# OVERVIEW

The SO-SFP-1000BASE-BX160D is a bi-directional transceiver solution operating directly on a single-fiber without the need for a separate optical filter. This is achieved by having two transceivers that inject different wavelengths into the same single-fiber. The solution thus consists of two transceivers, SO-SFP-1000BASE-BX160D-5157 and SO-SFP-1000BASE-BX160D-5751, operating at 1510nm and 1570nm respectively. Using a single-fiber solution provides a cost-efficient solution for interconnect and it simplifies the patching since no separate transmit/receive direction has to be taken into account.

The transceiver pair supports the bit rate range from 100Mbps to 1.25Gbps, i.e. Fast Ethernet (FE), Gigabit Ethernet (GbE) and 1 Gbps Fiberchannel (1G FC) services. The optical performance of the transceiver pair provides a bridgeable distance of up to 160km.

The transceiver solution is available in two temperature range options, one being an extended temperature range of -20°C to +85°C (-4°F to +185°F). The transceivers provide digital diagnostic functions via a 2-wire serial interface as defined by the SFF-8472 specification.

## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Technology</th>
<th>BiDi SFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission media</td>
<td>SM (1x LC)</td>
</tr>
<tr>
<td>Nominal wavelength</td>
<td>1510 nm(^1) &amp; 1570 nm(^2)</td>
</tr>
<tr>
<td>Bit rate range</td>
<td>100 Mbps – 1.25 Gbps</td>
</tr>
<tr>
<td>Power budget</td>
<td>13.0 - 34.0 dB (^3)</td>
</tr>
<tr>
<td>Dispersion tolerance</td>
<td>3400 ps/nm</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt; 1.0W</td>
</tr>
</tbody>
</table>

### Transmitter data
- **Output power:**
  - Min: +1.0 dBm
  - Max: +5.0 dBm
- **Tx wavelength:**
  - 1504 - 1517 nm \(^1\)
  - 1564 - 1577 nm \(^2\)

### Receiver data
- **Minimum input power:** -33.0 dBm \(^3\)
- **Overload (max power):** -8.0 dBm
- **Wavelength range:**
  - 1550 - 1590 nm \(^1\)
  - 1490 - 1530 nm \(^2\)

### DDM
- Yes

### MSA compliance
- SFP MSA
- SFF 8472

### Regulatory compliance
- **EMC CE**
  - EN 55022:2010
  - EN 55024:2010
- **UL/Safety**
  - UL 60950-1
- **FCC**
  - 47 CFR PART 15 OCT, 2013
- **RoHS**
  - RoHS 6
- **TUV**
  - EN 60950-1:2006+A11+A12+A12
  - EN 60825-1:2014
  - EN 60825-2:2004+A1+A2

### Storage temp.
- -40°C to +85°C

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\(^1\) SO-SFP-1000BASE-BX160D-5157  
\(^2\) SO-SFP-1000BASE-BX160D-5751  
\(^3\) GbE

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ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO-SFP-1000Base-BX1600-D-5157</td>
<td>SFP BiDi, 1.25Gbps GbE, TX/RX=1510/1570nm, SM, DDM, 34dB, 160km</td>
</tr>
<tr>
<td>SO-SFP-1000Base-BX1600-D-5751</td>
<td>SFP BiDi, 1.25Gbps GbE, TX/RX=1570/1510nm, SM, DDM, 34dB, 160km</td>
</tr>
<tr>
<td>SO-SFP-1000Base-BX1600-D-5157-E</td>
<td>SFP BiDi, 1.25Gbps GbE, TX/RX=1510/1570nm, SM, DDM, 34dB, 160km, E-temp</td>
</tr>
<tr>
<td>SO-SFP-1000Base-BX1600-D-5751-E</td>
<td>SFP BiDi, 1.25Gbps GbE, TX/RX=1570/1510nm, SM, DDM, 34dB, 160km, E-temp</td>
</tr>
</tbody>
</table>

DEFINITIONS

Technology: Grey; Transceiver type for non-WDM applications. Electrical or optical.
CWDM; Transceiver type for CWDM applications using G.694.2 channel grid.
DWDM; Transceiver type for DWDM applications using G.694.1 channel grid.
BiDi; Transceiver pair using two different wavelength channels operating on a single-fiber.
DAC: Direct Attach Cable. Electrical or optical cable with attached connectors.

Transmission Media: Type of fiber, e.g. Multimode (MM) or Singlemode (SM). Number of and connector type within brackets (e.g. 2x LC, 1x MPO).

Typical reach: Nominal distance performance based on dispersion and power budget properties, i.e. w/o dispersion compensation and optical amplification.

Bit rate range: Supported bit rate range in Gigabit or Megabit per second (Gbps or Mbps).
Protocols: Protocols within supported bit rate range.

Nominal wavelength: Typical wavelength from transmitter.
Interface standards: Referenced interface standards e.g. IEEE 802.3 standard for 10GbE services.

Power budget: Min and max power budget between Transmitter and Receiver. Excluding any dispersion penalty.

Dispersion tolerance/penalty: Maximum amount of tolerated dispersion and required reduction of power budget to maintain BER better than 1E^-12. Defined at a specific bit rate.

Temperature range: Max operating case temperature range.

Standard temperature range: Typically 0°C to +70°C (32°F to +158°F)
Extended temperature range (E-temp): Typically -20°C to +75°C (-4°F to +167°F)
Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F)

Power consumption: Worst case power consumption.
Transmitter Output power: Average output power. Provided in min and max values.
Receiver minimum input power: Minimum average input power at specified BER, normally 1E^-12.
Receiver max input power: Maximum average input power at specified BER, normally 1E^-12.
DDM: Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.