

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-SR-E	25GBASE-SR-Enhanced SFP, up to 30m/50m over OM3/OM4 MMF without FEC (for low latency), or up to 70m/100m over OM3/OM4 MMF with FEC. Please refer to Arista's "E-Series Optical Transceivers Q&A" for more information.
SFP-25G-LR	25GBASE-LR SFP transceiver, up to 10km over single-mode fiber (SMF)
SFP-25G-MR-LR	Dual rate 10/25GBASE-MR-LR SFP optical transceiver up to 10km over duplex SMF
SFP-25G-LR-E	25GBASE-LR-Enhanced SFP, duplex LC optical connector, up to 2km over SMF without FEC (for low latency), or up to 10km over SMF with FEC. Please refer to Arista's "E-Series Optical Transceivers Q&A" for more information.
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.

Additionally, the 25G Twinax Copper Cables - CAB-S-S-25G-xM can support 10G.

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.

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