SFP Fiber Optic Transceivers

TTCxxxx-TL40/TL80

10 Gbps CWDM SFP+ Optical Transceiver Module

FEATURES

- Supports selected ARRIS PON product links up to 80 km[1]
- IEEE 802.3ae compliant; 10 Gbps data throughput
- Eight CWDM Wavelengths 1470–1610 nm
- 40 km and 80 km versions available
- Pluggable SFP+ MSA footprint
- Duplex LC connector
- Very low jitter
- Metal enclosure for lower EMI
- Extended industrial operating temperature range of -40° to 95°C

PRODUCT OVERVIEW

The TTCxxxx-TL CWDM Optical Transceiver Module enables transmission capabilities for high-speed optical communications modules offered by ARRIS, such as the E6000N Remote Phy Device (RPD) and the XE4202M Remote Optical Line Termination (R-OLT).

Conforming to the Small Form Factor Pluggable (SFP) Multisource Agreement, this state-of-the-art TTCxxxx-TL enhanced 10 Gbps SFP (SFP+) transceiver is designed expressly for high-speed duplex PON communication applications that require 10 Gbps data rates, with the laser transmission portion of the device operating at eight CWDM center wavelengths from 1470 to 1610 nm (with 20 nm separation), and fiber distances up to 80 km[1]. Two versions are available, for either 40 km (TTCxxxx-TL40) or 80 km (TTCxxxx-TL80).

The TTCxxxx-TL module features a very low jitter contribution, resulting in an extremely clean, high-quality eye pattern required for high transmission performance. The modules' metal enclosure not only makes the unit sturdier, but also improves FCC test margins. This emission and ESD control is particularly important in applications with sensitive multi-port switches. The modules, which dissipate less than 2.8 Watts (TTCxxxx-TL80), are supplied with a duplex LC connector.

[1] CWDM wavelengths 1590 and 1610 nm are limited to 70 km due to chromatic dispersion limitations of the fiber.

SPECIFICATIONS

Characteristics	Specification
Physical	
Dimensions	2.2" L x 0.4" H x 0.5" W (5.6 cm x 1.1 cm x 1.4 cm) MSA-SFP+ Compliant
Weight	0.1 lbs (0.08 kg)
Environmental	
Operating Temperature Range	-40° to 95°C (-40° to 203°F)
Storage Temperature Range	-40° to 95°C (-40° to 203°F)
Humidity (Operating)	5% to 95% non-condensing
Power Requirements	
Input Voltage	3.3 VDC ± 5%
Input Current	660 mA max (TTCxxxx-TL40); 800 mA max (TTCxxxx-TL80)
Power Consumption	2.3 W max (TTCxxxx-TL40); 2.8 W max (TTCxxxx-TL80)
General	
Data rate	10.3125 Gbps (9.9 to 11.3 Gbps)
Connector	Duplex LC
	Hot plug-in/out
Supported link length	40 km (TTCxxxx-TL40); 80 km[2] (TTCxxxx-TL80), on SMF-28 or equivalent. **NOTE:** This is strictly a dispersion limitation. Actual transmission distance is also dictated by the power budget of each transmission link. EDFAs and Dispersion Compensation Modules are suitable for use with the TTCxxxx-TL transceivers.
Optical Interface: TTCxxxx-TL40 (40 km)	
Transmitter	
Transmitter type	Cooled CWDM EML
Optical Wavelength	Eight: 1471–1611 nm (nominal), with 20 nm separation
Optical Output Power	-2.0 dBm, min
Optical Extinction Ratio	8.2 dB, min
Receiver	
Receiver Sensitivity	-15.8 dBm max[1]
Optical Wavelength	1260–1620 nm
Maximum Input Power	-1.0 dBm, min
Loss of Signal Assert Level	-30 dBm, min
Optical Interface: TTCxxxx-TL80 (80 km[2])	
Transmitter	
Transmitter Type	Cooled CWDM EML
Optical Wavelength	Eight: 1471–1611 nm (nominal), with 20 nm separation
Optical Output Power	0 dBm, min
Optical Extinction Ratio	8.2 dB, min
Receiver	
Receiver Sensitivity	–23 dBm max (1471–1551 nm); -21 dBm (1571–1611 nm)[3]
Optical Wavelength	1260–1620 nm
Maximum Input Power	-6.0 dBm, min
Loss of Signal Assert Level	-35 dBm, min
Regulatory and Standards Compliance	
	Class 1 devices per FDA/CDRH and IEC-60825-1 laser safety regulations
	EMC certifications are currently under study

NOTES:

1. Measured with a PRBS of 2^{31} at $1x10^{-12}$ BER and 8.2 dB extinction ratio
2. CWDM wavelengths 1590 and 1610 nm are limited to 70 km due to the chromatic dispersion limitations of the fiber
3. Measured with PRBS 2^{31}-1 at $1x10^{-12}$ BER and 8.2 dB extinction ratio

ORDERING INFORMATION TTC-XXXX-TL40

Model Name	Description
TTC-1470-TL40	10 Gbps, 1470 nm, Duplex LC/UPC, 40 km, -40° to +95°C
TTC-1490-TL40	10 Gbps, 1490 nm, Duplex LC/UPC, 40 km, -40° to +95°C
TTC-1510-TL40	10 Gbps, 1510 nm, Duplex LC/UPC, 40 km, -40° to +95°C
TTC-1530-TL40	10 Gbps, 1530 nm, Duplex LC/UPC, 40 km, -40° to +95°C
TTC-1550-TL40	10 Gbps, 1550 nm, Duplex LC/UPC, 40 km, -40° to +95°C
TTC-1570-TL40	10 Gbps, 1570 nm, Duplex LC/UPC, 40 km, -40° to +95°C
TTC-1590-TL40	10 Gbps, 1590 nm, Duplex LC/UPC, 40 km, -40° to +95°C
TTC-1610-TL40	10 Gbps, 1610 nm, Duplex LC/UPC, 40 km, -40° to +95°C

ORDERING INFORMATION TTC-XXXX-TL80

Model Name	Description
TTC-1470-TL80	10 Gbps, 1470 nm, Duplex LC/UPC, 80 km, -40° to +95°C
TTC-1490-TL80	10 Gbps, 1490 nm, Duplex LC/UPC, 80 km, -40° to +95°C
TTC-1510-TL80	10 Gbps, 1510 nm, Duplex LC/UPC, 80 km, -40° to +95°C
TTC-1530-TL80	10 Gbps, 1530 nm, Duplex LC/UPC, 80 km, -40° to +95°C
TTC-1550-TL80	10 Gbps, 1550 nm, Duplex LC/UPC, 80 km, -40° to +95°C
TTC-1570-TL80	10 Gbps, 1570 nm, Duplex LC/UPC, 70 km[1], -40° to +95°C
TTC-1590-TL80	10 Gbps, 1590 nm, Duplex LC/UPC, 70 km[1], -40° to +95°C
TTC-1610-TL80	10 Gbps, 1610 nm, Duplex LC/UPC, 70 km[1], -40° to +95°C

NOTE:
1. CWDM wavelengths 1590 and 1610 nm are limited to distances of 70 km due to the chromatic dispersion limitations of the fiber.

RELATED PRODUCTS

NH2000, NH4000 VHub/UVHub	NC4000 Node
E6000n Remote PHY	XE4202M Remote OLT

Customer Care

Contact Customer Care for product information and sales:
- United States: 866-36-ARRIS
- International: +1-678-473-5656

Note: Specifications are subject to change without notice.

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