

JNP-QSFP-40G-LX4

Part number: 740-056705

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-LX4 40 Gigabit Optics for up to 150m transmission with OM4 over duplex MMF

Overview

Part Number	740-056705
Speed	40 Gigabit Ethernet
Breakout Capable	No
Transceiver Type	QSFP+
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: 40GBASE-LX4

Signaling rate, each lane	40 Gbps (10Gbps per Lane)	
Transmitter fibers	Dual	
Transmitter wavelengths (range)	Lane 0–1271 nm Lane 1–1291 nm Lane 2–1311 nm Lane 3–1331 nm	
Receive lane wavelengths (range)	Lane 0–1271 nm Lane 1–1291 nm Lane 2–1311 nm Lane 3–1331 nm	
Transmitter output power, each lane (minimum)	–7.0 dBm (per lane)	
Transmitter output power, each lane (maximum)	SMF 2.3 dBm MMF 4.3 dBm	
Receiver input power, each lane (minimum)	–11.5 dBm (per lane)	
Receiver input power, each lane (maximum)	SMF 2.3 dBm MMF 4.3 dBm	
Cable type	SMF MMF	MMF
Core size/cladding	9/125 µm 50/125 µm	50/125 µm
Fiber grade	OS1 OM4	OM3
Effective modal bandwidth	— 4700 MHz x km	2000 MHz x km
Distance	2 km 150 m	100 m
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		
ACX5448-D	Junos OS 19.3R1	
ACX5448-M	Junos OS 19.3R1	
ACX5448	Junos OS 18.2R1	
ACX7100-32C	Junos OS Evolved 21.2R1	
ACX7100-48L	Junos OS Evolved 21.1R1	
ACX7509	Junos OS Evolved 21.4R1	
MX204	Junos OS 17.4R1	
MX240		
MX304	Junos OS 22.2R1	
MX480		
MX960		
MX2008	Junos OS 15.1F7	
MX2010		
MX2020		
MX10003	Junos OS 17.3R1	Also supported on Fixed 6xQSFP
MX10004	Junos OS 22.3R1	
MX10008	Junos OS 21.4R1	
PTX10001-36MR	Junos OS Evolved 20.2R1	
PTX1000	Junos OS 16.1X65-D30	
PTX10003	Junos OS Evolved 19.1R1	
PTX10004	Junos OS Evolved 20.3R1	
PTX10008	Junos OS 18.2R1	
PTX10016	Junos OS 18.2R1	
Security		

Platform	Introduced Release	Additional Information
SRX4600	Junos OS 18.1R1	
SRX5400	Junos OS 19.3R1	Introduced release on SRX5K-MPC3-40G10G and SRX-MIC-2X40G-QSFP: 15.1X49-D10
SRX5600	Junos OS 19.3R1	Introduced release on SRX5K-MPC3-40G10G and SRX-MIC-2X40G-QSFP: 15.1X49-D10
SRX5800	Junos OS 19.3R1	Introduced release on SRX5K-MPC3-40G10G and SRX-MIC-2X40G-QSFP: 15.1X49-D10
Switching		
EX4300	Junos OS 14.1R1	
EX4300 Multigigabit	Junos OS 18.4R1	
EX4400-24X Breakout Supported	Junos OS 23.1R1	
EX4600		
EX4650-48Y	Junos OS 18.3R1	
EX9204	Junos OS 12.3R2	
EX9208	Junos OS 12.3R2	
EX9214	Junos OS 12.3R2	
EX9251	Junos OS 18.1R1	
EX9253	Junos OS 18.2R1	
QFX3500	Junos OS 13.2X52-D10	
QFX3600	Junos OS 13.2X51-D20	
QFX5100		Also available in packs of 4 transceivers, JNP-40G-LX4-4PACK.
QFX5110	Junos OS 15.1X53-D210	
QFX5120-32C	Junos OS 19.1R1	
QFX5130-32CD	Junos OS Evolved 20.4R1	
QFX5120-48T	Junos OS 20.2R1	
QFX5120-48Y	Junos OS 18.3R1	
QFX5200-32C	Junos OS 15.1X53-D30	
QFX5210-64C	Junos OS 22.4R1	

Platform	Introduced Release	Additional Information
QFX5220-32CD	Junos OS Evolved 22.2R1	
QFX5220-128C	Junos OS Evolved 19.2R1	
QFX5230-64CD		
QFX5700	Junos OS Evolved 21.2R1	
QFX10002	Junos OS 15.1X53-D10	
QFX10008	Junos OS 15.1X53-D30	
QFX10016	Junos OS 15.1X53-D61	
QFX10002-60C		

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 21.2R1

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
EX9200-12QS	A line card with six 40-Gigabit Ethernet rate-selectable ports, each of which can house transceivers	EX9204 Junos OS 16.1R4 EX9214 Junos OS 16.1R4 EX9208 Junos OS 16.1R4

Name	Description	Platforms and Introduced Releases	
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 EX9214 Junos OS 20.3R1	EX9208 Junos OS 20.3R1
EX9200-6QS	A line card with six 40-Gigabit Ethernet ports and 24 10-Gigabit Ethernet ports	EX9204 Junos OS 15.1R3 EX9214 Junos OS 15.1R3	EX9208 Junos OS 15.1R3
EX9253-6Q12C ^(EOL)	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	
EX9253-6Q12C-M ^(EOL)	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	
MX10K-LC9600	The MX10K-LC9600 (Model number: JNP10K-LC9600) is a fixed-configuration 24-port line card, which provides a line rate throughput of 9.6 Tbps	MX10004 Junos OS 22.3R1	MX10008 Junos OS 21.4R1
MX304-LMIC16	The MX304-LMIC16-BASE is a 16-port line card that supports maximum data throughput of 1.6 TB ingress and 1.6 TB egress	MX304 Junos OS 22.2R1	
PTX10K-LC1105	PTX10K 3Tbps MACse Line Card - 30x100G/30x40G	PTX10008 Junos OS 18.2R1	PTX10016 Junos OS 18.3R1
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 PTX10016 Junos OS Evolved 21.2R2	PTX10008 Junos OS Evolved 20.1R1

Name	Description	Platforms and Introduced Releases	
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 21.1R1 PTX10016 Junos OS Evolved 21.1R1	PTX10008 Junos OS Evolved 21.1R1
QFX10000-30C	A 30-port 100-Gigabit or 40-Gigabit Ethernet QSFP28 line card	QFX10008 Junos OS 15.1X53-D30	QFX10016 Junos OS 15.1X53-D61
QFX10000-30C-M	QFX10000 30-port 100G QSFP28 /24-port 40G QSFP+ with 6-port 100G QSFP28 line card, with MACSec	QFX10008 Junos OS 18.1R1	QFX10016 Junos OS 18.1R1
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	QFX10016 Junos OS 15.1X53-D61

Modular Interface Cards (MICs)

Name	Description	Platforms and Introduced Releases	
40 Gigabit Ethernet			
JNP-MIC1	12x100G/12x40G/48x10G Universal MIC	MX10003 Junos OS 17.3R1	
JNP-MIC1-MACSEC	12x100G/12x40G/48x10G Universal MACSEC MIC	MX10003 Junos OS 17.3R2	
SRX-MIC-2X40G-QSFP	MIC with two QSFP+ Ethernet ports	SRX5400 Junos OS 19.3R1 SRX5800 Junos OS 19.3R1	SRX5600 Junos OS 19.3R1

Modular Port Concentrators (MPCs)

Name	Description	Platforms and Introduced Releases	
40 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 MX960 Junos OS 19.2R1	MX480 Junos OS 19.2R1
MPC10E-15C	MPC10E-15C-MRATE/MPC10E-15C-P-BASE, 15 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 19.1R1 MX960 Junos OS 19.1R1	MX480 Junos OS 19.1R1
MPC5EQ-40G10G	6x40GE + 24x10GE MPC5EQ	MX240 Junos OS 13.3R2 MX960 Junos OS 13.3R2 MX2010 Junos OS 13.3R2	MX480 Junos OS 13.3R2 MX2008 Junos OS 15.1F7 MX2020 Junos OS 13.3R2
SRX5K-MPC3-40G10G	Fixed-configuration MPC with six 40-Gigabit Ethernet ports and twenty-four 10-Gigabit Ethernet ports	SRX5400 Junos OS 19.3R1 SRX5800 Junos OS 19.3R1	SRX5600 Junos OS 19.3R1

Uplink Modules

Name	Description	Platforms and Introduced Releases
40 Gigabit Ethernet		
EX-UM-2QSFP	EX4300, 2-Port 40G QSFP+ Uplink Module	EX4300 Junos OS 14.1R1
EX-UM-2QSFP-MR	EX4300MP 2-port 40GbE QSFP+/1-port 100GbE QSPF28 Uplink Module for EX4300-48MP	EX4300 Multigigabit Junos OS 19.3R1
EX4400-EM-1C	1x100GbE QSFP28 extension module for EX4400 series of switches	EX4400-24X Junos OS 23.4R1 Breakout Supported

Why buy optics from Juniper?

There is value in choosing Juniper over 3rd 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 3rd 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 3rd party optics

- JTAC will only assist with host-related issues unrelated to the use of 3rd 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 3rd 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.