

SO-SFP-1000BASE-TX & -TX-I

SFP, 10/100/1000Base-T SERDES/SGMII Interface, 100m, RJ45

OVERVIEW

The SO-SFP-1000BASE-TX is a transceiver with a high-performance integrated duplex data link for bidirectional communication over copper cable. It is specifically designed for high speed communication links that require 1Gbps Ethernet (GbE) over LAN cable.

SO-SFP-1000BASE-T supports 10/100/1000BASE-T Operation in Host Systems with SGMII interface.

SGMII is a serial connection bus for Ethernet MACs and PHYs defined by Cisco Systems. SGMII runs its physical layer at 1.25Gb/s, 8B10B encoded at all times, regardless of the negotiated data rate. If the rate is 100Mbps it will repeat the same symbol ten times or one hundred times for 10Mbps.

This transceiver provides a 2-wire serial interface as defined by the SFF-8472 specification. The transceiver module is compliant to RoHS-6/6.

The transceiver is available in two temperature range options, one being the Industrial temperature range (I-temp): -40°C to +85°C (-40°F to +185°F).

TECHNICAL DATA

Parameter	Value
Technology	Grey SFP (copper)
Transmission media	Electrical (1x RJ45)
Typical reach	100m ¹⁾
Interface standards	1000BASE-T IEEE 802.3
	100BASE-T IEEE 802.3
	10BASE-T IEEE 802.3
Protocol support	1Gbps Ethernet (GbE)
	100Mbps Ethernet (FE)
	10Mbps Ethernet
Operating temperature	0°C to +70°C (-TR)
	-40°C to +85°C (-TR-I)
Power consumption	< 1.2W
Storage temperature	-40°C to +85°C

Parameter	Value
Sync on line side	Preferred slave ²⁾
Auto- negotiation	Yes, SGMII auto-neg
Rx LOS	No
MSA compliance	SFP MSA
	SFF-8472

¹⁾ Using CAT5 UTP cable or better

²⁾ Slave mode means it uses the recovered clock from its link partner.

Safety/regulatory compliance:

TUV/UL/FDA (contact Smartoptics for latest certification information)

RoHS compliance



10/100/1000 BASE-T operation requires an SGMII interface with no clocks in the host system, and the module will operate as 1000BASE-T when the host system uses SERDES interface. It depends on the module PHY configuration

Subject to change without notice.

For more information visit smartoptics.com.

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ORDERING INFORMATION

Ordering number	Description
SO-SFP-1000Base-TX	SFP, 10/100/1000Base-T SERDES/SGMII Interface, 100m, RJ45
SO-SFP-1000Base-TX-I	SFP, 10/100/1000Base-T SERDES/SGMII Interface, 100m, RJ45, I-temp

RECOMMENDED SW CONFIGURATION

SO-SFP-1000BASE-TX supports 10/100/1000Mbps full duplex SGMII interface default. But it also can operate with 1000Mbps of SERDES operation. Please refer the following steps to configure:

Step 1: Access the PHY at 0Xac via two-wire serial interface.

Step 2: Configure 0Xac as below table

Register address	Write Data	Description
0x16	0x0001	Select page 1
0x1B	0x9088	Enable SerDes mode
0x00	0x9140	Software reset to allow changes to take effect
0x16	0x0000	Select page 0

SO-SFP-1000BASE-TX operate at mode of "Auto-negotiation enable" by default. But it also can operate with "Auto-negotiation disable". Please refer the following steps to configure:

Step 1: Access the PHY at 0Xac via two-wire serial interface.

Step 2: Configure 0Xac as below table

Register address	Write Data	Description
0x16	0x0001h	Select page 1
0x00h	0x8140h	Disable Auto-negotiation
0x16h	0x0000h	Select page 0

GENERAL 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 (DAC). 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.
Dispersion tolerance/penalty:	Maximum amount of tolerated dispersion and required reduction of power budget to maintain stipulated Bit Error Rate (BER) and at a given bit rate.
Temperature range:	Max operating case temperature range. Commercial temperature range (C-temp): 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. Will vary over temperature.
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 giving a BER, normally 1E ⁻¹² .
DDM:	Digital Diagnostic Monitoring functionality as defined in SFF-8472 MSA.

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