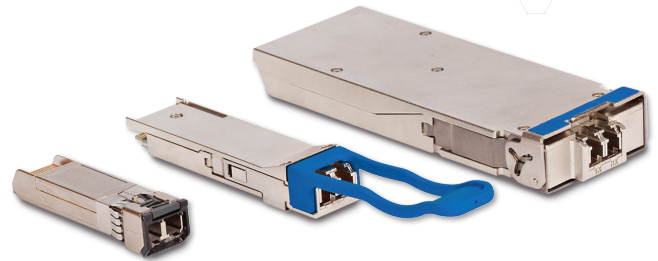


Fortinet Transceivers

Transceiver Modules for Fortinet Products

Fortinet's range of pluggable copper and optical transceiver modules are designed to complement Fortinet appliances that support transceiver module slots, including the FortiGate®, FortiSwitch™ and other appliance platforms.



Take the guesswork out of selecting transceivers

Common connectivity problems in enterprise and data center networks are often traced back to low-quality and incompatible transceiver modules, rather than a fault in the network appliances themselves. Fortinet's transceivers have been purpose-built and tested to work with Fortinet equipment, ensuring that your network is as stable and robust as possible, and taking the guesswork out of selecting compatible transceivers.

Wide range for maximum flexibility

Supporting various form factors, media types and throughput, Fortinet transceivers provide connectivity options to meet many different network architectures and deployment scenarios. Whether your network demands high-speed 100 GE inside the data center, or long-range 1 GE to connect data centers in different cities, Fortinet has a transceiver to meet your needs.



Highlights

- Copper and optical options
- Supports SFP, SFP+, QSFP+, DAC, CFP2 and QSFP28 slots
- Performance from 1 Gbps to 100 Gbps
- Tested for compatibility with Fortinet appliances

Key Features and Benefits



| | |
|---------------------------|--|
| Various Interface Options | Fortinet transceivers support various interfaces, including: SFP, SFP+, DAC and newer high-speed standards including QSFP+, CFP2 and QSFP28. |
| Tested for Compatibility | You can rest assured that your Fortinet transceivers have been tested for compatibility on Fortinet products, taking the guesswork out of selecting transceivers for your environment. |
| Maximize Network Uptime | Eliminate connectivity problems to maximize network uptime by using quality transceivers, designed to work with Fortinet products. |
| Cost Effective | Transceiver modules can be expensive, especially those with sensitive high-speed optics. Fortinet delivers high-quality transceivers, while keeping cost to a minimum. |

SPECIFICATIONS

Quick Reference Matrix

| | SFP (GE) | XFP (10 GE) | SFP+ (10 GE) | QSFP+ (40 GE) | CFP2 (100 GE) | QSFP28 (100 GE) |
|--------------------------------------|--|-------------------------------|----------------------------------|---|-------------------|--------------------|
| Maximum Transmission Distance | | | | | | |
| 10 Meter | | | SP-CABLE-ADASFP+ | | | |
| 30 Meter | | | FS-TRAN-SFP+GC | | | |
| 100 Meter | FG-TRAN-GC FS-TRAN-GC | | | FG-TRAN-QSFP+SR & FG-TRAN-QSFP+SR-BIDI (on OM3 MMF) | FG-TRAN-CFP2-SR10 | FG-TRAN-QSFP28-SR4 |
| 150 Meter | | | | FG-TRAN-QSFP+SR & FG-TRAN-QSFP+SR-BIDI (on OM4 MMF) | | |
| 220 Meter | FG-TRAN-SX (62.5/125 μ m) FR-TRAN-SX (62.5/125 μ m) | | FS-TRAN-SFP+LRM | | | |
| 300 Meter | | FG-TRAN-XFPSR (on OM3 MMF) | FG-TRAN-SFP+SR FS-TRAN-SFP+SR | | | |
| 500 Meter | FG-TRAN-SX (50/125 μ m) FR-TRAN-SX (50/125 μ m) | | | | | |
| 10 Kilometer | FG-TRAN-LX FR-TRAN-LX | FG-TRAN-XFPLR | FG-TRAN-SFP+LR | | FG-TRAN-CFP2-LR4 | FG-TRAN-QSFP28-LR4 |
| 40 Kilometer | | | FS-TRAN-SFP+ER | | | |
| 90 Kilometer | FR-TRAN-ZX | | | | | |

FG-Series Transceivers

| | FG-TRAN-GC | FG-TRAN-SX | FG-TRAN-LX | FG-TRAN-SFP+SR | FG-TRAN-SFP+LR | FG-TRAN-QSFP+SR | FG-TRAN-QSFP+SR BIDI |
|--------------------------------|------------------|--------------------------|-------------------------|------------------|--------------------|-------------------------|-------------------------|
| Hardware Specifications | | | | | | | |
| Protocol Standard | 1000Base-T | 1000Base-SX | 1000Base-LX | 10GBase-SR | 10GBase-LR | 40GBase-SR4 | 40GBase-SR-BiDi |
| IEEE Standard | 802.3ab | 802.3z | 802.3z | 802.3ae | 802.3ae | 802.3ba | 802.3ba |
| Module Type | SFP | SFP | SFP | SFP+ | SFP+ | QSFP+ | QSFP+ |
| Data Link Rate for Ethernet | 1.25 Gbps | 1.25 Gbps | 1.25 Gbps | 10 Gbps | 10 Gbps | 1.06 Gbps–41.2 Gbps | 41.2 Gbps |
| Transmission Range | 100 m | 220 m / 500 m | 10 km | 300 m | 10 km | 100 m (OM3)–150 m (OM4) | 100 m (OM3)–150 m (OM4) |
| Media | copper interface | MM | SM | MM | SM | MM | MM |
| Wavelength (nm) | | 850 | 1310 | 850 | 1310 | 750–980 | 850–900 |
| Connector Type | RJ-45 | Duplex LC | Duplex LC | Duplex LC | Duplex LC | Single 1x12 MPO | Duplex LC |
| Power Dissipation | 1.05 W | < 800 mw | < 830 mw | 600 mw | 850 mw | < 1.5 W | < 3.5 W |
| Operating Temperature Range | 0–85°C | 0–70°C | 0–70°C | 0–70°C | 0–85°C | 0–70°C | 0–70°C |
| Hot Plug | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Serial ID PROM | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Digital Monitoring | No | No | Yes | Yes | Yes | Yes | Yes |
| Auto Negotiation | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Link Status | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| | FG-TRAN-QSFP+LR | SP-CABLE-ADASFP+ | FG-TRAN-CFP2-SR10 | FG-TRAN-CFP2-LR4 | FG-TRAN-QSFP28-SR4 | FG-TRAN-QSFP28-LR4 | |
| Hardware Specifications | | | | | | | |
| Protocol Standard | 40GBase-LR4 | DAC | 100GBase-SR10 | 100GBase-LR4 | 100GBase-SR4 | 100GBase-LR4 | |
| IEEE Standard | 802.3ba | | 802.3ba | 802.3ba | 802.3bm | 802.3ba | |
| Module Type | QSFP+ | | CFP2 | CFP2 | QSFP28 | QSFP28 | |
| Data Link Rate for Ethernet | 41.2 Gbps | 1 G–10 Gbps | 103.12 Gbps | 103.1 Gbps | 103.1 Gbps | 103.1 Gbps | |
| Transmission Range | 10 km | .5 m–15 m | 100 m (OM3)–150 m (OM4) | 10 km | 100 m (OM4) | 10 km (SMF) | |
| Media | SM | | MM | SM | MM | SM | |
| Wavelength (nm) | | NA | 850 | 1310 | 850 | 1310 | |
| Connector Type | Duplex LC | SFP+ card edge connector | 24 fiber MPO | Duplex LC | MPO12 | LC | |
| Power Dissipation | < 3.5 W | | | < 8 W | < 3.5 W | < 3.5 W | |
| Operating Temperature Range | 0–70°C | | 0–70°C | 0–70°C | 0–70°C | 0–70°C | |
| Hot Plug | Yes | | Yes | Yes | Yes | Yes | |
| Serial ID PROM | Yes | Yes | Yes | Yes | Yes | Yes | |
| Digital Monitoring | Yes | Yes | Yes | Yes | Yes | Yes | |
| Auto Negotiation | Yes | Yes | Yes | Yes | Yes | Yes | |
| Link Status | Yes | | Yes | Yes | Yes | Yes | |

FG-Series Transceivers — Qualified for Fortinet products

SPECIFICATIONS

FS-Series Transceivers

| | FS-TRAN-GC | FS-TRAN-SFP+GC | FS-TRAN-SFP+SR | FS-TRAN-SFP+LRM | FS-TRAN-SFP+ER |
|--------------------------------|------------------|------------------|----------------|-----------------|----------------|
| Hardware Specifications | | | | | |
| Protocol Standard | 1000Base-T | 10GBASE-T | 10GBase-SR | 10GBASE-LRM | 10GBASE-ER |
| IEEE Standard | 802.3ab | 802.3az | 802.3ae | IEEE 802.3aq | IEEE 802.3ae |
| Module Type | SFP | SFP+ | SFP+ | SFP+ | SFP+ |
| Data Link Rate for Ethernet | 1.25 Gbps | 10 Gbps | 10.3125 Gbps | 10.3 Gbps | 11.3 Gbps |
| Transmission Range | 100 m | 30 m | 300 m | 220 m | 40 km |
| Media | Copper Interface | Copper Interface | MM | MM | SM |
| Wavelength (nm) | — | — | 850 | 1310 | 1550 |
| Connector Type | RJ-45 | RJ-45 | Duplex LC | Duplex LC | Duplex LC |
| Power Dissipation | 1.05 W | 2.5W | 600 mW | < 1W | 1.5 W |
| Operating Temperature Range | 0–85°C | -5 to +85°C | 0–70°C | -5–70°C | -5–70°C |
| Hot Plug | Yes | Yes | Yes | Yes | Yes |
| Serial ID PROM | Yes | Yes | Yes | Yes | Yes |
| Digital Monitoring | No | No | Yes | Yes | Yes |
| Auto Negotiation | Yes | Yes | Yes | Yes | Yes |
| Link Status | Yes | Yes | Yes | Yes | Yes |

FS-Series Transceivers — Qualified for Fortinet products, except FS-TRAN-SFP-GC which only works on FortiSwitches

FR-Series Transceivers

| | FR-TRAN-SX | FR-TRAN-LX | FR-TRAN-ZX |
|--------------------------------|-------------|-------------|-------------|
| Hardware Specifications | | | |
| Protocol Standard | 1000Base-SX | 1000Base-LX | 1000Base-LX |
| IEEE Standard | 802.3z | 802.3z | 802.3z |
| Module Type | SFP | SFP | SFP |
| Data Link Rate for Ethernet | 1.25 Gbps | 1.25 Gbps | 1.25 Gbps |
| Transmission Range | 500 m | 10 km | 90 km |
| Media | MM | SM | SM |
| Wavelength (nm) | 850 | 1310 | 1550 |
| Connector Type | Duplex LC | Duplex LC | Duplex LC |
| Power Dissipation | <500 mw | <600 mW | <700 mW |
| Operating Temperature Range | -40–85°C | -40–85°C | -40–85°C |
| Hot Plug | Yes | Yes | Yes |
| Serial ID PROM | Yes | Yes | Yes |
| Digital Monitoring | Yes | Yes | Yes |
| Auto Negotiation | Yes | Yes | Yes |
| Link Status | Yes | Yes | Yes |

FR-Series Transceivers — Transceivers with wider thermal range for use with Fortinet ruggedized products

Breakout Cables

| | FG-TRAN-QSFP-4XSFP | FG-TRAN-QSFP-4XSFP-5 | FG-CABLE-SR10-SFP+ | FG-CABLE-SR10-SFP+5 |
|--------------------------------|--------------------|----------------------|---------------------|---------------------|
| Hardware Specifications | | | | |
| Connector A | 1x 40 GE QSFP+ | 1x 40 GE QSFP+ | 1x 100 GE SR10 CFP2 | 1x 100 GE SR10 CFP2 |
| Connector A Type | MPO | MPO | MPO | MPO |
| Connector B | 4x 10 GE SFP+ | 4x 10 GE SFP+ | 10x 10 GE SFP+ | 10x 10 GE SFP+ |
| Connector B Type | LC duplex | LC duplex | LC duplex | LC duplex |
| Cable Length | 1 m | 5 m | 1 m | 5 m |
| Cable Type | OM3 MMF | OM3 MMF | OM3 MMF | OM3 MMF |
| Transceiver | Not included | Not included | Not included | Not included |

Fortinet Breakout Cables — Qualified on Fortinet Products (on applicable interfaces)

ORDER INFORMATION

| Product | SKU | Description |
|--|----------------------|---|
| 1 GE SFP LX transceiver module | FG-TRAN-LX | 1 GE SFP LX transceiver module for all systems with SFP and SFP/SFP+ slots |
| 1 GE SFP RJ45 transceiver module | FG-TRAN-GC | 1 GE SFP RJ45 transceiver module for all systems with SFP and SFP/SFP+ slots |
| 1 GE SFP SX transceiver module | FG-TRAN-SX | 1 GE SFP SX transceiver module for all systems with SFP and SFP/SFP+ slots |
| 10 GE SFP+ transceiver module, short range | FG-TRAN-SFP+SR | 10 GE SFP+ transceiver module, short range for all systems with SFP+ and SFP/SFP+ slots |
| 10 GE XFP transceiver module, short range | FG-TRAN-XFPSR | 10 GE XFP transceiver module, short range for all systems with XFP slots |
| 10 GE SFP+ transceiver module, long range | FG-TRAN-SFP+LR | 10 GE SFP+ transceiver module, long range for all systems with SFP+ and SFP/SFP+ slots |
| 10 GE XFP transceiver module, long range | FG-TRAN-XFPLR | 10 GE XFP transceiver module, long range for all systems with XFP slots |
| 40 GE QSFP+ transceivers, short range | FG-TRAN-QSFP+SR | 40 GE QSFP+ transceivers, short range for all systems with QSFP+ slots |
| 40 GE QSFP+ transceivers, short range, BiDi | FG-TRAN-QSFP+SR-BIDI | 40 GE QSFP+ transceivers, short range BiDi for systems with QSFP+ slots |
| 40 GE QSFP+ transceivers, long range | FG-TRAN-QSFP+LR | 40 GE QSFP+ transceivers, long range for all systems with QSFP+ slots |
| 10 GE SFP+ active direct attach cable, 10m / 32.8 ft | SP-CABLE-ADASFP+ | 10 GE SFP+ active direct attach cable, 10m / 32.8 ft for all systems with SFP+ and SFP/SFP+ slots |
| 100 GE CFP2 transceivers, long range | FG-TRAN-CFP2-LR4 | 100 GE CFP2 transceivers, long range, over single mode fiber, for all systems with CFP2 slots |
| 100 GE CFP2 transceivers, short range | FG-TRAN-CFP2-SR10 | 100 GE CFP2 transceivers, 10 channel parallel fiber, short range for all systems with CFP2 slots |
| 100 GE QSFP28 transceivers, short range | FG-TRAN-QSFP28-SR4 | 100 GE QSFP28 transceivers, 4 channel parallel fiber, short range for all systems with QSFP28 slots |
| 100 GE QSFP28 transceivers, long range | FG-TRAN-QSFP28-LR4 | 100 GE QSFP28 transceivers, 4 channel parallel fiber, long range for all systems with QSFP28 slots |
| 1 GE SFP RJ45 transceiver module | FS-TRAN-GC | 1 GE SFP RJ45 transceiver module for FortiSwitch with SFP and SFP/SFP+ slots |
| 10 GE copper SFP+ transceiver module, up to 30m | FS-TRAN-SFP+GC | 10GE copper SFP+ RJ45 Transceiver. For FortiSwitch only, up to 30M |
| 10 GE SFP+ transceiver module, short range | FS-TRAN-SFP+SR | 10 GE SFP+ transceiver module, short range for FortiSwitch with SFP+ and SFP/SFP+ slots |
| 10 GE SFP+ transceivers, extended range | FS-TRAN-SFP+EX | 10 GE SFP+ transceiver module, extended range for Fortinet systems with SFP+ slots |
| 10 GE SFP+ transceivers, long range multimode | FS-TRAN-SFP+LRM | 10 GE SFP+ transceiver module, long range multimode for Fortinet systems with SFP+ slots |
| 1 GE SFP SX transceivers, MMF, -40–85°C operation | FR-TRAN-SX | 1 GE SFP SX transceiver module, -40–85°C, over MMF, for all systems with SFP and SFP/SFP+ slots |
| 1 GE SFP LX transceivers, SMF, -40–85°C operation | FR-TRAN-LX | 1 GE SFP LX transceiver module, -40–85°C, over SMF, for all systems with SFP and SFP/SFP+ slots |
| 1 GE SFP transceivers, 90 km range, -40–85°C operation | FR-TRAN-ZX | 1 GE SFP transceivers, -40–85°C operation, 90 km range for all systems with SFP slots |
| 40 GE QSFP+ to 4x 10 GE SFP+ optical breakout, 1 meter | FG-TRAN-QSFP-4XSFP | 40 GE QSFP+ parallel breakout MPO to 4x LC connectors, 1 m reach, transceivers not included |
| 40 GE QSFP+ to 4x 10 GE SFP+ optical breakout, 5 meter | FG-TRAN-QSFP-4SFP-5 | 40 GE QSFP+ parallel breakout MPO to 4x LC connectors, 5 m reach, transceivers not included |
| 100 GE SR10 to 10x 10 GE fan out cable, 1 meter | FG-CABLE-SR10-SFP+ | 100 GE CFP2/QSFP28 parallel breakout MPO to 10x LC connectors, 1 m reach, transceivers not included |
| 100 GE SR10 to 10x 10 GE fan out cable, 5 meter | FG-CABLE-SR10-SFP+5 | 100 GE CFP2/QSFP28 parallel breakout MPO to 10x LC connectors, 5 m reach, transceivers not included |



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