# Optical Interface Support—EX 3200 and EX 4200 Switches

Optional uplink modules for EX 3200 and EX 4200 switches support either SFP or XFP transceivers. This topic describes the optical interfaces supported for those transceivers. It also lists the copper interface supported for the SFP transceivers.

The two tables in this topic describes the optical interface support over single-mode fiber-optic (SMF) and multimode fiber-optic (MMF) cables and over the copper interface for SFP transceivers in EX 3200 and EX 4200 switches:

- Table 1 on page 1—optical interface for SFP transceivers.
- Table 2 on page 5—optical interface for XFP transceivers.

**Table 1: Optical Interface Support for SFP Transceivers in EX 3200 and EX 4200 Switches**

| Ethernet Standard | Specifications | |
|---|---|---|
| 100Base-FX | Model Number | EX-SFP-1FE-FX |
| | Rate | 100 Mbps |
| | Connector Type | LC |
| | Fiber Count | Dual |
| | Transmitter Wavelength | 1310 nm |
| | Minimum Launch Power | –20 dBm |
| | Maximum Launch Power | –14 dBm |
| | Minimum Receiver Sensitivity | –32.5 dBm |
| | Maximum Receiver Sensitivity | –31.5 dBm |
| | Fiber Type | MMF |
| | Core/Cladding Size | 62.5/125 µm |
| | Modal Bandwidth | – |
| | Distance | 2 km (1.2 miles) |

**Table 1: Optical Interface Support for SFP Transceivers in EX 3200 and EX 4200 Switches** *(continued)*

| Ethernet Standard | Specifications | |
|---|---|---|
| 100Base-BX-U | Model Number | EX-SFP-FE20KT13R15 |
| | Rate | 100 Mbps |
| | Connector Type | LC |
| | Fiber Count | Single |
| | Transmitter Wavelength | 1310/1550 nm |
| | Minimum Launch Power | –14 dBm |
| | Maximum Launch Power | –8 dBm |
| | Minimum Receiver Sensitivity | –45 dBm |
| | Maximum Receiver Sensitivity | –30 dBm |
| | Fiber Type | SMF |
| | Core/Cladding Size | 9/125 µm |
| | Modal Bandwidth | – |
| | Distance | 20 km (12.4 miles) |
| 100Base-BX-D | Model Number | EX-SFP-FE20KT15R13 |
| | Rate | 100 Mbps |
| | Connector Type | LC |
| | Fiber Count | Single |
| | Transmitter Wavelength | 1310/1550 nm |
| | Minimum Launch Power | –14 dBm |
| | Maximum Launch Power | –8 dBm |
| | Minimum Receiver Sensitivity | –45 dBm |
| | Maximum Receiver Sensitivity | –30 dBm |
| | Fiber Type | SMF |
| | Core/Cladding Size | 9/125 µm |
| | Modal Bandwidth | – |
| | Distance | 20 km (12.4 miles) |

**Table 1: Optical Interface Support for SFP Transceivers in EX 3200 and EX 4200 Switches** *(continued)*

| Ethernet Standard | Specifications | | | | |
|---|---|---|---|---|---|
| 1000Base-SX | Model Number | EX-SFP-1GE-SX | | | |
| | Rate | 1000 Mbps | | | |
| | Connector Type | LC | | | |
| | Fiber Count | Dual | | | |
| | Transmitter Wavelength | 850 nm | | | |
| | Minimum Launch Power | –9.5 dBm | | | |
| | Maximum Launch Power | –3 dBm | | | |
| | Minimum Receiver Sensitivity | –21 dBm | | | |
| | Maximum Receiver Sensitivity | –20 dBm | | | |
| | Fiber Type | MMF | | | |
| | Core/Cladding Size | 62.5/125 µm | 62.5/125 µm | 50/125 µm | 50/125 µm |
| | Modal Bandwidth | 160 MHz/km | 200 MHz/km | 400 MHz/km | 500 MHz/km |
| | Distance | 220 m (722 ft) | 275 m (902 ft) | 500 m (1640 ft) | 550 m (1804 ft) |
| 1000Base-LX | Model Number | EX-SFP-1GE-LX | | | |
| | Rate | 1000 Mbps | | | |
| | Connector Type | LC | | | |
| | Fiber Count | Dual | | | |
| | Transmitter Wavelength | 1310 nm | | | |
| | Minimum Launch Power | –9.5 dBm | | | |
| | Maximum Launch Power | –3 dBm | | | |
| | Minimum Receiver Sensitivity | –25 dBm | | | |
| | Maximum Receiver Sensitivity | –22 dBm | | | |
| | Fiber Type | SMF | | | |
| | Core/Cladding Size | 9/125 µm | | | |
| | Modal Bandwidth | – | | | |
| | Distance | 10 km (6.2 miles) | | | |

**Table 1: Optical Interface Support for SFP Transceivers in EX 3200 and EX 4200 Switches** *(continued)*

| Ethernet Standard | Specifications | |
|---|---|---|
| 1000Base-LH (or 1000Base-ZX) | Model Number | EX-SFP-1GE-LH |
| | Rate | 1000 Mbps |
| | Connector Type | LC |
| | Fiber Count | Dual |
| | Transmitter Wavelength | 1550 nm |
| | Minimum Launch Power | –2 dBm |
| | Maximum Launch Power | 5 dBm |
| | Minimum Receiver Sensitivity | –25 dBm |
| | Maximum Receiver Sensitivity | –24 dBm |
| | Fiber Type | SMF |
| | Core/Cladding Size | 9/125 µm |
| | Modal Bandwidth | – |
| | Distance | 70 km (43.5 miles) |
| 1000Base-T | Model Number | EX-SFP-1GE-T |
| | Rate | 1000 Mbps |
| | Connector Type | RJ-45 |
| | Fiber Count | Copper |
| | Transmitter Wavelength | – |
| | Minimum Launch Power | – |
| | Maximum Launch Power | – |
| | Minimum Receiver Sensitivity | – |
| | Maximum Receiver Sensitivity | – |
| | Fiber Type | Copper |
| | Core/Cladding Size | – |
| | Modal Bandwidth | – |
| | Distance | 100 m (328 ft) |

**Table 2: Optical Interface Support for XFP Transceivers in EX 3200 and EX 4200 Switches**

| Ethernet Standard | Specifications | | | | | |
|---|---|---|---|---|---|---|
| 10GBase-SR | Model Number | EX-XFP-10GE-SR | | | | |
| | Rate | 10 Gbps | | | | |
| | Connector Type | LC | | | | |
| | Fiber Count | Dual | | | | |
| | Transmitter Wavelength | 850 nm | | | | |
| | Minimum Launch Power | –7.3 dBm | | | | |
| | Maximum Launch Power | –1.3 dBm | | | | |
| | Minimum Receiver Sensitivity | –11.1 dBm | | | | |
| | Maximum Receiver Sensitivity | –7.5 dBm | | | | |
| | Fiber Type | MMF | | | | |
| | Core/Cladding Size | 62.5/125 µm | 62.5/125 µm | 50/125 µm | 50/125 µm | 50/125 µm |
| | Modal Bandwidth | 160 MHz/km | 200 MHz/km | 2000 MHz/km | 400 MHz/km | 500 MHz/km |
| | Distance | 26 m (85 ft) | 33 m (108 ft) | 300 m (984 ft) | 66 m (216 ft) | 82 m (269 ft) |
| 10GBase-LR | Model Number | EX-XFP-10GE-LR | | | | |
| | Rate | 10 Gbps | | | | |
| | Connector Type | LC | | | | |
| | Fiber Count | Dual | | | | |
| | Transmitter Wavelength | 1310 nm | | | | |
| | Minimum Launch Power | –8.2 dBm | | | | |
| | Maximum Launch Power | 1 dBm | | | | |
| | Minimum Receiver Sensitivity | –18 dBm | | | | |
| | Maximum Receiver Sensitivity | –12.6 dBm | | | | |
| | Fiber Type | SMF | | | | |
| | Core/Cladding Size | 9/125 µm | | | | |
| | Modal Bandwidth | – | | | | |
| | Distance | 10 km (6.2 miles) | | | | |

**Table 2: Optical Interface Support for XFP Transceivers in EX 3200 and EX 4200 Switches** *(continued)*

| Ethernet Standard | Specifications | |
|---|---|---|
| 10GBase-ER | Model Number | EX-XFP-10GE-ER |
| | Rate | 10 Gbps |
| | Connector Type | LC |
| | Fiber Count | Dual |
| | Transmitter Wavelength | 1550 nm |
| | Minimum Launch Power | –5 dBm |
| | Maximum Launch Power | 2 dBm |
| | Minimum Receiver Sensitivity | –22 dBm |
| | Maximum Receiver Sensitivity | –16 dBm |
| | Fiber Type | SMF |
| | Core/Cladding Size | 9/125 µm |
| | Modal Bandwidth | – |
| | Distance | 40 km (24.8 miles) |
| 10GBase-ZR | Model Number | EX-XFP-10GE-ZR |
| | Rate | 10 Gbps |
| | Connector Type | LC |
| | Fiber Count | Dual |
| | Transmitter Wavelength | 1550 nm |
| | Minimum Launch Power | 0 |
| | Maximum Launch Power | 4 dBm |
| | Minimum Receiver Sensitivity | –30 dBm |
| | Maximum Receiver Sensitivity | –23 dBm |
| | Fiber Type | SMF |
| | Core/Cladding Size | 9/125 µm |
| | Modal Bandwidth | – |
| | Distance | 80 km (49.7 miles) |

**Related Topics** ■ Uplink Modules in an EX 3200 or EX 4200 Switch

- EX 3200 Switch—Front-Panel Description
- EX 4200 Switch—Front-Panel Description