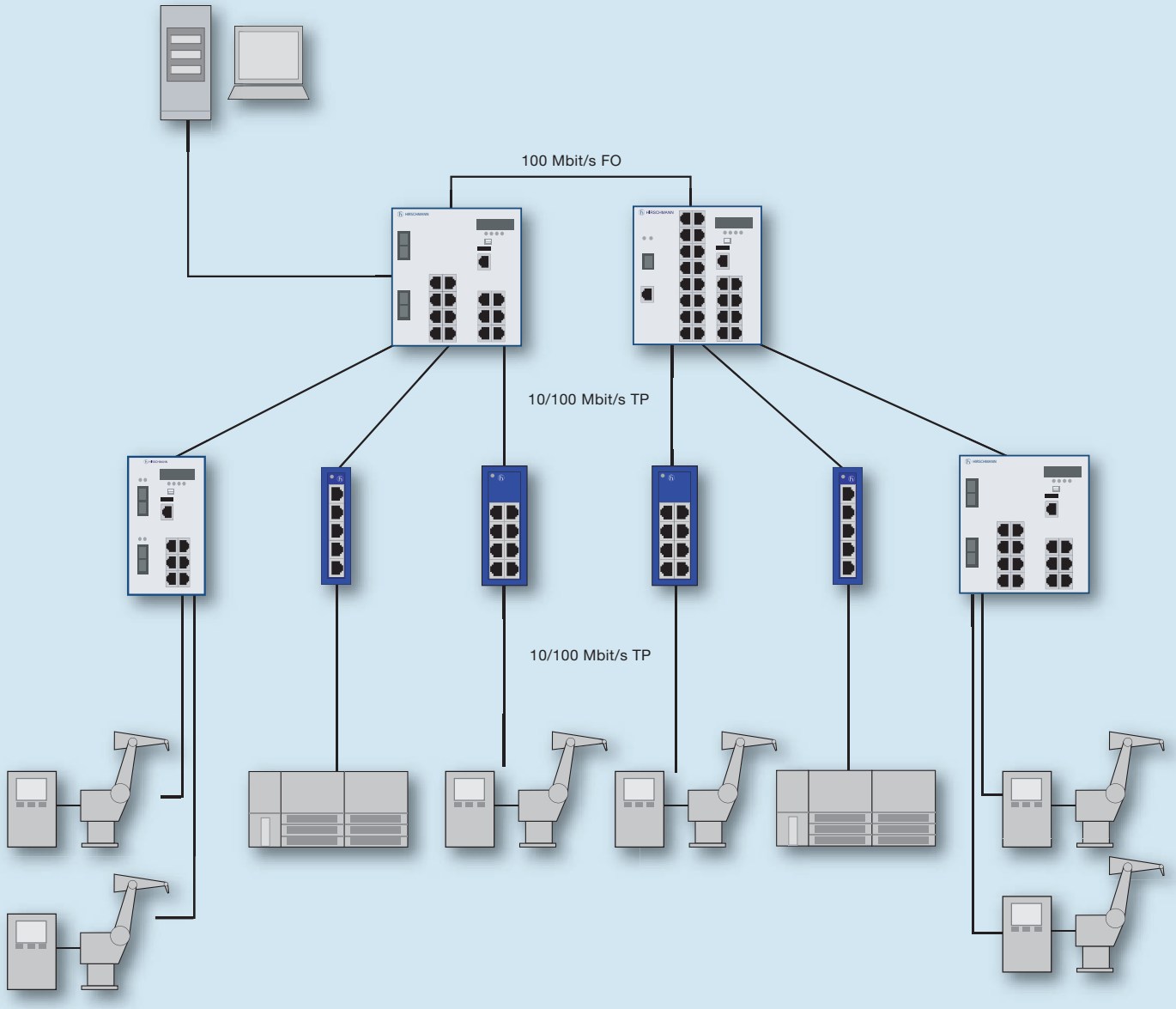
The dependable path to Industrial ETHERNET: Hirschmann's extended family of switches.



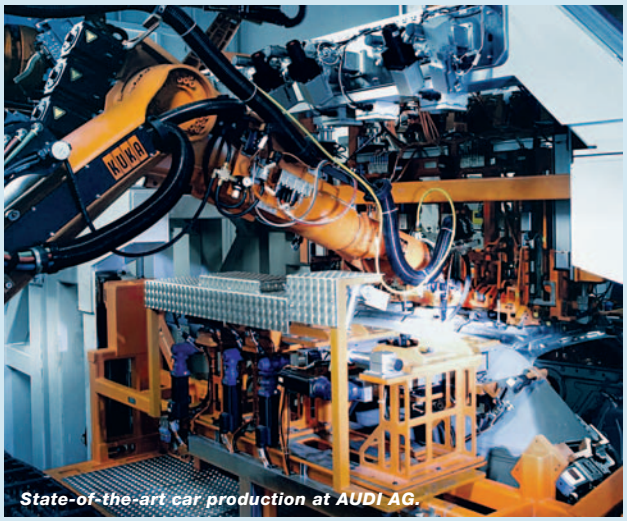
Applications

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.

Requirements and solutions

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.



State-of-the-art car production at AUDI AG.

Product features

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.

New approval

e1 approval for onboard vehicle applications

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

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.

SPIDER family

2 port media converter switches

Product description	SPIDER 1TX/1FX	SPIDER 1TX/1FX EEC
		
Product description		
Description	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)
Port type and quantity	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	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
Type	SPIDER 1TX/1FX	SPIDER 1TX/1FX EEC
Order No.	943 890-001	943 927-001
More Interfaces		
Power supply/signaling contact	1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact
Network size – length of cable		
Twisted pair (TP)	0 – 100 m	0 – 100 m
Multimode fiber (MM) 50/125 µm	0 – 5000 m, 8 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km	0 – 5000 m, 8 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km
Multimode fiber (MM) 62,5/125 µm	0 – 4000 m, 11 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km	0 – 4000 m, 11 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km
Singlemode fiber (SM) 9/125 µm		
Singlemode fiber (LH) 9/125 µm (long haul transceiver)		
Network size – cascadibility		
Line-/star topology	Any	Any
Power requirements		
Operating voltage	9.6 – 32 V DC	9.6 – 32 V DC
Current consumption at 24 V DC	Max. 130 mA	Max. 130 mA
Power consumption	Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC	Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC
Service		
Diagnostics	LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)
Redundancy		
Redundancy functions		
Ambient conditions		
Operating temperature	0° C up to +60° C	– 40° C up to +70° C
Storage/transport temperature	– 40° C up to +70° C	– 40° C up to +85° C
Relative humidity (non-condensing)	10 % up to 95 %	10 % up to 95 %
MTBF	128.1 years; MIL-HDBK 217F: Gb 25° C	128.1 years; MIL-HDBK 217F: Gb 25° C
Mechanical construction		
Dimensions (W x H x D)	25 mm x 114 mm x 79 mm	25 mm x 114 mm x 79 mm
Mounting	DIN rail 35 mm	DIN rail 35 mm
Weight	105 g	105 g
Protection class	IP 30	IP 30
Mechanical stability		
IEC 60068-2-27 shock	15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks
IEC 60068-2-6 vibration	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.
EMC interference immunity		
EN 61000-4-2 electrostatic discharge (ESD)	6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge
EN 61000-4-3 electromagnetic field	10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)
EN 61000-4-4 fast transients (burst)	2 kV power line, 4 kV data line	2 kV power line, 4 kV data line
EN 61000-4-5 surge voltage	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line
EN 61000-4-6 conducted immunity	10 V (150 – 80 kHz)	10 V (150 – 80 kHz)
EMC emitted immunity		
FCC CFR47 Part 15	FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A
EN 55022	EN 55022 Class A	EN 55022 Class A
Approvals		
Safety of industrial control equipment	cUL 508 (E175531)	cUL 508 (E175531)
EMV regulations for assembly in vehicles		
Hazardous locations		
Employment in vehicles		
Safety of information technology equipment		
German Lloyd		
Scope of delivery and accessories		
Scope of delivery	Device, terminal block, operating manual	Device, terminal block, operating manual
Accessories to order separately	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame

SPIDER 1TX/1FX-SM	SPIDER 1TX/1FX-SM EEC	SPIDER 3TX-TAP
		
Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)
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	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	3 x 10/100 BASE-TX, TP-cable, RJ 45 sockets, auto-crossing, auto-negotiation, auto-polarity
SPIDER 1TX/1FX-SM	SPIDER 1TX/1FX-SM EEC	SPIDER 3TX-TAP
943 891-001	943 928-001	943 899-001
1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact
0 – 100 m	0 – 100 m	0 – 100 m
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)	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)	
Any	Any	Any
9.6 – 32 V DC	9.6 – 32 V DC	9.6 – 32 V DC
Max. 130 mA	Max. 130 mA	Max. 100 mA
Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC	Max. 3.0 W 10.2 Btu (IT)/h at 24 V DC	Max. 2.2 W 7.5 Btu (IT)/h at 24 V DC
LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)
0° C up to +60° C	– 40° C up to +70° C	0° C up to +60° C
– 40° C up to +70° C	– 40° C up to +85° C	– 40° C up to +70° C
10 % up to 95 %	10 % up to 95 %	10 % up to 95 %
101.5 years; MIL-HDBK 217F: Gb 25° C	101.5 years; MIL-HDBK 217F: Gb 25° C	138.5 years; MIL-HDBK 217F: Gb 25° C
25 mm x 114 mm x 79 mm	25 mm x 114 mm x 79 mm	25 mm x 114 mm x 79 mm
DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
105 g	105 g	113 g
IP 30	IP 30	IP 30
15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks
3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.
6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge
10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)
2 kV power line, 4 kV data line	2 kV power line, 4 kV data line	2 kV power line, 4 kV data line
Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line
10 V (150 – 80 kHz)	10 V (150 – 80 kHz)	10 V (150 – 80 kHz)
FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A
EN 55022 Class A	EN 55022 Class A	EN 55022 Class A
cUL 508 (E175531)	cUL 508 (E175531)	cUL 508 (E175531)
Device, terminal block, operating manual	Device, terminal block, operating manual	Device, terminal block, operating manual
Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame

SPIDER 5TX	SPIDER 5TX EEC	SPIDER 8TX
		
Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)
5 x 10/100 BASE-TX, TP-cable, RJ 45 sockets, auto-crossing, auto-negotiation, auto-polarity	5 x 10/100 BASE-TX, TP-cable, RJ 45 sockets, auto-crossing, auto-negotiation, auto-polarity	8 x 10/100 BASE-TX, TP-cable, RJ 45 sockets, auto-crossing, auto-negotiation, auto-polarity
SPIDER 5TX	SPIDER 5TX EEC	SPIDER 8TX
943 824-002	943 824-102	943 376-001
1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact
0 – 100 m	0 – 100 m	0 – 100 m
Any	Any	Any
9.6 – 32 V DC	9.6 – 32 V DC	9.6 – 32 V DC
Max. 100 mA	Max. 100 mA	Max. 160 mA
Max. 2.2 W 7.5 Btu (IT)/h at 24 V DC	Max. 2.2 W 7.5 Btu (IT)/h at 24 V DC	Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC
LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)
0° C up to +60° C	– 40° C up to +70° C	0° C up to +60° C
– 40° C up to +70° C	– 40° C up to +85° C	– 40° C up to +70° C
10 % up to 95 %	10 % up to 95 %	10 % up to 95 %
123.7 years; MIL-HDBK 217F: Gb 25° C	123.7 years; MIL-HDBK 217F: Gb 25° C	105.7 years; MIL-HDBK 217F: Gb 25° C
25 mm x 114 mm x 79 mm	25 mm x 114 mm x 79 mm	40 mm x 114 mm x 79 mm
DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
113 g	113 g	177 g
IP 30	IP 30	IP 30
15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks
3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.
6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge
10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)
2 kV power line, 4 kV data line	2 kV power line, 4 kV data line	2 kV power line, 4 kV data line
Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line
10 V (150 – 80 kHz)	10 V (150 – 80 kHz)	10 V (150 – 80 kHz)
FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A
EN 55022 Class A	EN 55022 Class A	EN 55022 Class A
cUL 508 (EE175531)	cUL 508 (E175531)	cUL 508 (E175531)
	approval according to motor vehicle directive 2005/83/EG (e1)	
	E1	
Device, terminal block, operating manual	Device, terminal block, operating manual	Device, terminal block, operating manual
Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame

Switches with optical ports

SPIDER 8TX EEC	SPIDER 4TX/1FX	SPIDER 4TX/1FX EEC
		
Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)
8 x 10/100 BASE-TX, TP-cable, RJ 45 sockets, auto-crossing, auto-negotiation, auto-polarity	4 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	4 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
SPIDER 8TX EEC	SPIDER 4TX/1FX	SPIDER 4TX/1FX EEC
943 376-201	943 221-001	943 221-101
1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact
0 – 100 m	0 – 100 m	0 – 100 m
	0 – 5000 m, 8 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km	0 – 5000 m, 8 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km
	0 – 4000 m, 11 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km	0 – 4000 m, 11 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km
Any	Any	Any
9.6 – 32 V DC	9.6 – 32 V DC	9.6 – 32 V DC
Max. 160 mA	Max. 150 mA	Max. 150 mA
Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC	Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC	Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC
LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)
– 40° C up to + 70° C	0° C up to + 60° C	– 40° C up to + 70° C
– 40° C up to + 70° C	– 40° C up to + 70° C	– 40° C up to + 85° C
10 % up to 95 %	10 % up to 95 %	10 % up to 95 %
105.7 years; MIL-HDBK 217F: Gb 25° C	112.0 years; MIL-HDBK 217F: Gb 25° C	112.0 years; MIL-HDBK 217F: Gb 25° C
40 mm x 114 mm x 79 mm	25 mm x 114 mm x 79 mm	25 mm x 114 mm x 79 mm
DIN rail 35 mm	DIN rail 35 mm	DIN rail 35 mm
177 g	120 g	120 g
IP 30	IP 30	IP 30
15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks
3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.
6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge
10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)
2 kV power line, 4 kV data line	2 kV power line, 4 kV data line	2 kV power line, 4 kV data line
Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line
10 V (150 – 80 kHz)	10 V (150 – 80 kHz)	10 V (150 – 80 kHz)
FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A
EN 55022 Class A	EN 55022 Class A	EN 55022 Class A
cUL 508 (E175531)	cUL 508 (E175531)	cUL 508 (E175531)
Device, terminal block, operating manual	Device, terminal block, operating manual	Device, terminal block, operating manual
Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame

SPIDER 4TX/1FX-ST EEC	SPIDER 4TX/1FX-SM EEC	Product description
		
		Product description
Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Entry level Industrial ETHERNET rail switch, store and forward switching mode, ETHERNET (10 Mbit/s) and Fast-ETHERNET (100 Mbit/s)	Description
4 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	4 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	Port type and quantity
SPIDER 4TX/1FX-ST EEC	SPIDER 4TX/1FX-SM EEC	Type
943 914-001	943 880-001	Order No.
		More Interfaces
1 plug-in terminal block, 3-pin, no signal contact	1 plug-in terminal block, 3-pin, no signal contact	Power supply/signaling contact
		Network size – length of cable
0 – 100 m	0 – 100 m	Twisted pair (TP)
0 – 5000 m, 8 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 800 MHz x km		Multimode fiber (MM) 50/125 µm
0 – 4000 m, 11 dB link budget at 1300 nm, A = 1 dB/km, 3 dB reserve, B = 500 MHz x km		Multimode fiber (MM) 62,5/125 µm
	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)	Singlemode fiber (SM) 9/125 µm
		Singlemode fiber (LH) 9/125 µm (long haul transceiver)
		Network size – cascadibility
Any	Any	Line-/star topology
		Power requirements
9.6 – 32 V DC	9.6 – 32 V DC	Operating voltage
Max. 150 mA	Max. 150 mA	Current consumption at 24 V DC
Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC	Max. 3.9 W 13.3 Btu (IT)/h at 24 V DC	Power consumption
		Service
LEDs (power, link status, data, data rate)	LEDs (power, link status, data, data rate)	Diagnostics
		Redundancy
		Redundancy functions
		Ambient conditions
– 40° C up to + 70° C	– 40° C up to + 70° C	Operating temperature
– 40° C up to + 85° C	– 40° C up to + 85° C	Storage/transport temperature
10 % up to 95 %	10 % up to 95 %	Relative humidity (non-condensing)
112.0 years; MIL-HDBK 217F: Gb 25° C	93.9 years; MIL-HDBK 217F: Gb 25° C	MTBF
		Mechanical construction
25 mm x 114 mm x 79 mm	25 mm x 114 mm x 79 mm	Dimensions (W x H x D)
DIN rail 35 mm	DIN rail 35 mm	Mounting
120 g	120 g	Weight
IP 30	IP 30	Protection class
		Mechanical stability
15 g, 11 ms duration, 18 shocks	15 g, 11 ms duration, 18 shocks	IEC 60068-2-27 shock
3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	3.5 mm, 3 – 9 Hz, 10 cycles, 1 octave/min. 1 g, 9 – 150 Hz, 10 cycles, 1 octave/min.	IEC 60068-2-6 vibration
		EMC interference immunity
6 kV contact discharge, 8 kV air discharge	6 kV contact discharge, 8 kV air discharge	EN 61000-4-2 electrostatic discharge (ESD)
10 V/m (80 – 2000 MHz)	10 V/m (80 – 2000 MHz)	EN 61000-4-3 electromagnetic field
2 kV power line, 4 kV data line	2 kV power line, 4 kV data line	EN 61000-4-4 fast transients (burst)
Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	Power line: 2 kV (line/earth), 1 kV (line/line), 1 kV data line	EN 61000-4-5 surge voltage
10 V (150 – 80 kHz)	10 V (150 – 80 kHz)	EN 61000-4-6 conducted immunity
		EMC emitted immunity
FCC CFR47 Part 15 Class A	FCC CFR47 Part 15 Class A	FCC CFR47 Part 15
EN 55022 Class A	EN 55022 Class A	EN 55022
		Approvals
cUL 508 (E175531)	cUL 508 (E175531)	Safety of industrial control equipment
		EMV regulations for assembly in vehicles
		Hazardous locations
		Employment in vehicles
		Safety of information technology equipment
		German Lloyd
		Scope of delivery and accessories
Device, terminal block, operating manual	Device, terminal block, operating manual	Scope of delivery
Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Rail power supply RPS 30, RPS 80 EEC or RPS 120 EEC, 19" installation frame	Accessories to order separately