FL SFP

The small form-factor pluggable module (SFP module) is a plug-in input/output module for fiber optics that is used in Gigabit Ethernet

AUTOMATION

Data Sheet
7762_en_01

1 Description

SFP modules are slot modules that are inserted into appropriate SFP slots, for instance in the FL SWITCH SMCS 6GT/2SFP, to provide a fiber optic interface. SFP modules convert electrical signals into light and vice versa.

The various SFP modules allow to use different fibers and permit different data transmission distances.

SFP modules always work in full duplex mode with 1 Gbps - another operating mode cannot be set.

SFP module features

- Transmission with 1 Gbps, full duplex
- Distances up to 80 km (LH)
- Wavelength 850 nm (SX), 1310 nm (LX) or 1550 nm (LH)

Features and fields of application of the SFP modules

- Reliable transmission of data in harsh industrial environments

Make sure you always use the latest documentation.
It can be downloaded at www.download.phoenixcontact.com.

A conversion table is available on the Internet at www.download.phoenixcontact.com/general/7000_en_00.pdf.

2 Ordering data

Products

Description	Type	Order No.	Pcs./Pkt.
Pluggable input/output module for fiber optics Wavelength 850 nm (short), up to 550 m	FL SFP SX	2891754	1
Pluggable input/output module for fiber optics Wavelength 1310 nm (long), up to 30 km	FL SFP LX	2891767	1
Pluggable input/output module for fiber optics Wavelength 1550 nm (long), up to 80 km	FL SFP LX LH	2989912	1

3 Technical data

General data	
Function	Fiber optic SFP slot module
Permissible operating temperature	-40°C to 85°C
Permissible storage temperature	-40°C to 85°C
Humidity	
Operation	30% to 95%, no condensation
Storage	30% to 95%, no condensation
Air pressure	
Operation	86 kPa to 108 kPa, 1500 m above sea level
Storage	66 kPa to 108 kPa, 3500 m above sea level
Weight	12 g, typical
Resistance to gases that may endanger functions according to DIN 40046-36, DIN 40046-37	Sulfur dioxide (SO_2) 10 ± 0.3 cm^3/m^3, hydrogen sulfide (H_2S) 1 ± 0.3 cm^3/m^3, each at 25°C and 75% humidity and an exposure time of four days

Supply voltage	
Power supply	3.3 V typical
Current consumption	300 mA, typical; 330 mA, maximum

Fiber optic interface	
General characteristics of the glass fiber ports	
Connection format	Gigabit SFP slot module
Connection medium	Glass fiber
Connector	LC format
Transmission speed	1000 Mbps
Maximum network segment expansion	Depends on the SFP module used
Fiber type	Depends on the SFP module used
Laser protection class	1
Characteristics of the 1000 Mbps multi-mode ports (FL SFP SX)	
Data transmission rate	1.25 Gbps full duplex
Wavelength	850 nm
Maximum transmission length	550 m fiber optic 50/125 µm 250 m fiber optic 62.5/125 µm
Transmission power	
Minimum	-9 dBm
Maximum	-4 dBm
Receiver sensitivity	
Minimum	-17 dBm

Fiber optic interface (continued)

Characteristics of the 1000 Mbps single-mode ports (FL SFP LX)	
Data transmission rate	1.25 Gbps full duplex
Wavelength	1310 nm
Maximum transmission length with **single-mode fiber**	30 km fiber optic 9/125 µm (0.4 dB/km)
Maximum transmission length with **multi-mode fiber**	550 m fiber optic 50/125 µm 250 m fiber optic 62.5/125 µm
Transmission power	
Minimum	-5 dBm
Maximum	0 dBm
Receiver sensitivity	
Minimum	-23 dBm
Characteristics of the 1000 Mbps single-mode ports (FL SFP LH)	
Data transmission rate	1.25 Gbps full duplex
Wavelength	1550 nm
Maximum transmission length with **single-mode fiber**	80 km fiber optic 9/125 µm (0.3 dB/km)
Transmission power	
Minimum	0 dBm
Maximum	5 dBm
Receiver sensitivity	
Minimum	-24 dBm
Maximum optical input power	0 dBm

Mechanical tests

Shock test according to IEC 60068-2-27	Operation: 25g, half-sine shock pulse Storage/transport: 50g, half-sine shock pulse
Vibration resistance according to IEC 60068-2-6	Operation/storage/transport: 5g, 10 - 150 Hz
Free fall according to IEC 60068-2-32	1 m

Conformance with EMC directives

Developed according to IEC 61000-6.2	
Emitted interference acc. to EN55022: 1998 + A1: 2000 + A2: 2003 (interference voltage)	Class B (residential)
Emitted interference acc. to EN55011: 1998 + A1: 1999 + A2: 2002 (electromagnetic interference)	Class B (residential)
Noise immunity according to EN61000-4-2 (IEC1000-4-2) (ESD)	Requirements according to DIN EN 61000-6-2
Contact discharge:	Test intensity 2, criterion B
Air discharge:	Test intensity 3, criterion B
Indirect discharge:	Test intensity 2, criterion B
Noise immunity according to EN61000-4-3 (IEC1000-4-3) (electromagnetic fields)	Requirements according to DIN EN 61000-6-2 Test intensity 3, criterion A
Noise immunity according to EN61000-4-4 (IEC1000-4-4) (burst)	Requirements according to DIN EN 61000-6-2
Data lines:	Test intensity 2, criterion B
Power supply:	Test intensity 3, criterion B
Noise immunity according to EN61000-4-5 (IEC1000-4-5) (surge)	Requirements according to DIN EN 61000-6-2
Data lines:	Test intensity 2, criterion B
Power supply:	Test intensity 1, criterion B
Noise immunity according to EN61000-4-6 (IEC1000-4-6) (conducted)	Requirements according to DIN EN 61000-6-2 Test intensity 3, criterion A

Additional certifications

RoHS	EEE 2002/95/EC. - WEEE 2002/96/EC

Differences between this version and previous versions

Version 00: First version	
Version 01: Technical data change	

4 Use of SFP modules

SFP slots can receive SFP modules (glass fiber modules in the SFP format). With the SFP module selection the user can determine whether the device has, for instance multi-mode or single-mode fiber optic ports, with the SFP slots.

4.1 Elements of the SFP module

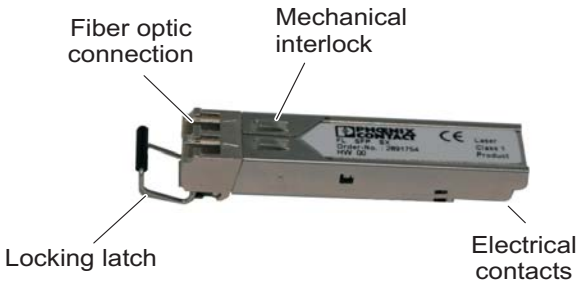

Figure 1 Elements of the SFP module

4.2 Mounting the SFP modules

Inserting the SFP modules

- Push the SFP modules in the respective slots on the switch.
- Ensure the correct mechanical position of the SFP modules.

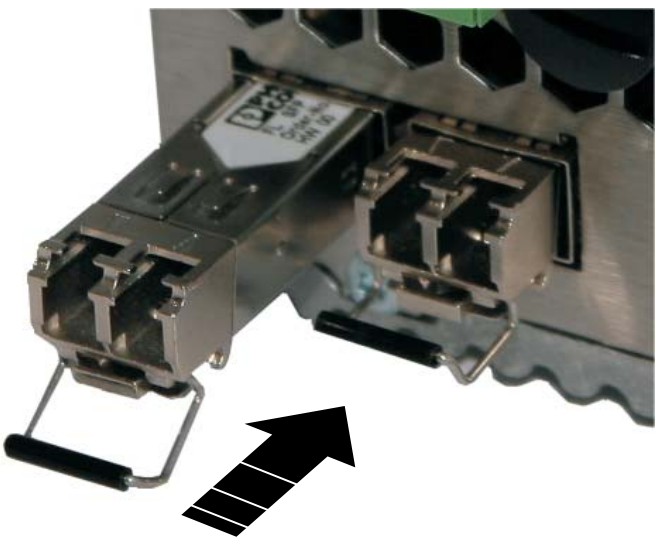

Figure 2 Inserting the SFP modules

4.3 Connecting the fiber optic cable

- Ensure the correct mechanical position when plugging the fiber optic connectors in.

Removing the fiber optic connectors

- Press the arresting latch (A) and pull out the connector (B).

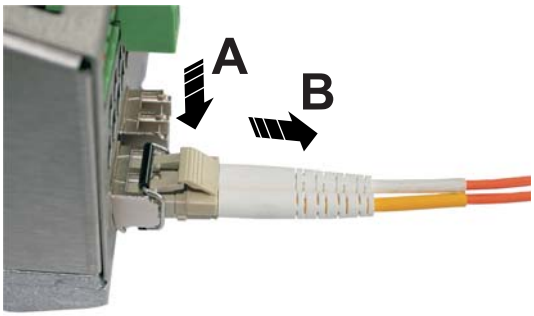

Figure 3 Removing the fiber optic connectors

Removing the SFP modules

- Remove the fiber optic connector before you remove the SFP module.
- Fold the locking latch (A) down and pull the SFP module to out of the slot (B).

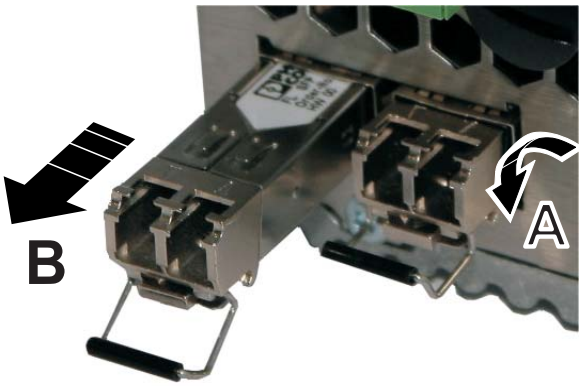

Figure 4 Removing the SFP module

5 Mechanical specifications

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