

# EX-SFP-10GE-ZR

Part number: 740-045928

## 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+, 10GBase-ZR 10 Gigabit Ethernet Optics, 1550nm for 80km Transmission on SMF

## Overview

Part Number	740-045928
Speed	10 Gigabit Ethernet
Breakout Capable	No
Transceiver Type	SFP+
Product Type	Optical Transceiver
Connector	Duplex LC
Monitoring Available	Yes
Digital Optical Monitoring	Yes

### 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: 10GBASE-ZR

Standards compliance (Ethernet/OTN Standard, for e.g. 100GBASE-LR4)	Multivendor agreement
MSA compliance (SFF, for e.g. SFF-8665)	SFF-8431 SFF-8472 SFF-8432
Digital Diagnostic Monitoring	Transceiver Temperature Transceiver Supply Voltage Tx Bias Current Tx output power Rx received optical power
Signaling rate, each lane	10 Gbps
Transmitter fibers	1
Transmitter wavelengths (range)	1530 nm to 1565 nm
Receive lane wavelengths (range)	1260 nm to 1565 nm
Transmitter output power, each lane (minimum)	0 dBm
Transmitter output power, each lane (maximum)	4 dBm
Receiver input power, each lane (minimum)	-24 dBm
Receiver input power, each lane (maximum)	-7 dBm
Receiver sensitivity (OMA), each lane (maximum)	-24 dBm
Stressed receiver sensitivity (OMA) each lane (maximum)	N/A
Cable type	SMF
Core size/cladding	9/125 $\mu$ m
Effective modal bandwidth	—
Distance	80 km
Maximum Power consumption (W)	1.5 W
Operating Temperature (range)	0° C to 70° C
Storage temperature	-40° C to 85° C

Typical Weight & Dimensions

Width: 14 mm  
Height: 12.05 mm  
Length: 57.5 mm  
Weight: 0.15 lb

## Supported Platforms

Platform	Introduced Release	Additional Information
Routing		
ACX5000		
ACX7024	Junos OS Evolved 22.3R1	
ACX7100-32C	Junos OS Evolved 21.3R1	
ACX7100-48L	Junos OS Evolved 21.3R1	
ACX7348	Junos OS Evolved 23.4R1	
ACX7509	Junos OS Evolved 21.4R1	
MX150	Junos OS 17.3R1	
PTX10008		
PTX10016		
SDN and Orchestration		
NFX250	Junos OS 15.1X53-D40	
Security		
SRX380	Junos OS 20.1R1	
Switching		
EX2300	Junos OS 15.1X53-D50	
EX3400	Junos OS 15.1X53-D50	
EX4100	Junos OS 22.2R1	
EX4100-F	Junos OS 22.2R1	
EX4100 Multigigabit	Junos OS 22.2R1	
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	

Platform	Introduced Release	Additional Information
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	
EX4500	Junos OS 11.4R5	
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	
EX8208	Junos OS 11.4R5	
EX8216	Junos OS 11.4R5	
EX9204	Junos OS 12.3R2	
EX9208	Junos OS 12.3R2	
EX9214	Junos OS 12.3R2	
EX9251	Junos OS 18.1R1	
EX9253	Junos OS 18.3R1	
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.
QFX5120-48Y	Junos OS 18.3R1	
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
MAM1Q00A-QSA28	NVIDIA LinkX Optics QSA Cable Adapter 100Gbps QSFP28 to 25Gbps SFP28; Supported interface work with MAM1Q00A-QSA28 revision A6 For more information regarding ordering NVIDIA products, please contact NVIDIA at: <a href="https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/">https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/</a>	ACX7100-32C Junos OS Evolved 21.3R1

### Line Cards

Name	Description	Platforms and Introduced Releases
10 Gigabit Ethernet		
ACX7300-16Y	ACX7300-16Y: 16-port, multi-rate (SFP56)	ACX7348 Junos OS Evolved 23.4R1
ACX7509-FPC-20Y	ACX7509 20X1GE/10GE/25GE/50GE LINE CARD	ACX7509 Junos OS Evolved 21.4R1
EX9200-2C-8XS	A line card with two 100-Gigabit Ethernet ports and eight 10-Gigabit Ethernet ports	EX9204 Junos OS 12.3R2  EX9214 Junos OS 12.3R2  EX9208 Junos OS 12.3R2

Name	Description	Platforms and Introduced Releases	
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
EX9200-6QS	A line card with six 40-Gigabit Ethernet ports and 24 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

### Modular Interface Cards (MICs)

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
EX9200-10XS-MIC	EX9200 MIC, 10-port 10GbaseX (Half-slot)	EX9204 Junos OS 12.3R2  EX9214 Junos OS 12.3R2	EX9208 Junos OS 12.3R2

### 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 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	

Name	Description	Platforms and Introduced Releases	
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.

---

Copyright © 2024, Juniper Networks, Inc. All rights reserved.

By accessing information contained in this document, you agree that:

- the information you are accessing is confidential to Juniper Networks
- you will not disclose this information to any party outside Juniper Networks
- you are authorized by Juniper Networks to access the information

The information in this document is provided "AS IS", with no warranties of any kind attached to the information. Any reliance upon the information shall be at the user's own risk. Juniper assumes no liability for the information contained in this document.