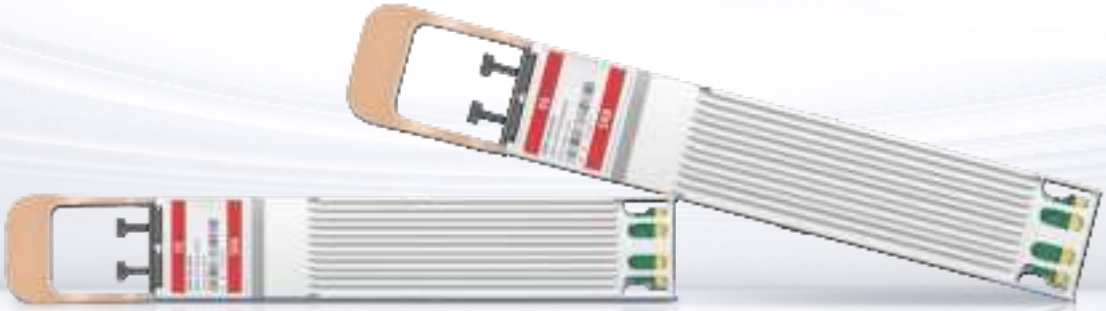
OSFP-SR8-800G Transceiver Module

Connectivity Guide

V1.0.253A



Contents

1. Overview

The FS OSFP-SR8-800G is an 800Gb/s 2x400Gb/s Twin-port OSFP transceiver that supports InfiniBand or Ethernet protocols. This SR8 multimode, parallel, 8-channel transceiver uses two, 4-channel MPO-12/APC optical connectors at 400Gb/s each. The parallel multimode, short reach 8-channel (2xSR4) uses 100G-PAM4 modulation and has a maximum fiber reach of 50-meters using 8 multimode fibers. The 50-meter length assumes two optical patch panels in the link.

The OSFP-SR8-800G transceiver features a finned heatsink design and is usually used in Quantum-2 InfiniBand or Ethernet air-cooled switches.

The transceiver combinations guarantee optimal operation in InfiniBand or Ethernet end-to-end systems and customer networking solutions. Rigorous production testing ensures the best out-of the-box installation experience, performance, and durability.

- **Note:** Images are for reference only. Product labels, colors and sizes may vary.

2. Key Features

- InfiniBand or Ethernet
- 800G 2xSR4/SR8 multimode transceiver
- 8x 100G-PAM4 Electrical to Dual 4x 100G-PAM4 optical Parallel
- Support 800G-to-two 400G ConnectX-7 links or 800G-to-four 200G ConnectX-7 links
- Finned-Top OSFP used in Quantum-2 or Ethernet air-cooled switches
- Maximum reach: 30m using OM3 fiber, 50m using OM4 fiber
- Dual MPO-12/APC optical connector
- 850nm VCSEL
- 16 W max power
- Single 3.3V power supply
- Class 1 laser safety
- CMIS 5.1 compliant
- Hot pluggable, OSFP MSA and RoHS compliant
- Commercial temperature range 0 to +70°C (32 to 158°F)

3. Applications

FS OSFP-SR8-800G is designed to maximize the performance of HPC networks, requiring high-bandwidth, low-latency, highly reliable connections between InfiniBand or Ethernet elements. It can link upward in NVIDIA Quantum or Ethernet architectures for switch-to-switch applications, downward for top-of-rack switch links to ConnectX® smart network adapters, and to BlueField® DPUs in compute servers and storage subsystems.

4. Connectivity Scenarios

The twin-ports enable several unique configurations to connect switches to switches, ConnectX-7 adapters, and BlueField-3 DPUs.

The twin port OSFP uses two, 4-channel MPO-12/APC optical connectors with two 4-channel fiber cables. These can link to a single port 400G OSFP or QSFP112 transceivers used in ConnectX-7 adapters and/or BlueField-3 DPUs.

The electronics, optics and optical connectors are the same for both single port OSFP and QSFP112. Both ConnectX-7 and BlueField-3 devices can be used with twin port OSFP transceivers at the same time with their respective form-factor type.

- Twin-port multimode OSFP transceivers remain at 16 W for all configurations linking OSFP switches, OSFP and QSFP112 adapters, and DPUs simultaneously.
- Linking twin-port transceivers with 1:2 fiber splitter cables to 400G transceivers automatically creates 200Gb/s transceivers by activating only 2-channels, and automatically reduces power consumption in the 400G OSFP transceiver from 8.5 to 5.5 W, and automatically reduces power consumption in the 400G QSFP112 transceiver from 9 to 6 W.

5. Use cases

All combinations of twin port 2x400G OSFP, 400G single port OSFP/QSFP112 transceivers support either InfiniBand or Ethernet protocols. The ConnectX-7 and BlueField-3 contains both InfiniBand and Ethernet protocols. InfiniBand environments require InfiniBand-compliant transceivers and switches, while Ethernet environments necessitate Ethernet-specific transceivers and switches.

The use cases include:

- Switch-to-switch at 800Gb/s
- Switch-to-two combinations of 400G ConnectX-7 and/or BlueField-3
- Switch-to-four combinations of 200G ConnectX-7 and/or BlueField-3
- Switch-to-DGX H100 GPU Systems

5.1 Switch-to-switch at 800Gb/s

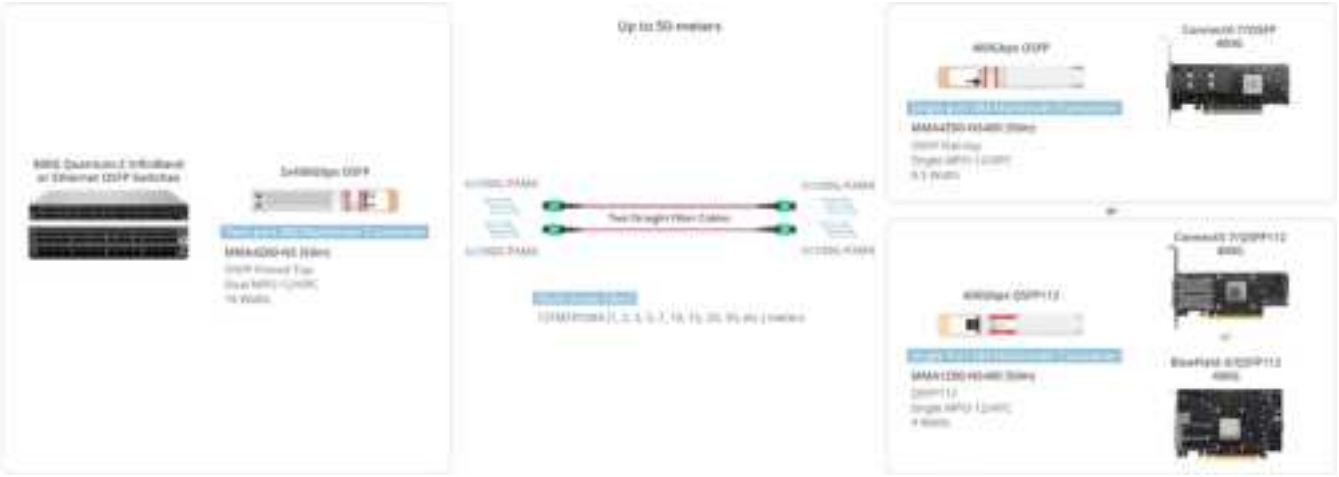
Two OSFP-based switches can be linked together at 800G (2x400GG) using two twin port OSFP transceivers and two straight, multimode fiber cables (12FMTPOM44) up to 50-meters.

5.2 Switch-to-two combinations of 400G ConnectX-7 and/or BlueField-3

A twin port OSFP transceiver using two, straight fiber cables can support up to two adapters and/or DPU combinations. Each of the two, 4-channel fiber cables (12FMTPOM4) can link to a 400G transceiver up to 50-meters in either OSFP (OSFP-SR4-400G-FL) or QSFP112 (QSFP112-SR4-400G-FL) form-factor. The electronics, optics and optical connectors are the same for both single port OSFP and QSFP112 form-factors and OSFP power consumption is 8.5 W, QSFP112 power consumption is 9 W.

- Only ConnectX-7/OSFPs supports single port OSFP.
- QSFP112 form-factor is used in ConnectX-7/QSFP112s and/or BlueField- 3/QSFP112 DPUs.

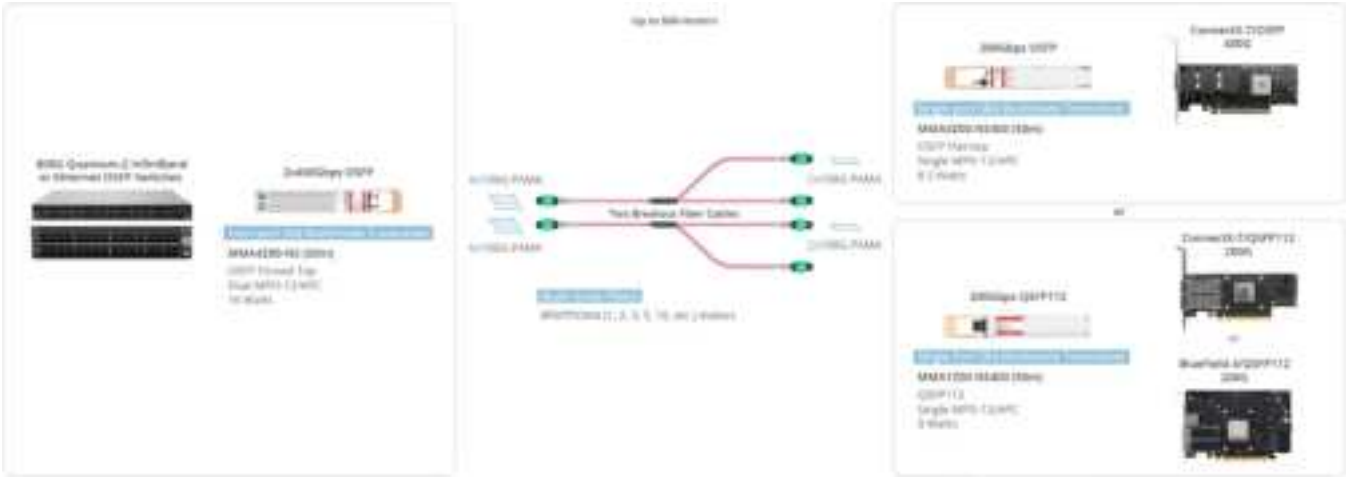
Any combination of ConnectX-7 and BlueField-3 using OSFP or QSFP112 can be used at the same time on twin port OSFP transceivers.



5.3 Switch-to-four combinations of 200G ConnectX-7 and/or BlueField-3

A twin port OSFP transceiver using two, 1:2 fiber splitter cables can support up to four adapter and/or DPU combinations. Each of the two, 4-channel 1:2 fiber splitter cables (12FMTPOM4) can link to a 400G transceiver up to 50-meters in either OSFP (OSFP-SR4-400G-FL) or QSFP112 (QSFP112-SR4-400G-FL) form-factor. The electronics, optics and optical connectors are the same for both single port OSFP and QSFP112 form factors. The two-fiber channel ends only activate two of the lanes in the 400G transceiver creating a 200G device and automatically reduces the power consumption of only the 400G OSFP transceivers from 8.5 W to 5.5 W, automatically reduces the power consumption of only the 400G QSFP112 transceivers from 9 W to 6 W. Twin port OSFP power consumption remains at 16 W.

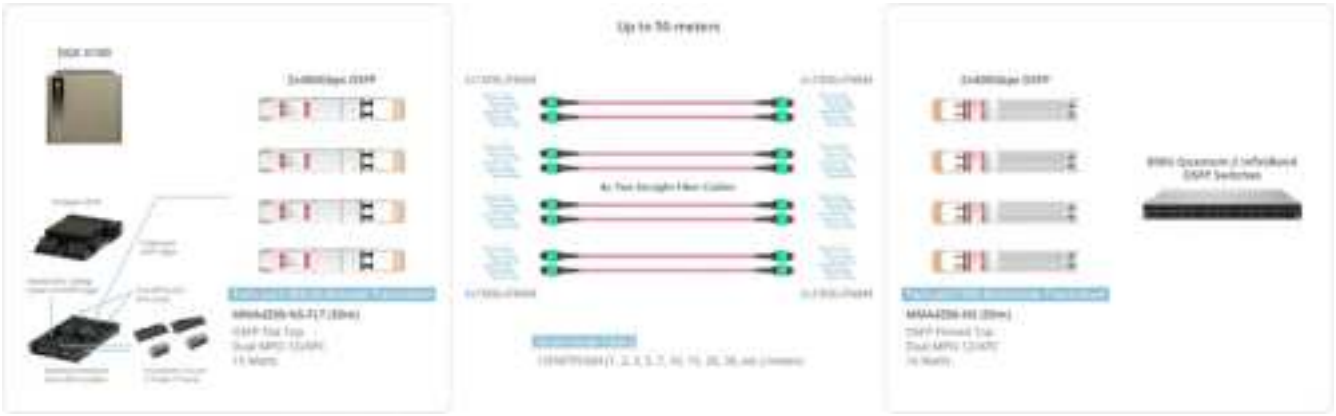
- Only ConnectX-7/OSFPs can accept single port OSFP.
- QSFP112 form-factor is used in ConnectX-7/QSFP112s and/or BluieField- 3/QSFP112 DPUs.
- Any combination of ConnectX-7 types and BlueField-3 can be used at the same time on twin port OSFP transceivers.



5.4 Switch-to-DGX H100 GPU Systems

The DGX-H100 contains eight "Hopper" H100 GPUs in the top chassis section, two CPUs, storage, and InfiniBand and/or Ethernet networking in the bottom server section. This contains eight 400Gb/s ConnectX-7 NICs mounted on two mezzanine boards called "Cedar-7" cards for GPU-to-GPU InfiniBand or Ethernet networking.

The OSFP-SR8-800G-FL without heat dissipation fins is deployable in DGX H100 systems, interoperating with heatsink-equipped OSFP-SR8-800G counterparts.



6. Ordering information

Table 1: Ordering Information for FS InfiniBand OSFP-SR8-800G Transceivers and Related Products.

Part number	Description
	Transceivers
OSFP-SR8-800G	800GBASE OSFP Finned Top 2x SR4/SR8 850nm 50m Dual MPO-12/APC MMF
OSFP-SR8-800G-FL	800GBASE OSFP Flat Top 2x SR4/SR8 850nm 50m Dual MPO-12/APC MMF
OSFP-SR4-400G-FL	400GBASE OSFP Flat Top SR4 850nm 50m MPO-12/APC MMF
QSFP112-SR4-400G	400GBASE QSFP112 SR4 850nm 50m MPO-12/APC MMF
	Switches
MQM9790-NS2F	NVIDIA® 64-Port NDR 400G InfiniBand Data Center Switch
MQM9700-NS2F	NVIDIA® 64-Port NDR 400G InfiniBand Data Center Switch
	NICs
MCX75510AAS-NEAT	ConnectX®-7 InfiniBand Adapter Card 400GbE/NDR, Single-Port OSFP
MCX75310AAC-NEAT	ConnectX®-7 InfiniBand & Ethernet Adapter Card 400GbE/NDR, Single-Port OSFP
MCX755106AS-HEAT	ConnectX®-7 InfiniBand & Ethernet Adapter Card 200GbE/NDR200, Dual-Port QSFP112
	Cables
12FMTPOM4	MPO-12 APC (Female) to MPO-12 APC (Female), MMF, Type B
8FMTPOM4	MPO-12 APC (Female) to 2 x MPO-4 APC (Female), MMF, Type B

Table 2: Ordering Information for FS Ethernet OSFP-SR8-800G Transceivers and Related Products.

Part number	Description
	Transceivers
OSFP-SR8-800G	800GBASE OSFP Finned Top 2x SR4/SR8 850nm 50m Dual MPO-12/APC MMF
OSFP-SR4-400G-FL	400GBASE OSFP Flat Top SR4 850nm 50m MPO-12/APC MMF
QSFP112-SR4-400G	400GBASE QSFP112 SR4 850nm 50m MPO-12/APC MMF
	Switches
N8650-32OD	32-Port Ethernet HPC/AI Data Center Switch, 32 x 800Gb OSFP, PicOS®
N9600-64OD	64-Port Ethernet HPC/AI Data Center Switch, 64 x 800Gb OSFP, PicOS®
	NICs
MCX75310AAC-NEAT	ConnectX®-7 InfiniBand & Ethernet Adapter Card 400GbE/NDR, Single-Port OSFP
MCX755106AS-HEAT	ConnectX®-7 InfiniBand & Ethernet Adapter Card 200GbE/NDR200, Dual-Port QSFP112
	Cables
12FMTPOM4	MPO-12 APC (Female) to MPO-12 APC (Female), MMF, Type B
8FMTPOM4	MPO-12 APC (Female) to 2 x MPO-4 APC (Female), MMF, Type B