

SRX Series Services Gateway Transceiver Reference

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SRX Series Services Gateway Transceivers

You can install transceivers of the following types in sockets in various cards or modules in SRX Series Services Gateways:

- Small form-factor pluggable (SFP)
- Enhanced small form-factor pluggable (SFP+)
- 10-Gigabit SFP (XFP)
- 100-Gbps form-factor pluggable (CFP)
- Quad 40-Gbps form-factor pluggable plus (QSFP+)

This guide describes all of the transceivers applicable to the SRX Series Services Gateways. The transceiver types are not interchangeable, with one exception: SFP+ transceivers can be used in SFP interfaces. However, an SFP+ transceiver installed in an SFP interface will be limited to the 1 Gbps maximum data rate of the interface in which it is installed.



NOTE: Modular Interface Cards (MICs) with SFP interfaces do not support SFP+ transceivers.



WARNING: Do not look directly into a fiber-optic transceiver or into the ends of fiber-optic cables. Fiber-optic transceivers and fiber-optic cable connected to a transceiver emit laser light that can damage your eyes.



WARNING: Do not leave a fiber-optic transceiver uncovered except when inserting or removing cable. The safety cap keeps the port clean and prevents accidental exposure to laser light.



CAUTION: Avoid bending fiber-optic cable tighter than its minimum bend radius. An arc smaller than a few inches in diameter can damage the cable and cause problems that are difficult to diagnose.



NOTE: We strongly recommend that only transceivers provided by Juniper Networks be used on SRX Series interface modules. Different transceiver types (long-range, short-range, copper, and others) can be used together on multiport transceiver interface modules as long as the transceivers are provided by Juniper Networks. We cannot guarantee that the interface module will operate correctly if third-party transceivers are used.

Table 1 on page 3 describes the SFP transceivers applicable to SRX Series Services Gateway SFP interfaces.

Table 1: SFP Gigabit Ethernet Transceivers

Juniper Networks Model	Description	Ethernet Standard	Wavelength λ (nm)		Media	Connector	Core and Cladding Size	Max. Distance
			TX	RX				
SRX-SFP-FE-FX	SFP 1000BASE-FX Gigabit Ethernet optic module	100BASE-FX	1310		SMF	LC	9/125 μm	2 km
SRX-SFP-1GE-LH	SFP 1000BASE-LH Gigabit Ethernet optic module	1000BASE-ZX	1550		SMF	LC	9/125 μm	70 km
SRX-SFP-1GE-LH-ET	SFP 1000BASE-LH Gigabit Ethernet optic module, extended temperature range (see note below)	1000BASE-ZX	1550		SMF	LC	9/125 μm	70 km
SRX-SFP-1GE-LX	SFP 1000BASE-LH Gigabit Ethernet optic module	1000BASE-LX	1310		SMF	LC	9/125 μm	10 km
					MMF	LC	50/125 μm	550 m
							62.5/125 μm	550 m
SRX-SFP-1GE-LX-ET	SFP 1000BASE-LH Gigabit Ethernet optic module, extended temperature range (see note below)	1000BASE-LX	1310		SMF	LC	9/125 μm	10 km
					MMF	LC	50/125 μm	550 m
							62.5/125 μm	550 m
SRX-SFP-1GE-SX	SFP 1000BASE-SX Gigabit Ethernet optic module	1000BASE-SX	850		MMF	LC	50/125 μm	550 m
							62.5/125 μm	275 m

Table 1: SFP Gigabit Ethernet Transceivers (continued)

Juniper Networks Model	Description	Ethernet Standard	Wavelength λ (nm)		Media	Connector	Core and Cladding Size	Max. Distance
			TX	RX				
SRX-SFP-1GE-SX-ET	SFP 1000BASE-SX Gigabit Ethernet optic module, extended temperature range (see note below)	1000BASE-SX	850		MMF	LC	50/125 μm	550 m
							62.5/125 μm	275 m
SRX-SFP-1GE-T	SFP 1000BASE-T Gigabit Ethernet module (uses Cat 5 cable)	1000BASE-T			Copper	RJ-45	4 twisted pair, category 5 shielded	100 m
SRX-SFP-1GE-T-ET	1000BASE-T Gigabit Ethernet module (uses Cat 5 cable), extended temperature range	1000BASE-T			Copper	RJ-45	4 twisted pair, category 5 shielded	100 m
SFP-FE20KT13R15	100BASE-BX Fast Ethernet optic module	100BASE-BX-U	1310	1550	SMF (single-strand fiber)	LC	9/125 μm	20 km
SFP-FE20KT15R13	100BASE-BX Fast Ethernet optic module	100BASE-BX-D	1550	1310	SMF (single-strand fiber)	LC	9/125 μm	20 km
SFP-GE10KT13R14	1000BASE-BX10 optic module	1000BASE-BX-U	1310	1490	SMF (single-strand fiber)	LC	9/125 μm	10 km
SFP-GE10KT13R15	1000BASE-BX10 optic module	1000BASE-BX-U	1310	1550	SMF (single-strand fiber)	LC	9/125 μm	10 km
SFP-GE10KT14R13	1000BASE-BX10 optic module	1000BASE-BX-D	1490	1310	SMF (single-strand fiber)	LC	9/125 μm	10 km
SFP-GE10KT15R13	1000BASE-BX10 optic module	1000BASE-BX-D	1550	1310	SMF (single-strand fiber)	LC	9/125 μm	10 km
SFP-GE40KT13R15	1000BASE-BX optic module	1000BASE-BX-U	1310	1550	SMF (single-strand fiber)	LC	9/125 μm	40 km

Table 1: SFP Gigabit Ethernet Transceivers (continued)

Juniper Networks Model	Description	Ethernet Standard	Wavelength λ (nm)		Media	Connector	Core and Cladding Size	Max. Distance
			TX	RX				
SFP-GE40KT15R13	1000BASE-BX optic module	1000BASE-BX-D	1550	1310	SMF (single-strand fiber)	LC	9/125 μm	40 km



NOTE: For SRX3400 and SRX3600 Services Gateways to meet NEBS and ETSI standards, all transceivers installed in the services gateway must be of extended temperature (ET) type.

Table 2 on page 5 describes the SFP+ 10-Gigabit Ethernet transceivers applicable to SRX Series Services Gateway SFP and SFP+ interfaces.

Table 2: SFP+ 10-Gigabit Ethernet Transceivers

Juniper Networks SKUs	Description	Standard	λ (nm)		Media	Connector	Core and Cladding Size	Max. Distance
			TX	RX				
SRX-SFP-10GE-ER	SFP+ 10-Gigabit Ethernet optic module. Meets extended temperature range requirements (see note below)	10GBASE-ER	1550		SMF	LC	9/125 μm	40 km
SRX-SFP-10GE-LR	SFP+ 10-Gigabit Ethernet optic module. Meets extended temperature range requirements (see note below)	10GBASE-LR	1310		SMF	LC	9/125 μm	40 km
SRX-SFP-10GE-SR	SFP+ 10-Gigabit Ethernet optic module	10GBASE-SR	850		MMF	LC	50/125 μm	300 m
							62.5/125 μm	33 m
SFPP-10GE-LRM	SFP+ 10GBase-LRM 10-Gigabit Ethernet optic module	10GBase-LRM	1260		MMF	LC	50/125 μm	220 m
							62.5/125 μm	220 m

Table 2: SFP+ 10-Gigabit Ethernet Transceivers (*continued*)

Juniper Networks SKUs	Description	Standard	λ (nm)		Media	Connector	Core and Cladding Size	Max. Distance
			TX	RX				
SRX-SFPP-10G-SR-ET	SFP+ 10-Gigabit Ethernet optic module	10GBASE-SR	850		MMF	LC	50/125 μ m	300 m
SRX-SFPP-10G-LR	SFP+ 10-Gigabit Ethernet optic module	10GBASE-LR	1310		SMF	LC	9/125 μ m	10 km



NOTE: For SRX3400 and SRX3600 Services Gateways to meet NEBS and ETSI standards, all transceivers installed in the services gateway must be of extended temperature (ET) type.

Table 3 on page 6 describes the XFP 10-Gigabit Ethernet transceivers applicable to SRX Series Services Gateway XFP interfaces.

Table 3: XFP 10-Gigabit Ethernet Transceivers

Juniper Networks SKUs	Description	Standard	λ (nm)		Media	Connector	Core and Cladding Size	Max. Distance
			TX	RX				
SRX-XFP-10GE-ER	10-Gigabit Ethernet single-mode optic module	10GBASE-ER	1550		SMF	LC	9/125 μ m	40 km
SRX-XFP-10GE-ER-ET	10-Gigabit Ethernet single-mode optic module, extended temperature range (see note below)	10GBASE-ER	1550		SMF	LC	9/125 μ m	40 km
SRX-XFP-10GE-LR	10-Gigabit Ethernet single-mode optic module	10GBASE-LR	1310		SMF	LC	9/125 μ m	10 km
SRX-XFP-10GE-LR-ET	10-Gigabit Ethernet single-mode optic module, extended temperature range (see note below)	10GBASE-LR	1310		SMF	LC	9/125 μ m	10 km
SRX-XFP-10GE-SR	10-Gigabit Ethernet short-reach multimode optic module	10GBASE-SR	850		SMF	LC	9/125 μ m	10 km

Table 3: XFP 10-Gigabit Ethernet Transceivers (continued)

Juniper Networks SKUs	Description	Standard	λ (nm)		Media	Connector	Core and Cladding Size	Max. Distance
			TX	RX				
SRX-XFP-10GE-SR-ET	10-Gigabit Ethernet short-reach multimode optic module, extended temperature range (see note below)	10GBASE-SR	850		SMF	LC	9/125 μ m	10 km



NOTE: For SRX3400 and SRX3600 Services Gateways to meet NEBS and ETSI standards, all transceivers installed in the services gateway must be of extended temperature (ET) type.

Table 4 on page 7 describes the CFP 100-Gigabit Ethernet transceivers applicable to SRX Series Services Gateway CFP interfaces.

Table 4: CFP 100-Gigabit Ethernet Transceivers

Juniper Networks SKUs	Description	Standard	λ (nm)		Media	Connector	Max. Distance
			TX	RX			
SRX-CFP-100G-LR4	100-Gigabit Ethernet single-mode optic module	100GBASE-LR4	1310		SMF	Dual SC	10 km
SRX-CFP-100G-SR10	100-Gigabit Ethernet single-mode optic module	100GBASE-SR10	850		MMF	Ribbon cable, 24 multimode fibers	100 m (OM3) 150 m (OM4)

Table 5 on page 7 describes the QSFP+ 40-Gigabit Ethernet transceivers applicable to SRX Series Services Gateway QSFP+ interfaces.

Table 5: QSFP+ 40-Gigabit Ethernet Transceivers

Juniper Networks SKUs	Description	Standard	λ (nm)		Media	Connector	Max. Distance
			TX	RX			
SRX-QSFP-40G-SR4	40-Gigabit Ethernet single-mode optic module	40GBASE-SR4	850		MMF	OM3, OM4, 12 fiber MPO connector	100 m (OM3) 150 m (OM4)

Table 5: QSFP+ 40-Gigabit Ethernet Transceivers (continued)

Juniper Networks SKUs	Description	Standard	λ (nm)		Media	Connector	Max. Distance
			TX	RX			
SRX-QSFP-40G-LR4	40-Gigabit Ethernet single-mode optic module	40GBASE-LR4	1310		SMF	LC	10 km

SRX Series Services Gateway Transceiver Interfaces

Table 6 on page 8, Table 7 on page 8, Table 8 on page 8, and Table 9 on page 9 show the different types of transceiver interfaces available on the various types of SRX Series Services Gateways.

Table 6: SRX210, SRX220, and SRX240 Services Gateway Transceiver Interface Types

Transceiver Type	Card Model	Description	Number of Transceiver Interfaces
SFP	SRX-MP-1SFP	1-Port SFP Mini-PIM (not supported on SRX220)	1
SFP	SRX-MP-1SFP-GE	1-Port Gigabit Ethernet SFP Mini-PIM	1

Table 7: SRX550 and SRX650 Services Gateway Transceiver Interface Types

Transceiver Type	Card Model	Description	Number of Transceiver Interfaces
SFP	SRX-MP-1SFP-GE (SRX550 only)	1-Port Gigabit Ethernet SFP Mini-PIM	1
	SRX-GP-8SFP	8-Port Gigabit Ethernet SFP XPIM	8
SFP+	SRX-GP-2XE-SFPP-TX	2-Port 10-Gigabit Ethernet XPIM	2

Table 8: SRX1400, SRX3400, and SRX3600 Services Gateway Transceiver Interface Types

Transceiver Type	Card Model	Description	Number of Transceiver Interfaces
SFP	SRX3K-16GE-SFP	IOC	16
	SRX1K-SYSIO-GE (SRX1400 only)	SYSIOC	6
SFP+	SRX1K3K-NP-2XGE-SFPP	NP-IOC	2
	SRX1K-SYSIO-XGE (SRX1400 only)	SYSIOC	3
XFP	SRX3K-2XGE-XFP	IOC	2

Table 9: SRX5400, SRX5600, and SRX5800 Services Gateway Transceiver Interface Types

Transceiver Type	Card Model	Description	Number of Transceiver Interfaces
SFP	SRX5K-40GE-SFP	IOC	40
	SRX-IOC-16GE-SFP	Flex IOC Port Module	16
	SRX5K-SPC-2-10-40	SPC	2
	SRX5K-SPC-4-15-320	SPC	2
	SRX-MIC-20GE-SFP	MIC	20
SFP+	SRX-MIC-10XG-SFPP	MIC	10
XFP	SRX5K-4XGE-XFP	IOC	4
	SRX-IOC-4XGE-XFP	Flex IOC Port Module	4
CFP	SRX-MIC-1X100G-CFP	MIC	1
QSFP+	SRX-MIC-2X40G-QSFP	MIC	2

The following is a list of all the cards and supported transceivers for the SRX5400, SRX5600, and SRX5800 Services Gateways.

Supported Transceivers	IO Card Model Number										
	SRX5K-MPC (contains 2 MIC slots)				SRX5K-FPC-IOC (contains 2 IOC slots)				SPC Cards - HA Control Ports		
	SRX-MIC-10XG-SFPP	SRX-MIC-2X40G-QSFP	SRX-MIC-1X100G-CFP	SRX-MIC-20GE-SFP	SRX-IOC-16GE-SFP	SRX-IOC-16GE-TX	SRX-IOC-4XGE-XFP	SRX5K-40GE-SFP	SRX5K-4XGE-XFP	SRX5K-SPC-2-10-40	SRX5K-SPC-4-15-320
	10 ports	2 ports	1 port	20 ports	16 ports	16 ports	4 ports	40 ports	4 ports	2 ports	2 ports
Speed											
10 GE	40 GE	100 GE	1 GE	1 GE	1 GE	10 GE	1 GE	10 GE	1 GE	1 GE	1 GE
SRX-CFP-100G-LR4			✓								
SRX-CFP-100G-SR10			✓								
SRX-QSFP-40G-LR4		✓									
SRX-QSFP-40G-SR4		✓									
SRX-SFPP-10G-SR-ET	✓										
SRX-SFPP-10G-LR	✓										
SRX-XFP-10GE-ER							✓		✓		
SRX-XFP-10GE-ER-ET							✓		✓		
SRX-XFP-10GE-LR							✓		✓		
SRX-XFP-10GE-LR-ET							✓		✓		
SRX-XFP-10GE-SR							✓		✓		
SRX-XFP-10GE-SR-ET							✓		✓		
SRX-SFP-1GE-LH					✓			✓		✓	✓
SRX-SFP-1GE-LH-ET					✓			✓		✓	✓
SRX-SFP-1GE-LX				✓	✓			✓		✓	✓
SRX-SFP-1GE-LX-ET				✓	✓			✓		✓	✓
SRX-SFP-1GE-SX				✓	✓			✓		✓	✓
SRX-SFP-1GE-SX-ET				✓	✓			✓		✓	✓
SRX-SFP-1GE-T				✓	✓			✓		✓	✓
SRX-SFP-1GE-T-ET				✓	✓			✓		✓	✓

Installing Transceivers

Transceivers are hot-insertable and hot-removable. Removing a transceiver does not interrupt the functioning of the card or module.

To install a transceiver:

1. Attach an ESD grounding strap to your bare wrist, and connect the strap to one of the ESD points on the chassis.
2. Take each transceiver to be installed out of its electrostatic bag, and identify the socket on the card or module where you will install it.



WARNING: Do not leave a fiber-optic transceiver uncovered except when inserting or removing cable. The safety cap keeps the port clean and prevents accidental exposure to laser light.

3. For each fiber interface transceiver, verify that the interface port is covered by a rubber safety cap. If it is not, cover the interface port with a safety cap. The safety cap prevents the release of laser light that can damage your eyes.
4. Carefully align the transceiver with the socket in the services gateway card or module. The connector should face the socket.
5. Slide the transceiver into the socket until the connector is seated in the component slot. If you are unable to fully insert the transceiver, make sure the connector is oriented correctly. See the hardware documentation for your services gateway for more information about LEDs.
6. Close the ejector handle of the transceiver.
7. Remove the rubber safety caps from both the transceiver and from the end of the cable. Insert the cable into the transceiver.
8. Verify that the status LEDs on the component faceplate indicate that the transceiver is functioning correctly.