ATTO TECHNOLOGY
REFERENCE GUIDE

ATTO Ethernet Connectivity Reference Guide

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 transcievers	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 transcievers	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 transcievers	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+ transcievers	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+ transcievers	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+ transcievers	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+ transcievers	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.

SFP+
(Small Formfactor Pluggable)

QSFP+ (Quad Small Form Factor Pluggable)

SFP28

QSFP28

LC

MPO
(Multi Fibre Push-On Pull Off)

QSA

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REFERENCE GUIDE

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Transceiver
Electrical to optical converter for transmitting and receiving over one or more lanes.
SFP+ (Small Formfactor Pluggable)
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.
QSFP+ (Quad Small Form Factor Pluggable)
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.
SFP28
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.
QSFP28
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.
LC
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.
MPO (Multi-Fibre Push-on Pull-off)
Connector used on fibre optic patch cables to plug into QSFP+, SFP28 and QSFP28 transceivers.
QSA
Mechanical adapter to allow single-channel SFP style cables to plug into quad-channel QSFP ports.
QSFP+ to 4x SFP+
Breakout cable to connect 10GbE NIC ports to a 40GbE switch port.
QSFP28 to 4x SFP28
Breakout cable to connect 25GbE NIC ports to a 100GbE switch port. Not all switches support breakout cables. Verify switch specifications.
PSM4 (Parallel Single-Mode 4 fiber)
Single-Mode cable that utilized four fibers in each direction.
CWDM (Coarse Wavelength Division Multiplexing)
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.
AOC (Acive Optical Cable)
Fiber Optic cable with permenantly 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.
Transceiver with Patch cable or AOC?
Either option works great. Removeable transceivers with patch cables offer more flexibility over Active optical cables. It is more cost effective to repace a single transceiever or a patch cable instead of the entire AOC upon a failure. Most ATTO products ship with removeable transceivers.