CISCO SYSTEMS

DATA SHEET

CISCO SFP OPTICS FOR PACKET-OVER-SONET/SDH AND ATM APPLICATIONS

The Cisco industry-standard Small Form-Factor Pluggable Interface Converter (SFP) for packet-over-SONET/SDH (POS), optical networking, and ATM applications (Figure 1) are hot-swappable optical interfaces that plug into a variety of ports on Cisco router interfaces. These SFP optics support OC-3, OC-12, and OC-48 data rates for multimode, short-reach, intermediate-reach, and long-reach applications.

Figure 1.   Cisco SFP Optics for POS/SDH and ATM Applications

PRODUCT OVERVIEW

Cisco[®] SFP optics for POS and ATM applications plug into a variety of SFP-based POS, TDM and ATM interfaces on Cisco router products. This line of SFP optics supports the following three data rates at various reaches: OC-3/STM-1 (155 Mbps), OC-12/STM-4 (622 Mbps), and OC-48/STM-16 (2,488 Gbps) (Table 1).

The SFPs are compatible with the SONET/SDH and ATM standards, and support the digital diagnostic functions specified in the SFF-8742 Multi-Source Agreement (MSA) and the extended operating temperature range from 23 to185°F (-5 to 85°C).

Table 1.   Features

Product Description	Typical Distance (km)	Fiber Type	Temperature Range (°C)	Digital Optical Monitoring Support
SFP OC-3/STM-1 Multimode	2	multimode	-5 to +85	Yes
SFP OC-3/STM-1 Short Reach	2	single mode	-5 to +85	Yes
SFP OC-3/STM-1 Intermediate-Reach	15	single mode	-5 to +85	Yes
SFP OC-3/STM-1 Long-Reach (40 km)	40	single mode	–5 to +85	Yes
SFP OC-3/STM-1 Long-Reach (80 km)	80	single mode	–5 to +85	Yes

Product Description	Typical Distance (km)	Fiber Type	Temperature Range (°C)	Digital Optical Monitoring Support
SFP OC-12/STM-4 Multimode	0.5	multimode	-5 to +85	Yes
SFP OC-12/STM-4 Short-Reach	2	single mode	-5 to +85	Yes
SFP OC-12/STM-4 Intermediate-Reach	15	single mode	-5 to +85	Yes
SFP OC-12/STM-4 Long-Reach (40 km)	40	single mode	-5 to +85	Yes
SFP OC-12/STM-4 Long-Reach (80 km)	80	single mode	-5 to +85	Yes
SFP OC-48/STM-16 Short-Reach	2	single mode	–5 to +85	Yes
SFP OC-48/STM-16 Intermediate-Reach	15	single mode	–5 to +85	Yes
SFP OC-48/STM-16 Long-Reach (80 km)	80	single mode	–5 to +85	Yes

Note: The temperature is intended as the case temperature on the SFP (not the ambient temperature).

DIGITAL DIAGNOSTIC FUNCTIONS

The Cisco SFP optics for POS and ATM applications allow real-time access, through the digital diagnostic monitoring interface, to a set of transceiver parameters such as optical output power, optical input power, temperature, laser bias current, and transceiver supply voltage.

The ability to read these parameters in real time greatly enhances the installation, activation, and troubleshooting of these SFP optics.

PRODUCT SPECIFICATIONS

Tables 2 through 4 list the optical parameters for the Cisco SFP optics for POS and ATM applications.

Table 2. Optical Parameters for Cisco OC-3/STM-1 SFP

OC-3/STM-1 SFP	Transmitter Wavelength Range (nm)	Transmit Power Range (dBm)	Receiver Power Range (dBm)	Optical Path Penalty (dB)
Multimode	1270 to 1380	–14 to –20	–5 to –30	–
Short Reach	1260 to 1360	-8 to -15	-8 to -23	1
Intermediate Reach	1261 to 1360	–8 to –15	–8 to –28	1
Long Reach (40 km)	1263 to 1360	0 to -5	-10 to -34	1
Long Reach (80 km)	1480 to 1580	0 to –5	–10 to –34	1

Table 3. Optical Parameters for Cisco OC-12/STM-4 SFP

OC-12/STM-4 SFP	Transmitter Wavelength Range (nm)	Transmit Power Range (dBm)	Receiver Power Range (dBm)	Optical Path Penalty (dB)
Multimode	1270 to 1380	-14 to -20	-6 to -26	-
Short Reach	1261 to 1360	-8 to -15	-8 to -23	1

OC-12/STM-4 SFP	Transmitter Wavelength Range (nm)	Transmit Power Range (dBm)	Receiver Power Range (dBm)	Optical Path Penalty (dB)
Intermediate Reach	1293 to1334	-8 to -15	–8 to –28	1
Long Reach (40 km)	1280 to 1335	+2 to -3	-8 to -28	1
Long Reach (80 km)	1480 to 1580	+2 to -3	–8 to –28	1

Table 4. Optical Parameters for Cisco OC-48/STM-16 SFP

OC-48/STM-16 SFP	Transmitter Wavelength Range (nm)	Transmit Power Range (dBm)	Receiver Power Range (dBm)	Optical Path Penalty (dB)
Short Reach	1266 to 1360	–3 to –10	–3 to –18	1
Intermediate Reach	1260 to 1360	0 to -5	0 to -18	1
Long Reach (80 km)	1500 to 1580	+3 to –2	–9 to –28	2

Connectors and Cabling

Connectors: Dual LC/PC connector

Note: Only connections with patch cords with PC or UPC connectors are supported. Patch cords with APC connectors are not supported.

ENVIRONMENTAL SPECIFICATIONS

- Extended operating case temperature range: 23 to 185°F (–5 to 85°C)
- Storage temperature range: 23 to 185°F (–5 to 85°C)

DIMENSIONS

- Dimensions (H x W x D): 8.6 mm x 13.7 mm x 56.5 mm

REGULATORY AND STANDARD COMPLIANCE

- Class 1 Laser per IEC60825-1 and CFR 21, Part 1040.01
- Optical Specification according to GR-253, ITU G.957, and G.707
- Optical Specification for SFP-OC3-MM ATM User-Network Interface Specification (v3.1)

ORDERING INFORMATION

To place an order, visit the Cisco Ordering Home Page. Table 5 lists the ordering information for the Cisco SFP transceivers for POS/SDH and ATM applications.

Table 5. Ordering Information

Product Description	Part Number
SFP OC-3/STM-1 Multimode	SFP-OC3-MM
SFP OC-3/STM-1 Short-Reach	SFP-OC3-SR
SFP OC-3/STM-1 Intermediate-Reach	SFP-OC3-IR1

Product Description	Part Number
SFP OC-3/STM-1 Long-Reach (40 km)	SFP-OC3-LR1
SFP OC-3/STM-1 Long-Reach (80 km)	SFP-OC3-LR2
SFP OC-12/STM-4 Multimode	SFP-OC12-MM
SFP OC-12/STM-4 Short-Reach	SFP-OC12-SR
SFP OC-12/STM-4 Intermediate-Reach	SFP-OC12-IR1
SFP OC-12/STM-4 Long-Reach (40 km)	SFP-OC12-LR1
SFP OC-12/STM-4 Long-Reach (80 km)	SFP-OC12-LR2
SFP OC-48/STM-16 Short-Reach	SFP-OC48-SR
SFP OC-48/STM-16 Intermediate-Reach	SFP-OC48-IR1
SFP OC-48/STM-16 Long-Reach (80 km)	SFP-OC48-LR2

WARRANTY

- Standard warranty: 90 days.

- Extended warranty (optional): available under Cisco SMARTnet® support contract for the Cisco router chassis.

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