

MPO-12/APC Optical Multimode Fiber Cable

Features

- Flexible round outer jacket for easy installation
- Push-pull latching for quick release
- Female-to-Female connectors
- 50/125 μm Multimode fibers
- 50m max reach
- Telcordia GR-1435 compliant
- IEC Standard Connectors:
MPO: IEC 61754-7 and ANSI/TIA/EIA 604-5-199
- OFNR/LSZH (low smoke zero halogen) jacket
- Supports InfiniBand, Ethernet protocols

Applications

- Optical short-reach high speed links in data centers
- Data processing and storage systems

Description

The M4MPOA12FB MPO-12/APC to MPO-12/APC passive optical Multimode cable, is designed for linking InfiniBand and Ethernet multimode twin-port OSFP and single-port OSFP and QSFP112 transceivers together.

The Multiple Push On, 12 fiber, Angled Polished Connectors (MPO-12/APC) uses 8 active fibers to transmit light, and 4 inactive fibers as strength members. The APC end has a 8-degree polished angle to deflect internal optical back reflections from entering the transceiver and distorting the signal quality.

Twin-port OSFP 800Gb/s transceivers support two 4-channel fibers which are linked to other twin-port OSFP, single port OSFP or QSFP112 400Gb/s transceivers.

The fibers are “crossover” , Type-B cables that enable directly attaching two transceivers together and aligning the transmit laser fiber on pin 1 to “crosses over ” and align with pin 12 of the opposite fiber end transceiver photodetector.

Typical usecase is linking twin port OSFP switches to each other, and to ConnectX-7® network adapters and/or BlueField-3® Data Processing Units (DPUs) in compute and storage servers.

Rigorous cable production testing ensures best out-of-the-box installation experience, performance, and durability. NADDOD optical solutions provide short, medium, and long reach scalability for all topologies, utilizing innovative optical technologies to enable high signal integrity and reliability.

Absolute Maximum Specifications

Absolute maximum ratings are those beyond which damage to the device may occur.

Prolonged operation between the operational specifications and absolute maximum ratings is not intended and may cause permanent device degradation.

Environmental Specifications

Table1-Environmental Specifications			
Parameter	Min	Max.	Units
Storage temperature	-40	85	°C
Operating temperature	0	70	°C
Humidity	10	85	%RH

Mechanical and Optical Specifications

Table2-Mechanical and Optical Specifications			
Parameter	Note	Value	Units
Tolerance on length,	Length < 5 m	+0.1/-0	m
	Length ≥ 5 m	+2% x L/-0	
Number of Fibers		12	
Cable diameter		3 ± 0.2	mm

Minimum bending radius	Anywhere on the cable	30	mm
Cable Jacket		Magenta, LSZH-OFNR	
Fiber	Length \leq 30 m	Multimode OM3	m
	Length $>$ 30 m	Multimode OM4	m
Topology	Crossed	Type B	
Connectors and connector end face	Low loss MPO	APC, female	
Insertion Loss, connector end face, IL	L=length {m}	$\leq 0.35 + 0.0004 \times L$	dB
Return Loss, connector end face, RL		≥ 35	dB

Interconnection Scheme

Table3-Interconnection Scheme		
MPO1 MPO/APC Female	Connection	MPO2 MPO/APC Female
1	----->	12
2	----->	11
3	----->	10
4	----->	9
5	Not Connected	8
6	Not Connected	7
7	Not Connected	6
8	Not Connected	5
9	<-----	4
10	<-----	3
11	<-----	2
12	<-----	1

Application

The M4MPOA12FB Fiber Cable is intended for interconnection of 2 switch together or a switch to 2 network adapters. The cable mates with pluggable optical 400GbE/NDR transceivers twin port OSFP DR8 transceiver for InfiniBand and Ethernet systems in the switch end and OSFP-400G-SR4H or Q112-400G-SR4H in ConnectX-7 network adapters and BlueField-3 DPUs.

- Twin port OSFP transceivers must use the same fiber type in both MPO-12/APC ports (straight or 1:2 splitter) and cannot be mixed.
- 50-meter specification assumes two optical patch panels in the link with total of 4 optical connector junctions
- Multimode fibers use an industry standard Magenta fiber jacket color
- Jacket is Low-Smoke, Zero-Halogen (LSZH) type to reduce toxic smoke in event of a fire.
- The connector has an Aqua connector shell denoting MPO-12/APC.
- MPO-12/APC connectors cannot be used with MPO-12/UPC Ultra-flat Polished Connectors which are typically

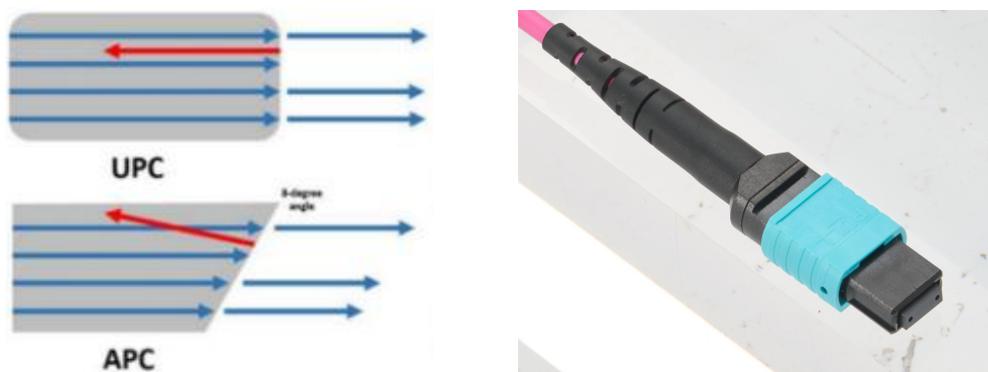
used in 4x25G-NRZ (100G) and 4x50G-PAM4 (200G) transceivers as the fiber polishes are different and will not mate.

- The split ends can support either OSFP and/or QSFP112 transceivers at the same time depending on the adapter type.

Connector Details

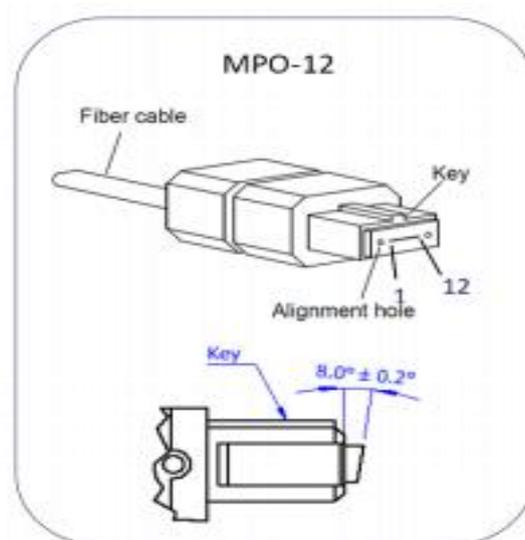
The M4MPOA12FB fiber cables have 8 individual fibers, 4 in each direction. A positioning key together with the alignment pins define the fiber position numbering scheme.

The MPO connectors are the angle-polished (APC) type which provide minimal reflection of the optical signal for optimal signal integrity.

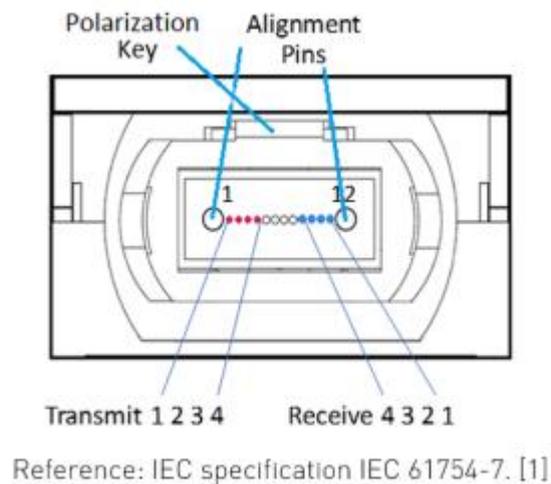


Transceivers have alignment pins for precise positioning of the cable connector against the optical beams. The fiber cable has alignment holes matching the transceiver's pins.

MPO Connector with Alignment Holes and Positioning Key:



Optical Receptacle and Lane Assignment (transceiver, front view):



Handling Precautions

The cable is shipped with dust caps which protect the connectors from contamination during shipment and installation. The caps should not be removed until the cable is plugged in at the time of installation. Prior to insertion of the fiber cable into the transceiver, always clean both the cable and the transceiver connector using optical connector cleaners to remove any contamination. Keep the cables away from any Liquids. Fiber cables have no conductive parts and are not ESD sensitive. However, they plug into ESD sensitive transceivers. Due to that, standard ESD handling precautions must be observed during installation.

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