

Arista 25G Transceivers and Cables: Q&A

What 25G Transceivers and Cables are available from Arista?

Arista supports a range of 25G copper cables and optical transceivers compliant to IEEE standards and industry MSAs. Arista’s 25G connectivity solutions include copper cables, Active Optical Cables (AOCs), and a range of optical transceivers in an SFP form factor for various fiber types and reach.

| Product Number | Product Description |
|--|--|
| 25G SFP Transceivers | |
| SFP-25G-SR | 25GBASE-SR SFP transceiver up to 70m/100m over parallel OM3/OM4 multi-mode fiber (MMF) |
| SFP-25G-MR-SR | 10/25GBASE-MR-SR Dual rate SFP Transceiver, up to 70m/100m over OM3/OM4 MMF at 25G and 300m/400m over OM3/OM4 MMF at 10G. Interoperates with 10G-SR when operated at 10G. |
| SFP-25G-MR-XSR | Dual rate 10/25GBASE-MR-XSR SFP optical transceiver up to 200m/300m of OM3/OM4 MMF at 25G, and up to 300m/400m of OM3/OM4 MMF at 10G. |
| SFP-25G-LR | 25GBASE-LR SFP transceiver, up to 10km over single-mode fiber |
| SFP-25G-MR-LR | Dual rate 10/25GBASE-MR-LR SFP optical transceiver up to 10km over duplex Single-Mode Fiber (SMF) |
| 25G SFP to SFP Active Optical Cables | |
| AOC-S-S-25G-xM | 25GbE SFP to SFP Active Optical Cable, 3m – 30m |
| 25G SFP to SFP Twinax Copper Cables | |
| CAB-S-S-25G-xM | 25G SFP to SFP twinax copper cable, 1m, 2m, 3m, and 5m |
| 100G QSFP to 25G SFP Twinax Copper breakout Cables | |
| CAB-Q-4S-100G-xM | 100GBASE- QSFP to 4 x 25GbE SFP twinax copper cable, 1m, 2m, 3m, and 5m |

What is the maximum supported distance for 25G Transceivers and Cables?

The maximum currently supported distance for 25G is 10km with SFP-25G-LR and SFP-25G-MR-LR. Additional optics may be released in the future to support longer distances.

What is the difference between SFP28 and 25G SFP?

They are the same. The “SFP” form factor was originally defined for speeds lower than 10G. When it was adopted for 10G, the name became SFP+ to denote the higher aggregate performance. The same SFP form factor was later adopted for 25G with the electrical interface operating at 25Gbps. The electrical interface is designed to accommodate up to 28Gbps, hence the engineering and industry name is SFP28. Arista refers to the 25G form factor as the 25G SFP to avoid any confusion.

Can 10G SFP+ and 1G SFP transceivers be plugged into Arista 25G SFP ports?

Yes, Arista 25G SFP ports allow the flexibility to run multiple speeds and support a full range of 10G SFP+ optical modules. The 10GBASE-T (copper) transceiver is supported in a limited range of products - refer to Arista's transceiver and cable guide for supported platforms. 1G SFP transceivers can also be used in 25G SFP platforms that support 1G. Please refer to product datasheets for more details on rate support for specific products.

Can 25G SFP transceivers and cables support 10/25G dual rate?

Arista offers three dual-rate 10G/25G SFPs for use with multi-mode fiber (MMF) and single-mode fiber (SMF):

- For MMF:
 1. The SFP-25G-MR-SR 10/25G Dual Rate Short Reach (or SR) optical transceiver, supporting 25G up to 100m with duplex OM4 MMF, and 10G up to 400m with duplex OM3 MMF. When operated at 10G, the SFP-25G-MR-SR will optically interoperate with 10G-SR SFPs.
 2. The SFP-25G-MR-XSR 10/25G Dual rate "eXtended Short Reach" (or XSR) optical transceiver, supporting 25G up to 300m with duplex OM4 MMF and 10G up to 400m with duplex OM3 MMF. When operated at 10G, the SFP-25G-MR-XSR will optically interoperate with 10G-SR SFPs, but attenuation may be required to ensure the maximum input power of the 10G-SR is not exceeded.
- For SMF:
 3. The SFP-25G-MR-LR 10/25G Dual rate optical transceiver, supporting 10G or 25G over 10km of duplex SMF.

Are Arista 25G Transceivers interoperable with other 25G transceivers available in the industry?

Yes, as long as the non-Arista 25G transceivers meet the associated industry standard specifications, Arista 25G transceivers are fully interoperable.

What 10G/25G/40G/100G Arista transceivers interoperate with Arista's 25G transceivers?

The tables below summarize the interoperability of Arista's 25G SFP transceivers over different media types and data rates

| Interoperability of Arista's 25G SFP transceivers over MMF @ 25Gb/s | | | | |
|---|-------------------------|--------------------------|----------------------------------|-----------------------------------|
| | SFP-25G-SR | SFP-25G-XSR @25G | QSFP-100G-SR4 (optical breakout) | QSFP-100G-XSR4 (optical breakout) |
| SFP-25G-SR | 70m (OM3) 100m (OM4) | 70m (OM3) 100m (OM4) | 70m (OM3) 100m (OM4) | 70m (OM3) 100m (OM4) |
| SFP-25G-MR-SR @ 25G | 70m (OM3) 100m (OM4) | 70m (OM3) 100m (OM4) | 70m (OM3) 100m (OM4) | 70m (OM3) 100m (OM4) |
| SFP-25G-MR-XSR @ 25G | 70m (OM3) 100m (OM4) | 200m (OM3) 300m (OM4) | 70m (OM3) 100m (OM4) | 150m (OM3) 300m (OM4) |

Interoperability of Arista's dual rate 25G-MR-XSR SFP transceiver over MMF @ 10Gb/s

| | SFP-10G-SRL | SFP-10G-SR | SFP-25G-MR-XSR @ 10G | QSFP-40G-SR4 (optical breakout) | QSFP-40G-XSR4 (optical breakout) |
|----------------------|------------------------------|------------------------------|--------------------------|---------------------------------|----------------------------------|
| SFP-25G-MR-SR @ 10G | 100m (OM3) 150m (OM4) | 300m (OM3) 400m (OM4) | 300m (OM3) 400m (OM4) | 100m (OM3) 150m (OM4) | 300m (OM3) 400m (OM4) |
| SFP-25G-MR-XSR @ 10G | 100m (OM3) * 150m (OM4) * | 300m (OM3) * 400m (OM4) * | 300m (OM3) 400m (OM4) | 100m (OM3) 150m (OM4) | 300m (OM3) 400m (OM4) |

Note: When using the SFP-25G-XSR to interoperate with 10G SFP transceivers, attenuation may be required for short links to ensure the 10G SFP receiver is not overloaded. Refer to the transceiver datasheet for detailed optical specifications.

Interoperability of Arista's 25G SFP transceivers over SMF @ 25Gb/s

| | SFP-25G-LR | SFP-25G-MR-LR @25G | QSFP-100G-PSM4 (optical breakout) |
|---------------------|------------|--------------------|-----------------------------------|
| SFP-25G-LR | 10km | 10km | 500m |
| SFP-25G-MR-LR @ 25G | 10km | 10km | 500m |

Interoperability of Arista's 25G-MR-LR SFP transceiver over SMF @ 10Gb/s

| | SFP-10G-LRL* | SFP-10G-LR* | SFP-25G-MR-LR @ 10G | QSFP-40G-PLRL4* (optical breakout) | QSFP-40G-PLR4* (optical breakout) |
|---------------------|--------------|-------------|---------------------|------------------------------------|-----------------------------------|
| SFP-25G-MR-LR @ 10G | 1km | 10km | 10km | 1km | 10km |

* Note: When using the SFP-25G-XSR to interoperate with 10G SFP and 40G transceivers, attenuation may be required for short links to ensure the receiver is not overloaded. Refer to the transceiver datasheet for detailed optical specifications.

What is the maximum power consumption of 25G SFP transceivers?

The table below summarizes the power consumption of Arista 25G SFP transceivers.

| Product Number | Max Power Consumption |
|----------------|-----------------------|
| AOC-S-S-25G-xM | 1.0W |
| SFP-25G-SR | 1.5W |

| | |
|----------------|------|
| SFP-25G-LR | 1.5W |
| SFP-25G-MR-SR | 1.5W |
| SFP-25G-MR-XSR | 1.5W |
| SFP-25G-MR-LR | 1.5W |

What will happen if I plug in 25G SFP transceivers that consume greater than 2W?

Arista cannot guarantee the performance of SFP transceivers that draw greater than 2W due to electrical and thermal limits.

Fiber and Copper Cables

What cable type is needed for 25G Transceivers?

The table below details the connector type of each 100G Transceiver and the cable type to be used.

| Product Number | Termination/Connector Type | Fiber Type to be used |
|------------------------------------|----------------------------|-----------------------------|
| SFP-25G-SR and SFP-25G-MR-SR / XSR | Duplex LC | Multi-mode Fiber OM3 or OM4 |
| SFP-25G-LR and SFP-25G-MR-LR | Duplex LC | Single-mode Fiber |
| AOC-S-S-25G-xM | N/A | Pre-terminated |
| CAB-S-S-25G-xM | N/A | Pre-terminated |
| CAB-Q-4S-100G-1M | N/A | Pre-terminated |

Where can customers buy splitter cables for 100G to 4x25G connectivity?

A large number of cabling suppliers provide MPO-LC MMF and SMF breakout cables. Example part numbers are below. More information is available at the [Transceivers and Cables](#) page on arista.com

| Product Description | Corning P/N | Leviton P/N | Wave2Wave P/N |
|---|-------------------|-----------------|---------------|
| OM4 MPO12 to 4 LC - Direct connect for 1x QSFP+ SR4 to 4 SFP+ SR, 5m | HE67908QPH-KB005M | FH-FH008MR1624K | 51PU-8080P-5M |
| OM4 MPO12 to 4 LC - Direct connect for 1x QSFP+ SR4 to 4 SFP+ SR, 3m | HE67908QPH-KB003M | FH-FH008MR1024K | 51PU-8080P-3M |
| SM MPO12 to 4 LC - Direct connect for 1x QSFP+ PLRL4 to 4 SFP+ LR, 5m | HE87808GPH-KB005M | FH-AH008MR1624K | 51PU-3084P-5M |
| SM MPO12 to 4 LC - Direct connect for 1x QSFP+ PLRL4 to 4 SFP+ LR, 3m | HE87808GPH-KB003M | FH-AH008MR1024K | 51PU-3084P-3M |

Can customers use third party 25G SFP to SFP and QSFP breakout cables?

Arista does not restrict the use of third party passive copper cables. These cables need to comply with the associated IEEE specifications, to allow them to be correctly identified and recognized by the Arista switch. Interfaces with cables not recognized correctly will be disabled.

What is the Forward Error Correction (FEC) requirement for Arista 25G Copper Cables?

The IEEE 802.3by spec has 3 different 25G cable types (CA-N, CA-S, CA-L), which are aligned to 3 different loss classification categories and have a minimum FEC requirement.

| | | |
|------|--------------|--|
| CA-N | 12.98dB loss | the highest grade, and no FEC is required |
| CA-S | 16.48dB loss | the middle grade, and BASE-R or RS FEC is required |
| CA-L | 22.48dB loss | the lowest grade, and RS FEC is required |

The table below summarizes the loss specification of Arista 25G copper cables

| Arista 25G SFP and 100G-4x25G Copper Cables | | |
|---|---|---|
| | 25G SFP to SFP Cables | 100G QSFP-4SFP Cables |
| Loss Characteristics spec | 1, 2, 3 meters: CA-N 5 meter cable: CA-L | 1, 2 meter cables: CA-N 3 meter cable: CA-S 5 meter cable: CA-L |

How do you change 25G SFP ports to support 10G SFP+ transceivers?

Configure the desired speed as 10G:

```
(config)# interface Et1
(config-if-Et1)# speed forced 10000full
```

How do you change 100G QSFP ports from 100GbE mode to 4x25G mode?

Configure the desired speed as 25G:

```
(config)# interface Et1/1-4
(config-if-Et1/1-4)# speed forced 25gfull
```

Can I configure a 100G port to a mix of 10G and 25G speeds?

No, a 100G-port can either be configured as 4x25G or 4x10G. Mix and match 10G/25G is not supported with a single 100G port.

How do you change 25G SFP ports back to the default mode?

Configure the port to default mode:

```
(config)# interface Et1
(config-if-Et1)# no speed
```

What additional resources are available on Transceivers and Cables?

Below is a list of additional resources available on the transceivers and cables page of www.arista.com.

| Document | Description |
|---|--|
| Optics and Cables Datasheet | Detailed specifications and ordering information |
| Transceiver and Cable Guide | Arista EOS support, physical attributes, laser safety and fiber cleaning instructions |
| FAQ Documents | 100G and 40G Frequently asked questions |
| Whitepapers | Whitepapers on 25G Ethernet, the 40G UNIV transceiver, and more, on the transceivers and cables pages on the arista website here |
| Partner Documents | Fiber cabling reference guides from Cabling companies like Corning and Leviton on the arista website here |