

# QFX-SFP-10GE-USR

Part number: 740-030658

## Optics Overview

Juniper Networks offers a complete portfolio of modular and fixed-chassis routers and switches for both WAN and data center networks. These solutions span Juniper’s MX-Series Universal Routing Platform and PTX-Series Packet Transport Routers to EX-Series Ethernet Switches and QFX-Series Data Center Switches among others. Depending on deployment scenarios, Juniper’s platforms support different pluggable optic modules that can be selected based on speed, distance, form-factor, and wavelength among other relevant attributes.

## Additional Resources

### Hardware Compatibility Tool

HCT contains a regularly updated database of Juniper’s transceivers, DACs, and AOCs along with information regarding compatibility with Juniper’s platforms and interface modules.

<https://apps.juniper.net/hct/home/>

## Product Description

SFP+ 10 Gigabit Ethernet Ultra Short Reach Optics, 850 nm for 10m on OM1, 20m on OM2, 100m on OM3 Multi-Mode Fiber

## Overview

Part Number	740-030658
Speed	10 Gigabit Ethernet
Breakout Capable	No
Transceiver Type	SFP+
Product Type	Optical Transceiver
Connector	Duplex LC
Monitoring Available	Yes
Digital Optical Monitoring	Yes
Common Optic Equivalent	SFPP-10G-USR-C

**Note:**

- Monitoring Available - Can measure received optical power and display in CLI.
- Digital Optical Monitoring - Full support for SFF-8636.
- Common Optic - The common optics product line provides competitively priced single-SKU optics offerings for use across Juniper routing, switching, and security platforms.

## Specifications

Standard: Juniper Networks proprietary 10G-USR

Signaling rate, each lane	9.95328 GBd +/- 20 ppm 10.3125 GBd +/- 100 ppm
Transmitter wavelengths (range)	840 nm to 860 nm
Receive lane wavelengths (range)	840 nm to 860 nm
Transmitter output power, each lane (minimum)	-7.3 dBm
Transmitter output power, each lane (maximum)	-1.3 dBm
Receiver input power, each lane (minimum)	-9.9 dBm
Receiver input power, each lane (maximum)	-1.0 dBm
Optical Transmitter 3-dB spectral width (maximum)	0.65 nm
Cable type	MMF
Core size/cladding	62.5/125 $\mu\text{m}$ 50/125 $\mu\text{m}$ 50/125 $\mu\text{m}$
Fiber grade	OM1                                      OM2 OM3 (OM4 compatible)
Effective modal bandwidth	200 MHz x km                      500 MHz x km 2000 MHz x km
Distance	10 m                                      30 m 100 m
Maximum Power consumption (W)	0.5 W
Operating Temperature (range)	0° C to 70° C
Storage temperature	-40° C to 85° C

## Supported Platforms

Platform	Introduced Release	Additional Information
<b>Routing</b>		
ACX710	Junos OS 20.2R1	
ACX2000		
ACX2100		
ACX2200		
ACX4000		
ACX5000		
ACX5448-D	Junos OS 19.3R1	
ACX5448-M	Junos OS 19.3R1	
ACX5448	Junos OS 18.2R1	
ACX7100-48L	Junos OS Evolved 21.1R1	
ACX7509	Junos OS Evolved 21.4R1	
MX150	Junos OS 17.3R1	
PTX10008		
PTX10016		
<b>SDN and Orchestration</b>		
NFX150	Junos OS 18.1R1	
NFX250	Junos OS 15.1X53-D40	
NFX350	Junos OS 19.4R1	
<b>Switching</b>		
EX2300	Junos OS 15.1X53-D50	
EX2300-C	Junos OS 15.1X53-D50	
EX2300 Multigigabit	Junos OS 18.1R2	
EX3300	Junos OS 11.3R1	
EX3400	Junos OS 15.1X53-D50	
EX4100	Junos OS 22.2R1	

Platform	Introduced Release	Additional Information
EX4100-F	Junos OS 22.2R1	
EX4100 Multigigabit	Junos OS 22.2R1	
EX4200	Junos OS 10.2R1	EX4200-24F-S and EX4200-48T-S switches—Junos OS for EX Series switches, Release 12.3R4 or later
EX4300	Junos OS 13.2X50-D10	EX4300-24T, EX4300-24P, EX4300-48T, EX4300-48T-AFI, EX4300-48P, EX4300-48T-DC, and EX4300-48T-DC-AFI switches—Junos OS for EX Series switches, Release 13.2X50-D10 or later EX4300-32F switches—Junos OS for EX Series switches, Release 13.2X51-D15 or later EX4300-24T-S, EX4300-24P-S, EX4300-32F-S, EX4300-48T-S, and EX4300-48P-S switches—Junos OS for EX Series switches, Release 13.2X51-D26 or later
EX4300 Multigigabit	Junos OS 18.2R1	
EX4400	Junos OS 21.1R1	
EX4400-48T	Junos OS 21.1R1	
EX4400-24T	Junos OS 21.1R1	
EX4400 Multigigabit	Junos OS 21.2R1	
EX4400-24X	Junos OS 23.4R1	
EX4400-48F	Junos OS 21.1R1	
EX4500	Junos OS 10.2R1	
EX4550	Junos OS 12.2R1	EX4550-32F-S switches—Junos OS for EX Series switches, Release 12.3R5 or later
EX4600		
EX4650-48Y	Junos OS 18.3R1	
EX6200	Junos OS 11.3R2	
EX8208	Junos OS 10.2R1	
EX8216	Junos OS 10.2R1	
EX9204	Junos OS 12.3R2	
EX9208	Junos OS 12.3R2	
EX9214	Junos OS 12.3R2	

Platform	Introduced Release	Additional Information
EX9251	Junos OS 18.1R1	
EX9253	Junos OS 18.3R1	
QFX3500	Junos OS 11.1R1	
QFX5100		Not available for the QFX5100-48T
QFX5110	Junos OS 15.1X53-D210	Small form-factor pluggable (SFP) and enhanced SFP (SFP+) optical transceivers used in the QFX5110-32Q are for the management ports only, whereas natively supported on QFX5110-48S.
QFX5120-32C	Junos OS 22.2R1	
QFX5130-32CD	Junos OS Evolved 22.2R1	
QFX5120-48Y	Junos OS 18.3R1	
QFX5120-48YM	Junos OS 20.4R1	
QFX5210-64C	Junos OS 18.1R1	
QFX5220-32CD	Junos OS Evolved 22.2R1	
QFX5220-128C	Junos OS Evolved 22.2R1	
QFX5230-64CD		
QFX5700	Junos OS Evolved 22.1R1	
QFX10002		Only supported in the management Ethernet port
QFX10008		
QFX10016		

## Supported Interface Modules

### Adapters

Name	Description	Platforms and Introduced Releases
10 Gigabit Ethernet		
MAM1Q00A-QSA	NVIDIA LinkX Optics QSA Cable Adapter 40Gbps QSFP+ to 10Gbps SFP+ / 1Gbps SFP ports. For more information regarding ordering Mellanox products, please contact Mellanox at: <a href="https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/">https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/</a>	EX9253 Junos OS 18.3R1

### Flexible PIC Concentrators (FPCs)

Name	Description	Platforms and Introduced Releases
10 Gigabit Ethernet		
QFX5K-FPC-20Y	20X50G linecard for QFX5700	QFX5700 Junos OS Evolved 22.1R1

### Line Cards

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
ACX7509-FPC-20Y	ACX7509 20X1GE/10GE/25GE/50GE LINE CARD	ACX7509 Junos OS Evolved 21.4R1	
EX9200-32XS	A line card with 32 10-Gigabit Ethernet ports	EX9204 Junos OS 12.3R2  EX9214 Junos OS 12.3R2	EX9208 Junos OS 12.3R2
QFX10000-60S-6Q	QFX10000 60-port 1/10G SFP/SFP+ line card with 6 40G QSFP+ / 2 100G QSFP28 ports	PTX10008 Junos OS 19.1R1  QFX10008 Junos OS 17.1R1	PTX10016 Junos OS 19.1R1  QFX10016 Junos OS 17.1R1

## Uplink Modules

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
EX-UM-4SFPP-MR	EX4300, 4-Port 10G SFP+/4-Port 1G SFP Uplink Module	EX4300 Junos OS 18.2R1	EX4300 Multigigabit Junos OS 18.2R1
EX-UM-4X4SFP	EX4300, 4-Port 10G SFP+/4-Port 1G SFP Uplink Module	EX4300 Junos OS 13.2X50-D10	
EX-UM-8X8SFP	EX4300, 8-Port 10G SFP+/ 8-Port 1G SFP Uplink Module	EX4300 Junos OS 13.2X51-D15	
EX4400-EM-1C	1x100GbE QSFP28 extension module for EX4400 series of switches	EX4400-24X Junos OS 23.4R1	
EX4400-EM-4S	4x10G SFP+ extension module for EX4400 series of switches	EX4400 Junos OS 21.1R1	EX4400-48T Junos OS 21.1R1
		EX4400-24T Junos OS 21.1R1	EX4400 Multigigabit Junos OS 21.2R1
		EX4400-48F Junos OS 21.1R1	

## Why buy optics from Juniper?

There is value in choosing Juniper over 3<sup>rd</sup> party optics

### ✓ Full testing, validation, and JTAC support for Juniper optics

- Power, Electrical, and Management interfaces tested at the system level.
- Extended temperature and functional testing in DVT chamber using fully loaded systems.
- Full software integration into JUNOS/EVO for seamless part recognition, functionality, and telemetry.
- Latest qualification status and optics specifications published on [Hardware Compatibility Tool](#).

### ✓ Single-source provider for 1G to 400G on a variety of optical technologies

- Juniper's optics portfolio is maintained and constantly refreshed based on vendor availability.
- Automatic supply chain diversity and supply continuity - multiple optics suppliers fulfilled through Juniper.

### ✓ Rigorous evaluation of optical vendors

- Juniper ensures uniformity across all vendors by standardizing P-Specs for management, specs, and logs.
- Vendors are scored based on engineering and supply-chain analysis.
- Factory audits and critical component evaluation (Ex. Who is supplying the laser?).

## Aren't 3<sup>rd</sup> party optics the same?

Optics may be a commodity, but some things are too good to be true

### × Juniper does not Provide JTAC support for 3<sup>rd</sup> party optics

- JTAC will only assist with host-related issues unrelated to the use of 3<sup>rd</sup> party optics.

### × Not all optics are the same - standards compliance does not guarantee quality or performance

- Third-party providers lack system-level knowledge and testing.
- No guarantee of vendor reliability or accountability.

### × Newer technologies (ex. Coherent 400G ZR/ZR+) are complex and not simply plug-and-play

- Significant software integration necessary to enable full functionality, management, and telemetry.
- Use of unqualified 3<sup>rd</sup> party high-power optics can damage the host equipment.

### × Third-party providers simply can't scale

- Incomplete solution offerings and fast turnaround times only for limited quantities.

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