

# SFP Fiber Transceivers Series



## Value

- › All SFPs have been tested with the best operating performance on EtherWAN switches
- › Gigabit Ethernet applications and are compliant to IEEE802.3z
- › The characteristics are performed in accordance with Telcordia Specification GR-468-CORE

## Features

- › Data Rate: 1.25Gbps, NRZ
- › Single +3.3V Power Supply
- › RoHS Compliant and Lead-free
- › AC/AC Differential Electrical Interface
- › Eye Safety Designed to meet Laser Class 1 comply with EN60825-1
- › Compliant with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP)
- › Compliance with specifications for IEEE-802.3z Gigabit Ethernet at 1.25 Gbps
- › EMC requirement meets FCC in the United States and CENELEC EN55022 (CISPR 22) in Europe

## Ordering Information

### Non-Hardened SFP Series

| Model Number      | Designation     | Distance   | Cable Type                 | Wavelength (nm)   | Connector Type | Link Budget |
|-------------------|-----------------|------------|----------------------------|-------------------|----------------|-------------|
| EXFE-R1S4-05H1    | 100BASE-TX      | 100m       | -                          | -                 | TX             | -           |
| EX-0155NSP-MB2L   | 100BASE-MM      | 2Km        | 62.5/125µm, MM             | 1310              | Duplex LC      | 13 dBm      |
| EX-0155TSP-MB5L   | 100BASE-SM      | 15Km       | 9/125µm, SM                | 1310              | Duplex LC      | 17 dBm      |
| EX-0155TSP-MB6L   | 100BASE-SM      | 40Km       | 9/125µm, SM                | 1310              | Duplex LC      | 29 dBm      |
| EX-0155TBP-MB5L   | 100BASE-SM      | 20Km       | 9/125µm, SM                | TX:1310 / RX:1550 | Single LC      | 18 dBm      |
| EX-0155TBP-LB5L   | 100BASE-SM      | 20Km       | 9/125µm, SM                | TX:1550 / RX:1310 | Single LC      | 18 dBm      |
| EX-1250NSP-SB1L   | 1000BASE-SX     | 275M/ 550M | 62.5/125 µm/ 50/125 µm, MM | 850               | Duplex LC      | 7.5 dBm     |
| EX-1250TSP-MB2L   | 1000BASE-SX     | 2KM        | 62.5/125µm, MM             | 1310              | Duplex LC      | 13.5 dBm    |
| EX-1250TSP-MB4L   | 1000BASE-LX     | 10KM       | 9/125µm, SM                | 1310              | Duplex LC      | 11.5 dBm    |
| EX-1250TSP-MB5L   | 1000BASE-LX     | 20KM       | 9/125µm, SM                | 1310              | Duplex LC      | 15 dBm      |
| EX-1250TSP-NB6L   | 1000BASE-LX     | 40KM       | 9/125µm, SM                | 1310              | Duplex LC      | 20 dBm      |
| EX-1250TSP-KB8L   | 1000BASE-LX     | 70KM       | 9/125µm, SM                | 1550              | Duplex LC      | 23 dBm      |
| EX-1250TSP-CB8L   | 1000BASE-LX     | 70KM       | 9/125µm, SM                | 1550              | Duplex LC      | 24 dBm      |
| EX-1250TBP-MB1L   | 1000BASE-BX WDM | 550M       | 62.5/125 µm/ 50/125 µm, MM | TX:1310 / RX:1550 | Single LC      | 7 dBm       |
| EX-1250TBP-LB1L   | 1000BASE-BX WDM | 550M       | 62.5/125 µm/ 50/125 µm, MM | TX:1550 / RX:1310 | Single LC      | 7 dBm       |
| EX-1250TBP-MB4L   | 1000BASE-BX WDM | 10KM       | 9/125µm, SM                | TX:1310 / RX:1550 | Single LC      | 12 dBm      |
| EX-1250TBP-KB4L   | 1000BASE-BX WDM | 10KM       | 9/125µm, SM                | TX:1550 / RX:1310 | Single LC      | 12 dBm      |
| EX-1250TBP-MB5L   | 1000BASE-BX WDM | 20KM       | 9/125µm, SM                | TX:1310 / RX:1550 | Single LC      | 15 dBm      |
| EX-1250TBP-KB5L   | 1000BASE-BX WDM | 20KM       | 9/125µm, SM                | TX:1550 / RX:1310 | Single LC      | 15 dBm      |
| EX-1250TBP-NB6L-D | 1000BASE-BX WDM | 40KM       | 9/125µm, SM                | TX:1310 / RX:1550 | Single LC      | 20 dBm      |
| EX-1250TBP-KB6L-D | 1000BASE-BX WDM | 40KM       | 9/125µm, SM                | TX:1550 / RX:1310 | Single LC      | 20 dBm      |
| EX-1250TBP-NB7L-D | 1000BASE-BX WDM | 60KM       | 9/125µm, SM                | TX:1310 / RX:1550 | Single LC      | 25 dBm      |
| EX-1250TBP-KB7L-D | 1000BASE-BX WDM | 60KM       | 9/125µm, SM                | TX:1550 / RX:1310 | Single LC      | 23 dBm      |

### Hardened SFP Series

| Model Number      | Designation     | Distance   | Cable Type                 | Wavelength (nm)   | Connector Type | Link Budget |
|-------------------|-----------------|------------|----------------------------|-------------------|----------------|-------------|
| EX-0155NSP-MB2L-A | 100BASE-MM      | 2Km        | 62.5/125µm, MM             | 1310              | Duplex LC      | 13 dBm      |
| EX-0155TSP-MB5L-A | 100BASE-SM      | 15Km       | 9/125µm, SM                | 1310              | Duplex LC      | 19 dBm      |
| EX-0155TSP-MB6L-A | 100BASE-SM      | 40Km       | 9/125µm, SM                | 1310              | Duplex LC      | 30 dBm      |
| EX-1250NSP-SB1L-A | 1000BASE-SX     | 275M/ 550M | 62.5/125 µm/ 50/125 µm, MM | 850               | Duplex LC      | 7.5 dBm     |
| EX-1250TSP-MB2L-A | 1000BASE-SX     | 2KM        | 62.5/125µm, MM             | 1310              | Duplex LC      | 13.5 dBm    |
| EX-1250TSP-MB4L-A | 1000BASE-LX     | 10KM       | 9/125µm, SM                | 1310              | Duplex LC      | 11.5 dBm    |
| EX-1250TSP-MB5L-A | 1000BASE-LX     | 20KM       | 9/125µm, SM                | 1310              | Duplex LC      | 15 dBm      |
| EX-1250TSP-NB6L-A | 1000BASE-LX     | 40KM       | 9/125µm, SM                | 1310              | Duplex LC      | 20 dBm      |
| EX-1250TSP-KB8L-A | 1000BASE-LX     | 70KM       | 9/125µm, SM                | 1550              | Duplex LC      | 23 dBm      |
| EX-1250TBP-MB1L-A | 1000BASE-BX WDM | 550M       | 62.5/125 µm/ 50/125 µm, MM | TX:1310 / RX:1550 | Single LC      | 7 dBm       |
| EX-1250TBP-MB4L-A | 1000BASE-BX WDM | 10KM       | 9/125µm, SM                | TX:1310 / RX:1550 | Single LC      | 12 dBm      |
| EX-1250TBP-KB4L-A | 1000BASE-BX WDM | 10KM       | 9/125µm, SM                | TX:1550 / RX:1310 | Single LC      | 12 dBm      |
| EX-1250TBP-MB5L-A | 1000BASE-BX WDM | 20KM       | 9/125µm, SM                | TX:1310 / RX:1550 | Single LC      | 15 dBm      |
| EX-1250TBP-KB5L-A | 1000BASE-BX WDM | 20KM       | 9/125µm, SM                | TX:1550 / RX:1310 | Single LC      | 15 dBm      |

# SFP Fiber Transceivers Specifications

## Specifications of Non-Hardened SFP Fiber Transceiver

| Model Number               | Product Information |                   |   |             |                      |             |                                |
|----------------------------|---------------------|-------------------|---|-------------|----------------------|-------------|--------------------------------|
|                            | Connector Type      | Wavelength (nm)   | Distance                                    | Link Budget | Optical Output Power | Sensitivity | Case Operating Temperature     |
| EXFE-R1S4-05H1             | TX                  | -                 | 100m  | -           | -                    | -           | 0°C to 70°C<br>(32°F to 158°F) |
| EX-0155NSP-MB2L            | Duplex LC           | 1310              | 2Km   | 13 dBm      | -19 to -14 dBm       | -32 dBm     |                                |
| EX-0155TSP-MB5L            | Duplex LC           | 1310              | 15Km  | 17 dBm      | -15 to -8 dBm        | -32 dBm     |                                |
| EX-0155TSP-MB6L            | Duplex LC           | 1310              | 40Km  | 29 dBm      | -5 to 0 dBm          | -34 dBm     |                                |
| EX38-A3S-TC-N-B3           | Single LC           | TX:1310 / RX:1550 | 2Km   | 18 dBm      | -10 to 0 dBm         | -28 dBm     |                                |
| EX48-A3S-TC-N-B5           | Single LC           | TX:1550 / RX:1310 | 2Km   | 18 dBm      | -10 to 0 dBm         | -28 dBm     |                                |
| EX-0155TBP-MB5L            | Single LC           | TX:1310 / RX:1550 | 20Km  | 18 dBm      | -14 to -8 dBm        | -32 dBm     |                                |
| EX-0155TBP-LB5L            | Single LC           | TX:1550 / RX:1310 | 20Km  | 18 dBm      | -14 to -8 dBm        | -32 dBm     |                                |
| EX-0155TBP-MB6L            | Single LC           | TX:1310 / RX:1550 | 40Km  | 26 dBm      | -8 to -3 dBm         | -34 dBm     |                                |
| EX-0155TBP-KB6L            | Single LC           | TX:1550 / RX:1310 | 40Km  | 26 dBm      | -8 to -3 dBm         | -34 dBm     |                                |
| EX-1250NSP-SB1L            | Duplex LC           | 850               | 275M (62.5/125 μm)/<br>550M (50/125 μm), MM | 7.5 dBm     | -9.5 to -4 dBm       | -17 dBm     |                                |
| EX-1250TSP-MB2L            | Duplex LC           | 1310              | 2KM (62.5/125 μm), MM                       | 13.5 dBm    | -9.5 to -3 dBm       | -23 dBm     |                                |
| EX-1250TSP-MB4L            | Duplex LC           | 1310              | 10KM (9/125μm), SM                          | 11.5 dBm    | -9.5 to -3 dBm       | -21 dBm     |                                |
| EX-1250TSP-MB5L            | Duplex LC           | 1310              | 20KM (9/125μm), SM                          | 15 dBm      | -9 to -3 dBm         | -24 dBm     |                                |
| EX-1250TSP-NB6L            | Duplex LC           | 1310              | 40KM (9/125μm), SM                          | 20 dBm      | -3 to +2 dBm         | -23 dBm     |                                |
| EX-1250TSP-KB8L            | Duplex LC           | 1550              | 70KM (9/125μm), SM                          | 23 dBm      | 0 to +5 dBm          | -23 dBm     |                                |
| EX-1250TSP-CB8L            | Duplex LC           | 1550              | 70KM (9/125μm), SM                          | 24 dBm      | 0 to +5 dBm          | -24 dBm     |                                |
| EX-1250TBP-MB1L            | Single LC           | TX:1310 / RX:1550 | 550M (62.5/125 μm), MM                      | 7 dBm       | -10 to -4 dBm        | -17 dBm     |                                |
| EX-1250TBP-LB1L            | Single LC           | TX:1550 / RX:1310 | 550M (62.5/125 μm), MM                      | 7 dBm       | -10 to -4 dBm        | -17 dBm     |                                |
| EX-1250TBP-MB4L            | Single LC           | TX:1310 / RX:1550 | 10KM (9/125μm), SM                          | 12 dBm      | -9 to -3 dBm         | -21 dBm     |                                |
| EX-1250TBP-KB4L            | Single LC           | TX:1550 / RX:1310 | 10KM (9/125μm), SM                          | 12 dBm      | -9 to -3 dBm         | -21 dBm     |                                |
| EX-1250TBP-MB5L            | Single LC           | TX:1310 / RX:1550 | 20KM (9/125μm), SM                          | 15 dBm      | -8 to -3 dBm         | -23 dBm     |                                |
| EX-1250TBP-KB5L            | Single LC           | TX:1550 / RX:1310 | 20KM (9/125μm), SM                          | 15 dBm      | -8 to -3 dBm         | -23 dBm     |                                |
| EX-1250TBP-NB6L-D          | Single LC           | TX:1310 / RX:1550 | 40KM (9/125μm), SM                          | 20 dBm      | -3 to +2 dBm         | -23 dBm     |                                |
| EX-1250TBP-KB6L-D          | Single LC           | TX:1550 / RX:1310 | 40KM (9/125μm), SM                          | 20 dBm      | -3 to +2 dBm         | -23 dBm     |                                |
| EX-1250TBP-NB7L-D          | Single LC           | TX:1310 / RX:1550 | 60KM (9/125μm), SM                          | 25 dBm      | 0 to +5 dBm          | -23 dBm     |                                |
| EX-1250TBP-KB7L-D          | Single LC           | TX:1550 / RX:1310 | 60KM (9/125μm), SM                          | 23 dBm      | -2 to +3 dBm         | -25 dBm     |                                |
| EX-1250TBP-CB8L-D (1490nm) | Single LC           | TX:1490 / RX:1570 | 80KM (9/125μm), SM                          | 24 dBm      | -1 to +4 dBm         | -25 dBm     |                                |
| EX-1250TBP-CB8L-D (1570nm) | Single LC           | TX:1570 / RX:1490 | 80KM (9/125μm), SM                          | 24 dBm      | -1 to +4 dBm         | -25 dBm     |                                |

# SFP Fiber Transceivers Specifications

## Specifications of Hardened SFP Fiber Transceiver

| Model Number      | Product Information |                   |   |             |                      |             |                                   |
|-------------------|---------------------|-------------------|---|-------------|----------------------|-------------|-----------------------------------|
|                   | Connector Type      | Wavelength (nm)   | Distance                                    | Link Budget | Optical Output Power | Sensitivity | Case Operating Temperature        |
| EX-0155NSP-MB2L-A | Duplex LC           | 1310              | 2Km   | 13 dBm      | -19 to -14 dBm       | -32 dBm     | -40°C to 85°C<br>(-40°F to 185°F) |
| EX-0155TSP-MB5L-A | Duplex LC           | 1310              | 15Km  | 19 dBm      | -15 to -8 dBm        | -34 dBm     |                                   |
| EX-0155TSP-MB6L-A | Duplex LC           | 1310              | 40Km  | 30 dBm      | -5 to 0 dBm          | -35 dBm     |                                   |
| EX38-A3S-TI-N-B3  | Single LC           | TX:1310 / RX:1550 | 2Km   | 18 dBm      | -10 to 0 dBm         | -28 dBm     |                                   |
| EX48-A3S-TI-N-B5  | Single LC           | TX:1550 / RX:1310 | 2Km   | 18 dBm      | -10 to 0 dBm         | -28 dBm     |                                   |
| EX-0155TBP-MB5L-A | Single LC           | TX:1310 / RX:1550 | 20Km  | 18 dBm      | -14 to -8 dBm        | -32 dBm     |                                   |
| EX-0155TBP-LB5L-A | Single LC           | TX:1550 / RX:1310 | 20Km  | 18 dBm      | -14 to -8 dBm        | -32 dBm     |                                   |
| EX-0155TBP-MB6L-A | Single LC           | TX:1310 / RX:1550 | 40Km  | 26 dBm      | -8 to -3 dBm         | -34 dBm     |                                   |
| EX-0155TBP-KB6L-A | Single LC           | TX:1550 / RX:1310 | 40Km  | 26 dBm      | -8 to -3 dBm         | -34 dBm     |                                   |
| EX-1250NSP-SB1L-A | Duplex LC           | 850               | 275M (62.5/125 μm)/<br>550M (50/125 μm), MM | 7.5 dBm     | -9.5 to -4 dBm       | -17 dBm     |                                   |
| EX-1250TSP-MB2L-A | Duplex LC           | 1310              | 2KM (62.5/125 μm), MM                       | 13.5 dBm    | -9.5 to -3 dBm       | -23 dBm     |                                   |
| EX-1250TSP-MB4L-A | Duplex LC           | 1310              | 10KM (9/125μm), SM                          | 11.5 dBm    | -9.5 to -3 dBm       | -21 dBm     |                                   |
| EX-1250TSP-MB5L-A | Duplex LC           | 1310              | 20KM (9/125μm), SM                          | 15 dBm      | -9 to -3 dBm         | -24 dBm     |                                   |
| EX-1250TSP-NB6L-A | Duplex LC           | 1310              | 40KM (9/125μm), SM                          | 20 dBm      | -3 to +2 dBm         | -23 dBm     |                                   |
| EX-1250TSP-KB8L-A | Duplex LC           | 1550              | 70KM (9/125μm), SM                          | 23 dBm      | 0 to +5 dBm          | -23 dBm     |                                   |
| EX-1250TBP-MB1L-A | Single LC           | TX:1310 / RX:1550 | 550M (62.5/125 μm), MM                      | 7 dBm       | -10 to -4 dBm        | -17 dBm     |                                   |
| EX-1250TBP-LB1L-A | Single LC           | TX:1550 / RX:1310 | 550M (62.5/125 μm), MM                      | 7 dBm       | -10 to -4 dBm        | -17 dBm     |                                   |
| EX-1250TBP-MB4L-A | Single LC           | TX:1310 / RX:1550 | 10KM (9/125μm), SM                          | 12 dBm      | -9 to -3 dBm         | -21 dBm     |                                   |
| EX-1250TBP-KB4L-A | Single LC           | TX:1550 / RX:1310 | 10KM (9/125μm), SM                          | 12 dBm      | -9 to -3 dBm         | -21 dBm     |                                   |
| EX-1250TBP-MB5L-A | Single LC           | TX:1310 / RX:1550 | 20KM (9/125μm), SM                          | 15 dBm      | -8 to -3 dBm         | -23 dBm     |                                   |
| EX-1250TBP-KB5L-A | Single LC           | TX:1550 / RX:1310 | 20KM (9/125μm), SM                          | 15 dBm      | -8 to -3 dBm         | -23 dBm     |                                   |