OPTIC MODULES

Product Description

Juniper Networks® has platforms ranging from the Juniper Networks CTP Series Circuit to Packet Platforms, BX Series Multi-Access Gateways, E Series Broadband Services Routers, M Series Multiservice Edge Routers, MX Series 3D Universal Edge Routers, to the T Series Core Routers. These platforms support multiple interface types and technologies such as Ethernet, ATM, and SONET. Depending on the deployment scenario, they support different pluggable optic modules that can be selected based on distance, form factor, and wavelength. This datasheet is intended to guide the user through the various options available when choosing an optic module for a given platform depending on the architecture.

Features and Benefits

The following table lists the different pluggable optic modules and supported platforms, along with the technical specifications for each.

Table 1: Optic Modules Matrix

SKU	Description	Platforms	Interface Type	Form Factor	Standard	λ (TX) (nm)	λ (RX) (nm)	Media	Cable	Max Reach
CTP-SFP-1GE-LX	Small form-factor pluggable (SFP) 1000BASE-LX Gigabit Ethernet optic module.	CTP2008, CTP2024, and CTP2056	GbE	SFP	1000BASE-LX	1310		SMF	9/125	10 km
								MMF	50/125	550 m
									62.5/125	550 m
CTP-SFP-1GE-SX	SFP 1000BASE-SX Gigabit Ethernet optic module.	CTP 2008, CTP2024, and CTP2056	GbE	SFP	1000BASE-SX	850		MMF	50/125	550 m
									62.5/125	275 m
CTP-SFP-1GE-T	SFP 1000BASE-T Gigabit Ethernet module (uses Cat 5 cable).	CTP 2008, CTP2024, and CTP2056	GbE	SFP	1000BASE-T			Copper	4 twisted pair, Category 5 shielded	100 m
RX-10KM-SFP	1-port 10 km GbE SFP adapter: provides (1) SFP Gigabit Ethernet single-mode (10 km) physical port with an LC full duplex connection. Works with ERX-GIGESFP-IOA.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440	GbE	SFP	1000BASE-LX	1310		SMF	9/125	10 km
RX-550M-SFP	1-port 550 m GbE SFP adapter: provides (1) SFP Gigabit Ethernet multimode (550 M) physical port with an LC full duplex connection. Works with ERX-GIGESFP-IOA.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440	GbE	SFP	1000BASE-SX	850		MMF	50/125	550 m
									62.5/125	275 m

SKU	Description	Platforms	Interface Type	Form Factor	Standard	λ (TX) (nm)	λ (RX) (nm)	Media	Cable	Max Reach
RX-70KM-SFP	1-port 70 km GbE SFP adapter: provides (1) SFP Gigabit Ethernet single-mode (70 km) physical port with an LC full duplex connection. Works with ERX-GIGESFP-IOA.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440	GbE	SFP	1000BASE-ZX	1550		SMF	9/125	70 km
RX-FXMM-SFP	1-port 2 km FE SFP adapter: provides (1) SFP Fast Ethernet multimode (2 km FX) physical port. SC connector type. Works with ERX-8FXSFP-IOA.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440	FE	SFP	100BASE-FX	1310		MMF	50/125 62.5/125	2 km 2 km
RX-FXSM-SFP	1-port 10 km FE SFP adapter: provides (1) SFP Fast Ethernet single-mode (10 km LX) physical port. SC connector type. Works with ERX-8FXSFP-IOA.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440	FE	SFP	100BASE-FX	1310		SMF	9/125	10 km
RX-GET-SFP	1000BASE-T GbE SFP for all E Series GbE input/output adapters (IOAs) that accept pluggable interfaces (uses Cat 5 cable with RJ45 connector).	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440	GbE	SFP	1000BASE-T			Copper	4 twisted pair, Category 5 shielded	100 m
SFP-1FE-FX	SFP 100BASE-FX Fast Ethernet optic module.	MX240, MX480, MX960	FE	SFP	100BASE-FX	1310		MMF	62.5/125	2 km
SFP-1GE-FE-E-T	SFP capable of support 10/100/1000 speeds.	MX240, MX480, MX960	GbE/FE/E	SFP	10BASE-T; 100BASE-T; 1000BASE-T			Copper	4 twisted pair, Category 5 shielded	100 m
SFP-1GE-LH	SFP 1000BASE-LH Gigabit Ethernet optic module.	M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, BX7000, T320, T640, SRX3400, SRX3600	GbE	SFP	1000BASE-ZX	1550		SMF	9/125	70 km
SFP-1GE-LX	SFP 1000BASE-LX Gigabit Ethernet optic module.	M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, BX7000, T320, T640, SRX3400, SRX3600, SRX5600, SRX5800	GbE	SFP	1000BASE-LX	1310		SMF MMF MMF	9/125 50/125 62.5/125	10 km 550 m 550 m
SFP-1GE-SX	SFP 1000BASE-SX Gigabit Ethernet optic module.	M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, BX7000, T320, T640, SRX3400, SRX3600, SRX5600, SRX5800	GbE	SFP	1000BASE-SX	850		MMF MMF	50/125 62.5/125	550 m 275 m
SFP-1GE-T	SFP 1000BASE-T Gigabit Ethernet optic module (uses Cat 5 cable).	M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, BX7000, T320, T640, SRX3400, SRX3600, SRX5600, SRX5800	GbE	SFP	1000BASE-T			Copper	4 twisted pair, Category 5 shielded	100 m

SKU	Description	Platforms	Interface Type	Form Factor	Standard	λ (TX) (nm)	λ (RX) (nm)	Media	Cable	Max Reach
SFP-1OC48-IR	SFP OC-48 optic module, intermediate reach.	E120, E320, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC48/ STM16	SFP	IR-1	1310		SMF	9/125	15 km
SFP-1OC48-LR	SFP OC-48 optic module—long reach.	E120, E320, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC48/ STM16	SFP	LR-2	1550		SMF	9/125	80 km
SFP-1OC48-SR	SFP OC-48 optic module—short reach.	E120, E320, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC48/ STM16	SFP	SR-1	1310		SMF	9/125	2 km
SFP-FE20KT13R15	SFP 100BASE-BX Fast Ethernet optics, Tx 1310 nm / Rx 1550 nm for 20 km transmission.	MX240, MX480, MX960	FE	SFP	100BASE-BX-U	1310	1550	SMF (single strand fiber)	9/125	20 km
SFP-FE20KT15R13	SFP 100BASE-BX Fast Ethernet optics, Tx 1550 nm / Rx 1310 nm for 20 km transmission.	MX240, MX480, MX960	FE	SFP	100BASE-BX-D	1550	1310	SMF (single strand fiber)	9/125	20 km
SFP-GE10KT13R14	SFP module supporting 1000BASE-BX10, UPLINK, at 10 km (Tx1310 nm / Rx1490). A single fiber is used for both transmit and receive. UPLINK SFP must be matched with DOWNLINK SFP.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640, T1600	GbE	SFP	1000BASE-BX-U	1310	1490	SMF (single strand fiber)	9/125	10 km
SFP-GE10KT13R15	SFP module supporting 1000BASE-BX10, UPLINK, at 10 km (Tx1310 nm / Rx1550). A single fiber is used for both transmit and receive. UPLINK SFP must be matched with DOWNLINK SFP.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640, T1600	GbE	SFP	1000BASE-BX-U	1310	1550	SMF (single strand fiber)	9/125	10 km
SFP-GE10KT14R13	SFP supporting 1000BASE-BX10, DOWNLINK, at 10 km (Tx1490 nm / Rx1310 nm). A single fiber is used for both transmit and receive. UPLINK SFP must be matched with DOWNLINK SFP.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640, T1600	GbE	SFP	1000BASE-BX-D	1490	1310	SMF (single strand fiber)	9/125	10 km
SFP-GE10KT15R13	SFP module supporting 1000BASE-BX10, DOWNLINK, at 10 km (Tx1550 nm / Rx1310 nm). A single fiber is used for both transmit and receive. UPLINK SFP must be matched with DOWNLINK SFP.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640, T1600	GbE	SFP	1000BASE-BX-D	1550	1310	SMF (single strand fiber)	9/125	10 km

SKU	Description	Platforms	Interface Type	Form Factor	Standard	λ (TX) (nm)	λ (RX) (nm)	Media	Cable	Max Reach
SFP-GE40KM	SFP supporting 1000BASE-EX Gigabit Ethernet optic module, 40 km.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, MX240, MX480, MX960	GbE	SFP	1000BASE-LX	1310		SMF	9/125	40 km
SFP-GE40KT13R15	SFP module supporting 1000BASE-BX, UPLINK, at 40 km (Tx1310 nm / Rx1550 nm). A single fiber is used for both transmit and receive. UPLINK SFP must be matched with DOWNLINK SFP.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640, T1600	GbE	SFP	1000BASE-BX-U	1310	1550	SMF (single strand fiber)	9/125	40 km
SFP-GE40KT15R13	SFP module supporting 1000BASE-BX, DOWNLINK, at 40 km. (Tx1550 nm / Rx1310 nm). A single fiber is used for both transmit and receive. UPLINK SFP must be matched with DOWNLINK SFP.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640, T1600	GbE	SFP	1000BASE-BX-D	1550	1310	SMF (single strand fiber)	9/125	40 km
SFP-OC12-IR	OC12/STM4 pluggable transceiver (SFP)—intermediate range.	E120, E320, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC12/ STM4	SFP	IR-1	1310		SMF	9/125	15 km
SFP-OC12-LR	OC12/STM4 pluggable transceiver (SFP)—long range.	E120, E320, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC12/ STM4	SFP	LR-1	1310		SMF	9/125	40 km
SFP-OC12-SR	OC12/STM4 pluggable transceiver (SFP)—short range.	E120, E320, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC12/ STM4	SFP	SR-1	1310		SMF	9/125	2 km
SFP-OC3-IR	SFP OC3 intermediate reach (IR) SM optic module—15 km.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC3/STM1	SFP	IR-1	1310		SMF	9/125	15 km
SFP-OC3-LR	SFP OC3 long reach (LR) SM optic module —40 km.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC3/STM1	SFP	LR-1	1310		SMF	9/125	40 km

SKU	Description	Platforms	Interface Type	Form Factor	Standard	λ (TX) (nm)	λ (RX) (nm)	Media	Cable	Max Reach
SFP-OC3-SR	SFP OC3 short reach (SR) MM optic module—2 km.	E120, E320, ERX310, ERX705, ERX710, ERX1410, ERX1440, M7i, M10i, M40e, M120, M320, MX240, MX480, MX960, T320, T640	OC3/STM1	SFP	-	1310		MMF	50/125 62.5/125	2 km 2 km
SFPP-10GE-ER	SFP+ 10GbE pluggable transceiver, SMF, 1550 nm for 40 km transmission.	MX960, MX480, MX240	10GbE	SFP+	10GBASE-ER	1550		SMF	9/125	40 km
SFPP-10GE-LR	SFP+ 10GbE pluggable transceiver, SMF, 1310 nm for 10 km transmission.	MX240, MX480, MX960, T640, T1600	10GbE	SFP+	10GBASE-LR	1310		SMF	9/125	10 km
SFPP-10GE-LRM	SFP+ 10GbE pluggable transceiver, MMF, 1310 nm for 220 m transmission.	MX960, MX480, MX240	10GbE	SFP+	10GBASE-LRM	1310		MMF	50/125 62.5/125	220 m 220 m
SFPP-10GE-SR	SFP+ 10GbE pluggable transceiver, MMF, 850 nm for 300 m transmission.	MX240, MX480, MX960, T640, T1600	10GbE	SFP+	10GBASE-SR	850		MMF	50/125 62.5/125	300 m 33 m
XENPAK-1XGE-ER	XENPAK 10GbE pluggable optic module, 10GBASE-ER, 40 km reach.	M120, M320, T320, T640	10GbE	XENPAK	10GBASE-ER	1550		SMF	9/125	40 km
XENPAK-1XGE-LR	XENPAK 10GbE pluggable optic module, 10GBASE-LR, 10 km reach.	M120, M320, T320, T640	10GbE	XENPAK	10GBASE-LR	1310		SMF	9/125	10 km
XENPAK-1XGE-SR	XENPAK 10GbE pluggable optic module, 10GBASE-SR, MMF, 26-300 m reach.	M120, M320, T320, T640	10GbE	XENPAK	10GBASE-SR	850		MMF	50/125 62.5/125	300 m 33 m
XENPAK-1XGE-ZR	XENPAK 10GbE pluggable optic module, 10GBASE-ZR, SMF, 80 km reach.	M120, M320, T320, T640	10GbE	XENPAK	10GBASE-ZR	1550		SMF	9/125	80 km
XFP-10G-CBAND-T50-ZR	10GbE DWDM XFP, 80 km reach, tunable across C-Band 50 GHz channel spacing, compliant with ITU-T G.698.1.	MX240, MX480, MX960, T640, T1600	10GbE	XFP	10GBASE-ZR	50 GHz Tunable C-BAND ITU Grid		SMF	9/125	80 km
XFP-10GE-ER	10GbE 40 km single-mode pluggable interface.	E120, E320, SRX3400, SRX3600, SRX5600, SRX5800	10GbE	XFP	10GBASE-ER	1550		SMF	9/125	40 km
XFP-10GE-LR	10GbE XFP pluggable transceiver; single-mode 1310 nm 10 km reach.	E120, E320, SRX3400, SRX3600, SRX5600, SRX5800	10GbE	XFP	10GBASE-LR	1310		SMF	9/125	10 km
XFP-10G-E-OC192-IR2	Dual rate 10GbE pluggable transceiver for 10GbE and OC192, 1550 nm for 40 km transmission.	M120, M320, MX240, MX480, MX960, T320, T640	10GbE/ OC192/ STM64	XFP	10GBASE-ER	1550		SMF	9/125	40 km
XFP-10GE-SR	10GbE short reach multimode pluggable interface.	E120, E320, SRX3400, SRX3600, SRX5600, SRX5800	10GbE	XFP	10GBASE-SR	850		MMF	50/125 62.5/125	300 m 33 m

SKU	Description	Platforms	Interface Type	Form Factor	Standard	λ (TX) (nm)	λ (RX) (nm)	Media	Cable	Max Reach
XFP-10G-L-OC192-SR1	Dual rate 10GbE pluggable transceiver for 10GbE and OC192, 1310 nm for 10 km transmission.	M120, M320, T320, T640, MX240, MX480, MX960	10GbE/ OC192/ STM64	XFP	10GBASE-LR	1310		SMF	9/125	10 km
XFP-10G-S	10GbE pluggable transceiver, 850 nm for 300 m transmission.	M120, M320, MX240, MX480, MX960, T320, T640	10GbE	XFP	10GBASE-SR	850		MMF	50/125 62.5/125	300 m 33 m
XFP-10G-Z-OC192-LR2	Dual rate 10GbE pluggable transceiver for 10GbE and OC192, 1550 nm for 80 km transmission.	M120, M320, T320, T640, MX240, MX480, MX960, E120, E320	10GbE/ OC192/ STM64	XFP	10GBASE-ZR	1550		SMF	9/125	80 km

SFP (form factor) = small form-factor pluggable transceiver

SMF (media) = single-mode fiber-optic

MMF (media) = multimode fiber-optic

XFP (form factor) = 10-gigabit small form-factor pluggable transceiver

Ordering Information

The SKU and the platforms support are listed in the table above.

About Juniper Networks

Juniper Networks is in the business of network innovation. From devices to data centers, from consumers to cloud providers, Juniper Networks delivers the software, silicon and systems that transform the experience and economics of networking. The company serves customers and partners worldwide. Additional information can be found at **www.juniper.net**.

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