Cisco 40GBASE CFP Modules

Product Overview

The Cisco® 40GBASE CFP transceiver modules are hot-swappable input/output devices that plug into a 40 Gigabit Ethernet CFP port of a Cisco switch or router. They offer customers versatile 40 Gigabit Ethernet connectivity options in core and distribution layers of data center, enterprise, and service provider networks.

Features and Benefits

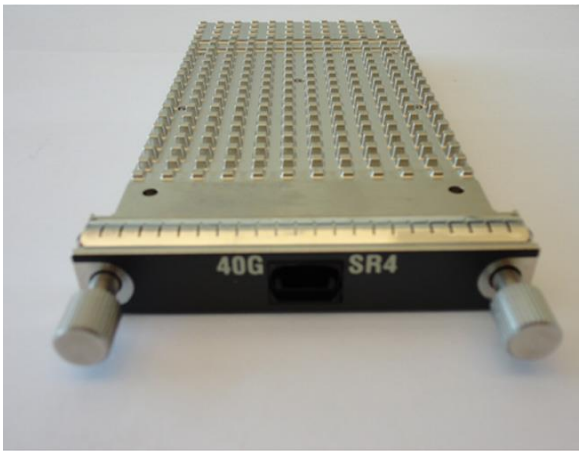
Main features of Cisco 40GBASE CFP modules include:

- Support for 40GBASE Ethernet and OTU3 standards
- Interoperability with respective industry IEEE- and/or OTU3-compliant interfaces
- Variety of interface choices for 40 Gigabit Ethernet and 10 Gigabit Ethernet connectivity
- Support for “pay-as-you-populate” model
- Support for digital optical monitoring (DOM)
- Support for the Cisco quality identification (ID) feature, which enables a Cisco switch or router to identify whether the module is certified and tested by Cisco

Cisco CFP-40G-SR4

The Cisco 40GBASE-SR4 CFP module (Figure 1) supports link lengths of up to 100m and 150m, respectively, over laser-optimized OM3 and OM4 multimode fiber cables. It enables high-bandwidth 40 Gigabit Ethernet optical links over ribbon fiber cables terminated with female MPO/MTP 12-fiber connectors. This CFP module supports IEEE 40GBASE-SR4 standard only.

Figure 1. Cisco 40GBASE-SR4 CFP Module



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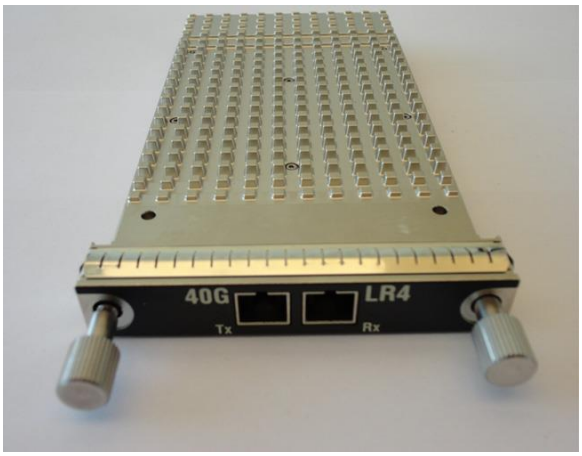
Cisco CFP-40G-LR4

The Cisco 40GBASE-LR4 CFP module (Figure 2) supports link lengths of up to 10km over a standard pair of G.652 single-mode fiber with duplex SC connectors. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. This CFP module supports both IEEE 40GBASE-LR4 and OTU3 C4S1-2D1 standards.

Figure 2. Cisco 40GBASE-LR4 CFP Module



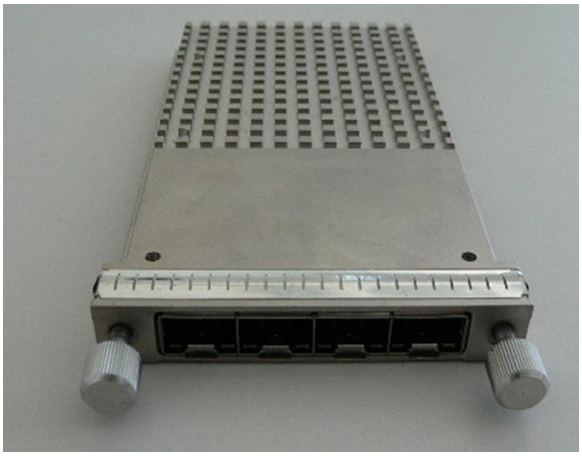
Cisco CFP-40G-FR

The Cisco 40GBASE-FR CFP module supports link lengths of up to 2km over a standard pair of single-mode fiber with duplex SC connectors. It implements a serial optical lane at 40 Gigabit. This CFP module supports both IEEE 40GBASE-FR and OTU3 VSR2000-3R2 standards.

Cisco FourX Converter Module (CVR-CFP-4SFP10G)

The Cisco FourX converter module (Figure 3) offers the flexibility to convert a 40 Gigabit Ethernet CFP port of a Cisco switch or router into four independent 10 Gigabit Ethernet ports supporting Cisco 10GBASE Small Form-Factor Pluggable Plus (SFP+) modules. The 10 Gigabit Ethernet SFP+ modules are not included.

Figure 3. Cisco FourX Converter Module



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Product Specifications

Platform Support

Cisco CFP-40G-SR4, CFP-40G-LR4, and CFP-40G-FR modules are supported on 40 Gigabit Ethernet CFP ports of Cisco switches and routers. For more details, refer to the document "Cisco 40 Gigabit Ethernet Transceiver Modules Compatibility Matrix."

The Cisco FourX module is supported on 40 Gigabit Ethernet CFP ports of Cisco switches and routers, converting them into 10 Gigabit Ethernet SFP+ ports. For more details, refer to the document "Cisco 10 Gigabit Ethernet Transceiver Modules Compatibility Matrix."

Connectors and Cabling

Connectors: 12-fiber female MPO/MTP connector (-SR4), dual SC/PC connector (-LR4 and -FR).

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.

Table 1 provides cabling specifications for the Cisco CFP modules.

Table 1. CFP Port Cabling Specifications

Cisco CFP Module	Wavelength (nm)	Cable Type	Core Size (Microns)	Modal Bandwidth (MHz*km)***	Cable Distance*
Cisco CFP-40G-SR4	850	Multimode fiber (MMF)	50.0 50.0 50.0	500 (OM2) 2000 (OM3) 4700 (OM4)	30m 100m 150m**
Cisco CFP-40G-LR4	1310	Single-mode fiber (SMF)	G.652	-	10km
Cisco CFP-40G-FR	1550	Single-mode fiber (SMF)	G.652	-	2km

* Minimum cabling distance is 0.5m for - SR4 modules and 2m for LR4 modules, according to the IEEE 802.3ba.
** Considered an engineered link with maximum 1dB allocated to connectors and splice loss.
*** Specified at transmission wavelength.

Table 2 shows the main optical characteristics for the Cisco CFP modules.

Table 2. Optical Transmit and Receive Specifications

Product	Type	Transmit Power (dBm)*		Receive Power (dBm)*		Transmit and Receive Wavelength (nm)
		Maximum	Minimum	Maximum	Minimum	
Cisco CFP-40G-SR4	40GBASE-SR4, 4 lanes, 850 nm MMF	2.4, per lane	-7.6, per lane	2.4, per lane	-9.5, per lane	840 to 860
Cisco CFP-40G-LR4	40GBASE-LR4 1310 nm SMF	2.3 per lane	-7 per lane	2.3 per lane	-13.7 per lane	Four lanes: 1271, 1291, 1311, 1331
	OTU3 C4S1-2D1 1310 nm SMF	2.3 per lane	-2.3 per lane	2.3 per lane	-9.0 per lane	Four lanes: 1271, 1291, 1311, 1331
Cisco CFP-40G-FR	40GBASE-FR and OTU3 VSR2000-3R2	3.0	0.0	3.0	-6.0	1530 to 1565

* Transmit power and receive power are in average, unless specified.

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Dimensions

Maximum outer dimensions for the CFP transceiver module are (D x W x H): 144.8 x 82 x 13.6 mm.

Cisco CFP transceiver modules typically weigh 300 grams or less.

Environmental Conditions and Power Requirements

- Operating temperature range: 0 to 70°C (32 to 158°F)
- Storage temperature range: -40 to 85°C (-40 to 185°F)
- Power consumption: up to 8W per 40G CFP port

Warranty

- Standard warranty: 90 days.
- Extended warranty (optional): Cisco CFP modules can be covered in a Cisco SMARTnet® Service support contract for the Cisco switch or router chassis.

Regulatory and Standards Compliance

Standards

- GR-20-CORE: Generic Requirements for Optical Fiber and Optical Fiber Cable
- GR-326-CORE: Generic Requirements for Single-Mode Optical Connectors and Jumper Assemblies
- GR-1435-CORE: Generic Requirements for Multifiber Optical Connectors
- IEEE 802.3ba: 40GBASE requirements
- ITU-T G.709: OTU3 requirements

Safety

- Laser Class 1 21CFR-1040 LN#50 7/2001
- Laser Class 1 IEC60825-1

Ordering Information

Table 3 provides the ordering information for Cisco 40 Gigabit Ethernet CFP modules and Cisco FourX converter module.

Table 3. Ordering Cisco CFP Modules

Description	Product Number
Cisco 40GBASE-SR4 CFP Module for MMF	CFP-40G-SR4
Cisco multirate 40GBASE-LR4 and OTU3 C4S1-2D1 CFP Module for SMF	CFP-40G-LR4
Cisco multirate 40GBASE-FR and OTU3 VSR2000-3R2 CFP Module for SMF	CFP-40G-FR
Cisco FourX CFP to Four SFP+ Converter Module	CVR-CFP-4SFP10G

For more information about the Cisco 40 Gigabit Ethernet CFP modules, contact your local account representative or visit http://www.cisco.com/en/US/products/ps11708/index.html.

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