

# JNP-QSFP-4X10GE-IR

Part number: 740-056706

## 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

QSFP+ 40GBASE optics, up to 1.4 km transmission on parallel single mode (4X10GbE long reach up to 1.4 km)

## Overview

Part Number	740-056706
Speed	4 x 10 Gigabit Ethernet
Breakout Capable	Yes
Transceiver Type	QSFP+
Product Type	Optical Transceiver
Connector	MPO-12 APC
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: Juniper Networks proprietary 4x10G-IR PSM

Signaling rate, each lane	10.3125 GBd +/- 100 ppm
Transmitter wavelengths (range)	1290.5 nm through 1355 nm
Receive lane wavelengths (range)	1260 nm through 1355 nm
Transmitter output power, each lane (minimum)	-10.4 dBm
Transmitter output power, each lane (maximum)	1.5 dBm
Receiver input power, each lane (minimum)	-13 dBm
Receiver input power, each lane (maximum)	1.5 dBm
Optical Transmitter 3-dB spectral width (maximum)	2.4 nm
Cable type	SMF
Core size/cladding	9/125 $\mu$ m
Distance	1.4 km
Maximum Power consumption (W)	3.5 W
Operating Temperature (range)	0° C to 70° C
Storage temperature	-40° C to 85° C

## Supported Platforms

Platform	Introduced Release	Additional Information
Routing		
ACX5000 Breakout Supported		
ACX5448-D Breakout Supported	Junos OS 19.3R1	
ACX5448-M Breakout Supported	Junos OS 19.3R1	
ACX5448 Breakout Supported	Junos OS 18.2R1	
ACX6360 Breakout Supported	Junos OS 18.4R1	
ACX7100-32C Breakout Supported	Junos OS Evolved 21.3R1	
ACX7100-48L Breakout Supported	Junos OS 21.3R1	
ACX7509 Breakout Supported	Junos OS Evolved 21.4R1	
MX240 Breakout Supported	Junos OS 19.1R1	
MX480 Breakout Supported	Junos OS 19.1R1	
MX960 Breakout Supported	Junos OS 19.1R1	
PTX10001-36MR Breakout Supported	Junos OS Evolved 20.2R1	
PTX1000 Breakout Supported	Junos OS 16.1X65-D30	
PTX10003 Breakout Supported	Junos OS Evolved 19.1R1	
PTX10004 Breakout Supported	Junos OS Evolved 20.3R1	

Platform	Introduced Release	Additional Information
PTX10008 Breakout Supported	Junos OS Evolved 20.1R1 Junos OS 18.2R1	
PTX10016 Breakout Supported	Junos OS Evolved 21.2R2 Junos OS 18.2R1	
Switching		
EX9204 Breakout Supported	Junos OS 20.3R1	
EX9208 Breakout Supported	Junos OS 20.3R1	
EX9214 Breakout Supported	Junos OS 20.3R1	
EX9251 Breakout Supported	Junos OS 18.1R1	
EX9253 Breakout Supported	Junos OS 18.2R1	
QFX5100 Breakout Supported		
QFX5110 Breakout Supported	Junos OS 15.1X53-D210	
QFX5120-32C Breakout Supported	Junos OS 22.2R1	
QFX5130-32CD Breakout Supported	Junos OS Evolved 22.2R1	
QFX5120-48Y Breakout Supported	Junos OS 22.2R1	
QFX5200-32C Breakout Supported	Junos OS 15.1X53-D30	
QFX5210-64C Breakout Supported	Junos OS 18.1R1	
QFX5220-32CD Breakout Supported	Junos OS Evolved 22.2R1	
QFX5220-128C Breakout Supported	Junos OS Evolved 22.2R1	

Platform	Introduced Release	Additional Information
QFX5230-64CD Breakout Supported		
QFX5700 Breakout Supported	Junos OS Evolved 22.2R1	
QFX10002 Breakout Supported	Junos OS 15.1X53-D10	
QFX10008 Breakout Supported	Junos OS 15.1X53-D30	
QFX10016 Breakout Supported	Junos OS 15.1X53-D61	
QFX10002-60C Breakout Supported		

## Supported Interface Modules

### Flexible PIC Concentrators (FPCs)

Name	Description	Platforms and Introduced Releases
40 Gigabit Ethernet		
QFX5K-FPC-16C	16X100G linecard for QFX5700 chassis	QFX5700 Junos OS Evolved 22.2R1 Breakout Supported
QFX5K-FPC-4CD	4X400G linecard for QFX700 chassis	QFX5700 Junos OS Evolved 22.2R1 Breakout Supported
4 x 10 Gigabit Ethernet		
QFX5K-FPC-16C	16X100G linecard for QFX5700 chassis	QFX5700 Junos OS Evolved 22.2R1 Breakout Supported

Name	Description	Platforms and Introduced Releases
QFX5K-FPC-4CD	4X400G linecard for QFX700 chassis	QFX5700 Junos OS Evolved 22.2R1 <a href="#">Breakout Supported</a>

## Line Cards

Name	Description	Platforms and Introduced Releases
40 Gigabit Ethernet		
ACX7509-FPC-16C	ACX7509 16X40GE/16X100GE LINE CARD	ACX7509 Junos OS Evolved 21.4R1 <a href="#">Breakout Supported</a>
4 x 10 Gigabit Ethernet		
ACX7509-FPC-16C	ACX7509 16X40GE/16X100GE LINE CARD	ACX7509 Junos OS Evolved 21.4R1 <a href="#">Breakout Supported</a>
EX9200-15C	Fixed-configuration line card with 15 rate-selectable ports. All ports can operate at 10-Gbps, 25-Gbps, 40-Gbps, or 100-Gbps speeds. The ports are configured to operate at 100-Gbps speed by default.	EX9204 Junos OS 20.3R1 <a href="#">Breakout Supported</a>  EX9214 Junos OS 20.3R1 <a href="#">Breakout Supported</a>  EX9208 Junos OS 20.3R1 <a href="#">Breakout Supported</a>
EX9253-6Q12C <sup>(EOL)</sup>	A line card with six built-in QSFP+ ports, each of which can house QSFP+ pluggable transceivers and 12 built-in QSFP28 ports, each of which can house QSFP28 pluggable transceivers.	EX9253 Junos OS 18.2R1 <a href="#">Breakout Supported</a>
EX9253-6Q12C-M <sup>(EOL)</sup>	A line card with six built-in QSFP+ ports, each of which can house QSFP+ pluggable transceivers and 12 built-in QSFP28 ports with Media Access Control Security (MACsec) capability, each of which can house QSFP28 pluggable transceivers.	EX9253 Junos OS 18.2R1 <a href="#">Breakout Supported</a>

Name	Description	Platforms and Introduced Releases	
PTX10K-LC1105	PTX10K 3Tbps MACse Line Card - 30x100G/30x40G	PTX10008 Junos OS 18.2R1 Breakout Supported	PTX10016 Junos OS 18.3R1 Breakout Supported
PTX10K-LC1201-36CD	PTX10K 36 ports of 400 Gigabit Ethernet that provide 14.4-Tbps line rate processing speeds	PTX10004 Junos OS Evolved 20.3R1 Breakout Supported  PTX10016 Junos OS Evolved 21.2R2 Breakout Supported	PTX10008 Junos OS Evolved 20.1R1 Breakout Supported
PTX10K-LC1202-36MR	36-port line card that has thirty-two QSFP28 ports capable of supporting 100-Gbps speed, and four QSFP56-DD ports capable of supporting 400-Gbps speed	PTX10004 Junos OS Evolved 20.4R1 Breakout Supported  PTX10016 Junos OS Evolved 21.2R2 Breakout Supported	PTX10008 Junos OS Evolved 20.3R1 Breakout Supported
QFX10000-36Q	A 36-port 40-Gigabit Ethernet quad small form-factor pluggable plus transceiver (QSFP+) or 12-port 100GbE QSFP28 line card	QFX10008 Junos OS 15.1X53-D30 Breakout Supported	QFX10016 Junos OS 15.1X53-D61 Breakout Supported

## Modular Port Concentrators (MPCs)

Name	Description	Platforms and Introduced Releases	
4 x 10 Gigabit Ethernet			
MPC10E-10C	MPC10E-10C-MRATE/MPC10E-10C-P-BASE, 10 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 19.2R1 Breakout Supported  MX960 Junos OS 19.2R1 Breakout Supported	MX480 Junos OS 19.2R1 Breakout Supported

Name	Description	Platforms and Introduced Releases	
MPC10E-15C	MPC10E-15C-MRATE/MPC10E-15C-P-BASE, 15 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 19.1R1 Breakout Supported  MX960 Junos OS 19.1R1 Breakout Supported	MX480 Junos OS 19.1R1 Breakout Supported



## 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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