Ordering Information

<table>
<thead>
<tr>
<th>MODEL</th>
<th>LINE VOLTAGE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>601-CS-D-P1</td>
<td>200–480 V ac</td>
<td>Fully programmable, electronic, three-phase, power monitor designed to monitor three-phase systems.</td>
</tr>
</tbody>
</table>

## Dimensions (Inches (mm))

![Dimensions Diagram]

- **Model Dimensions**
  - Dimensions: 3.100 [78.74], 3.850 [97.79], 2.280 [57.91], 3.050 [77.47], 1.200 [30.48], 0.200 [5.08], 0.650 [16.51], 4.700 [119.38], 5.050 [127.27]

- **Main Conductor Pass Holes**
  - A, B, C: 4.700 [119.38], 5.050 [127.27]
  - D: 0.650 [16.51]

- **Optional Loop Holes**
  - Dimensions: 4.700 [119.38], 5.050 [127.27]

Specifications are subject to change without notice. Revised: 07/06/2023