

# SFPP-10GE-LR

Part number: 740-031981

## 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

10 Gigabit Ethernet Long Reach SFP+

## Overview

Part Number	740-031981
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-LR-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-LR

Standards compliance (Ethernet/OTN Standard, for e.g. 100GBASE-LR4)	10GBASE-L
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)	1260 nm to 1355 nm
Receive lane wavelengths (range)	1260 nm to 1355 nm
Transmitter output power, each lane (minimum)	-8.2 dBm
Transmitter output power, each lane (maximum)	0.5 dBm
Receiver input power, each lane (minimum)	-14.4 dBm
Receiver input power, each lane (maximum)	0.5 dBm
Receiver sensitivity (OMA), each lane (maximum)	-12.6 dBm
Stressed receiver sensitivity (OMA) each lane (maximum)	-10.3 dBm
Cable type	SMF
Core size/cladding	9/125 $\mu$ m
Distance	10 km
Maximum Power consumption (W)	1.0 W
Operating Temperature (range)	0° C to 85° 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		
ACX2000		
ACX2100		
ACX2200		
ACX4000		
ACX5448-D	Junos OS 19.3R1	
ACX5448-M	Junos OS 19.3R1	
ACX5448	Junos OS 18.2R1	
ACX7024	Junos OS Evolved 22.3R1	
ACX7100-48L	Junos OS Evolved 21.1R1	
ACX7348	Junos OS Evolved 23.4R1	
ACX7509	Junos OS Evolved 21.4R1	
MX104	Junos OS 13.2R2	
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		
MX304	Junos OS 22.2R1	
MX480		
MX960		
MX2008	Junos OS 15.1F7	
MX2010		
MX2020		
MX10003	Junos OS 18.3R1	Use the QSA adapter to convert a 40-Gbps port to a 10-Gbps or a 1-Gbps port.
MX10004	Junos OS 22.3R1	
MX10008	Junos OS 21.2R1	

Platform	Introduced Release	Additional Information
MX10016	Junos OS 21.2R1	
PTX3000		
PTX5000		
PTX10002-60C	Junos OS 19.4R1	
PTX10004	Junos OS Evolved 20.4R1	
PTX10008	Junos OS Evolved 20.2R1	
PTX10016	Junos OS Evolved 20.4R1	
SSR1200		
SSR1300		
SSR1400		
SSR1500		
SDN and Orchestration		
NFX250		
Security		
SRX1600	Junos OS 23.4R1	
SRX2300	Junos OS 23.4R1	
SRX4100	Junos OS 15.1X49-D65	
SRX4200	Junos OS 15.1X49-D65	
SRX5400	Junos OS 19.3R1	
SRX5600	Junos OS 19.3R1	
SRX5800	Junos OS 19.3R1	
Switching		
EX3400	Junos OS 15.1X53-D50	
EX4400	Junos OS 21.1R1	
EX4400-48T	Junos OS 21.1R1	
EX4400-24T	Junos OS 21.1R1	
EX4400 Multigigabit	Junos OS 21.1R1	
EX4400-24X	Junos OS 21.1R1	

Platform	Introduced Release	Additional Information
EX4400-48F	Junos OS 21.1R1	
EX9251	Junos OS 18.1R1	
QFX5130-32CD	Junos OS Evolved 22.2R1	
QFX5220-32CD	Junos OS Evolved 22.2R1	
QFX5220-128C	Junos OS Evolved 22.2R1	
QFX5230-64CD		
QFX5700	Junos OS Evolved 22.1R1	

## 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: <a href="https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/">https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/</a>	MX204 Junos OS 18.3R1	MX304 Junos OS 22.2R1
		MX10003 Junos OS 18.3R1	PTX10002-60C Junos OS 19.4R1
		PTX10004 Junos OS Evolved 20.4R1	PTX10008 Junos OS Evolved 20.2R1
		PTX10016 Junos OS Evolved 20.4R1	

### 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			
SRX5K-IOC4-10G	SRX5K-IOC4-10G is a fixed-configuration interface card with a Packet Forwarding Engine that provides 400-Gbps line rate. This interface card provides scalability in bandwidth and services to the SRX5400, SRX5600 and SRX5800 Services Gateways.	SRX5400 Junos OS 19.3R1  SRX5800 Junos OS 19.3R1	SRX5600 Junos OS 19.3R1

## 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	
MX10K-LC480	The MX10K-LC480 (Model number: JNP10K-LC480) is a fixed-configuration line card with 48 SFP/SFP+ ports.	MX10004 Junos OS 22.3R1  MX10016 Junos OS 21.2R1	MX10008 Junos OS 21.2R1
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-LC1201-36CD	PTX10K 36 ports of 400 Gigabit Ethernet that provide 14.4-Tbps line rate processing speeds	PTX10008 Junos OS Evolved 20.2R1	PTX10016 Junos OS Evolved 21.2R2

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 20.4R1  PTX10016 Junos OS Evolved 21.2R2	PTX10008 Junos OS Evolved 20.4R1

## Modular Interface Cards (MICs)

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
MIC-MACSEC-20GE	Multi rate MACsec MIC that supports either 20x1GE SFP or 2x10G SFPP ports. This MIC has 256b AES.	MX104 Junos OS 18.3R1  MX480 Junos OS 18.3R1	MX240 Junos OS 18.3R1  MX960 Junos OS 18.3R1
MIC3-3D-10XGE-SFPP	10-Gigabit Ethernet MIC with SFP+	MX240 Junos OS 12.3R1  MX960 Junos OS 12.3R1  MX2010 Junos OS 12.3R2	MX480 Junos OS 12.3R1  MX2008 Junos OS 15.1F7  MX2020 Junos OS 12.3R1
MIC6-10G	10-Gigabit Ethernet MIC with SFP+ (24 Ports)	MX2008 Junos OS 15.1F7  MX2020 Junos OS 13.3R2	MX2010 Junos OS 13.3R2
MIC6-10G-OTN	10-Gigabit Ethernet DWDM OTN MIC	MX2008 Junos OS 15.1F7  MX2020 Junos OS 13.3R3	MX2010 Junos OS 13.3R3



## Modular Port Concentrators (MPCs)

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
MPC-3D-16XGE-SFPP	16x10GE MPC	MX240 Junos OS 10.0R2	MX480 Junos OS 10.0R2
		MX960 Junos OS 10.0R2	MX2008 Junos OS 15.1F7
		MX2010 Junos OS 12.3R2	MX2020 Junos OS 12.3R1
MPC4E-3D-2CGE-8XGE	2x100GE + 8x10GE MPC4E	MX240 Junos OS 12.3R2	MX480 Junos OS 12.3R2
		MX960 Junos OS 12.3R2	MX2008 Junos OS 15.1F7
		MX2010 Junos OS 12.3R2	MX2020 Junos OS 12.3R2
MPC4E-3D-32XGE-SFPP	32x10GE MPC4E	MX240 Junos OS 12.3R2	MX480 Junos OS 12.3R2
		MX960 Junos OS 12.3R2	MX2008 Junos OS 15.1F7
		MX2010 Junos OS 12.3R2	MX2020 Junos OS 12.3R2
MPC5E-100G10G	2x100GE + 4x10GE MPC5E	MX240 Junos OS 13.3R3	MX480 Junos OS 13.3R3
		MX960 Junos OS 13.3R3	MX2008 Junos OS 15.1F7
		MX2010 Junos OS 13.3R3	MX2020 Junos OS 13.3R3
MPC5E-40G10G	6x40GE + 24x10GE MPC5E	MX240 Junos OS 13.3R2	MX480 Junos OS 13.3R2
		MX960 Junos OS 13.3R2	MX2008 Junos OS 15.1F7
		MX2010 Junos OS 13.3R2	MX2020 Junos OS 13.3R2

Name	Description	Platforms and Introduced Releases	
MPC5EQ-100G10G	2x100GE + 4x10GE MPC5EQ	MX240 Junos OS 13.3R3 MX960 Junos OS 13.3R3 MX2010 Junos OS 13.3R3	MX480 Junos OS 13.3R3 MX2008 Junos OS 15.1F7 MX2020 Junos OS 13.3R3
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
MPC7E-10G	MPC7E 10G	MX240 Junos OS 16.1R1 MX960 Junos OS 16.1R1 MX2010 Junos OS 16.1R1	MX480 Junos OS 16.1R1 MX2008 Junos OS 15.1F7 MX2020 Junos OS 16.1R1
MX2K-MPC6E	MPC6E	MX2008 Junos OS 15.1F7 MX2020 Junos OS 13.3R2	MX2010 Junos OS 13.3R2

### Physical Interface Cards (PICs)

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
P1-PTX-24-10G-W-SFPP	10-Gigabit Ethernet LAN/WAN OTN PIC with SFP+ (PTX Series)	PTX3000 Junos OS 13.2R2	PTX5000 Junos OS 12.3R2
P1-PTX-24-10GE-SFPP	10-Gigabit Ethernet PIC with SFP+ (PTX Series)	PTX3000 Junos OS 13.2R2	PTX5000 Junos OS 12.1X48R1

## Uplink Modules

Name	Description	Platforms and Introduced Releases	
10 Gigabit Ethernet			
EX4400-EM-4S	4x10G SFP+ extension module for EX4400 series of switches	EX4400 Multigigabit Junos OS 21.1R1	
EX4400-EM-4Y	4x25G SFP28 extension module for EX4400 series of switches. MACsec AES256	EX4400 Junos OS 21.1R1	EX4400-48T Junos OS 21.1R1
		EX4400-24T Junos OS 21.1R1	EX4400 Multigigabit Junos OS 21.1R1
		EX4400-24X Junos OS 21.1R1	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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