

ATTO Model #	Speed	Connection Form Factor	Transceiver	Common Cable Options to use	Max Cable Length
FFRM-N322  Shipped without SFP28 Transceiver	25GbE	SFP28	25GBASE-SR	Multimode fiber optic cable with LC connectors	70m with OM3 100m with OM4
			N/A	AOC with integrated 25GBASE-SR SFP28 transceivers	70m with OM3 100m with OM4
			25GBASE-LR	Single-mode fiber optic cable with LC connectors	10km
			N/A	Direct attached passive 25GBASE-CR twinax cable with SFP28 integrated connectors	3-5m
FFRM-N351 FFRM-N352  Shipped without QSFP28 Transceiver	25/40/50GbE	QSFP28	100GBASE-SR4	100GBASE-SR4 Multimode fiber optic cable with MPO connectors	70m with OM3
			N/A	AOC with integrated 100GBASE-SR4 QSFP28 transceivers	70m with OM3 100m with OM4
			PSM4	Optical cable with four parallel Single-mode fibers using MPO connectors	500m
			CWDM4	Single-mode fiber optic cable with LC connectors	2km
			100GBASE-LR4	100GBASE-LR4 Single-mode fiber optic cable with MPO connectors	10km
			N/A	Direct attached passive 100GBASE-CR4 twinax copper cable with QSFP28 integrated connectors	3-5m
FFRM-N311 FFRM-N312  Shipped without QSFP28 Transceiver	25/40/50/100GbE	QSFP28	100GBASE-SR4	100GBASE-SR4 Multimode fiber optic cable with MPO connectors	70m with OM3 100m with OM4
			N/A	AOC with integrated 100GBASE-SR4 QSFP28 transceivers	70m with OM3 100m with OM4
			PSM4	Optical cable with four parallel Single-mode fibers using MPO connectors	500m
			CWDM4	Single-mode fiber optic cable with LC connectors	2km
			100GBASE-LR4	Single-mode fiber optic cable with LC connectors	10km
			N/A	Direct attached passive 100GBASE-CR4 twinax copper cable with QSFP28 integrated connectors	3-5m
FFRM-NQ41 FFRM-NQ42  Shipped with or without QSFP+ Transceiver	40GbE	QSFP+	40GBASE-SR4	Multimode 40GBASE-SR4 fiber optic cable with MPO connectors	100m with OM3 150m with OM4
			N/A	AOC with integrated 40GBASE-SR4 QSFP+ transceivers	100m with OM3 150m with OM4
			40GBASE-LR4	Single-mode 40GBASE-LR4 fiber optic cable with LC connectors	10km
			N/A	Direct attached passive copper cable with 40GBASE-CR4 QSFP+ integrated connectors	7m

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TLNQ-3401 TLNQ-3402  Shipped with QSFP+ Transceiver	Thunderbolt™ 3 to 40GbE	QSFP+	40GBASE-SR4	Multimode 40GBASE-SR4 fiber optic cable with MPO connectors	100m with OM3
			N/A	AOC with integrated SR4 QSFP+ transceivers	100m with OM3 150m with OM4
			40GBASE-LR4	Single-mode 40GBASE-LR4 fiber optic cable with MPO connectors	10km
			N/A	Direct attached passive copper cable with 40GBASE-CR4 QSFP+ integrated connectors	7m
FFRM-NS11 FFRM-NS12 FFRM-NS14 TLNS-2101 TLNS-2102 Shipped with SFP+ Transceiver	10GbE	SFP+	10GBASE-SR	Multimode fiber optic cable with LC connectors	300m with OM3 400m with OM4
			N/A	AOC with integrated SR SFP+ transceivers	300m with OM3 400m with OM4
			10GBASE-LR	Single-mode fiber optic cable with LC connectors	10km
			N/A	Direct attached passive copper cable with SFP+ integrated connectors	100m
FFRM-NT11 FFRM-NT12	10GbE	RJ45	N/A	Cat 6,6a or 7 copper twisted pair	55m with Cat 6 100m with Cat 6a, 7
TLNS-3101 TLNS-3102  Shipped with QSA converter and SFP+ transceiver	Thunderbolt 3 to 10GbE	SFP+	10GBASE-SR	Multimode fiber optic cable with LC connectors	300m with OM3 400m with OM4
			N/A	AOC with integrated SR SFP+ transceivers	300m with OM3 400m with OM4
			10GBASE-LR	Single-mode fiber optic cable with LC connectors	10km
			N/A	Direct attached passive copper cable with SFP+ integrated connectors	15km
TLNT-2102	Thunderbolt 2 to 10GbE	RJ45	N/A	Cat 6,6a or 7 copper twisted pair	55m with Cat 6 100m with Cat 6a, 7

Maximum cable lengths may vary by manufacturer. Verify the specifications from your cable supplier. There are many other connectivity options available. Contact ATTO Tech Support for more information.



<b>Transceiver</b>
Electrical to optical converter for transmitting and receiving over one or more lanes.
<b>SFP+ (Small Formfactor Pluggable)</b>
Optical transceiver rated for one lane of 10Gb/s in each direction. Commonly used with 10Gb Ethernet. Optical cables with LC connectors are plugged in.
<b>QSFP+ (Quad Small Form Factor Pluggable)</b>
Optical transceiver with four lanes of 10Gb/s in each direction. The four lanes are combined into a single channel for 40Gb Ethernet. Optical cables with MPO connectors are plugged in.
<b>SFP28</b>
Optical transceiver rated for one lane at 25Gb/s in each direction. Commonly used with 25Gb Ethernet. Optical cables with MPO connectors are plugged in.
<b>QSFP28</b>
Optical transceiver with four lanes of 25Gb/s in each direction. The four lanes are combined into a single channel for use with 100Gb Ethernet. Two lanes are combined for 50Gb Ethernet. Optical cables with MPO connectors are plugged in.
<b>LC</b>
Small form factor connector for multi-mode or single-mode fiber optic cables. Used to plug into SFP+ transceivers, or Long Range SFP28 or QSFP28 transceivers.
<b>MPO (Multi-Fibre Push-on Pull-off)</b>
Connector used on fibre optic patch cables to plug into QSFP+, SFP28 and QSFP28 transceivers.
<b>QSA</b>
Mechanical adapter to allow single-channel SFP style cables to plug into quad-channel QSFP ports.
<b>QSFP+ to 4x SFP+</b>
Breakout cable to connect 10GbE NIC ports to a 40GbE switch port.
<b>QSFP28 to 4x SFP28</b>
Breakout cable to connect 25GbE NIC ports to a 100GbE switch port. Not all switches support breakout cables. Verify switch specifications.
<b>PSM4 (Parallel Single-Mode 4 fiber)</b>
Single-Mode cable that utilized four fibers in each direction.
<b>CWDM (Coarse Wavelength Division Multiplexing)</b>
Cable that utilizes one fiber in each direction. Transmits multiple optical signals through the same fiber at different wavelengths. Reduces the number of fibers in the cable.
<b>AOC (Active Optical Cable)</b>
Fiber Optic cable with permanently attached transceivers. Can be used in place of a removeable transceiver with a fiber optic patch cable. Best practice is to use AOC for cable lengths up to 30m.
<b>Transceiver with Patch cable or AOC?</b>
Either option works great. Removeable transceivers with patch cables offer more flexibility over Active optical cables. It is more cost effective to replace a single transceiver or a patch cable instead of the entire AOC upon a failure. Most ATTO products ship with removeable transceivers.