Data Line Surge Protection
PolyPhaser leads the market with its patented RF protection solutions, specifically supporting communications systems. Based on its extensive experience with multi-stage surge protection, PolyPhaser continues to expand its product offering to support the needs of advanced network applications with technologies such as DC Block, DC Pass and Ultra Low PIM.

Transtector Systems specializes in the protection of highly sensitive, low voltage equipment through its patented, non-degrading silicon diode technology and custom filters. Its power quality expertise translates into a diverse product offering including AC, DC, and signal applications as well as integrated cabinets, power distribution panels and EMP hardened devices.

Smiths Power is a leading supplier of power distribution, conditioning, protection and monitoring solutions for data centers, wireless communications and other critical or high-value electrical systems. As a family of brands, PDI, Onyx, PolyPhaser, Transtector, DOWIN, LEA and RO Associates unite under one umbrella to Transform, Distribute, Monitor and Protect™ power in global networks and systems. Our companies provide expertise in consulting, design and manufacturing of power transformers and distribution systems, static switching, power monitoring, RF, AC, DC, data signal and EMP protectors as well as power quality engineering services.

Alongside Smiths Connectors and Smiths Microwave, Smiths Power is part of the Smiths Interconnect division of Smiths Group (www.smiths.com), a global leader in applying advanced technologies for markets in threat and contraband detection, energy, medical devices, communications and engineered components. Smiths Group employs around 23,000 people in more than 50 countries.

Dataline Surge Protection

Signal integrity is a key requirement for any critical communication system and must be protected. PolyPhaser, Transtector and LEA offer solutions optimized for PoE, Gigabit Ethernet, Gigabit PoE, Ethernet, RS-232 | RS-422 | RS-485, CCTV, DeviceNet and other low voltage signals. They are available for digital and analog systems in both indoor and outdoor enclosures.
Data Line Surge Protection

Multi Protocol Equipment Protector

CPX Series
High density, modular, multi-protocol, coordinated Level I and Level II surge protection for OSP environments.

Features
- Low capacitance (3 pF) high surge current capacity (20 kA)
- Compact 1 RU modular chassis fits up to 16 modules
- Fused options satisfy GR-1089-CORE Issue 4 EPP installation requirements
- Coordinated Level I & Level II lightning protection
- Front access, modular for multi-protocol installations: 10/100 Ethernet, GbE and T1/E1
- Dual lug grounding studs

Standards and Certificates
- GR-1089-CORE Issue 4
- UL 497A (fused)
- UL 497B (non-fused)

Mechanical
- Input/Output Connector: RJ-45
- Chassis Dimensions (H x W x D) in: 1.75 x 19.0 x 3.3
- Chassis Dimensions (H x W x D) cm: 4.5 x 48.3 x 8.4
- Chassis Weight (max)/lb/kg: 3.0/1.36
- Module Weight (max)/lb/kg: 0.1/0.05

Environmental
- Humidity: 99% non-condensing
- Operating/Storage Temperature: -40°C to +75°C

Electrical

<table>
<thead>
<tr>
<th>Part Name</th>
<th>10/100BT Fused</th>
<th>10/100BT Non-Fused</th>
<th>T1/E1 Fused</th>
<th>T1/E1 Non-Fused</th>
<th>GbE Fused</th>
<th>GbE Non-Fused</th>
<th>CPX PoE</th>
<th>Defender 48-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Part Number</td>
<td>1000-1268</td>
<td>1000-1268-NF</td>
<td>1000-1269</td>
<td>1000-1269-NF</td>
<td>1000-1270</td>
<td>1000-1270-NF</td>
<td>1000-1402</td>
<td>1000-1405</td>
</tr>
<tr>
<td>16 Port Chassis</td>
<td>1101-1064</td>
<td>1101-1074</td>
<td>1101-1084</td>
<td>1101-1085</td>
<td>1101-1095</td>
<td>1101-1095-NF</td>
<td>1101-1105</td>
<td>1101-1106</td>
</tr>
<tr>
<td>4 Unit Chassis</td>
<td>1101-1107</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Protocol: Ethernet, T1/E1, Gigabit Ethernet
- Data Rate: 10 / 100 Mbps, 1.544 / 2.048 Mbps, 10 / 100 / 1000 Mbps
- Pins Protected: (1, 2) and (3, 6), (1, 2, (3, 6), (4, 5), (7, 8)
- Pins Bonded to Ground: (4, 5) and (7, 8), (3, 6) and (7, 8), n/a
- Nominal Voltage: 5 Vdc, 3.3 Vdc, 5 Vdc, 48 Vdc, 48 Vdc
Data Line Surge Protection

Multi Protocol Equipment Protector

TSJ Series
Compact data line surge protection for T1, gigabit PoE, GbE, PoE and Ethernet with 48 Vdc power.

Features
- Easy installation with ground stud and RJ-45 jacks
- High surge current capacity

Standards and Certificates
- UL 497B Listed (1101-997, 1101-990, 1101-300-1)
- UL 94-5V (1101-1074, 1101-300-1)
- RoHS compliant (1101-997, 1101-990, 1101-1074)

Part Name
- TSJ GbE PoE
- TSJ GbE
- TSJ POE 56
- TSJ 10/100
- TSJ 48 CLT
- TSJ GB

Part Number
- 1101-994
- 1101-990
- 1101-1074
- 1101-1001
- 1101-300-1
- 1101-997

Electrical

Application
- Gigabit PoE
- Gigabit
- PoE 56
- Ethernet
- 48 CLT
- Gigabit PoE

Data Rate
- 1000 Mbps
- 1000 Mbps
- 10/100 Mbps
- 10/100 Mbps
- 10/100 Mbps
- 1000 Mbps

Pins Protected
- All pins L-L and L-G
- 1, 2, 3, 6
- 1, 2, 4, 5
- All pins

Nominal Voltage
- 48 Vdc
- 5 Vdc
- 48 Vdc
- 5 Vdc
- 48 Vdc

Max Continuous Operating Voltage
- 50 Vdc
- 11 Vdc
- 50 Vdc
- 11 Vdc
- 50 Vdc

Max Surge Current 10/1000 µs per Telecordia GR 1089
- 1 kA L-L, L-G
- 500 A L-L, L-G
- 100 A L-L, L-G
- 500 A L-L, L-G
- 100 A L-G

Max Surge Current 8/20 µs per IEC 6100-4-5
- 20 kA L-L, L-G
- 5 kA L-L, L-G
- 1.5 kA L-L, L-G
- 5 kA L-L, L-G
- 2.5 kA L-L

Mechanical

Input/Output Connector
- Shielded RJ-45
- Shielded RJ-45
- Shielded RJ-45
- Non-shielded RJ-45
- Shielded RJ-45

Dimensions
- 3.2 x 2.2 x 1.7
- 2.5 x 1.78 x 1.18

Weight (max) lbs, kg
- 0.2, 0.1
- 0.25, 0.11

Environmental

Humidity
- 69% non-condensing

Operating/Storage Temperature
- -40°C to +85°C

Enclosure Rating
- UL 94V-0
Data Line Surge Protection

Multi Protocol Equipment Protector

DPR (Data Protection Rack)

Modular, reconfigurable, rack, wall or DIN rail mount surge protection for PoE, GbE, Ethernet, T1/E1 and xDSL.

Features

• Non-degradable, low clamping silicon diode suppression technology (except 1101-911)
• Line and load bidirectional protection
• 1RU chassis holds up to 16 modules and is adjustable to fit 19” or 23” racks
• Unprotected pins bonded to ground

Standards and Certificates

• NEC 800.100 and 830.100
• IEEE 802.3af
• ITU 703

Electrical

<table>
<thead>
<tr>
<th>Part Name</th>
<th>DPR Ethernet</th>
<th>DPR T1/E1</th>
<th>DPR XDSL</th>
<th>DPR 1000 Base T</th>
<th>DPR POE 60 V</th>
<th>DPR GT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-828-1</td>
<td>1101-830-1</td>
<td>1101-829-1</td>
<td>1101-882-1</td>
<td>1101-905-1</td>
<td>1101-911-1</td>
</tr>
</tbody>
</table>

- **Protocol**
  - Ethereum
  - T1/E1
  - xDSL
  - GbE
  - PoE
  - GbE / PoE

- **Data Rate**
  - 10/100 Mbps
  - 1.544/2.048 Mbps
  - 6.312 Mbps
  - 10/100/1000 Mbps
  - 10/100 Mbps
  - 10/100/1000 Mbps

- **Pins Protected**
  - (1,2) (3,6) (4,5) and (7,8)
  - (1,2) and (4,5)
  - (1,2) and (4,5)
  - (1,2) (3,6) (4,5) and (7,8)

- **Nominal Voltage**
  - 5 Vpk
  - 3 Vpk
  - 3.3 Vpk
  - 48 Vpk

- **Max Continuous Operating Voltage**
  - 6 Vpk
  - 5.5 Vpk
  - 6 Vpk
  - 60 Vpk
  - 75 Vpk

- **Surge Suppression**
  - <25 Vpk @ 100 A / 10/1000 µs
  - <25 Vpk @ 100 A / 10/1000 µs
  - <25 Vpk @ 100 A / 10/1000 µs
  - <25 Vpk @ 100 A / 10/1000 µs
  - <75 Vpk @ 100 A / 10/1000 µs
  - <100 Vpk @ 100 A / 10/1000 µs

- **Mechanical**

  - **Input/Output Connector**
    - RJ-45

  - **Module Dimensions (H x W x D) in**
    - 1.0 x 1.0 x 3.7

  - **Module Dimensions (H x W x D) cm**
    - 2.5 x 2.5 x 9.4

  - **Chassis Dimensions (H x W x D) in**
    - 1.8 x 19.0 x 3.7

  - **Chassis Dimensions (H x W x D) cm**
    - 4.4 x 48.3 x 9.4

  - **Module Weight (max) lb, kg**
    - 1.5, 0.7

  - **Chassis Weight (max) lb, kg**
    - 5.2, 2.4

- **Environmental**

  - **Humidity**
    - 99% non-condensing

  - **Operating/Storage Temperature**
    - -40°C to +75°C

  - **Enclosure Rating**
    - UL 368-0
Data Line Surge Protection

Multi Protocol Equipment Protector

TSJ X6 Series

Six port data line protector for T1/E1 and Ethernet applications.

<table>
<thead>
<tr>
<th>Port Name</th>
<th>TSJ X6A</th>
<th>TSJ 10/100</th>
<th>TSJ X6 GbE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-772-A</td>
<td>1101-666</td>
<td>1101-1044</td>
</tr>
</tbody>
</table>

Electrical

Application
- T1/E1
- Ethernet
- Gigabit Ethernet

Data Rate
- 1.44/2.048 Mb/s
- 10/100 Mb/s
- 1000 Mb/s

Pros Protected
- (1, 2) and (4, 5)
- (7, 8)

Nominal Voltage
- 3 Vpk
- 5 Vpk
- 3.3 V

MCOV Data
- 12 Vpk
- 12 Vpk
- 11 Vpk

Voltage Protection Level
- >26 Vpk @ 100 A 10/1000 µs

Max Surge Current
- 100 A @ 10/1000 µs
- 500 A @ 8/20 µs
- 5 kA @ 8/20 µs

Mechanical

Input/Output Connector
- RJ-45 (shielded)
- RJ-45 (unshielded)

Enclosure Dimensions
- (H x W x D) in
- 5.3 x 5.7 x 1.2

Enclosure Dimensions
- (H x W x D) cm
- 13.6 x 14.5 x 3.0

Weight (max) lb, kg
- 0.5, 0.2

Environmental

Humidity
- 99% non-condensing

Operating/Storage Temperature
- -40°C to +65°C

Enclosure Rating
- UL94V-0

Features

- Non-degradable, low clamping silicon diode protection
- Line and load bidirectional protection
- External ground lug
- 6 individual circuits
- Replacement modules available
- Easy to install
- Unprotected pins bonded to ground

Standards and Certificates

- GR 1089 CORE

1101-995

Multi Protocol Equipment Protector

TB (Thunderbolt) Series

Outdoor, RJ-45, bulkhead mount, IP 67, surge protector for 10/100 Mb/s PoE, gigabit Ethernet and gigabit PoE.

<table>
<thead>
<tr>
<th>Part Name</th>
<th>TB 10/100/PoE</th>
<th>TB GbE</th>
<th>TB GbE PoE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-1028</td>
<td>1101-1029</td>
<td>1101-1030</td>
</tr>
</tbody>
</table>

Electrical

Application
- PoE
- Gigabit Ethernet
- Gigabit PoE

Data Rate
- 10/100 Mb/s
- 1000 Mb/s
- 1000 Mb/s

Pros Protected
- (1, 2), (3, 6), (4, 5) and (7, 8)

Nominal Voltage
- 48 Vdc
- 3.3 Vdc
- 48 Vdc

Max Continuous Operating Voltage
- 60 Vpk (pins 4, 5, 7, 8)
- 11 Vpk (pins 1, 2, 3, 6)
- 11 Vpk

Max Surge Current
- 5 kA (8/20 µs)
- 3 kA (8/20 µs)
- 100 A @ 10/1000 µs

Mechanical

Input/Output Connector
- RJ-45

Enclosure Dimensions
- (H x W x D) in
- 1.5 x 1.5 x 4.0

Enclosure Dimensions
- (H x W x D) cm
- 3.6 x 3.6 x 10.0

Weight (lb, kg)
- 0.2, 0.1
- 0.4, 0.2

Environmental

Humidity
- 99% non-condensing

Operating/Storage Temperature
- -40°C to +75°C

Enclosure Rating
- IP 67

1101-1028

TRANSECTOR

smiths power
Data Line Surge Protection

Multi Protocol Equipment Protector

IX Series
Configurable, modular, weatherized, twisted pair surge protection for up to five pairs.

Mechanical
- Input/Output Connector: #20 to #16 AWG terminal screw
- Dimensions (H x W x D) in cm: 5.3 x 2.5 x 1.7
- Dimensions (H x W x D) in cm: 13.3 x 6.4 x 4.3
- Weight (max) lbs: 0.7 - 0.4

Environmental
- Operating Temperature: -40°C to +65°C

Features
- DC modules optimized to 12, 24, 48, 56 or 72 Vdc with isolated ground
- Data line modules optimized for POTS, Telco Trunk, T1/E1, RS-232, RS-422, RS-485, Ethernet or PoE
- Weatherized enclosure
- SMCP-00 pair configuration available
- Boards available in bags of 50
- Pole mount kit offered

Part Number Matrix

<table>
<thead>
<tr>
<th>Board</th>
<th>Application</th>
<th>Turn-on Voltage</th>
<th>Series Impedance</th>
<th>Capacitance (Differential)</th>
<th>Capacitance (Common)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>Cat.5, UTP, STP</td>
<td>±9 Vdc ±10%</td>
<td>1 Ohm ±2%</td>
<td>30 pF Typical</td>
<td>15 pF Typical</td>
</tr>
<tr>
<td>L</td>
<td>T1/E1, IS422, RS485</td>
<td>±12 Typical</td>
<td>1 Ohm ±2%</td>
<td>100 pF Typical</td>
<td>100 pF Typical</td>
</tr>
<tr>
<td>M</td>
<td>RS232</td>
<td>±31 Typical</td>
<td>1 Ohm ±2%</td>
<td>100 pF Typical</td>
<td>100 pF Typical</td>
</tr>
<tr>
<td>P</td>
<td>POTSLine</td>
<td>±110 Typical</td>
<td>40 pF Typical</td>
<td>40 pF Typical</td>
<td>40 pF Typical</td>
</tr>
<tr>
<td>T</td>
<td>T1 Ring Voltage, DSL, ADSL, HDSL</td>
<td>±210 Typical</td>
<td>1 Ohm ±2%</td>
<td>30 pF Typical</td>
<td>30 pF Typical</td>
</tr>
</tbody>
</table>

| DC 24-48 | 24 Vdc Power | ±13 Vdc ±10% | 0.05 ohm ±2% | N/A | N/A |
| DC 48-IG | 48 Vdc Power | ±85 Vdc ±10% | 0.05 ohm ±2% | N/A | N/A |
| DC 56-IG | 56 Vdc Power | ±85 Vdc ±10% | 0.05 ohm ±2% | N/A | N/A |

IX Series

Model Name/Number
- IX-1T
- IX-2H1DC48-IG
- IX-2H1DC24-IG
- IX-2M
- IX-2T

Application
- xDSL
- PoE
- PoE
- RS-252 and RS562-2 Lines
- Dual Telco Trunk

Data Rate
- Up to 25 Mbps
- 10/100 Mbps
- 10/100 Mbps
- Up to 25 Mbps
- Up to 25 Mbps

Data Turn On @ 10 mA
- ±210 Vdc
- ±9 Vdc ±10% per board
- ±5 Vdc ±10% per board
- ±31 Vdc ±10 %
- ±210 Vdc ±10 %

Data Series Resistance
- 1.0 Ohm ±2%

DC Nominal Voltage
- N/A
- ±56 Vdc
- ±24 Vdc
- N/A
- N/A

DC Turn On @ 2 A
- N/A
- ±68 Vdc ±10 %
- ±33 Vdc ±10 %
- N/A
- N/A

DC Voltage Protection
- 100 Voltsac
- N/A
- < ±75 Vdc
- < ±34 Vdc
- N/A
- N/A

DC Series Resistance
- 0.05 Ohms ±2%

Max Surge Current
- 100 A @10/1000 µs per Telecordia GR-1089

Standards and Certificates
- UL 497 B
- GR-1089
Data Line Surge Protection

PoE Protector

**ALPU POE Series**
Compact, outdoor, RJ-45, surge protection for point-to-point and point-to-multi-point radios utilizes non-degrading SASD for very low let-thru voltage protection.

**Features**
- Rugged Aluminum enclosures
- Compact design
- 1/4-20 threaded holes for grounding
- Pole mount kit (1000-1164)
- Gasketed, NEMA 3R rated enclosure

**Standards and Certificates**
- GR-1089
- NEC 800.100 and 830.100
- IEEE 802.3af/at
- CE
- UL 94-V0 (1101-932, 1101-933, 1101-934)

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**Electrical**

<table>
<thead>
<tr>
<th>Part Name</th>
<th>ALPU-POE-66-M</th>
<th>ALPU-POE-69-M</th>
<th>ALPU-POE-G6-M</th>
<th>ALPU G6E</th>
<th>ALPU G6E POE</th>
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<tbody>
<tr>
<td>Part Number</td>
<td>1101-932</td>
<td>1101-933</td>
<td>1101-934</td>
<td>1101-605</td>
<td>1101-609</td>
</tr>
<tr>
<td>Protocol</td>
<td>Power over Ethernet</td>
<td>Power over Ethernet</td>
<td>Data Only</td>
<td>Power over Ethernet</td>
<td>Power over Ethernet</td>
</tr>
<tr>
<td>Data Rate</td>
<td>100 Mbps</td>
<td>100 Mbps</td>
<td>100 Mbps</td>
<td>1000 Mbps</td>
<td>1000 Mbps</td>
</tr>
<tr>
<td>Pins Protected</td>
<td>Data (1,2) and (3,6), DC power (4,5) and (7,8)</td>
<td>(1,2), (3,6), (4,5) and (7,8), (10,11)</td>
<td>(1,2), (3,6), (4,5) and (7,8)</td>
<td>(1,2), (3,6), (4,5) and (7,8)</td>
<td></td>
</tr>
<tr>
<td>Data Nominal Voltage</td>
<td>5 Vpk</td>
<td>48 Vpk</td>
<td>75 Vpk</td>
<td>3.3 Vpk</td>
<td>3.3 Vpk</td>
</tr>
<tr>
<td>DC Nominal Voltage</td>
<td>48 Vdc</td>
<td>48 Vdc</td>
<td>75 Vdc</td>
<td>3.3 Vpk</td>
<td>92 Vpk</td>
</tr>
<tr>
<td>MCOV Data</td>
<td>6 Vpk</td>
<td>48 Vpk</td>
<td>75 Vpk</td>
<td>55 Vpk</td>
<td>92 Vpk</td>
</tr>
<tr>
<td>MCOV DC Power</td>
<td>60 Vpk</td>
<td>48 Vpk</td>
<td>75 Vpk</td>
<td>6 Vpk</td>
<td>92 Vpk</td>
</tr>
<tr>
<td>DC Power Voltage Protection Level</td>
<td>&lt; 75 Vpk @ 100 A 10/1000 μs</td>
<td>&lt; 75 Vpk @ 100 A 10/1000 μs</td>
<td>&lt; 150 Vpk @ 100 A 10/1000 μs</td>
<td>&lt; 25 Vpk @ 100 A 10/1000 μs</td>
<td>&lt; 134 Vpk @ 100 A 10/1000 μs</td>
</tr>
</tbody>
</table>

**Mechanical**

| Input/Output Connector    | RJ-45 shielded 100 Ohm |
| Dimensions (H x W x D)    | 7.2 x 3.0 x 1.7 cm |
| Weight (max) / lb, kg     | 0.8 / 0.4 |
| Humidity                 | 95% non-condensing |
| Operating/Storage          | -40°C to +60°C |

**Environmental**

<table>
<thead>
<tr>
<th>Part Name</th>
<th>ALPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-998</td>
</tr>
<tr>
<td>Data Rate</td>
<td>1000 Mbps</td>
</tr>
<tr>
<td>Data Nominal Voltage</td>
<td>48 Vdc</td>
</tr>
<tr>
<td>DC Nominal Voltage</td>
<td>48 Vdc</td>
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<tr>
<td>MCOV Data</td>
<td>70 Vdc</td>
</tr>
<tr>
<td>MCOV DC Power</td>
<td>70 Vdc</td>
</tr>
<tr>
<td>DC Power Voltage Protection Level</td>
<td>&lt;20 V @ 100 A 10/1000 μs</td>
</tr>
</tbody>
</table>
Data Line Surge Protection

PoE Protector

ALPU CMM3

Eight port, outdoor, PoE protector with RJ-45 connectors.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>ALPU CMM3</th>
</tr>
</thead>
</table>

Electrical

- Data Rate: 10/100 Mbps
- Pins Protected: (1, 3, 5, 6, 4, 5) and (7, 8)
- Max Continuous Operating Voltage: 90 Vpk
- Max Surge Current: 800 A 8/20 µs, 200 A 10/1000 µs

Features

- IEEE C62.41
- Telcordia GR-1089-CORE
- Non-degradable, low clamping, leadless silicon diode protection
- Line and load bidirectional protection
- Functions as bridge clip
- Ground bar (1101-621)

Standards and Certificates

- Bellcore 1089

Punch Down Block Protector

PBM Series

Data line surge protection for 66 punch down block applications.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>PBM 6605</th>
<th>PBM 6607</th>
</tr>
</thead>
</table>

Electrical

- Application: Telco Trunk, T1 (1 pair of wires)
- Nominal Voltage: 230 V, 40 V
- Operating Voltage: 270 Vpk, 45 Vpk
- Max Surge Current: 100 A @ 10/1000 µs, 150 A @ 8/20 µs, 100 A @ 10/1000 µs, 150 A @ 8/20 µs

Features

- Non-degradable, low clamping, leadless silicon diode protection
- Line and load bidirectional protection
- Functions as bridge clip
- Ground bar (1101-621)

Standards and Certificates

- Bellcore 1089

Mechanical

- Input/Output Connector: 66 punch down block - IDC (replaces bridge clip)
- Enclosure Dimensions in (H x W x D): 1.8 x 0.9 x 0.4
- Enclosure Dimensions cm (H x W x D): 4.5 x 2.3 x 0.9
- Weight (max): 0.1, 0.05 lb, kg

Environmental

- Operating/Storage Temperature: -20°C to +50°C

ALPU CMM3

8 port, outdoor, PoE protector with RJ-45 connectors.

Part Number: ALPU CMM3
Part Number: 1101-805

Electrical

- Data Rate: 10/100 Mbps
- Pins Protected: (1, 3, 5, 6, 4, 5) and (7, 8)
- Max Continuous Operating Voltage: 90 Vpk
- Max Surge Current: 800 A 8/20 µs, 200 A 10/1000 µs

Features

- IEEE C62.41
- Telcordia GR-1089-CORE
- Non-degradable, low clamping, leadless silicon diode protection
- Line and load bidirectional protection
- Functions as bridge clip
- Ground bar (1101-621)

Standards and Certificates

- Bellcore 1089

1101-805
Data Line Surge Protection

Component Protector

DRDC Series
Bidirectional, low clamping silicon diode, DIN rail mounted surge protection for low frequency data lines and DC power operating at up to 10 A.

Features
- Optimized for data circuits including RS-422, RS-485 and 4-20mA loops
- Non-degradable, low clamping, leadless, silicon diode surge suppression
- Engineered for bidirectional, line and load protection
- Replaceable suppression module, no rewiring required
- 2 pair wire #28 to #12 AWG screws

Standards and Certificates
- FM Approval Class 1 Division II
- CE
- UL 497B (except 1101-724)

Electrical
- Nominal Voltage: 7 Vdc, 12 Vdc, 24 Vdc, 48 Vdc, 70 Vdc
- Max Continuous Operating Voltage: 13 Vdc, 16 Vdc, 32 Vdc, 64 Vdc, 118 Vdc
- Voltage Protection Level 10/1000 μs (IEEE/ANSI C62.41): 20 Vpk @ 164 A, 25 Vpk @ 134 A, 50 Vpk @ 134 A, 100 Vpk @ 134 A, 165 Vpk @ 66 A
- Voltage Protection Level 8/20 μs (IEEE/ANSI C62.41): 25 Vpk @ 1.4 kA, 30 Vpk @ 1.2 kA, 60 Vpk @ 1.2 kA, 120 Vpk @ 1.2 kA, 185 Vpk @ 600 A
- Response Time: < 5 ns

Mechanical
- Terminal: 2 pair wire #28 to #12 AWG Screw (4 mm² max)
- Dimensions (H x W x D) in: 4.0 x 0.5 x 4.0
- Dimensions (H x W x D) cm: 10.2 x 1.3 x 10.2
- Weight (maximum): 0.1, 0.2 lb, kg

Environmental
- Humidity: 95% non-condensing
- Operating Temperature: -40°C to +60°C

Part Name
- DRDC 7
- DRDC 12
- DRDC 24
- DRDC 48
- DRDC 70

Part Number
- 1101-678
- 1101-679
- 1101-680
- 1101-681
- 1101-724

Terminal 2 pair wire #28 to #12 AWG Screw (4 mm² max)
Dimensions (H x W x D) in: 4.0 x 0.5 x 4.0
Dimensions (H x W x D) cm: 10.2 x 1.3 x 10.2
Weight (maximum): 0.1, 0.2 lb, kg
Humidity: 95% non-condensing
Operating Temperature: -40°C to +60°C
Data Line Surge Protection

Two-Pair Signal Protector

FSP 4000 MC Series

High-speed, high-current, silicon avalanche data line surge protector designed for RS422, RS485 and 4-20mA loops double wire pair equipment. Product family can accommodate 12 Vdc, 27 Vdc, 52 Vdc and 280 Vdc service voltage applications.

Features

- Optimized for RS422, RS485 and 4-20mA loops
- Protects up to two balanced pairs and shields
- Non-degradable, low clamping, leadless, silicon avalanche diode
- Line and load bidirectional protection
- Shield is pass-through

FSP 4001 MC
1101-372-1

Electrical

<table>
<thead>
<tr>
<th>Part Name</th>
<th>FSP 4001 MC</th>
<th>FSP 4002 MC</th>
<th>FSP 4003 MC</th>
<th>FSP 4005 MC-GT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-372-1</td>
<td>1101-372-2</td>
<td>1101-372-3</td>
<td>1101-372-6</td>
</tr>
<tr>
<td>Service Voltage</td>
<td>12 Vdc</td>
<td>27 Vdc</td>
<td>52 Vdc</td>
<td>280 Vdc</td>
</tr>
<tr>
<td>Max Continuous Operating Voltage</td>
<td>13 Vpk</td>
<td>27 Vpk</td>
<td>54 Vpk</td>
<td>290 Vpk</td>
</tr>
<tr>
<td>Voltage Protection Level</td>
<td>50 V</td>
<td>65 V</td>
<td>100 V</td>
<td>&lt;550 V @ 10 kA 8/20 µs</td>
</tr>
<tr>
<td>Max Surge Current Rating 10/1000 µs</td>
<td>200 A</td>
<td>134 A</td>
<td>67 A</td>
<td>21 A</td>
</tr>
<tr>
<td>Configuration</td>
<td>2 balanced pairs + 2 shields</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Input Connection</td>
<td>Terminal block</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector Positions</td>
<td>6 in 6 out</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection Modes</td>
<td>L-L, L-G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response Time</td>
<td>&lt; 5 ns</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mechanical

- Suppression Terminal: Input and output clamping screw terminal (1/4 in AWG-25 mm² max)
- Dimensions (H x W x D) in: 3.2 x 2.3 x 1.4
- Dimensions (H x W x D) cm: 8.2 x 6.1 x 3.6
- Weight (max): lbs, g 0.2, 73

Environmental

- Humidity: 90% non-condensing
- Operating Temperature: -40°C to +85°C
- Enclosure Rating: 94 V5

Part Name

- FSP 4001 MC
- FSP 4002 MC
- FSP 4003 MC
- FSP 4005 MC-GT

Part Number

- 1101-372-1
- 1101-372-2
- 1101-372-3
- 1101-372-6
Data Line Surge Protection

CCTV Equipment Protector

**CCTV Series**
Data line and DC surge protection for pan-tilt-zoom surveillance systems with power and signal circuits.

**Features**
- Non-degradable, low clamping, leadless silicon diode protection
- Line and load bidirectional protection
- BNC connectors for video and protection circuit for RS-232/RS-422/RS-485
- #22 to #16 AWG screw terminal for DC circuit protection

**Standards and Certificates**
- UL 497B Listed

---

<table>
<thead>
<tr>
<th>Part Name</th>
<th>CCTV-PTZ</th>
<th>CCTV-PTZ-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-607-1</td>
<td>1101-613</td>
</tr>
</tbody>
</table>

**Electrical**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MCOV Signal</td>
<td>12 Vac tip to ring, 40 Vac ring to ground</td>
<td></td>
</tr>
<tr>
<td>Max Surge Current Signal</td>
<td>140 A/10/1000 µs</td>
<td></td>
</tr>
<tr>
<td>MCOV Data</td>
<td>24 Vac</td>
<td></td>
</tr>
<tr>
<td>Max Surge Current Data</td>
<td>190 A/10/1000 µs</td>
<td></td>
</tr>
<tr>
<td>MCOV AC/DC</td>
<td>28 Vac, 40 Vac</td>
<td>n/a</td>
</tr>
<tr>
<td>Max Surge Current DC</td>
<td>150 A/10/1000 µs</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**Mechanical**

<table>
<thead>
<tr>
<th>Input/Output Connector</th>
<th>BNC female in and out, two (in/out) five position screw terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Dimensions (H x W x D)</td>
<td>3.2 x 3.2 x 1.7</td>
</tr>
<tr>
<td>Enclosure Dimensions (H x W x D)</td>
<td>8.1 x 8.1 x 4.3</td>
</tr>
<tr>
<td>Weight (max)</td>
<td>0.2, 0.1</td>
</tr>
</tbody>
</table>

**Environmental**

<table>
<thead>
<tr>
<th>Operating/Storage Temperature</th>
<th>-40°C to +65°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure Rating</td>
<td>UL94-VO</td>
</tr>
</tbody>
</table>

---

1101-607-1
Data Line Surge Protection

Submersible Signal Protector

**PDS Series**

Submersible, low voltage, low frequency, signal surge protection with #18 AWG leads for series wiring.

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDS1 - Parallel Conduit</td>
<td>1101-586</td>
</tr>
<tr>
<td>PDS2 - Series Installed Conduit</td>
<td>1101-587</td>
</tr>
</tbody>
</table>

**Electrical**

| Max Continuous Operating Voltage | < 28 Vpk |
| Voltage Protection Level 8/20 µs @ 2 kA | ~ 125 Vpk |
| Voltage Protection Level 10/1000 µs @ 100 kA | ~ 250 Vpk |
| Max Surge Current 10 ka @ 20 kV 8/20 µs | |
| Parasitic Capacitance 8 pF L-L |

**Mechanical**

| Input/Output Connector | #16 AWG leads (1.5 mm) |
| Enclosure Dimensions (in) | 0.95 diameter x 5.9 length |
| Enclosure Dimensions (cm) | 1.3 diameter x 12.7 length |
| Weight (max) lb, kg | 0.1, 0.05 |

**Environmental**

| Operating/Storage Temperature | -40°C to +65°C |

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**Features**

- Rugged gas tube, SASD hybrid circuit
- Fits single or dual conduit ports
- 1/2” NPT thread for series or “T” conduit attachment

**Standards and Certificates**

- FM Approval Class I Division II
- CE

Data Power Equipment Protector

**DRI Series**

Modular, single or dual twisted pair #28 to #12 AWG, data line surge protection for AC and DC circuits with visual indication of suppressor status for circuits with power applied.

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRI 24</td>
<td>1101-869</td>
</tr>
<tr>
<td>DRI 120</td>
<td>1101-870</td>
</tr>
</tbody>
</table>

**Electrical**

| Service Voltage | 24 Vdc |
| Signal Rate DC power to 30 Kb/s |
| Protection Modes L-L, L-G |
| Protection Level 50 Vpk |
| Max Continuous Operating Voltage 34 Vpk |
| Max Pass Through Current 5 A |
| Response Time 5 ns |

**Mechanical**

| Dimensions (H x W x D) in | 2.9 x 1.7 x 3.4 |
| Dimensions (H x W x D) cm | 7.3 x 4.3 x 8.6 |
| Weight (max) lb, kg | 0.3, 0.14 |

**Environmental**

| Humidity | 95% non-condensing |
| Operating Temperature | -40°C to +65°C |
# Data Line Surge Protection

## SXRR Series

The SXRR series suppressors are high-speed, high-current solid state silicon devices that are designed to provide equalization protection for railroad signaling and Positive Train Control (PTC) applications.

### Electrical

<table>
<thead>
<tr>
<th>Part Name</th>
<th>SXRR 50</th>
<th>SXRR 90</th>
<th>SXRR 120</th>
<th>SXRR 150DD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-707</td>
<td>1101-744</td>
<td>1101-764</td>
<td>1101-1105</td>
</tr>
<tr>
<td>Nominal Voltage (V)</td>
<td>12</td>
<td>90</td>
<td>120</td>
<td>50</td>
</tr>
<tr>
<td>Max Continuous Operating Voltage (Vac)</td>
<td>35 Vdc</td>
<td>110 Vdc</td>
<td>130 Vdc</td>
<td>55 Vac</td>
</tr>
<tr>
<td>Voltage Protection Level (Vpk)</td>
<td>280 V @ 20 kA 8/20 µs</td>
<td>340 V @ 20 kA 8/20 µs</td>
<td>450 V @ 20 kA 8/20 µs</td>
<td>78 V @ 50 A 8/20 µs</td>
</tr>
</tbody>
</table>

### Mechanical

- Input/Output Connector: 1/4 inch terminal clips
- Enclosure Dimensions (H x W x D) cm: 5.3 x 7.4 x 2.5
- Weight (max): 0.1 kg, 0.05 kg

### Environmental

- Operating/Storage Temperature: -40°C to +75°C
- Ingress Protection Rating: IP20
- Enclosure Rating: UL 94V-0

## Railroad Equipment Protector

### Features

- Non-degradable, low clamping, leadless silicon diode protection
- Line and load bidirectional protection
- Gas discharge tube back-up protection (some models)
- Visual status indication

### Standards and Certificates

- AREMA

## I2R DTA

Railroad track surge suppressor with equalizer. Signal pass-thru surge protection each rail to ground, equalizer protection rail to rail. The DTA is ideal for lightning and induced surge protection of track monitoring circuits directly in bungalow and shelter applications.

### Electrical

<table>
<thead>
<tr>
<th>Part Name</th>
<th>I2R DTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part Number</td>
<td>1101-1099</td>
</tr>
<tr>
<td>Nominal Voltage</td>
<td>48 V</td>
</tr>
<tr>
<td>Max Continuous Operating Voltage (Vdc)</td>
<td>60 Vdc</td>
</tr>
<tr>
<td>Voltage Protection Level (Vpk) @ 6kV/3kA 8/20us</td>
<td>375</td>
</tr>
<tr>
<td>Max Surge Current</td>
<td>20ka</td>
</tr>
</tbody>
</table>

### Mechanical

- Input/Output Connector: awg 24-6g wire cage clamp connection
- Dimensions (H x W x D) cm: 5.31 x 3.9 x 1.5
- Weight (max): 3.1 kg

### Environmental

- Operating/Storage Temperature: -40°C to +85°C
- Enclosure Rating: IP65
- Ingress Protection Rating: IP20

---

**SXRR 50, 90, 120**

- 1.2" x 3.1 cm
- 0.8" x 2.1 cm
- 2.5" x 0.3 cm

**SXRR 150DD**

- 0.25" x 0.62" x 1.0 cm