

100G Fiber Optic Transceiver

Cable Ordering Guide: Cisco Nexus



Step 1:

Choose the correct Cisco transceiver for your application

Cisco 40/100G Optics: QSFP

Cisco Part Number	Reach	Media	Connector
QSFP-100G-SR4-S	100m	Parallel MMF	MPO
QSFP-40/100G-SRBD	100m	Duplex MMF	LC (40G or 100G)
QSFP-40G-SR-BD	100m	Duplex MMF	LC (40G only)
QSFP-100G-PSM4-S	500m	Parallel SMF	MPO
QSFP-100G-SM-SR	2km	Duplex SMF	LC
QSFP-100G-CWDM4-S	2km	Duplex SMF	LC
QSFP-100G-FR-S	2km	Duplex SMF	LC

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



QSFP-100G-SR4-S

Description

The **QSFP28 SR4-S** module supports 100GBASE-SR4 Ethernet over link lengths of up to 100m over parallel multimode fiber. The maximum reach over OM4 is 100m and 70m over OM3 MMF (Multi-Mode Fiber). The SR4-S module accepts MPO12 connectors and can interoperate with 4 individual 25G SR-S modules via a fiber breakout cable. It is primarily used in data center and enterprise applications.



QSFP-40/100G-SRBD

The **QSFP28 40/100G** dual-rate BiDi (Bi-Directional) transceiver is a pluggable optical transceiver with a duplex LC connector interface for short-reach data communication and interconnect applications using MMF. It offers customers a solution that enables reuse of their existing 10 Gb duplex MMF infrastructure for migration to either 40 or 100 Gigabit Ethernet connectivity.

In 40G mode, the Cisco QSFP 40/100G BiDi transceiver supports link lengths of 100m and 150m on OM3 and OM4 MMF, respectively. In 100G mode, it supports 70 and 100 meters on OM3 and OM4, respectively.

Each 40/100G BiDi transceiver consists of two transmit and receive channels in the 832-918 nm wavelength range, enabling an aggregated 40G or 100G link over a two-strand multimode fiber connection.

In 100G mode, the operating temperature range is +10 to +60°C and in 40G mode it is +10 to +70°C. the QSFP28 40/100G BiDi module is primarily used in data center and enterprise applications.



QSFP-100G-PSM4-S

The **QSFP28 PSM4-S** module supports 100G link lengths of up to 500m over parallel G.652 SMF (Single-Mode Fiber). It accepts angle-polished MPO12 connectors and can interoperate with 4 individual 25G LR-S modules via a fiber breakout cable. PSM4-S complies with the PSM4 MSA and is primarily used in data center applications.



QSFP-100G-CWDM4-S
and
QSFP-100G-SM-SR

The **QSFP28 CWDM4-S** module supports 100G link lengths of up to 2km over duplex G.652 SMF. It accepts duplex LC connectors. The 100G Ethernet signal is carried over four wavelengths on the CWDM (Coarse Wavelength Division Multiplexing) grid. Multiplexing and demultiplexing of the four wavelengths are managed within the device. CWDM4-S complies with the CWDM4 MSA and is primarily used in data center and enterprise applications.

The QSFP28 SM-SR is for “Single-Mode Fiber Short Reach” applications and is also known as “CWDM4-Lite”. A variant of CWDM4-S, its operating temperature range is +10 to +60°C instead of the standard commercial temperature range of 0 to 70°C.

Like CWDM4-S, SM-SR supports 100G link lengths of up to 2km over duplex G.651 SMF and accepts duplex LC connectors. However, its optical link loss budget is 4.2 dB instead of 5.0 dB as specified by the CWDM4 MSA. At 4.2 dB, the link budget offers the ability to support the optical loss from patch panels in a data center environment. SM-SR is interoperable with CWDM4-S.



QSFP-100G-FR-S

The **QSFP28 FR-S** module supports 100G link lengths of up to 2km over duplex G.652 SMF. It accepts duplex LC connectors. FR-S is a single-lambda 100G optic and contains an internal processor chip that performs PAM4 (Pulse Amplitude Modulation), KP4 FEC (Forward Error Correction), and a gearbox to convert the 4x25G electrical signals from the host port to a single channel 100G optical signal.

FR-S interoperates with 400G optical interfaces such as IEEE 400GBASE-DR4, and Cisco’s 4x100G FR QSFP-DD module via fiber breakout cable. FR-S complies with the 100G-FR specification issued by the 100G Lambda MSA. It is primarily used in data center, enterprise, and service provider applications.

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 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/BiDi) 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.

100G Multimode Fiber Options for Multimode: QSFP-40/100-SRBD



OR



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		
FZ2E^LNLNSNM*	FQZO-12-10U	QAPP24BL	FYZT^^77Y001F*	QAPP24BL	FQZO-12-10U	FZ2E^LNLNSNM*
	Opticom			Opticom		
	FC2ZO-12-10U	FCE1U		FCE1U	FC2ZO-12-10U	

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

^Patch cords are available in R = ONFR (Riser) or L = LSZH.

^^Trunk cables are available in P = OFNP (Plenum), L = LSZH or B = Euroclass B2ca.

100G Multimode Fiber Options for Multimode: QSFP-100G-SR4-S



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		
FZTR^7N7NYNM*	FQMAP66CG	QAPP24BL	FYZT^^88Y001F*	QAPP24BL	FQMAP66CG	FZTR^7N7NYNM*
	Opticom			Opticom		
	FAPH0612CGMPO	FCE1U		FCE1U	FAPH0612CGMPO	

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





^Interconnects are available in P = ONFP (Plenum), L = LSZH or C = Euroclass Cca.

^^Trunk cables are available in P = OFNP (Plenum), L = LSZH or B = Euroclass B2ca.

Step 3: Continued

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

100G Single Mode Options for: QSFP-100G-PSM4-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
 QSFP-100G-PSM4-S						 F9TR^7N7NBNM*
	FHMP-6-ABL	FLEX1U06		FLEX1U06	FHMP-6-ABL	
	QuickNet			QuickNet		
	FQMAP65BL	QAPP24BL	FY9T^^88B001F*	QAPP24BL	FQMAP65BL	
	Opticom			Opticom		
	FAPH0612BLMPO	FCE1U		FCE1U	FAPH0612BLMPO	

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^^Trunk cables are available in P = OFNP (Plenum), L = LSZH or B = Euroclass B2ca.

100G Single Mode Options for: QSFP-100G-SM-SR, QSFP-100G-CWDM4-S, and QSFP-100G-FR-S

Patch Cords	Cassettes	Enclosures	Trunk Cable	Enclosures	Cassettes	Patch Cords	
LC	HD Flex		MPO12 OS2 Method B (Female to Female)		HD Flex	LC	
 QSFP-100G-SM-SR						 F92E^LNLNSNM*	
	F92E^LNLNSNM*	FQ9N-12-10U		FLEX1U06	FLEX1U06		FQ9N-12-10U
	QuickNet			QuickNet			
	FQ9N-12-10U	QAPP24BL	FY9T^^77B001F*	QAPP24BL	FQ9N-12-10U		
	Opticom			Opticom			
	FC29N-12-10U	FCE1U		FCE1U	FC29N-12-10U		

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

^Patch cords are available in R = ONFR (Riser) or L = LSZH.

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