

SFPP-10GE-ER

Part number: 740-031983

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 Extended Reach SFP+

Overview

| | |
|----------------------------|---------------------|
| Part Number | 740-031983 |
| 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 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 | |
| ACX7100-32C | Junos OS Evolved 21.3R1 | |
| ACX7100-48L | Junos OS Evolved 21.1R1 | |
| ACX7348 | Junos OS Evolved 23.4R1 | |
| ACX7509 | Junos OS Evolved 21.4R1 | |
| MX104 | Junos OS 13.3R8 | The following releases are not supported: 14.1R1, 14.1R2, 14.1R3, 14.1R4, 14.1R5, 14.2R1, 14.2R2, 14.2R3, 15.1R1, 15.1F2 |
| 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 10.0R2 | |
| MX304 | Junos OS 22.2R1 | |
| 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 | |
| MX10003 | Junos OS 18.3R1 | Use the QSA adapter to convert a 40-Gbps port to a 10-Gbps or a 1-Gbps port. |

| Platform | Introduced Release | Additional Information |
|-----------------------|-------------------------|--|
| MX10004 | Junos OS 22.3R1 | |
| MX10008 | Junos OS 21.2R1 | |
| MX10016 | Junos OS 21.2R1 | |
| PTX10001-36MR | Junos OS Evolved 21.3R1 | |
| PTX3000 | | |
| PTX5000 | | |
| PTX10003 | Junos OS Evolved 19.3R1 | |
| PTX10004 | Junos OS Evolved 21.3R1 | |
| PTX10008 | Junos OS Evolved 21.3R1 | |
| PTX10016 | Junos OS Evolved 21.2R2 | |
| SDN and Orchestration | | |
| NFX250 | | |
| Security | | |
| SRX4100 | Junos OS 15.1X49-D65 | |
| SRX4200 | Junos OS 15.1X49-D65 | |
| SRX4600 | Junos OS 17.4R2 | |
| SRX5400 | Junos OS 12.3X48-D10 | Introduced release on SRX-MIC-10XG-SFPP: 12.3X48-D10. Introduced release on SRX5K-MPC3-100G10G and SRX5K-MPC3-40G10G: 15.1X49-D10. |
| SRX5600 | Junos OS 12.3X48-D10 | Introduced release on SRX-MIC-10XG-SFPP: 12.3X48-D10. Introduced release on SRX5K-MPC3-100G10G and SRX5K-MPC3-40G10G: 15.1X49-D10. |
| SRX5800 | Junos OS 12.3X48-D10 | Introduced release on SRX-MIC-10XG-SFPP: 12.3X48-D10. Introduced release on SRX5K-MPC3-100G10G and SRX5K-MPC3-40G10G: 15.1X49-D10. |
| Switching | | |
| EX4400-24X | Junos OS 23.4R1 | |
| EX9251 | Junos OS 18.1R1 | |
| EX9253 | Junos OS 18.3R1 | |

| Platform | Introduced Release | Additional Information |
|--------------|-------------------------|------------------------|
| 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: https://www.nvidia.com/en-us/networking/ethernet/cable-accessories/ | MX204 Junos OS 18.3R1 MX304 Junos OS 22.2R1 MX960 Junos OS 23.2R1 PTX10001-36MR Junos OS Evolved 21.3R1 PTX10004 Junos OS Evolved 21.3R1 EX9253 Junos OS 18.3R1 | MX240 Junos OS 23.2R1 MX480 Junos OS 23.2R1 MX10003 Junos OS 18.3R1 PTX10003 Junos OS Evolved 19.3R1 PTX10008 Junos OS Evolved 21.3R1 |
| 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 | |

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 |

| Name | Description | Platforms and Introduced Releases | |
|--------------------|--|--|--|
| PTX10K-LC1201-36CD | PTX10K 36 ports of 400 Gigabit Ethernet that provide 14.4-Tbps line rate processing speeds | PTX10004 Junos OS Evolved 21.3R1 | PTX10008 Junos OS Evolved 21.3R1 |
| | | PTX10016 Junos OS Evolved 21.2R2 | |
| 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 21.3R1 | PTX10008 Junos OS Evolved 21.3R1 |
| | | PTX10016 Junos OS Evolved 21.2R2 | |

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 | MX240 Junos OS 18.3R1 |
| | | MX480 Junos OS 18.3R1 | MX960 Junos OS 18.3R1 |
| MIC3-3D-10XGE-SFPP | 10-Gigabit Ethernet MIC with SFP+ | MX240 Junos OS 12.3R1 | MX480 Junos OS 12.3R1 |
| | | MX960 Junos OS 12.3R1 | MX2008 Junos OS 15.1F7 |
| | | MX2010 Junos OS 12.3R2 | MX2020 Junos OS 12.3R1 |
| SRX-MIC-10XG-SFPP | MIC with ten SFP+ 10-Gigabit Ethernet ports | SRX5400 Junos OS 12.3X48-D10 | SRX5600 Junos OS 12.3X48-D10 |
| | | SRX5800 Junos OS 12.3X48-D10 | |

Modular Port Concentrators (MPCs)

| Name | Description | Platforms and Introduced Releases | |
|---------------------|--|---|--|
| 10 Gigabit Ethernet | | | |
| MPC-3D-16XGE-SFPP | 16x10GE MPC | MX240 Junos OS 10.0R2 MX960 Junos OS 10.0R2 MX2010 Junos OS 12.3R2 | MX480 Junos OS 10.0R2 MX2008 Junos OS 15.1F7 MX2020 Junos OS 12.3R1 |
| 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 |
| 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 |
| MPC4E-3D-2CGE-8XGE | 2x100GE + 8x10GE MPC4E | MX240 Junos OS 12.3R2 MX960 Junos OS 12.3R2 MX2010 Junos OS 12.3R2 | MX480 Junos OS 12.3R2 MX2008 Junos OS 15.1F7 MX2020 Junos OS 12.3R2 |
| MPC4E-3D-32XGE-SFPP | 32x10GE MPC4E | MX240 Junos OS 12.3R2 MX960 Junos OS 12.3R2 MX2010 Junos OS 12.3R2 | MX480 Junos OS 12.3R2 MX2008 Junos OS 15.1F7 MX2020 Junos OS 12.3R2 |

| Name | Description | Platforms and Introduced Releases | |
|----------------|-------------------------|---|--|
| MPC5E-100G10G | 2x100GE + 4x10GE MPC5E | 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 |
| MPC5E-40G10G | 6x40GE + 24x10GE MPC5E | 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 |
| 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 |

| Name | Description | Platforms and Introduced Releases | |
|--------------------|--|--|---------------------------------|
| MX2K-MPC6E | MPC6E | MX2008 Junos OS 15.1F7 MX2020 Junos OS 13.3R2 | MX2010 Junos OS 13.3R2 |
| SRX5K-MPC3-100G10G | Fixed-configuration MPC with two 100-Gigabit Ethernet ports and four 10-Gigabit Ethernet ports | SRX5400 Junos OS 15.1X49-D10 SRX5800 Junos OS 15.1X49-D10 | SRX5600 Junos OS 15.1X49-D10 |
| SRX5K-MPC3-40G10G | Fixed-configuration MPC with six 40-Gigabit Ethernet ports and twenty-four 10-Gigabit Ethernet ports | SRX5400 Junos OS 15.1X49-D10 SRX5800 Junos OS 15.1X49-D10 | SRX5600 Junos OS 15.1X49-D10 |

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-1C | 1x100GbE QSFP28 extension module for EX4400 series of switches | EX4400-24X Junos OS 23.4R1 |

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.

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