QFX-SFP-10GE-ER

Part number: 740-030128

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-ER 10 Gigabit Ethernet Optics, 1550nm for 40km transmission on SMF

Overview

Part Number	740-030128
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-ER-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: 10GBASE-ER

Standards compliance (Ethernet/OTN Standard, for e.g. 100GBASE-LR4)	10GBASE-E
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	SMF
Transmitter wavelengths (range)	1530 nm to 1565 nm
Receive lane wavelengths (range)	1530 nm to 1565 nm
Transmitter output power, each lane (minimum)	-4.7 dBm
Transmitter output power, each lane (maximum)	4.0 dBm
Receiver input power, each lane (minimum)	-15.8 dBm
Receiver input power, each lane (maximum)	–1.0 dBm
Receiver sensitivity (OMA), each lane (maximum)	-14.1 dBm
Stressed receiver sensitivity (OMA) each lane (maximum)	-11.3 dBm
Cable type	SMF
Core size/cladding	9/125 µm
Distance	40 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	
MX204	Junos OS 17.4R1	Supported natively on the SFP+ ports and with a QSA adapter on the QSFP28 ports
MX240	Junos OS 12.3R1	
MX304	Junos OS 22.2R1	
MX480	Junos OS 12.3R1	
MX960	Junos OS 12.3R1	
MX10003	Junos OS 18.3R1	Use the QSA adapter to convert a 40-Gbps port to a 10-Gbps or a 1-Gbps port.
PTX10001-36MR	Junos OS Evolved 21.2R1	
PTX10008	Junos OS 17.1R1	
PTX10016	Junos OS 17.1R1	
SDN and Orchestration		
NFX150	Junos OS 18.1R1	
NFX250	Junos OS 15.1X53-D40	
NFX350	Junos OS 19.4R1	
Security		
SRX380	Junos OS 20.1R1	
SRX650		
SRX1400		

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Platform	Introduced Release	Additional Information
SRX1500		
SRX3400		
SRX3600		
SRX4100	Junos OS 15.1X49-D65	
SRX4200	Junos OS 15.1X49-D65	
Switching		
EX2300		
EX2300 Multigigabit	Junos OS 18.1R2	
EX3300	Junos OS 12.1R1	
EX3400	Junos OS 15.1X53-D50	
EX4100	Junos OS 22.2R1	
EX4100-F	Junos OS 22.2R1	
EX4100 Multigigabit	Junos OS 22.2R1	
EX4200	Junos OS 10.3R1	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	

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Platform	Introduced Release	Additional Information
EX4500	Junos OS 11.1R1	
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 10.1R1	
EX8216	Junos OS 10.1R1	
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	
QFX3500	Junos OS 11.3R1	
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.
QFX5120-32C	Junos OS 19.1R1	Supported only on the 2 native SFP+ ports
QFX5130-32CD	Junos OS Evolved 22.2R1	
QFX5120-48Y	Junos OS 18.3R1	
QFX5120-48YM	Junos OS 20.4R1	
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	Junos OS 17.1R1	

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Platform	Introduced Release	Additional Information
QFX10016	Junos OS 17.1R1	

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: https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/	MX204 Junos OS 18.3R1 MX240 Junos OS 23.2R1 MX304 Junos OS 22.2R1 MX480 Junos OS 23.2R1 MX960 Junos OS 23.2R1 MX10003 Junos OS 18.3R1 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: https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/	ACX7100-32C Junos OS Evolved 21.3R1
Adapter		
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: https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/	PTX10001-36MR Junos OS Evolved 21.2R1

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

I/O cards (IOCs)

Name	Description	Platforms and Introduced Releases
10 Gigabit Ethernet		
SRX1K-SYSIO-XGE	10-Gigabit Ethernet SYSIOC	SRX1400

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
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

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Name	Description	Platforms and Introduced Releases	
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
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	
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

Modular Port Concentrators (MPCs)

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
MPC10E-10C	MPC10E-10C-MRATE/MPC10E-10C-P-BASE, 10 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 23.2R1 MX960 Junos OS 23.2R1	MX480 Junos OS 23.2R1 MX960 Junos OS 20.3R1
MPC10E-15C	MPC10E-15C-MRATE/MPC10E-15C-P-BASE, 15 x QSFP28/QSFP56-DD multirate port line card	MX240 Junos OS 23.2R1 MX960 Junos OS 23.2R1	MX480 Junos OS 23.2R1 MX960 Junos OS 20.3R1

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Name	Description	Platforms and Introduced Releases	
MPC3E-3D-NG	MPC3E-3D-NG with port based queuing and flexible queuing option, Price includes full scale L2/L2.5 and reduced scale L3 features, Optics sold separately	MX240 Junos OS 12.3R1 MX960 Junos OS 12.3R1	MX480 Junos OS 12.3R1
MPC3E-3D-NG-Q	MPC3E-3D-NG-Q with full scale HQoS, Price includes full scale L2/L2.5 and reduced scale L3 features, Optics sold separately	MX240 Junos OS 12.3R1 MX960 Junos OS 12.3R1	MX480 Junos OS 12.3R1
MX-MPC3E-3D	MPC3E	MX240 Junos OS 12.3R1 MX960 Junos OS 12.3R1	MX480 Junos OS 12.3R1
MX-MPC3E-3D-NG	MPC3E NG	MX240 Junos OS 12.3R1 MX960 Junos OS 12.3R1	MX480 Junos OS 12.3R1

Network Processing Cards (NPCs)

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
SRX1K3K-NP-2XGE-SFPP	2-port Ethernet SFP+ NP-IOC for SRX3400, SRX3600, and SRX1400 Services Gateways	SRX1400 Junos OS 12.1X44-D10 SRX3600 Junos OS 12.1X44-D10	SRX3400 Junos OS 12.1X44-D10

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

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Name	Description	Platforms and Introduced Releases
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 EX4400-24T Junos OS 21.1R1 EX4400-48F Junos OS 21.1R1 EX4400-48T Junos OS 21.1R1 EX4400 Multigigabit Junos OS 21.2R1

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.
