

Key Features

- Deployment flexibility with 800G (dual 400G), 400G, 100G, 50G, 40G, 25G, 10G or 1G modules.
- Hot swappable to maximize uptime and simplify serviceability
- Data rates from 1GbE to 25GbE supported using the SFP form factor, for the smallest, and lowest power solutions
- SFP+ Optical interoperability with 10GbE XFP, X2 and XENPAK pluggable form factors
- QSFP+ Universal transceiver for 40G operations over duplex multi-mode and single-mode fiber. Interoperable with IEEE 40GbE LR4 and LRL4 for easier migrations from 10G to 40G and to single mode fiber
- 100G QSFP pluggable transceivers and cables for high density 100G deployments. Optical interoperability with 100GbE CFP, CFP2 and CPAK
- Parallel QSFP transceivers for both multi-mode and single-mode enable flexible 4x25G and 4x10G options for gradual migration from 10G to 40G and 25G to 100G connectivity
- 100G SFP-DD and DSFP cables for cost effective NIC connectivity
- 200G QSFP optics, AOCs and cables for simple upgrade from 100G
- A Broad range of 400GE optics, AOCs and cables, in both OSFP and QSFP-DD form-factors
- 400G-ZR optics, with pluggable line-system for simple, cost effective DCI
- Flexibility of media and interface choice on a port-by-port basis
- Support for tunable 10G and 400G DWDM for DCI and long-haul optical fiber networks

Overview

Arista's Optical Modules and Cable portfolio offer a wide variety of high-density and low-power 800G (dual 400G), 400G, 200G, 100G, 50G, 40G, 25G, 10G, 1G, and 100M Ethernet connectivity options over fiber or copper.

To accommodate an increasing spectrum of applications, Arista offers a wide choice of OSFP, QSFP-DD, QSFP, SFP, SFP-DD and DSFP transceivers and cables that comply with industry standards, offering a broad range of connectivity options. Each module is optimized for different media and reach (ranging from 0.5 meters to 80 kilometers).

All interface speeds, from 1G to 400GE have connectivity options that include Direct Attach copper Cables (DACs), Active Optical Cables (AOCs), multi-mode fiber and single-mode fiber transceivers.



10 Gigabit Ethernet SFP+ Options

PHY Type	Reach
10GBASE-T ¹	Up to 30m link length over Category 6a copper cables
10GBASE-MRA-T ¹	Up to 30m link length over Category 6a copper cables (rate adapting transceiver)
10GBASE-CR	Twin-ax copper cables with link lengths of 0.5m, 1m, 1.5m, 2m, 2.5m, 3m and 5m
10GBASE-AOC	Active Optical Cable with link lengths of 3m, 5m, 7m, 10m, 15m, 20m, 25m and 30m
10GBASE-SR	Up to 300m link length with 2000 MHz*km duplex MMF (OM3). Optical interoperability with 10GBASE-SRL
10GBASE-SRL	Up to 100m link length with 2000 MHz*km duplex MMF (OM3). Optical interoperability with 10GBASE-SR
10GBASE-LR	Up to 10km link length over duplex single-mode fiber. Optical interoperability with 10GBASE-LRL
10GBASE-LRL	Up to 1km link length over duplex single-mode fiber. Optical interoperability with 10GBASE-LR
10GBASE-ER	Up to 40km link length over duplex single-mode fiber
10GBASE-ERLBD	Up to 30km link length over a single strand of single-mode fiber
10GBASE-ERBD ²	Up to 40km link length over a single strand of single-mode fiber
10GBASE-ZR	Up to 80km link length over duplex single-mode fiber
10GBASE-DWDM ²	Up to 80km link length DWDM over duplex single-mode fiber

1. Supported on specific platforms. Refer to Arista's Transceiver and Cable Guide for supported platforms.
2. Proper optical attenuation is required for shorter links to protect the receiver from permanent damage.

Gigabit Ethernet SFP Options

PHY Type	Reach
1000BASE-SX	Up to 550m link length with 500 MHz km MMF (OM2). Rate adapting option available (SFP-10G-RA-1G-SX) ²
1000BASE-LX	Up to 10km link length over duplex SMF and up to 550m on MMF ⁴ . Rate adapting option available (SFP-10G-RA-1G-LX) ²
1000BASE-T	Up to 100m link length over Category 5 copper cables, supporting both 100 Megabit and 1 Gigabit Ethernet

Physical Characteristics (HxWxD)

- SFP: 8.55 x 13.7 x 56.5mm
- QSFP: 13.5 x 18.4 x 72.4mm
- QSFP-DD, Type 1: 13.5 x 18.4 x 78.3mm
- QSFP-DD, Type 2: 13.5 x 18.4 x 93.3mm
- OSFP: 13.0 x 22.6 x 100.4mm

Environmental Characteristics

- Operating case temperature: 0 to 70C
- Storage Temperature: -40 to 70C
- Relative Humidity: 5 to 95%
- Operating Altitude: 0-10,000 ft

Power Requirements (Maximum)

- SFP/SFP+ (except 10G ER, ZR, DWDM, BASE-T and 25G SR, XSR, LR): 1 W
- SFP-10G-T-RP, SFP-1G-T, & SFP-100M-FX: 1.5W
- 40G QSFP+ AOC, 40GBASE-SR4, XSR4; SFP+ ERLBD, ERBD, ER, ZR, DWDM and 25G SR, MR-SR MR-XSR, LR, MR-LR: 1.5 W
- SFP-10G-T, SFP-10G-RA-1G-SX, SFP-10G-RA-1G-LX, SFP-25G-ER: 2W
- SFP-10G-MRA-T: 2.5W
- 40G QSFP+ AOC, BIDI, UNIV, LRL4, LR4, PLR4, PLRL4 and ER4: 3.5 W
- 100G QSFP AOC, SR4, XSR4, SWDM4, BIDI, PSM4, CWDM4, XCWDM4: 3.5W
- 100G QSFP LRL4: 4.0W
- 100G QSFP LR4, ERL4, DR, FR, LR, ER: 4.5W
- 200G QSFP SR4: 4.5W
- 100G QSFP ZR4: 5.5W
- 200G QSFP FR4: 6.5W
- QDD-200G-2LR4 & OSFP-200G-2LR4 modules: 8W
- 400G OSFP & QSFP-DD AOC, VSR4, SR8, BIDI, DR4, XDR4, PLR4, FR4, LR4 2FR4: 12W
- 400G OSFP & QSFP-DD LR8: 14W
- 400G OSFP & QSFP-DD to 4x QSFP100 breakout Active Copper Cables: OSFP/ QSFP-DD: 10W, QSFP: 4W
- 800G OSFP & QSFP-DD AOC, 2XDR4, 2PLR4, 2FR4, 2LR4: 16W

IEEE Compliance

- 802.3 IEEE Ethernet

MSA & Standards Compliance

- GR-20-CORE
- GR-326-CORE
- GR-1435-CORE
- QSFP+/QSFP28: SFF-8449 and 8636
- SFP+: SFF-8431, 8461 and 8472
- 100G CWDM4 MSA
- 100G PSM4 MSA
- 100G SWDM4 Alliance
- 100G Lambda MSA
- OSFP MSA
- QSFP-DD MSA

- As per IEEE spec's, min cabling distance for -LR, -SR, -SX, -LX modules is 2m

Gigabit Ethernet SFP Specifications

PHY Type	Connector Type	Wave-length (nm)	Cable Type	Core Size (um)	Modal Bandwidth (MHz*Km)	Tx power (dBm)	Rx power (dBm)	Max Reach
1000BASE-SX	LC	850	MMF	62.5	160	-9.5 to -4.0	-17 to 0.0	220m
				62.5	200			275m
				50.0	400			500m
				50.0	500			550m
1000BASE-LX	LC	1310	MMF ¹	62.5	500	-9.5 to -3.0	-19 to -3.0	550m
				50.0	400			550m
			SMF	G.652	–			10km
1000BASE-T	RJ-45	–	Cat5 (UTP)	–	–	–	–	100m

10 Gigabit Ethernet Cable Specifications

PHY Type	Connector Type	Wavelength (nm)	Cable Type	Max Reach
10GBASE-CR	SFP+ (Both ends)	–	TwinaX Copper	0.5m to 5m
10GBASE-CR	QSFP+ to 4 x SFP+	–	TwinaX Copper	0.5m to 5m
10GBASE-AOC	SFP+ (Both ends)	850nm	MMF	3m to 30m

10 Gigabit Ethernet SFP/SFP+ Specifications

PHY Type	Conn. Type	Wave-length (nm)	Cable Type	Core Size (um)	Modal Bandwidth (MHz*Km)	Tx power (dBm)	Rx power (dBm)	Max Reach
10GBASE-T	RJ-45	–	Cat6a	–	–	–	–	30m
10GBASE-MRA-T	RJ-45	–	Cat6a	–	–	–	–	30m
10GBASE-SR	LC	850	MMF	62.5	200	-7.3 to -1.0	-9.9 to -1.0	33m
				50.0	400			66m
				50.0	500			82m
				50.0	2000 (OM3)			300m
10GBASE-SRL	LC	850	MMF	50.0	4700 (OM4)	-8.0 to -1.0	-9.9 to -1.0	400m
				62.5	200			11m
				50.0	400			22m
				50.0	500			27m
10GBASE-SRL	LC	850	MMF	50.0	2000 (OM3)	-8.0 to -1.0	-9.9 to -1.0	100m
				50.0	4700 (OM4)			150m
				62.5	200			11m
				50.0	400			22m
10GBASE-LRL	LC	1310	SMF	G.652	–	-8.2 to 0.5	-12.5 to 0.5	1km
10GBASE-LR	LC	1310	SMF	G.652	–	-8.2 to 0.5	-14.4 to 0.5	10km
10GBASE-ERLBD-U/D	LC	1270 / 1330	SMF	G.652	–	0 to 5.0	0 to -15	30km
10GBASE-ERBD-U/D ²	LC	1270 / 1330	SMF	G.652	–	0 to 5.0	-9 to -21	40km ³
10GBASE-ER ²	LC	1550	SMF	G.652	–	-4.7 to 4.0	-15.0 to -1.0	40km ³
10GBASE-ZR ²	LC	1550	SMF	G.652	–	-1.0 to 4.0	-23.0 to -7.0	80km ³
10GBASE-DWDM ²	LC	1567.95 to 1529.94	SMF	G.652	–	-1.0 to 3.0	-23.0 to -7.0	80km ³

1. When 1000BASE-LX is used with OM1 or OM2 MMF a mode conditioning patch cable is required at the transmitter. This cable is not required for OM3 fiber.

2. Proper optical attenuation is required for shorter links to protect the receiver from permanent damage

3. Per IEEE 802.3ae - Links beyond 30 km over single-mode fiber are considered engineered links

Order Number	Product Description
10 Gigabit Ethernet SFP+ Cables	
CAB-SFP-SFP-0.5M	10GBASE-CR SFP+ Cable 0.5 meter
CAB-SFP-SFP-1M	10GBASE-CR SFP+ Cable 1 meter
CAB-SFP-SFP-1.5M	10GBASE-CR SFP+ Cable 1.5 meter
CAB-SFP-SFP-2M	10GBASE-CR SFP+ Cable 2 meter
CAB-SFP-SFP-2.5M	10GBASE-CR SFP+ Cable 2.5 meter
CAB-SFP-SFP-3M	10GBASE-CR SFP+ Cable 3 meter
CAB-SFP-SFP-5M	10GBASE-CR SFP+ Cable 5 meter
10G Gigabit Ethernet SFP+ Active Optical Cables	
AOC-S-S-10G-3M	SFP+ to SFP+ 10GbE Active Optical Cable 3 meter
AOC-S-S-10G-5M	SFP+ to SFP+ 10GbE Active Optical Cable 5 meter
AOC-S-S-10G-7M	SFP+ to SFP+ 10GbE Active Optical Cable 7 meter
AOC-S-S-10G-10M	SFP+ to SFP+ 10GbE Active Optical Cable 10 meter
AOC-S-S-10G-15M	SFP+ to SFP+ 10GbE Active Optical Cable 15 meter
AOC-S-S-10G-20M	SFP+ to SFP+ 10GbE Active Optical Cable 20 meter
AOC-S-S-10G-25M	SFP+ to SFP+ 10GbE Active Optical Cable 25 meter
AOC-S-S-10G-30M	SFP+ to SFP+ 10GbE Active Optical Cable 30 meter
10 Gigabit Ethernet SFP+ Optics	
SFP-10G-T ¹	10G/1G/100M BASE-T Copper (RJ45) Transceiver, up to 30m over Cat6a cable
SFP-10G-T-RP ²	10G/1G/100M BASE-T Copper (RJ45) Transceiver, up to 30m over Cat6a cable, with reduced power consumption
SFP-10G-MRA-T ¹	10G/1G/100M BASE-T Copper (RJ45) Rate Adapting Transceiver, up to 30m over Cat6a cable
SFP-10G-SRL	10GBASE-SRL SFP+ Transceiver, up to 100m over OM3 MMF or 150m over OM4 MMF
SFP-10G-SR	10GBASE-SR SFP+ Transceiver, up to 300m over OM3 MMF or 400m over OM4 MMF
SFP-10G-LRL	10GBASE-LRL SFP+ Transceiver, up to 1km over duplex SMF
SFP-10G-LR	10GBASE-LR SFP+ Transceiver, up to 10km over duplex SMF
SFP-10G-ERLBD-U	10GBASE-ERLBD SFP+ Transceiver, uplink, up to 30km over single fiber SMF
SFP-10G-ERLBD-D	10GBASE-ERLBD SFP+ Transceiver, downlink, up to 30km over single fiber SMF
SFP-10G-ERBD-U	10GBASE-ERBD SFP+ Transceiver, uplink, up to 40km over single fiber SMF
SFP-10G-ERBD-D	10GBASE-ERBD SFP+ Transceiver, downlink, up to 40km over single fiber SMF
SFP-10G-ER	10GBASE-ER SFP+ Transceiver, up to 40km over duplex SMF
SFP-10G-ZR	10GBASE-ZR SFP+ Transceiver, up to 80km over duplex SMF
SFP-10G-DZ-T ³	10GBASE-DWDM Tunable SFP+ Transceiver, Full C-Band 50 GHz ITU Grid, up to 80km over duplex SMF
Gigabit Ethernet SFP Optics and Copper	
SFP-1G-SX	1000BASE-SX SFP Transceiver
SFP-10G-RA-1G-SX ¹	1000BASE-SX (media interface) to 10G (host interface) rate adapting SFP Transceiver
SFP-1G-LX	1000BASE-LX SFP Transceiver
SFP-10G-RA-1G-LX ¹	1000BASE-LX (media interface) to 10G (host interface) rate adapting SFP Transceiver
SFP-1G-T	100/1000BASE-T SFP Copper Transceiver

1. SFP-10G-T & rate adapting transceivers supported on specific platforms - refer to Arista's Transceiver and Cable Guide for supported platforms.
2. The SFP-10G-T-RP has identical performance to the SFP-10G-T, but with a lower module power consumption of 1.5W, enabling support in all Arista SFP+ and SFP25 ports, unless otherwise specified.
3. A full list of 50GHz grid and 100GHz grid channel numbers, wavelengths and frequencies are listed in the following pages of this data sheet.

Arista 50GHz Channel Numbers and Wavelengths (50GHz ITU grid) for SFP-10G-DZ-T

Channel Number	Frequency (THz)	Wavelength (nm)	Channel Number	Frequency (THz)	Wavelength (nm)	Channel Number	Frequency (THz)	Wavelength (nm)
1	191.2	1567.95	33	192.8	1554.94	65	194.4	1542.14
2	191.25	1567.54	34	192.85	1554.53	66	194.45	1541.74
3	191.3	1567.13	35	192.9	1554.13	67	194.5	1541.35
4	191.35	1566.72	36	192.95	1553.73	68	194.55	1540.95
5	191.4	1566.31	37	193.0	1553.33	69	194.6	1540.55
6	191.45	1565.90	38	193.05	1552.92	70	194.65	1540.16
7	191.5	1565.49	39	193.1	1552.52	71	194.7	1539.76
8	191.55	1565.08	40	193.15	1552.12	72	194.75	1539.37
9	191.6	1564.68	41	193.2	1551.72	73	194.8	1538.97
10	191.65	1564.27	42	193.25	1551.32	74	194.85	1538.58
11	191.7	1563.86	43	193.3	1550.92	75	194.9	1538.18
12	191.75	1563.45	44	193.35	1550.51	76	194.95	1537.79
13	191.8	1563.04	45	193.4	1550.11	77	195.0	1537.39
14	191.85	1562.64	46	193.45	1549.71	78	195.05	1537.00
15	191.9	1562.23	47	193.5	1549.31	79	195.1	1536.61
16	191.95	1561.82	48	193.55	1548.91	80	195.15	1536.21
17	192.0	1561.42	49	193.6	1548.51	81	195.2	1535.82
18	192.05	1561.01	50	193.65	1548.11	82	195.25	1535.43
19	192.1	1560.60	51	193.7	1547.71	83	195.3	1535.03
20	192.15	1560.20	52	193.75	1547.31	84	195.35	1534.64
21	192.2	1559.79	53	193.8	1546.91	85	195.4	1534.25
22	192.25	1559.39	54	193.85	1546.52	86	195.45	1533.86
23	192.3	1558.98	55	193.9	1546.12	87	195.5	1533.46
24	192.35	1558.58	56	193.95	1545.72	88	195.55	1533.07
25	192.4	1558.17	57	194.0	1545.32	89	195.6	1532.68
26	192.45	1557.77	58	194.05	1544.92	90	195.65	1532.29
27	192.5	1557.36	59	194.1	1544.52	91	195.7	1531.90
28	192.55	1556.96	60	194.15	1544.13	92	195.75	1531.50
29	192.6	1556.55	61	194.2	1543.73	93	195.8	1531.11
30	192.65	1556.15	62	194.25	1543.33	94	195.85	1530.72
31	192.7	1555.74	63	194.3	1542.93	95	195.9	1530.33
32	192.75	1555.34	64	194.35	1542.54	96	195.95	1529.94

Arista 100GHz Channel Numbers and Wavelengths (100GHz ITU grid) for SFP-10G-DZ-T

Channel Number	Frequency (THz)	Wavelength (nm)	Channel Number	Frequency (THz)	Wavelength (nm)	Channel Number	Frequency (THz)	Wavelength (nm)
1	191.2	1567.95	17	192.8	1554.94	33	194.4	1542.14
2	191.3	1567.13	18	192.9	1554.13	34	194.5	1541.35
3	191.4	1566.31	19	193.0	1553.33	35	194.6	1540.55
4	191.5	1565.49	20	193.1	1552.52	36	194.7	1539.76
5	191.6	1564.68	21	193.2	1551.72	37	194.8	1538.97
6	191.7	1563.86	22	193.3	1550.92	38	194.9	1538.18
7	191.8	1563.04	23	193.4	1550.11	39	195.0	1537.39
8	191.9	1562.23	24	193.5	1549.31	40	195.1	1536.61
9	192.0	1561.42	25	193.6	1548.51	41	195.2	1535.82
10	192.1	1560.60	26	193.7	1547.71	42	195.3	1535.03
11	192.2	1559.79	27	193.8	1546.91	43	195.4	1534.25
12	192.3	1558.98	28	193.9	1546.12	44	195.5	1533.46
13	192.4	1558.17	29	194.0	1545.32	45	195.6	1532.68
14	192.5	1557.36	30	194.1	1544.52	46	195.7	1531.90
15	192.6	1556.55	31	194.2	1543.73	47	195.8	1531.11
16	192.7	1555.74	32	194.3	1542.93	48	195.9	1530.33

Standards Compliance & Certifications

EMC Emissions & Immunity	Subpart B, Part 15 FCC Class A, ICES-003 Issue 7 EN 55032:2015, BS EN 55032:2015, EN 55035:2017, EN 300 386 V2.1.1
Safety	EN 62368-1:2014 + A11:2017, IEC 62368-1:2014 21CFR-1040.10 LN#50, Laser Class 1 or 1M IEC 60825-1, Laser Class 1 or 1M EN 60825-1,
Certifications	CE South Korea KCC Australia RCM UKCA
European Union Directives	2014/35/EU Low Voltage Directive 2014/30/EU EMC Directive 2012/19/EU WEEE Directive 2011/65/EU RoHS 2015/863/EU Commission Delegated Directive

Warranty

Arista pluggables and cables include a one-year limited hardware warranty, which covers parts, repair, or replacement with a 10 business day turn-around after the unit is received.

Service and Support

Support services including next business day and 4-hour advance hardware replacement are available. For service depot locations, please see: <http://www.arista.com/en/service>

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