Guide
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40G Fiber Optic Transceiver
Cable Ordering Guide: Cisco Nexus

Step 1:
Choose the correct Cisco transceiver for your application

Did you know?

- As you increase data rates, reach decreases
- Only 10% of data centers exceed 100m
- Every connection introduces dB loss which further reduces the distance

Cisco 40/100G Optics: QSFP

Cisco Part Number	Reach	Media	Connector
QSFP-40G-SR4	150m	Parallel MMF	MPO
QSFP-40G-SR4-S	150m	Parallel MMF	MPO
QSFP-40G-CSR4	400m	Duplex MMF	MPO
QSFP-4x10G-LR-S	10km	Parallel SMF	MPO
QSFP-40G-SR-BD	100m	Duplex MMF	LC
QSFP-40G-CSR-S	400m	Duplex MMF	LC
WSP-Q40GLRL	2km	Duplex SMF	LC

Description

QSFP-40G-SR4

The **QSFP-40G-SR4** module supports link lengths of 100 meters and 150 meters, respectively, on laser-optimized OM3 and OM4 multimode fibers. It primarily enables high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors. It can also be used in a 4x10G breakout mode for interoperability with 10GBASE-SR and SFP-10/25G-CSR-S (in 10G mode) interfaces up to 100 and 150 meters on OM3 and OM4 fibers, respectively. The worry-free 4x10G mode operation is enabled by the optimization of the transmit and receive optical characteristics of the Cisco QSFP-40G-SR4 to prevent receiver overload or unnecessary triggering of alarm thresholds on the 10GBASE-SR and SFP-10/25G-CSR-S (in 10G mode) receiver, and at the same time is completely interoperable with all standard 40GBASE-SR4 interfaces.

The 4x10G connectivity is achieved using an external 12-fiber parallel to 2-fiber duplex breakout cable, which connects the 40GBASE-SR4 module to four 10GBASE-SR optical interfaces. Cisco QSFP-40G-SR4 is optimized to guarantee interoperability with any IEEE 40GBASE-SR4 and in 4x10G mode with the 10GBASE-SR and SFP-10/25G-CSR (in10G mode).

QSFP-40G-SR4-S

The **QSFP-40G-SR4-S** QSFP module supports link lengths of 100 and 150 meters, respectively, on laser-optimized OM3 and OM4 multimode fibers. QSFP-40G-SR4-S is aligned to IEEE 40GBASE-SR4 optical specifications which support high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors. Because the QSFP-40G-SR4-S does not support 4x10G breakout connectivity, see QSFP-40G-SR4 or QSFP-40G-CSR4 for such applications. QSFP-40G-SR4-S does not support FCoE.

QSFP-40G-CSR4

The **QSFP-40G-CSR4** QSFP module extends the reach of the IEEE 40GBASE-SR4 interface to 300 and 400 meters on laser-optimized OM3 and OM4 multimode parallel fiber, respectively. Each 10-gigabit lane of this module is compliant to IEEE 10GBASE-SR specifications. This module can be used for native 40G optical links over 12-fiber parallel cables with MPO/MTP female connectors or in a 4x10G breakout mode with parallel to duplex fiber breakout cables for connectivity to four 10GBASE-SR interfaces. Cisco QSFP-40G-CSR4 is optimized to guarantee interoperability over the complete specification range of 10GBASE-SR.

QSFP-4X10G-LR-S

The **QSFP-4X10G-LR-S** QSFP module supports link lengths of up to 10km on G.652 Single-Mode Fiber (SMF). It enables high-bandwidth 40G optical links over 12-fiber parallel fiber terminated with MPO/MTP multifiber female connectors. It can also be used in a 4x10G mode for interoperability with 10GBASE-LR interfaces up to 10km.

The 4x10G connectivity is achieved using an external 12-fiber parallel to 2-fiber duplex breakout cable, which connects the 4x10G LR module to four 10GBASE-LR optical interfaces. Cisco's QSFP-4X10G-LR-S is optimized to guarantee interoperability in 4x10G mode over the full specification range of 10GBASE-LR and the SFP-10/25G-LR-S (in 10G mode). QSFP-4X10G-LR-S does not support FCoE.

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Step 1:
Choose the correct Cisco transceiver for your application (continued)

Description

QSFP-40G-SR-BD

The **QSFP-40G-SR-BD** BiDirectional (BiDi) transceiver is a pluggable optical transceiver with a duplex LC connector interface for short-reach data communication and interconnect applications using MultiMode Fiber (MMF). The Cisco QSFP 40-Gbps BiDi transceiver offers customers a compelling solution that enables reuse of their existing 10 gigabit duplex MMF infrastructure for migration to 40 Gigabit Ethernet connectivity.

The Cisco QSFP 40-Gbps BiDi transceiver supports link lengths of 100 and 150 meters on laser-optimized OM3 and OM4 multimode fibers, respectively.

The Cisco BiDi transceiver complies with the QSFP MSA specification, enabling customers to use it on all QSFP 40-Gbps platforms to achieve high-density 40 Gigabit Ethernet networks.

Each Cisco QSFP 40-Gbps BiDi transceiver consists of two 20-Gbps transmit and receive channels in the 832-918 nanometer wavelength range, enabling an aggregated 40-Gbps link over a two-strand multimode fiber connection.

QSFP-40G-CSR-S

The **QSFP-40G-CSR-S** is a pluggable optical transceiver with a duplex LC connector interface used for connectivity using MultiMode Fiber (MMF). The Cisco 40GBASE-CSR Modules support link lengths of 300 meters and 400 meters, respectively, on laser-optimized OM3 and OM4 multimode fibers. Customers benefit through the reuse of their existing 10 gigabit duplex MMF infrastructure as they migrate to 40 Gigabit Ethernet, while maintaining the same supported link distances as 10G Ethernet. Each QSFP-40G-CSR-S operates at four different wavelengths. Each of the four wavelengths operates at 10G over existing duplex multimode fiber using standard LC connectors. The Cisco QSFP-40G-CSR-S transceiver does not support FCoE.

WSP-Q40GLRL

The Cisco **WSP-Q40GLR4L** QSFP module supports link lengths of up to 2 kilometers over a standard pair of G.652 Single-Mode Fiber (SMF) with duplex LC connectors. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. It is interoperable with 40GBASE-LR4 for distances up to 2 kilometers. The operating temperature range is from +10 to +60°C with an optical link budget of 4 decibels. This 4-decibel link budget offers the ability to support the loss from patch panels in the link in a data center environment.

Step 2:

Identify the enclosure system(s) that meet your application needs. Universal wired fiber cassettes provide optimal interoperability across fiber cabling systems.

For more information about universal wired fiber cassettes, see our video.

HD Flex™ Fiber Enclosures

The HD Flex™ Fiber Cabling System is the highest density solution designed to set you free by removing the barriers of architecture, deployment, scalability and maintenance challenges.

- Provides up to 144 fibers (72 duplex ports) per RU of density
- Enclosures and panels are adaptable between 4, 6 and 12-port configurations
- Split tray feature allows each half of the tray to be pulled out independently

For more information about the HD Flex™ Fiber Cabling System, reference the system brochure (FBCB46) or visit panduit.com/hdflex.

QuickNet™ Patch Panels

Panduit QuickNet™ Patch Panels provide the flexibility to deployment both copper and fiber connectivity in the same RU.

- High-density patch panels conserve valuable rack space with 96 fibers (48 duplex ports) per RU
- Available in flat or angled patch panels to facilitate proper bend radius control and minimize the need for horizontal cable managers

For more information about the QuickNet™ Fiber Cabling System, reference the QuickNet™ Data Center Application Guide (FBAG01).

Opticom® Fiber Enclosures

Opticom® Fiber Enclosures accept pre-terminated, splice-on, and field terminated fiber connectivity.

- Slide-out, tilt-down drawer provides up to 96 LC fibers (48 duplex ports) per RU
- Integral bend radius control and cable management for fiber optic patch cords

For more information about the Opticom® Fiber Enclosures, reference the spec sheet (RKSP39).

PanMPO™ Fiber Connector

The PanMPO™ Fiber Connector is a unique, patented MPO design that specifically addresses today's needs for fast and efficient Ethernet and Fibre Channel migration to help maximize return on cabling infrastructure investment and minimize downtime. Protect your investments today; minimizing installed cost of high-speed data center engineered links securing your position as a next-generation data center prepared to face future demands.

- Easy migration from serial duplex (SR/SR-BD) to parallel (SR4.x) while maintaining compliance with cabling standards (TIA and ISO/IEC)
- Connector cleaning – the pin retraction feature allows for complete cleaning of the MPO surface
- Link certification – the gender changing ability of PanMPO™ on test leads allows for multiple test scenarios without the need for multiple test lead styles (which increase test variability)
- Mistake proofing – PanMPO™ Patch Cords can be reconfigured for gender and polarity in the field

For more information on the PanMPO™ Fiber Connector, visit panduit.com/panmpo.

Signature Core™ Fiber Optic Cabling System

Signature Core™ OM4+ and OM5+ Fiber Optic Cabling Systems extend the reach of standards-based Ethernet, BiDi, and Shortwave Wavelength Division Multiplexing (SWDM). Both are fully compliant and interoperable with standards based OM3, OM4 and OM5 solutions.

- Signature Core™ OM4+ Cabling extends reach on average by 20% compared to standard OM4
- Signature Core™ OM5+ Cabling outperforms the standard OM5 fiber for any SWDM applications, providing on average 15% extended reach while maintaining Bit Error Rate performance
- Signature Core™ Fiber Media solutions allow for design flexibility (more connectors in the channel)

For more information on the Signature Core™ Fiber Optic Cabling System, visit panduit.com/signaturecore.

Step 3:

Select the components to build out your end-to-end fiber connectivity channel.

40G Multimode Fiber Options for Multimode: QSFP-40G-SR-BD and QSFP-40G-SR4-S

QSFP-40G-SR-BD

OR

QSFP-40G-CSR-S

Patch Cords	Cassettes	Enclosures	Trunk Cable	Enclosures	Cassettes	Patch Cords
LC	HD Flex		MPO12 OM4 Method B (Female to Female)	HD Flex		LC
						
	FHCZO-12-10U	FLEX1U06		FLEX1U06	FHCZO-12-10U	
	QuickNet			QuickNet		
						
FZ2ERLNLNSNM*	FQZO-12-10U	QAPP24BL	FZTYP7575YAF*	QAPP24BL	FQZO-12-10U	FZ2ERLNLNSNM*
	Opticom			Opticom		
						
	FC2ZO-12-10U	FCE1U		FCE1U	FC2ZO-12-10U	

QSFP-40G-SR-BD

OR

QSFP-40G-CSR-S

*Patch cords and trunk cables are available in a variety of lengths, feet or meters; select the part numbers for additional information.

40G Multimode Fiber Options for Multimode: QSFP-40G-SR4, QSFP-40G-SR4-S, and QSFP-40G-CSR4

QSFP-40G-SR4

QSFP-40G-SR4-S

QSFP-40G-CSR4

Interconnect	Fiber Adapter Panels	Enclosures	Trunk Cable	Enclosures	Fiber Adapter Panels	Interconnect
MPO12	HD Flex		MPO12 OM4 Method B (Male to Male)	HD Flex		MPO12
						
	FHMP-6-BCG	FLEX1U06		FLEX1U06	FHMP-6-BCG	
	QuickNet			QuickNet		
						
FZTRP7N7NYNF*	FQMAP66CG	QAPP24BL	FZTYP8585YAF*	QAPP24BL	FQMAP66CG	FZTRP7N7NYNF*
	Opticom			Opticom		
						
	FAPH0612CGMPO	FCE1U		FCE1U	FAPH0612CGMPO	

QSFP-40G-SR4

QSFP-40G-SR4-S

QSFP-40G-CSR4

*Interconnects and trunk cables are available in a variety of lengths, feet or meters; select the part numbers for additional information.

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Step 3: Continued

Select the components to build out your end-to-end fiber connectivity channel.

40G **Single Mode** Options for: WSP-Q40GLRL

WSP-Q40GLRL

Patch Cords	Cassettes	Enclosures	Trunk Cable	Enclosures	Cassettes	Patch Cords
LC	HD Flex		MPO12 OS2 Method B (Female to Female)	HD Flex		LC
						
	FHC9N-12-10U	FLEX1U06		FLEX1U06	FHC9N-12-10U	
	QuickNet			QuickNet		
						
	FQ9N-12-10U	QAPP24BL		QAPP24BL	FQ9N-12-10U	
F92ERLNLNSNM*			F9TYP7575BAF*			F92ERLNLNSNM*
	Opticom			Opticom		
						
	FC29N-12-10U	FCE1U		FCE1U	FC29N-12-10U	

WSP-Q40GLRL

*Patch cords and trunk cables are available in a variety of lengths, feet or meters; select the part numbers for additional information.

40G **Single Mode** Options for: QSFP-4X10G-LR-S

QSFP-4X10G-LR-S

Interconnect	Fiber Adapter Panels	Enclosures	Trunk Cable	Enclosures	Fiber Adapter Panels	Interconnect
MPO12	HD Flex		MPO12 OS2 Method B (Male to Male)	HD Flex		MPO12
						
	FHMP-6-ABL	FLEX1U06		FLEX1U06	FHMP-6-ABL	
	QuickNet			QuickNet		
						
	FQMAP65BL	QAPP24BL		QAPP24BL	FQMAP65BL	
F9TRP7N7NBNF*			F9TYP8585BAF*			F9TRP7N7NBNF*
	Opticom			Opticom		
						
	FAPH0612BLMPO	FCE1U		FCE1U	FAPH0612BLMPO	

QSFP-4X10G-LR-S

*Interconnects and trunk cables are available in a variety of lengths, feet or meters; select the part numbers for additional information.

For more information on the complete Panduit Fiber Solution, reference the Fiber Solutions Quick Reference Guide (FBCB40).

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