Extreme Networks Optical Transceivers and Cables

Highlights

- High system reliability and system compatibility based on rigorous qualification and certification testing
- Hot-swappable flexibility in the field for greater ease and lower total cost of ownership
- Standards-based 802.3z, 802.3ah, 802.3u, 802.3ae, 802.3ak, 802.3ba, 802.3bm, and 802.3by and compliant as required
- SFP28, SFP+ and SFP modules and cables compliant with SFF-8472, SFF-8432, SFF-8419
- QSFP+, QSFP28 modules complaint with SFF-8636, SFF-8679, SFF-8661
- Covered by Service Contract of base system (unless otherwise indicated on price list)
- Platform compatibility can be verified using the Extreme Optics Compatibility website

Highly Reliable, Extreme-Qualified Optical Transceivers and Cables

Extreme Networks offers a complete set of high-performance, reliable, and cost-effective optical transceivers and cables to help enterprises and service providers meet the challenges of diverse network topologies. To ensure maximum quality, Extreme selects and tests the most reliable, highest-performing optical transceivers on the market, and then warrants their availability, capacity, and performance in Extreme Networks products.

Extensive performance and reliability testing reflects an ongoing commitment to quality. Extreme Networks tests transceivers to help ensure that they provide the right mix of functionality and performance when used in conjunction with Extreme products. The speed, capacity, reliability, and low cost of ownership characteristics for which Extreme products are known also apply to all its optical components.

By using Extreme-qualified components, organizations can be assured that their warranty and service requirements will be met and that their Extreme products will continually provide the uptime, performance, and reliability required by today's leading enterprises and service providers.

Support for Multiple Transceiver Types

This Datasheet provides descriptions, features, and benefits of the pluggable transceiver modules supported by Extreme Networks switches and routers, along with information about how to install and use them. The following types of pluggable transceiver modules are included:

- Extreme Networks 100Gb QSFP28 Modules
- Extreme Networks 40Gb QSFP+ Modules
- Extreme Networks 25Gb SFP28 Modules
- Extreme Networks SFP-DD Cables
- Extreme Networks SFP+ Modules
- Extreme Networks SFP Modules
- QSFP Port Adapters

Extreme strongly recommends the use of Extreme Networks-certified pluggable transceiver modules with Extreme Networks switches and routers.

Published Compatibility and Detailed Specifications

Extreme publishes up-to-date optical transceiver and cable compatibility information using the Extreme Networks Optics Compatibility website, located at https://optics.extremenetworks.com/. This site defines compatibility among transceivers/cables and Extreme switches and routers, including minimum required software revisions, end-of-sale and replacement information, and other device-specific notes. In addition, the site describes detailed specifications for each module.

Extreme Networks 100Gb QSFP28 Modules

The Extreme 100GBASE Quad Small Form-Factor Pluggable (QSFP28) portfolio offers customers a wide variety of high-density and low-power 100 Gigabit Ethernet connectivity options for data center, high-performance computing networks, enterprise core and distribution layers, and service provider applications. The QSFP-100G modules represent the latest generation of 100Gb transceiver modules solution based on a QSFP28 form factor.

Features and Benefits

- Hot-swappable input/output device that plugs into a 100 Gigabit Ethernet Extreme platform
- Interoperable with other IEEE-compliant 100GBASE interfaces where applicable
- Certified and tested on Extreme platforms for superior performance, quality, and reliability
- High-speed electrical interface compliant to IEEE 802.3bm
- QSFP28 Form factor, 2-wire I2C communication interface and other low-speed electrical interface compliant to SFF 8436 and QSFP Multisource Agreement (MSA)

Standard/Type	Description	Extreme Products
100GBASE-SR4	100G SR4 QSFP28, MPO, 100m over OM4, Multimode Fiber	100G-SR4-QSFP100M 10401
100GBASE-BDSR	100G SR BiDi, QSFP28, LC, 100m over OM4, Multimode Fiber	100G-SR4BD-QSFP100M
100GBASE-SWDM4	100G SWDM4 QSFP28, LC, 100m, Multimode Fiber	100G-SWDM4-QSFP100M
100GBASE-ESR4	100G ESR4 QSFP28, MPO, 300m over OM4, Multimode Fiber	100G-ESR4-QSFP300M
100GBase-DR	100G DR QSFP28, LC, 500m, Singlemode Fiber	100G-DR-QSFP500M
100GBASE-CWDM4	100G CWDM4 QSFP28, LC, 2KM, Singlemode Fiber	100G-CWDM2-QSFP2KM
100GBASE-LR4-2	100G LR4 QSFP28, LC, 2KM, Singlemode Fiber	100G-LR4-QSFP2KM
100GBase-FR	100G FR QSFP28, LC, 2KM Singlemode Fiber	100G-FR-QSFP2KM
100GBASE-PSM4	100G PSM4 QSFP28, MPO, 2km, Singlemode Fiber	10405
100GBASE-4WDM-10	100G 4WDM QSFP28, LC, 10km, Singlemode Fiber	100G-4WDM-QSFP10KM
100GBASE-LR	100G LR QSFP28, LC, 10km, Singlemode Fiber	100G-LR-QSFP10KM

Standard/Type	Description	Extreme Products
100GBASE-LR4	100G LR4 QSFP28, LC, 10km, Singlemode Fiber	100G-LR4-QSFP10KM 10403
100GBASE-4WDM-20	100G 4WDM QSFP28, LC, 20km, Singlemode Fiber	100G-4WDM-QSFP20KM
100GBASE-4WDM-40	100G 4WDM QSFP28, LC, 40km, Singlemode Fiber	100G-4WDM-QSFM40KM
100GBASE-ERLT	100G ER4 Lite QSFP28, LC, 40km, Singlemode Fiber	100G-ER4LT-QSFP40KM
100G-DACP	100G QSFP28 Passive DAC Copper cables (0.5m, 1m, 3m, 5m)	100G-DACP-QSFPZ5M 100G-DACP-QSFP1M 100G-DACP-QSFP3M 100G-DACP-QSFP5M
100G-DACP Breakout	100G QSFP28 to 4xSFP28 Passive DAC Copper cables (1m, 3m, 5m)	100G-DACP-QSFP4SFP1M 100G-DACP-QSFP4SFP3M 100G-DACP-QSFP4SFP5M
100G-AOC	100G Active Optical Cables (5m, 10m, 20m)	10434 100G-AOC-QSFP10M-TA 10437
100G-AOC Breakout	100G QSFP28 to 4xSFP28 Active Optical Breakout cables (10m, 20m)	10443 10444

100GBASE-SR4: The Extreme 100GBASE-SR4 Optics modules support link lengths of up to 70m (OM3) or 100m (OM4) over Multimode fiber with MPO-12 connectors. They provide 100Gb optical links over 12-fiber parallel fiber terminated with MPO connectors.

100GBASE-BDSR: The Extreme 100GBASE-BDSR Optics modules support link lengths of up to 70m (OM3), 100m (OM4) or 150m (OM5) over Multimode fiber with LC connectors. They provide 100G optical links over 2 Multimode fibers by transmitting and receiving 50Gb streams bidirectionally over each fiber at different wavelengths centered at 850nm and 900nm for TX and RX on each fiber.

100GBASE-SDWM4: The Extreme 100GBASE-SWDM4 Optics modules support link lengths of up to 75m (OM3), 100m(OM4), or 150m(OM5) over a pair of Multimode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. 100GBASE-SWDM4 requires the use of FEC.

100GBASE-ESR4: The Extreme 100GBASE-ESR4 Optics modules support link lengths of up to 170m (OM3) or 300m (OM4) over Multimode fiber with MPO-12 connectors. They provide 100G optical links over 12-fiber parallel fiber terminated with MPO connectors.

100GBASE-DR: The Extreme 100GBASE-DR Optics modules support link lengths of up to 500m over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over a single wavelength using PAM4 encoding. 100GBASE-DR is compatible as breakout with 400G-DR/400G-DR4 (500M) using fiber break-out cables. 100GBASE-DR requires the use of FEC.

100GBASE-CWDM4: The Extreme 100GBASE-CWDM4 Optics modules support link lengths of up to 2km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths using CWDM wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. 100GBASE-CWDM4 requires the use of FEC.

100GBASE-CWDM4 is compatible with 100GBASE-4WDM-10 modules up to 2km using FEC.

100GBASE-LR4-2: The Extreme 100GBASE-LR4-2 Optics modules support link lengths of up to 2km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths using LAN-WDM wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. 100GBASE-LR4-2 does not require the use of FEC.

100GBASE-FR: The Extreme 100GBASE-FR Optics modules support link lengths of up to 2km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over a single wavelength using PAM4 encoding. 100GBASE-FR can also be used in applications meant for 100GBASE-DR and is compatible as breakout with 400G-DR/

400G-DR4 (500M) and -DR4+(2KM) using fiber break-out cables. 100GBASE-FR requires the use of FEC.

100GBASE-PSM4: The Extreme 100GBASE-PSM4 Optics modules support link lengths of up to 2km over Singlemode fibers with MPO-12 connectors. They provide 100G optical links over 12-fiber parallel fiber terminated with MPO connectors. 100GBASE-PSM4 does not require the use of FEC.

100GBASE-4WDM-10: The Extreme 100GBASE-4WDM-10 Optics modules support link lengths of up to 10km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths using CWDM wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. 100GBASE-4WDM-10 requires the use of FEC.

100GBASE-4WDM-10 is compatible with 100GBASE-CWDM4 modules up to 2km using FEC.

100GBASE-4WDM-10 is not compatible with either 100GBASE-4WDM-20 or 100GBASE-4WDM-40.

100GBASE-LR: The Extreme 100GBASE-LR Optics modules support link lengths of up to 10km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over a single wavelength using PAM4 encoding. 100GBASE-LR is compatible as breakout with 400G-LR4P (MPO) using fiber break-out cables. 100GBASE-LR requires the use of FEC.

100GBASE-LR4: The Extreme 100GBASE-LR4 Optics modules support link lengths of up to 10km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths using LAN-WDM wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. 100GBASE-LR4 does not require the use of FEC.

100G-LR4-QSFP10KM is compatible with 100GBASE-ER4 modules up to 10km without using FEC.

100GBASE-4WDM-20: The Extreme 100GBASE-4WDM-20 Optics modules support link lengths of up to 20km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths using LAN-WDM wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. 100GBASE-4WDM-20 requires the use of FEC.

100GBASE-4WDM-20 is compatible with 100G-ER4-QSFP40KM and 100GBASE-4WDM-40 up to 20km using FEC.

100GBASE-4WDM-20 is not compatible with either 100GBASE-4WDM-10 or 100GBASE-CWDM4.

100GBASE-4WDM-40: The Extreme 100GBASE-4WDM-40 Optics modules support link lengths of up to 40km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths using LAN-WDM wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. 100GBASE-4WDM-40 requires the use of FEC.

100GBASE-4WDM-40 is compatible with 100G-ER4-QSFP40KM up to 40km using FEC, and with 100GBASE-4WDM-20 up to 20km using FEC.

100GBASE-4WDM-40 is not compatible with 100GBASE-4WDM-10 or 100GBASE-CWDM4.

Customers should ensure that 100GBASE-4WDM40 receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Optics Compatibility website.

100GBASE-ER4LT: The Extreme 100GBASE-ER4 Optics modules support link lengths of up to 40km over a pair of Singlemode fibers with duplex LC connectors. The 100 Gigabit Ethernet signal is carried over four wavelengths using LAN-WDM wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device. Full 40km reach requires the use of FEC on the host platform. Without FEC, the reach is 30km.

100G-ER4-QSFP40KM is compatible with 100GBASE-LR4 modules up to 10km without using FEC.

100G-ER4-QSFP40KM is compatible with 100G-4WDM-QSFP40KM up to 40km using FEC, and with 100G-4WDM-QSFP20KM up to 20km using FEC.

Customers should ensure that 100GBASE-ER4 receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Optics Compatibility website.

100G-DACP: Extreme QSFP28 to QSFP28 copper direct-attach 100G-DACP cables are suitable for very short links and offer a cost-effective way to establish a 100-Gigabit link between 100G ports of Extreme platforms. Extreme currently offers passive copper cables in lengths of 0.5, 1, 3 and 5 meters. 100GBASE-DACP requires the use of FEC.

100G-DACP Breakout: Extreme QSFP28 to 4xSFP28 copper direct-attach 100G-DACP break-out cables are suitable for very short links and offer a cost-effective way to establish a 100 Gigabit link between one 100G QSFP28 port and four 25G SFP28 ports of Extreme platforms. Extreme currently offers passive copper break-out cables in lengths of 1, 3 and 5 meters. 100GBASE-DACP Breakout requires the use of FEC.

100G-AOC: Extreme QSFP28 to QSFP28 active optical fiber cables are suitable for short links and offer a cost-effective way to establish a 100-Gigabit link between 100G ports of Extreme platforms. Extreme currently offers active optical cables in lengths of 5, 7, 10 and 20 meters.

100G-AOC Breakout: Extreme QSFP28 to 4xSFP28 active optical fiber cables are suitable for short links and offer a cost-effective way to establish a 100 Gigabit link between one 100Gb port and four 25Gb SFP28 ports of Extreme platforms. Extreme currently offers active optical breakout cables in lengths of 10 and 20 meters.

Extreme Networks 40Gb QSFP+ Modules

The Extreme 40GBASE Quad Small Form-Factor Pluggable (QSFP+) portfolio offers customers a wide variety of high-density and low-power 40 Gigabit Ethernet connectivity options for data center, high-performance computing networks, enterprise core and distribution layers, and service provider applications. The QSFP-40G modules represent the latest generation of 40Gb transceiver modules solution based on a QSFP+ form factor.

Features and Benefits

- Hot-swappable input/output device that plugs into a 40 Gigabit Ethernet Extreme platform
- Interoperable with other IEEE-compliant 40GBASE interfaces where applicable
- Certified and tested on Extreme platforms for superior performance, quality, and reliability
- High-speed electrical interface compliant to IEEE 802.3ba
- QSFP Form factor, 2-wire I2C communication interface and other low-speed electrical interface compliant to SFF 8436 and QSFP Multisource Agreement (MSA)

Standard/Type	Description	Extreme Products
40GBASE-SR4	40G SR4 QSFP+, MPO, 150m over OM4, Multimode Fiber	40G-SR4-QSFP150M
40GBASE-BDSR	40G SR BiDi QSFP+, LC, 150m over OM4, Multimode Fiber	40G-BDSR-QSFP150M 10329
40GBASE-ESR4	40G ESR4 QSFP+, MPO, 400m over OM4, Multimode Fiber	40G-ESR4-QSFP400M-NT
40GBASE-LM4	40G LM4 QSFP+, LC, 160m (OM4) Multimode, 1km Singlemode Fiber	40G-LM4-QSFP160KM 10334 AA1404002-E6
40GBASE-LR4	40G LR4 QSFP+, LC, 10km, Singlemode Fiber	40G-LR4-QSFP10KM 10320 40GB-LR4-QSFP
40GBASE-PSM4	40G PSM4, QSFP+, MPO, 10km, Singlemode Fiber	10326
40GBASE-ER4	40G ER4, QSFP+, LC, 40km, Singlemode Fiber	10335 40G-QSFP-ER4-1

Standard/Type	Description	Extreme Products
40G-DACP	40G QSFP+ Passive DAC Copper cables (0.5m, 1m, 3m, 5m)	40G-DACP-QSFPZ5M 40G-DACP-QSFP1M 40G-DACP-QSFP3M 40G-DACP-QSFP5M
40G-DACP Breakout	40G QSFP+ to 4xSFP+ Passive DAC Copper cables (1m, 2m, 3m, 5m)	40G-DACP-QSFP4SFP1M 40G-DACP-QSFP4SFP2M 40G-DACP-QSFP4SFP3M 40G-DACP-QSFP4SFP5M
40G-DACA	40G QSFP+ Active DAC Copper cables (1m, 3m, 5m)	40G-DACA-QSFP4SFP1M 40G-DACA-QSFP4SFP3M 40G-DACA-QSFP4SFP5M
40G-DACA Breakout	40G QSFP+ to 4xSFP+ Active DAC Copper cables (1m, 3m, 5m)	40G-DACA-QSFP4SFP1M 40G-DACA-QSFP4SFP3M 40G-DACA-QSFP4SFP5M
40G-AOC	40G Active Optical Cables (3m, 5m, 10m, 20m, 100m)	40G-AOC-QSFP3M 40G-AOC-QSFP5M 40G-AOC-QSFP10M 40G-AOC-QSFP20M 40G-AOC-QSFP100M
40G-AOC Breakout	40G QSFP+ to 4xSFP+ Active Optical breakout cables (10m)	40G-AOC-QSFP4SFP10M

40GBASE-SR4: The Extreme 40GBASE-SR4 Optics modules support link lengths of up to 100m (OM3) or 150m (OM4) over Multimode Fiber with MPO-12 connectors. They provide 40G optical links over 12-fiber parallel fiber terminated with MPO connectors.

Note that 40G-SR4-QSFP150M is compatible with 10GBASE-SR, allowing for break-out to 10GBASE-SR transceivers.

40GBASE-BDSR: The Extreme 40GBASE-BDSR Optics modules support link lengths of up to 100m (OM3), 150m (OM4) or 200m (OM5) over Multimode Fiber with LC connectors. They provide 40G optical links over 2 Multimode fibers by transmitting and receiving 20Gb streams bidirectionally over each fiber at different wavelengths centered at 850nm and 900nm for TX and RX on each fiber.

40GBASE-ESR4: The Extreme 40GBASE-ESR4 Optics modules support link lengths of up to 300m (OM3) or 400m (OM4) over Multimode Fiber with MPO-12 connectors. They provide 40G optical links over 12-fiber parallel fiber terminated with MPO connectors.

Note that 40G-ESR4-QSFP400M-NT is compatible with 10GBASE-SR, allowing break-out to four 10GBASE-SR connections.

40GBASE-LM4: The Extreme 40GBASE-LM4 Optics modules support link lengths of up to 140m (OM3) or 160m (OM3) over Multimode Fiber with MPO-12 connectors, or up to 1km over Singlemode fiber with duplex LC connectors. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device.

40GBASE-LR4: The Extreme 40GBASE-LR4 Optics modules support link lengths of up to 10km over a pair of Singlemode fibers with duplex LC connectors. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device.

40GBASE-PSM4: The Extreme 40GBASE-PSM4 Optics modules support link lengths of up to 10km over Singlemode fibers with MPO-12 connectors. They provide 40G optical links over 12-fiber parallel fiber terminated with MPO connectors. 40GBASE-PSM4 does not require the use of FEC.

Note that 10326 is compatible with 10GBASE-LR, allowing for break-out to 10GBASE-LR transceivers.

40GBASE-ER4: The Extreme 40GBASE-ER4 Optics modules support link lengths of up to 40km over a pair of Singlemode fibers with duplex LC connectors. The 40 Gigabit Ethernet signal is carried over four wavelengths. Multiplexing and demultiplexing of the four wavelengths are managed within the device.

Customers should ensure that 40GBASE-ER4 receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power

levels are described for each module on the Extreme Optics Compatibility website.

40G-DACP: Extreme QSFP+ to QSFP+ copper direct-attach 40G cables are suitable for very short links and offer a cost-effective way to establish a 40 Gigabit link between 40G ports of Extreme platforms. Extreme currently offers 40G passive copper cables in lengths of 0.5, 1, 3 and 5 meters.

40G-DACP Breakout: Extreme QSFP+ to 4xSFP+ copper direct-attach 40Gb break-out cables are suitable for very short links and offer a cost-effective way to establish a 40 Gigabit link between one 40Gb QSFP+ port and four 10Gb SFP+ ports of Extreme platforms. Extreme currently offers 40G passive copper break-out cables in lengths of 1, 2, 3 and 5 meters.

40G-AOC: Extreme QSFP+ to QSFP+ active optical fiber cables are suitable for short to medium links and offer a cost-effective way to establish a 40 Gigabit link between 40Gb ports of Extreme platforms. Active optical cables are much thinner than copper cables and do not cause Electromagnetic Interference (EMI) issues, which is critical in high-density systems. Extreme currently offers active optical cables in lengths of 3, 5, 10, 20 and 100 meters.

40G-AOC Breakout: Extreme QSFP+ to 4xSFP+ active optical fiber breakout cables are suitable for short to medium links and offer a cost-effective way to establish a 40 Gigabit link between one 40Gb QSFP+ port and four 10Gb SFP+ ports of Extreme platforms. Active optical cables are much thinner than copper cables and do not cause Electromagnetic Interference (EMI) issues, which is critical in high-density systems. Extreme currently offers active optical breakout cables in lengths of 10 meters.

Extreme Networks 25Gb SFP28 Modules

The Extreme 25GBASE Small Form-Factor Pluggable (SFP28) portfolio offers customers a wide variety of 25 Gigabit Ethernet connectivity options for enterprise core and distribution layers, and high-speed campus applications. The 25G modules represent the latest generation of 25Gb transceiver modules solution based on an SFP28 form factor.

Features and Benefits

- Hot-swappable input/output device that plugs into a 25 Gigabit Ethernet Extreme platform
- Interoperable with other IEEE-compliant 25GBASE interfaces where applicable
- Certified and tested on Extreme platforms for superior performance, quality, and reliability
- High-speed electrical interface compliant to IEEE 802.3by and 802.3cc
- SFP28 Form factor, 2-wire I2C communication interface and other low-speed electrical interface compliant to SFF-8472, SFF-8432 and SFP Multisource Agreement (MSA)

Standard/Type	Description	Extreme Products
25GBASE-SR	25G SR SFP28, LC, 100m over OM4/70m over OM3, Multimode Fiber	25G-SR-SFP100M 10501
25GBASE-SR/10GBASE-SR (Lite)	Dual rate 25G/10G SR SFP28, LC, 100m over OM4/70m over OM3, Multimode Fiber	25/10G-SR-SFP100M

Standard/Type	Description	Extreme Products
25GBASE-SR (Lite FEC)	25G SR SFP28, LC, 100m over OM4, Multimode Fiber	10502
25GBASE-ESR	25G ESR SFP28, LC, 300m over OM4, Multimode fiber	10503
25GBASE-LR	25G LR SFP28, LC, 10km, Singlemode Fiber	25G-LR-SFP10KM 10504
25GBASE-ER	25G ER SFP28, LC, 40km, Singlemode Fiber	25G-ER-SFP40KM
25G-DACP	25G SFP28 Passive DAC Copper cables (0.5m, 1m, 3m, 5m)	25G-DACP-SFPZ5M 25G-DACP-SFP1M 25G-DACP-SFP3M 25G-DACP-SFP5M 10520 10521 10522
25G-AOC	25G SFP28 Active Optical Cables (10m, 20m)	10530 10531

25GBASE-SR: The Extreme 25GBASE-SR Optics modules support link lengths of up to 70m (OM3) or 100m (OM4) over Multimode fiber with duplex LC connectors. 25GBASE-SR requires the use of FEC.

25GBASE-SR/10GBASE-SR (Lite): The Extreme 25GBASE-SR/10GBASE-SR (Lite) Optics modules support 25G link lengths of up to 70m (OM3) or 100m (OM4), and 10Gb link lengths of up to 70m (OM3) or 100m (OM4), over Multimode fiber with duplex LC connectors. 25GBASE-SR requires the use of FEC.

25GBASE-SR (Lite FEC): The Extreme 25GBASE-SR Optics module supports link lengths of up to 70m (OM3) or 100m (OM4) over Multimode fiber with duplex LC connectors using FEC. In addition, the 25GBASE-SR (Lite FEC) module supports link lengths of 30m (OM3) or 40m (OM4) without the use of FEC.

25GBASE-ESR: The Extreme 25GBASE-ESR Optics modules support link lengths of up to 200m (OM3) or 300m (OM4) over Multimode fiber with duplex LC connectors. 25GBASE-ESR requires the use of FEC.

25GBASE-LR: The Extreme 25GBASE-LR Optics modules support link lengths of up to 10km over a pair of Singlemode fibers with duplex LC connectors. 25GBASE-LR requires the use of FEC.

25GBASE-ER: The Extreme 25GBASE-ER Optics modules support link lengths of up to 40km over a pair of Singlemode fibers with duplex LC connectors. 25GBASE-ER requires the use of FEC.

Customers should ensure that 25GBASE-ER receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Extreme Optics Compatibility website.

25G-DACP: Extreme SFP28 to SFP28 copper direct-attach cables are suitable for very short links and offer a cost-effective way to establish a 25 Gigabit link between 25G ports of Extreme platforms. Extreme currently offers 25Gb passive copper cables in lengths of 0.5, 1, 3 and 5 meters. 25G-DACP 0.5m, 1m and 2m do not require FEC; 3m and 5m cables require the use of FEC.

25G-AOC: Extreme SFP28 to SFP28 active optical cables are suitable for short links and offer a cost-effective way to establish a 25 Gigabit link between 25Gb ports of Extreme platforms. Extreme currently offers 25Gb active optical cables in lengths of 10 and 20 meters. 25G-AOC requires the use of FEC.

Extreme Networks 20Gb SFP-DD Cables

The Extreme 20GBASE Small Form-Factor Plus Pluggable (SFP+) Double Density (DD) cables provide SFP+ double density (20G) connectivity for select Extreme switches which support SFP+ double density ports.

Standard/Type	Description	Extreme Products
20G SFPDD DAC	20G SFPDD to SFPDD DAC (0.5m, 1m, 3m, 5m)	20G-DACP-SFPDDZ5M 20G-DACP-SFPDD1M 20G-DACP-SFPDD3M 20G-DACP-SFPDD5M
20G SFPDD-SFP+ DAC Breakout	20G SFPDD to 2xSFP+ DAC (1m, 3m, 5m)	20G-DACP-SFPDD2SFP1M 20G-DACP-SFPDD2SFP3M 20G-DACP-SFPDD2SFP5M
20G SFPDD-QSFP+ DAC Breakout	20G SFPDD to QSFP+ DAC (1m, 3m, 5m)	20G-DACP-QSFP1SFPDD1M 20G-DACP-QSFP1SFPDD3M 20G-DACP-QSFP1SFPDD5M

20G SFPDD DAC: Extreme SFPDD to SFPDD copper direct-attach cables are suitable for very short links and offer a cost-effective way to establish a 20 Gigabit link between SFPDD ports of Extreme's 5420 platform. The SFPDD ports support 2 SFP+ data links in a single SFPDD connector. Extreme currently offers 20G SFPDD-SFPDD passive copper cables in lengths of 0.5, 1, 3, and 5 meters.

20G SFPDD-SFP+ DAC Breakout: Extreme SFPDD to 2xSFP+ copper direct-attach breakout cables are suitable for very short links and offer a cost-effective way to establish two 10-Gigabit links between an SFPDD port of Extreme's 5420 platform and 2 10-Gigabit SFP+ ports. Extreme currently offers 20G SFPDD-2xSFP+ passive copper cables in lengths of 1, 3, and 5 meters.

20G SFPDD-QSFP+ DAC Breakout: Extreme SFPDD to QSFP+ copper direct-attach breakout cables are suitable for very short links and offer a cost-effective way to establish a 20-Gigabit link between an SFPDD port of Extreme's 5420 platform and 2 channels of a QSFP+ port. The SFPDD connection is wired to channels 1 and 2 of the QSFP+ connector. Extreme currently offers 20G SFPDD-QSFP+ passive copper cables in lengths of 1, 3, and 5 meters.

Extreme Networks 10Gb SFP+ Modules

The Extreme 10GBASE Small Form-Factor Plus Pluggable (SFP+) portfolio offers customers a wide variety of 10 Gigabit Ethernet connectivity options for enterprise core, distribution, and campus applications.

Features and Benefits

- Hot-swappable input/output device that plugs into a 10 Gigabit Ethernet Extreme platform
- Interoperable with other IEEE-compliant 10GBASE interfaces where applicable
- Certified and tested on Extreme platforms for superior performance, quality, and reliability

- High-speed electrical interface compliant to IEEE 802.3ae
- SFP Form factor, 2-wire I2C communication interface and other low-speed electrical interface compliant to SFF-8472, SFF-8432, SFF-8431 and SFP Multisource Agreement (MSA)

Standard/Type	Description	Extreme Products
10GBASE-BASET	10G BASET SFP+, RJ45, 30m over Cat6 copper	10338
10GBASE-USR	10G USR SFP+, LC, 100m over OM3, Multimode Fiber	10G-USR-SFP100M 10G-SFPP-USR-E
10GBASE-SR	10G SR SFP+, LC, 400m over OM4, Multimode Fiber	10301 10G-SR-SFP300M-ET 10G-SFP-SR 10GB-SR-SFPP 10G-SFP-SR-SA 10G-SR-SFP300M-IT
10GBASE-LRM	10G LRM SFP, LC, 220m over OM4, Multimode Fiber	10303 AA1403017-E6
10GBASE-LR	10G LR SFP+, LC, 10km, Singlemode Fiber	10302 10G-LR-SFP10KM-ET 10G-LR-SFP10KM-IT
10GBASE-BiDi-10	10G SR BiDi SFP+, LC, 10km over Singlemode Fiber	10GB-BX10-D 10GB-BX10-U AA1403169-E6 AA1403170-E6
10GBASE-ER	10G ER SFP+, LC, 40km, Singlemode Fiber	10G-ER-SFP40KM-ET 10309 AA1403013-E6 10G-ER-SFP40KM-IT
10GBASE-BiDi-40	10G SR BiDi SFP+, LC, 40km over Singlemode Fiber	10GB-BX40-D 10GB-BX40-U
10GBASE-ZR	10G ZR SFP+, LC, 80KM, Singlemode Fiber	10310 10GB-ZR-SFPP
10G-DACP	10G SFP+ Passive DAC Copper cables (0.5m, 1m, 3m, 5m, 10m)	10G-DACP-QSFPZ5M 10304 10305 10306 10307
10G-DACA	10G SFP+ Active DAC Copper cables (1m, 3m, 5m)	10G-DACA-SFP1M 10G-DACA-SFP3M 10G-DACA-SFP5M
10G-AOC	10G Active Optical Cables (7m, 10m)	10G-AOC-SFP7M 10G-AOC-SFP10M

10GBASE-BASET: The Extreme 10GBASE-BASET modules support link lengths of up to 30m over Cat6a copper cable with RJ-45 connectors.

10GBASE-BASET requires 2.5W power, hence requires alternate port population configuration due to heat dissipation.

10GBASE-USR: The Extreme 10GBASE-USR Optics modules support link lengths of up to 100m (OM3) over Multimode Fiber with duplex LC connectors.

10GBASE-SR: The Extreme 10GBASE-SR Optics modules support link lengths of up to 300m (OM3) or 400m (OM4) over Multimode Fiber with duplex LC connectors.

Part number 10G-SR-SFP300M-ET8PK provides an 8-pack of part number 10G-SR-SFP300M-ET.

10GBASE-LRM: The Extreme 10GBASE-LRM Optics modules support link lengths of up to 220m (OM3) over Multimode Fiber with duplex LC connectors. 10GBase-LRM modules use linear-mode amplifiers.

10GBASE-LR: The Extreme 10GBASE-LR Optics modules support link lengths of up to 10km over a pair of Singlemode fibers with duplex LC connectors.

Part number 10G-LR-SFP10KM-ET8PK provides an 8-pack of part number 10G-LR-SFP10KM-ET.

10GBASE-BiDi-10: The Extreme 10GBASE-BiDi-10 Optics modules support link lengths of up to 10km over a single fiber with LC connector. They provide 10G optical links over one Singlemode fiber by transmitting and receiving bidirectionally at different wavelengths over the same fiber, using one module which transmits at 1270nm paired with a second module which transmits at 1330nm.

10GBASE-ER: The Extreme 10GBASE-ER Optics modules support link lengths of up to 40km over a pair of Singlemode fibers with duplex LC connectors

Customers should ensure that 10GBASE-ER receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Extreme Optics Compatibility website.

10GBASE-BiDi-40: The Extreme 10GBASE-BiDi-40 Optics modules support link lengths of up to 40km over a single fiber with LC connector. They provide 10G optical links over one Singlemode fiber by transmitting and receiving bidirectionally at different wavelengths over the same fiber, using one module which transmits at 1270nm paired with a second module which transmits at 1330nm.

Customers should ensure that 10GBASE-BiDi-40 receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Extreme Optics Compatibility website.

10GBASE-ZR: The Extreme 10GBASE-ZR Optics modules support link lengths of up to 80km over a pair of Singlemode fibers with duplex LC connectors

Customers should ensure that 10GBASE-ZR receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Extreme Optics Compatibility website.

10G-DACP: Extreme SFP+ to SFP+ passive copper direct-attach cables are suitable for very short links and offer a cost-effective way to establish a 10 Gigabit link between 10G ports of Extreme platforms. Extreme currently offers 10G passive copper cables in lengths of 0.5, 1, 3, 5 and 10 meters.

10G-DACA: Extreme SFP+ to SFP+ active copper direct-attach cables are suitable for short links and offer a cost-effective way to establish a 10 Gigabit link between 10G ports of Extreme platforms. Extreme currently offers 10G active copper cables in lengths of 1, 3, 5 7 and 10 meters.

10G-AOC: Extreme SFP+ to SFP+ active optical fiber cables are suitable for short to medium links and offer a cost-effective way to establish a 10 Gigabit link between Extreme platforms. Active optical cables are much thinner than copper cables and do not cause Electromagnetic Interference (EMI) issues, which is critical in high-density systems. Extreme currently offers 10G active optical cables in lengths of 7 and 10 meters.

Extreme Networks 1000Base SFP Modules

Standard/Type	Description	Extreme Products
1000BASE-BASET	1G BASET SFP, RJ45, 100m over Cat6 copper	10065 10070H MGBIC-02
1000BASE-SX	1G SX SFP, LC, 550m over OM3, Multimode Fiber	10051H 10071H
1000BASE-FX	1G FX SFP, LC, 2km, Singlemode Fiber	MGBIC-LC03 I-MGBIC-LC03
1000BASE-BiDi-10	1G SR BiDi SFP, LC, 10km over Singlemode Fiber	10056H 10057H AA1419069-E6 AA1419070-E6
1000BASE-LX	1G LX SFP, LC, 10km, Singlemode Fiber	10060H 10052H 10072H
1000BASE-BiDi-40	1G SR BiDi SFP+, LC, 40km over Singlemode Fiber	MGBIC-BX40-D MGBIC-BX40-U
1000BASE-ELX	1G ZR SFP+, LC, 80KM, Singlemode Fiber	10053H

1000BASE-BASET: The Extreme 1000BASE-BASET modules support link lengths of up to 100m over Cat6a copper cable with RJ-45 connectors.

1000BASE-SX: The Extreme 1000BASE-SX Optics modules support link lengths of up to 550m (OM3) over Multimode fiber with duplex LC connectors.

Part number 10071H provides a 10-pack of part number 10051H.

1000GBASE-FX: The Extreme 1000BASE-FX Optics modules support link lengths of up to 2km or over Singlemode fiber with duplex LC connectors.

1000BASE-BIDI-10: The Extreme 1000BASE-BIDI-10 Optics modules support link lengths of up to 10km over one Singlemode fiber with LC connectors. They provide 1G optical links over one Singlemode fiber by transmitting and receiving bidirectionally at different wavelengths over the same fiber, using one module which transmits at 1310nm paired with a second module which transmits at 1490nm.

1000BASE-LX: The Extreme 1000BASE-LX Optics modules support link lengths of up to 10km over a pair of Singlemode fibers with duplex LC connectors.

Part number 10072H provides a 10-pack of part number 10052H.

1000BASE-BIDI-40: The Extreme 1000GBASE-BIDI-40 Optics modules support link lengths of up to 40km over one Singlemode fiber with LC connectors. They provide 1G optical links over one Singlemode fiber by transmitting and receiving bidirectionally at different wavelengths over the same fiber, using one module which transmits at 1310nm paired with a second module which transmits at 1490nm.

Customers should ensure that 10GBASE-BiDi-40 receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Extreme Optics Compatibility website.

1000BASE-ELX: The Extreme 1000BASE-ELX Optics modules support link lengths of up to 70km over a pair of Singlemode fibers with duplex LC connectors

Customers should ensure that 1000BASE-ELX receivers are protected from excessive input optical power by adding additional optical attenuation if necessary. TX and RX power levels are described for each module on the Extreme Optics Compatibility website.

Maintenance Services

Extreme's maintenance and support services are provided 100% by in-house engineering experts. We have a rate of over 90% first-person resolution, ensuring efficient operation of your business-essential network. With 24x7x365 phone support, advanced part replacement, and on-site support, we augment your staff with expert resources to help you mitigate critical network issues fast. Visit our Extreme Maintenance Services page for more information.

Most Extreme Transceivers are “Service Associated” and are covered by the Maintenance Service of the chassis and therefore do not require an additional service contract.

Warranty

All Extreme Networks transceivers have a 1-year warranty.

Legal Notice

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