DATA SHEET

CISCO DWDM XENPAK

OVERVIEW

The Cisco® Dense Wavelength-Division Multiplexing (DWDM) XENPAK pluggable allows enterprise companies and service providers to provide scalable and easy-to-deploy 10 Gigabit Ethernet services in their networks (Figure 1).

Main features of the Cisco DWDM XENPAK include:

- The Cisco DWDM XENPAK supports 10GBASE Ethernet.
- The hot-swappable input/output device plugs into an Ethernet XENPAK port of a Cisco switch or router to link the port with the network.
- The Cisco DWDM XENPAK supports the Cisco quality identification (ID) feature that enables a Cisco Systems® switch or router to identify whether or not the module is a Cisco certified and tested XENPAK module.
- The Cisco DWDM XENPAK supports 32 non-tunable ITU 100 GHz wavelengths compatible with the Cisco ONS DWDM channel plan.
- The Cisco DWDM XENPAK supports digital optical monitoring capability.

Figure 1. Cisco DWDM XENPAKs

PLATFORM SUPPORT

The Cisco DWDM XENPAKs are supported across a variety of Cisco switches, routers, and optical transport devices. For more details, refer to the document Cisco DWDM XENPAK Compatibility Matrix.

Connectors and Cabling

- Equipment: Standard XENPAK interface

Network: Dual SC/PC connector

Note: Only connections with patch cords with PC or UPC connectors are supported. Patch cords with APC connectors are not supported. All cables and cable assemblies used must be compliant with the standards specified in the standards section.

Dimension:

Cisco DWDM Xenpak’s typically weighs less than 300 grams

Environmental Conditions and Power Requirements

- Operating temperature range: 32 to 122°F (0 to 55°C)
- Storage temperature range: –40 to 185°F (–40 to 85°C)

The maximum power consumption per Cisco XENPAK is 8W.

Optical Parameters

Table 1 shows the main optical characteristics for the Cisco DWDM XENPAK modules.

Table 1. Optical Parameters

Parameter	Symbol	Minimum	Typical	Maximum	Units	Notes and Conditions
Transmitter						
Spectral Width				0.2	nm	Full width, –20dB from maximum, with Resolution bandwidth (RBW) = 0.01 nm
Transmitter Center Wavelength		x – 100	x	x + 100	pm	Refer to Table 2 for center wavelengths
Side-Mode Suppression Ratio	SMSR	30			dB	
Transmitter Extinction Ratio	OMI	9			dB	
Transmitter Optical Output Power	P_{out}	–1.0		3.0	dBm	Average power coupled into single-mode fiber
Receiver						
Receiver Optical Input Wavelength		1530		1565	nm	
Receiver Damage Threshold				–1	dBm	
Dispersion Tolerance		–500		1600	ps/nm	
Power-Limited Performance (measured at optical signal-to-noise ratio [OSNR] of 30 dB at 0.1-nm RBW)						
Optical Input Power	P_{in}	–24.0		–7.0	dBm	See footnote*
Dispersion Power Penalty				3	dB	See footnote*
Noise-Limited Performance (measured at OSNR of 23 dB at 0.1-nm RBW)						
Optical Input Power	P_{in}	–17.0		–7.0	dB	See footnote*
Dispersion OSNR Penalty				3	dB	See footnote*

* At Bit error rate (BER) = $10e_{-12}$ with IEEE802.3 test pattern

Note: 1. Parameters are specified over temperature and at end of life unless otherwise noted.
2. When shorter distances of single-mode fiber are used, an inline optical attenuator (10-dB) must be used to avoid overloading and damaging the receiver.

3. The receive-only WDM XENPAK has no transmitter. The receiver matches the receiver specifications given above.
4. To prevent burst errors, Cisco suggests the use of appropriate optical attenuation in front of the receiver when interoperating X2 DWDM and XENPAK DWDM specifically under the following conditions:
   - When the input power on the receiver exceeds -14dBm,
   - When the optical signal to noise ratio is less than 30dB @ 0.1nm RBW
   - When total chromatic dispersion is greater than 1500ps/nm

The attenuation should be chosen to limit the input power into the receiver to be less than -14dBm.

WARRANTY

Standard warranty: 90 days

ORDERING INFORMATION

Table 2 gives details about ordering Cisco DWDM XENPAKs.

Table 2. Cisco DWDM XENPAK Product Information

Product Number	Description	ITU Channel
DWDM-XENPAK-60.61=	10GBASE-DWDM 1560.61 nm XENPAK (100-GHz ITU grid)	21
DWDM-XENPAK-59.79=	10GBASE-DWDM 1559.79 nm XENPAK (100-GHz ITU grid)	22
DWDM-XENPAK-58.98=	10GBASE-DWDM 1558.98 nm XENPAK (100-GHz ITU grid)	23
DWDM-XENPAK-58.17=	10GBASE-DWDM 1558.17 nm XENPAK (100-GHz ITU grid)	24
DWDM-XENPAK-56.55=	10GBASE-DWDM 1556.55 nm XENPAK (100-GHz ITU grid)	26
DWDM-XENPAK-55.75=	10GBASE-DWDM 1555.75 nm XENPAK (100-GHz ITU grid)	27
DWDM-XENPAK-54.94=	10GBASE-DWDM 1554.94 nm XENPAK (100-GHz ITU grid)	28
DWDM-XENPAK-54.13=	10GBASE-DWDM 1554.13 nm XENPAK (100-GHz ITU grid)	29
DWDM-XENPAK-52.52=	10GBASE-DWDM 1552.52 nm XENPAK (100-GHz ITU grid)	31
DWDM-XENPAK-51.72=	10GBASE-DWDM 1551.72 nm XENPAK (100-GHz ITU grid)	32
DWDM-XENPAK-50.92=	10GBASE-DWDM 1550.92 nm XENPAK (100-GHz ITU grid)	33
DWDM-XENPAK-50.12=	10GBASE-DWDM 1550.12 nm XENPAK (100-GHz ITU grid)	34
DWDM-XENPAK-48.51=	10GBASE-DWDM 1548.51 nm XENPAK (100-GHz ITU grid)	36
DWDM-XENPAK-47.72=	10GBASE-DWDM 1547.72 nm XENPAK (100-GHz ITU grid)	37
DWDM-XENPAK-46.92=	10GBASE-DWDM 1546.92 nm XENPAK (100-GHz ITU grid)	38
DWDM-XENPAK-46.12=	10GBASE-DWDM 1546.12 nm XENPAK (100-GHz ITU grid)	39
DWDM-XENPAK-44.53=	10GBASE-DWDM 1544.53 nm XENPAK (100-GHz ITU grid)	41
DWDM-XENPAK-43.73=	10GBASE-DWDM 1543.73 nm XENPAK (100-GHz ITU grid)	42

Product Number	Description	ITU Channel
DWDM-XENPAK-42.94=	10GBASE-DWDM 1542.94 nm XENPAK (100-GHz ITU grid)	43
DWDM-XENPAK-42.14=	10GBASE-DWDM 1542.14 nm XENPAK (100-GHz ITU grid)	44
DWDM-XENPAK-40.56=	10GBASE-DWDM 1540.56 nm XENPAK (100-GHz ITU grid)	46
DWDM-XENPAK-39.77=	10GBASE-DWDM 1539.77 nm XENPAK (100-GHz ITU grid)	47
DWDM-XENPAK-38.98=	10GBASE-DWDM 1538.98 nm XENPAK (100-GHz ITU grid)	48
DWDM-XENPAK-38.19=	10GBASE-DWDM 1538.19 nm XENPAK (100-GHz ITU grid)	49
DWDM-XENPAK-36.61=	10GBASE-DWDM 1536.61 nm XENPAK (100-GHz ITU grid)	51
DWDM-XENPAK-35.82=	10GBASE-DWDM 1535.82 nm XENPAK (100-GHz ITU grid)	52
DWDM-XENPAK-35.04=	10GBASE-DWDM 1535.04 nm XENPAK (100-GHz ITU grid)	53
DWDM-XENPAK-34.25=	10GBASE-DWDM 1534.25 nm XENPAK (100-GHz ITU grid)	54
DWDM-XENPAK-32.68=	10GBASE-DWDM 1532.68 nm XENPAK (100-GHz ITU grid)	56
DWDM-XENPAK-31.90=	10GBASE-DWDM 1531.90 nm XENPAK (100-GHz ITU grid)	57
DWDM-XENPAK-31.12=	10GBASE-DWDM 1531.12 nm XENPAK (100-GHz ITU grid)	58
DWDM-XENPAK-30.33=	10GBASE-DWDM 1530.33 nm XENPAK (100-GHz ITU grid)	59
WDM-XENPAK-REC=	10GBASE-WDM receive-only XENPAK	

REGULATORY AND STANDARDS COMPLIANCE

Safety

- Laser Class I 21CFR1040
- Network Equipment Building Standards (NEBS) Level 3

GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable

GR-326-CORE: Generic Requirements for Singlemode Optical Connectors and Jumper Assemblies

GR-1435-CORE: Generic Requirements for Multi-Fiber Optical Connectors

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Printed in the USA C78-366583-01 12/08