My first Hirschmann:
The SPIDER family of switches.

- Large selection of entry level switches
- Compact design
- Simple rail installation
- Industry standard 24 V supply voltage
- Plug & Play gets you up and running right away
The dependable path to Industrial ETHERNET: Hirschmann’s extended family of switches.

The SPIDER family is the ideal choice whenever you want to use a simple unmanaged switch to link ETHERNET nodes in a star or linear topology. You can also deploy SPIDER switches as a low-cost port expansion option on managed systems in large networks. Applications include process lines or machine manufacturing, for example printing machines. Fiber port versions support reliable data transfer over long distances and guarantee good communications under extreme conditions in the presence of strong electromagnetic interference. These robust switches are the solution of choice when the application demands high EMC stability and good temperature resistance. IP 30 protection and excellent shock, vibration and temperature resistance ensure that these industrial entry level switches will keep running in harsh environments.
Hirschmann developed the low-cost SPIDER switch family to provide a user-friendly pathway to Industrial ETHERNET at the device level in the network pyramid where there is a need for simple unmanaged switches. The third generation of Hirschmann plug & play entry level switches feature a universal layout and are available in a wide range of variations including switches with an extended temperature range (–40°C up to +70°C) and e1 approval. The family also includes versions with one twisted pair and one fiber optic port or with three twisted pair ports.

There are 13 entry level switches in the SPIDER product family which can be used to quickly deploy low-cost star or linear network topologies over short or long distances. The Hirschmann portfolio covers the entire network pyramid right up to the layer 3 backbone switch. The SPIDER family defines the right entry point for any Industrial ETHERNET solution. You get one stop shopping from a company which stands for excellent quality and reliability.

SPIDER switches comply with all applicable industry standards, and they are also suitable for onboard vehicle applications. All of the devices support 10/100 BASE-TX or -FX as well as auto-negotiation and auto-crossing functions. The optical ports are compatible with SC- or ST-connectors and are designed for single- or multimode transmission.

- Simple rail installation
- Industrial circuit design, UL approved
- Long service life (MTBF)
- e1 approval for use in vehicles (German Federal Bureau of Motor Vehicles)
- 24 V supply voltage
- Simple installation (plug & play)
- LED display of device and network status
- Low-cost entry level price
- Compact design for installation in distribution boxes
- Extended temperature range from –40°C up to +70°C (EEC models)
Low-cost combined with great versatility: Hirschmann SPIDER switches.

**New versions**
In addition to the familiar SPIDER 5TX, 8TX and 4TX/1FX switches, versions with single-mode port and switches with 3 and 2 ports are also now available.

**New applications**
New variations with one twisted pair and one fiber optic port used as stable store and forward switches can be used to replace conventional 10 or 100 Mbit/s converters.

**New: extended temperature range**
All switches are now available in extended range versions which will operate between –40° up to +70°C.

**Familiar reliable functions**
- Compact design
- Industry standard 24 V supply voltage
- Rail mounted
- Auto negotiation and auto-crossing functions take the pain out of installation

**New approval**
e1 approval for onboard vehicle applications

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**Hirschmann Competence Center**
The Hirschmann Competence Center is the place to contact when you are looking for cost-effective total solutions. You get expert consulting, service and support from the pioneer in industrial network technology. Whether you need simple entry level switches or complete solutions at the top end of the network pyramid, we would be pleased to discuss your individual Industrial ETHERNET requirements with you. 

[www.hicomcenter.com](http://www.hicomcenter.com)
# SPIDER family

## 2 port media converter switches

<table>
<thead>
<tr>
<th>Product description</th>
<th>SPIDER 1TX/1FX</th>
<th>SPIDER 1TX/1FX EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product description</strong></td>
<td>Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)</td>
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</tr>
<tr>
<td><strong>Port type and quantity</strong></td>
<td>1 x 10/100BASE-TX, TP-cable, RJ45 sockets, auto-crossing, auto-negotiation, auto-polarity</td>
<td>1 x 10/100BASE-TX, TP-cable, RJ45 sockets, auto-crossing, auto-negotiation, auto-polarity</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>SPIDER 1TX/1FX</td>
<td>SPIDER 1TX/1FX EEC</td>
</tr>
<tr>
<td><strong>Order No.</strong></td>
<td>943 890-001</td>
<td>943 927-001</td>
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</tbody>
</table>

## More Interfaces

<table>
<thead>
<tr>
<th>Power supply/signaling contact</th>
<th>SPIDER 1TX/1FX</th>
<th>SPIDER 1TX/1FX EEC</th>
</tr>
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<tbody>
<tr>
<td><strong>Network size – length of cable</strong></td>
<td>1 plug-in terminal block, 3-pin, no signal contact</td>
<td>1 plug-in terminal block, 3-pin, no signal contact</td>
</tr>
<tr>
<td><strong>Twisted pair (TP)</strong></td>
<td>0–100 m</td>
<td>0–100 m</td>
</tr>
<tr>
<td><strong>Multimode fiber (MM) 50/125 µm</strong></td>
<td>0–5000 m, 8 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km</td>
<td>0–5000 m, 8 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km</td>
</tr>
<tr>
<td><strong>Multimode fiber (MM) 62.5/125 µm</strong></td>
<td>0–4000 m, 11 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km</td>
<td>0–4000 m, 11 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km</td>
</tr>
<tr>
<td><strong>Singlomode fiber (SM) 9/125 µm</strong></td>
<td>Any</td>
<td>Any</td>
</tr>
</tbody>
</table>

## Network size – cascadibility

<table>
<thead>
<tr>
<th>Line-/star topology</th>
<th>SPIDER 1TX/1FX</th>
<th>SPIDER 1TX/1FX EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Power requirements</strong></td>
<td>9.6–32 VDC</td>
<td>9.6–32 VDC</td>
</tr>
<tr>
<td><strong>Current consumption at 24 VDC</strong></td>
<td>Max. 130 mA</td>
<td>Max. 130 mA</td>
</tr>
<tr>
<td><strong>Power consumption</strong></td>
<td>Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC</td>
<td>Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC</td>
</tr>
</tbody>
</table>

## Service

<table>
<thead>
<tr>
<th><strong>Diagnostics</strong></th>
<th>LEDs (power, link status, data, data rate)</th>
<th>LEDs (power, link status, data, data rate)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Redundancy</strong></td>
<td>Redundancy functions</td>
<td>Redundancy functions</td>
</tr>
<tr>
<td><strong>Ambient conditions</strong></td>
<td>SPIDER 1TX/1FX EEC</td>
<td>SPIDER 1TX/1FX EEC</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>0°C up to +60°C</td>
<td>0°C up to +60°C</td>
</tr>
<tr>
<td><strong>Storage/transport temperature</strong></td>
<td>−40°C up to +70°C</td>
<td>−40°C up to +70°C</td>
</tr>
<tr>
<td><strong>Relative humidity (non-condensing)</strong></td>
<td>10% up to 95%</td>
<td>10% up to 95%</td>
</tr>
<tr>
<td><strong>MTBF</strong></td>
<td>128.1 years; MIL-HDBK 217F: Gb 25°C</td>
<td>128.1 years; MIL-HDBK 217F: Gb 25°C</td>
</tr>
</tbody>
</table>

## Mechanical construction

<table>
<thead>
<tr>
<th>Dimensions (W x H x D)</th>
<th>SPIDER 1TX/1FX EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Weight</strong></td>
<td>105 g</td>
</tr>
<tr>
<td><strong>Protection class</strong></td>
<td>IP 30</td>
</tr>
</tbody>
</table>

## Mechanical stability

<table>
<thead>
<tr>
<th>IEC 60068-2-27 shock</th>
<th>SPIDER 1TX/1FX EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IEC 60068-2-6 vibration</strong></td>
<td>SPIDER 1TX/1FX EEC</td>
</tr>
<tr>
<td><strong>EMC interference immunity</strong></td>
<td>SPIDER 1TX/1FX EEC</td>
</tr>
<tr>
<td><strong>EMC emitted immunity</strong></td>
<td>SPIDER 1TX/1FX EEC</td>
</tr>
<tr>
<td><strong>Approvals</strong></td>
<td>SPIDER 1TX/1FX EEC</td>
</tr>
</tbody>
</table>

## Scope of delivery and accessories

<table>
<thead>
<tr>
<th>Scope of delivery</th>
<th>SPIDER 1TX/1FX EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accessories to order separately</strong></td>
<td>Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19” installation frame</td>
</tr>
</tbody>
</table>
### Switches for linear and star topologies

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPIDER 1TX/1FX-SM</strong></td>
<td>Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)</td>
<td>1 x 10/100 BASE-TX, TP-cable, RJ 45 sockets, auto-crossing, auto-negotiation, auto-polarity 1 x 100 BASE-FX, MM cable, SC sockets&lt;br&gt;1 plug-in terminal block, 3-pin, no signal contact&lt;br&gt;0–100 m&lt;br&gt;0–32.5 km, 16 dB link budget at 1300 nm, A = 0.4 dB/km, 3 dB reserve, D = 3.5 ps/(nm x km)&lt;br&gt;Any&lt;br&gt;9.6 – 32 V DC&lt;br&gt;Max. 130 mA&lt;br&gt;Max. 100 mA&lt;br&gt;Max. 1.5 years; MIL-HDBK 217F: Gb 25° C&lt;br&gt;25 mm x 114 mm x 79 mm&lt;br&gt;DIN rail 35 mm&lt;br&gt;105 g&lt;br&gt;IP 30&lt;br&gt;15 g, 11 ms duration, 18 shocks&lt;br&gt;6 kV contact discharge, 8 kV air discharge&lt;br&gt;10 V/m (80–2000 MHz) 10 V/m (80–2000 MHz)&lt;br&gt;2 kV power line, 4 kV data line&lt;br&gt;Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line&lt;br&gt;10 V (150–80 kHz) 10 V (150–80 kHz)&lt;br&gt;FCC CFR47 Part 15 Class A&lt;br&gt;cUL 508 (E175531)</td>
</tr>
<tr>
<td><strong>SPIDER 1TX/1FX-SM EEC</strong></td>
<td>Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)</td>
<td>3 x 10/100 BASE-TX, TP-cable, RJ 45 sockets, auto-crossing, auto-negotiation, auto-polarity 1 x 100 BASE-FX, MM cable, SC sockets&lt;br&gt;1 plug-in terminal block, 3-pin, no signal contact&lt;br&gt;0–100 m&lt;br&gt;0–32.5 km, 16 dB link budget at 1300 nm, A = 0.4 dB/km, 3 dB reserve, D = 3.5 ps/(nm x km)&lt;br&gt;Any&lt;br&gt;9.6 – 32 V DC&lt;br&gt;Max. 100 mA&lt;br&gt;Max. 2.2 W 7.5 Btu (IT)/h at 24 V DC&lt;br&gt;10.5 years; MIL-HDBK 217F: Gb 25° C&lt;br&gt;25 mm x 114 mm x 79 mm&lt;br&gt;DIN rail 35 mm&lt;br&gt;113 g&lt;br&gt;IP 30&lt;br&gt;15 g, 11 ms duration, 18 shocks&lt;br&gt;6 kV contact discharge, 8 kV air discharge&lt;br&gt;10 V/m (80–2000 MHz) 10 V/m (80–2000 MHz)&lt;br&gt;2 kV power line, 4 kV data line&lt;br&gt;Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line&lt;br&gt;10 V (150–80 kHz) 10 V (150–80 kHz)&lt;br&gt;FCC CFR47 Part 15 Class A&lt;br&gt;cUL 508 (E175531)</td>
</tr>
</tbody>
</table>

**Device, terminal block, operating manual**

**Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19” installation frame**
Switches for linear and star topologies

Accessories to order separately

EN 55022

FCC CFR47 Part 15

EMC emitted immunity

IEC 60068-2-27 shock

Diagnostics

Service

Twisted pair (TP)

Network size – length of cable

More Interfaces

SPIDER family

German Lloyd

Employment in vehicles

Max. 130 mA

0 – 4000 m,

A = 1 dB/km, 3 dB reserve, B = 800 MHz x km

1 x 100 BASE-FX, MM cable, SC sockets

ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)

store and forward switching mode,

Power line:

FCC CFR47 Part 15 Class A

Rail power supply RPS 30, RPS 80 EEC or

2 port media converter switches

8 dB link budget at 1300 nm,

ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)

store and forward switching mode,

Power line:

cUL 508 (E175531)

RPS 120 EEC, 19" installation frame

2 kV (line/earth ), 1 kV (line/line ), 1 kV data line

2 kV power line, 4 kV data line

943 891-001

1 x 10/100 BASE-TX, TP-cable, RJ 45 sockets,

ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)

store and forward switching mode,

Power line:

cUL 508 (E175531)

RPS 120 EEC, 19" installation frame

2 kV (line/earth ), 1 kV (line/line ), 1 kV data line

2 kV power line, 4 kV data line

943 824-002

138.5 years; MIL-HDBK 217F: Gb 25° C

– 40°C up to +60° C

3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.

113 g

DIN rail 35 mm

10 V/m (80 –2000 MHz)

6 kV contact discharge, 8 kV air discharge

25 m mx1 1 4m mx7 9m m

DIN rail 35 mm

Max. 2.2 W 7.5 Btu (IT)/h at 24 V DC

LEDs (power, link status, data, data rate )

113 g

943 824-102

123.7 years; MIL-HDBK 217F: Gb 25° C

– 40°C up to +70° C

3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.

101.5 years; MIL-HDBK 217F: Gb 25° C

Power supply/signaling contact

Mechanical construction

DIN rail 35 mm

Power line:

10 V (150 – 80 kHz)

2 kV (line/earth ), 1 kV (line/line ), 1 kV data line

2 kV power line, 4 kV data line

943 880-001

1 x 100 BASE-FX, MM cable, SC sockets

101.5 years; MIL-HDBK 217F: Gb 25° C

– 40°C up to +70° C

3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.

113 g

DIN rail 35 mm

10 V/m (80 –2000 MHz)

6 kV contact discharge, 8 kV air discharge

25 m mx1 1 4m mx7 9m m

DIN rail 35 mm

Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC

LEDs (power, link status, data, data rate )

120 g

251.3 years; MIL-HDBK 217F: Gb 25° C

– 40°C up to +85° C

3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.

3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.

3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.

120 g

DIN rail 35 mm

10 V/m (80 –2000 MHz)

6 kV contact discharge, 8 kV air discharge

25 m mx1 1 4m mx7 9m m

DIN rail 35 mm

Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC

LEDs (power, link status, data, data rate )

120 g

3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.
<table>
<thead>
<tr>
<th>Product Description</th>
<th>SPIDER family</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product description</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC</strong></td>
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</tr>
<tr>
<td><strong>11 dB link budget at 1300 nm,</strong></td>
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<tr>
<td><strong>0 – 5000 m,</strong></td>
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<tr>
<td><strong>Entry level Industrial ETHERNET rail switch,</strong></td>
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<td><strong>10 % up to 95 %</strong></td>
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<tr>
<td><strong>– 40°C up to +70° C</strong></td>
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<tr>
<td><strong>2 kV (line/earth ), 1 kV (line/line ), 1 kV data line</strong></td>
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<tr>
<td><strong>3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.</strong></td>
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<tr>
<td><strong>cUL 508 (E175531)</strong></td>
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<tr>
<td><strong>10 V (150 – 80 kHz)</strong></td>
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<td><strong>10 V/m (80 –2000 MHz)</strong></td>
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<tr>
<td><strong>2 kV power line, 4 kV data line</strong></td>
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<tr>
<td><strong>Power line:</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>120 g</strong></td>
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<td><strong>A = 1 dB/km, 3 dB reserve, B = 500 MHz x km</strong></td>
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<tr>
<td><strong>Max. 130 mA</strong></td>
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<tr>
<td><strong>9.6 – 32 V DC</strong></td>
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<tr>
<td>Mounting</td>
<td>Weight</td>
<td>Area</td>
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<td>---------------</td>
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</tr>
<tr>
<td>DIN rail 35 mm</td>
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<tr>
<td>19&quot; installation frame</td>
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</table>

**Switches for linear and star topologies**

**Multimode fiber (MM) 62,5/125 µm**

**Accessories to order separately**

**EMV regulations for assembly in vehicles**

**Conducted immunity**

**Network size – cascadibility**

**Ambient conditions**

**Dimensions (W x H x D)**

**Mechanical stability**

**Mounting**

**Weight**

**Type**

**Accessories**

**Power supply**

**Description**

**Power requirements**

**Order No.**

**Service**

**Redundancy**

**Storage/transport temperature**

**Multimode fiber (MM) 62,5/125 µm**

**Accessories to order separately**

**EN 55022**

**EN 61000-4-2**

**IEC 60068-2-6**

**Vibration**

**Stress testing**

**Shock**

**RPS 120 EEC, 19" installation frame**

**Rail power supply RPS 30, RPS 80 EEC or**

**Device, terminal block, operating manual**

**Switches with optical ports**

**FCC CFR47 Part 15 Class A**

**EMV**

**Safety of information technology equipment**

**Power line**

**LEDs (power, link status, data, data rate)**

**Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC**

**9.6 – 32 V DC**

**11 dB link budget at 1300 nm,**

**SPIDER 1TX/1FX**

**1 x 10/100 BASE-TX, TP-cable, RJ 45 sockets,**

**IP 30**

**2 kV (line/earth ), 1 kV (line/line ), 1 kV data line**

**cUL 508 (E175531)**

**Device, terminal block, operating manual**

**8 dB link budget at 1300 nm,**

**0 – 5000 m,**

**SPIDER 1TX/1FX EEC**

**1 x 100 BASE-FX, MM cable, SC sockets**

**11 dB link budget at 1300 nm,**

**0 – 32.5 km,**

**SPIDER 8TX EEC**

**8 x 10/100 BASE-TX, TP-cable, RJ 45 sockets,**

**15 g, 11 ms duration, 18 shocks**

**cUL 508 (E175531)**

**Device, terminal block, operating manual**

**auto-crossing, auto-negotiation, auto-polarity**

**Power line:**

**FCC CFR47 Part 15 Class A**

**2 kV power line, 4 kV data line**

**792x471**

**Any**

**Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC**

**9.6 – 32 V DC**

**1 plug-in terminal block, 3-pin, no signal contact**

**10 V (150 – 80 kHz)**

**105.7 years; MIL-HDBK 217F: Gb 25° C**

**3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.**

**Power line:**

**FCC CFR47 Part 15 Class A**

**2 kV power line, 4 kV data line**

**10 V (150 – 80 kHz)**

**113 g**

**10 % up to 95 %**

**6 kV contact discharge, 8 kV air discharge**

**A = 0.4 dB/km, 3 dB reserve, B = 500 MHz x km**

**Auto-crossing, auto-negotiation, auto-polarity**

**Power line:**

**FCC CFR47 Part 15 Class A**

**2 kV power line, 4 kV data line**

**10 V (150 – 80 kHz)**

**112.0 years; MIL-HDBK 217F: Gb 25° C**

**3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.**

**Power line:**

**FCC CFR47 Part 15 Class A**

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**A = 0.4 dB/km, 3 dB reserve, B = 500 MHz x km**

**Auto-crossing, auto-negotiation, auto-polarity**

**Power line:**

**FCC CFR47 Part 15 Class A**

**2 kV power line, 4 kV data line**

**10 V (150 – 80 kHz)**

**112.0 years; MIL-HDBK 217F: Gb 25° C**

**3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min.**

**Power line:**

**FCC CFR47 Part 15 Class A**

**2 kV power line, 4 kV data line**

**10 V (150 – 80 kHz)**

**113 g**

**10 % up to 95 %**

**6 kV contact discharge, 8 kV air discharge**

**A = 0.4 dB/km, 3 dB reserve, B = 500 MHz x km**

**Auto-crossing, auto-negotiation, auto-polarity**

**Power line:**

**FCC CFR47 Part 15 Class A**

**2 kV power line, 4 kV data line**

**10 V (150 – 80 kHz)**

**113 g**

**10 % up to 95 %**

**6 kV contact discharge, 8 kV air discharge**

**A = 0.4 dB/km, 3 dB reserve, B = 500 MHz x km**

**Auto-crossing, auto-negotiation, auto-polarity**

**Power line:**

**FCC CFR47 Part 15 Class A**

**2 kV power line, 4 kV data line**

**10 V (150 – 80 kHz)**

**113 g**

**10 % up to 95 %**

**6 kV contact discharge, 8 kV air discharge**

**A = 0.4 dB/km, 3 dB reserve, B = 500 MHz x km**

**Auto-crossing, auto-negotiation, auto-polarity**

**Power line:**
The information/details in this publication merely contain general descriptions or performance factors which, when applied in an actual situation, do not always correspond with the described form, and may be amended by way of the further development of products. The desired performance factors shall only be deemed binding if these are expressly agreed on conclusion of the contract. Please note that some characteristics of the recommended accessory parts may differ from the appropriate product. This might limit the possible operating conditions for the entire system."