



Next-Gen Network Solution

JAYANI TECHNOLOGIES LTD.

HIGH-DENSITY
MPO / MTP

CABLING SYSTEM PRODUCT CATALOG

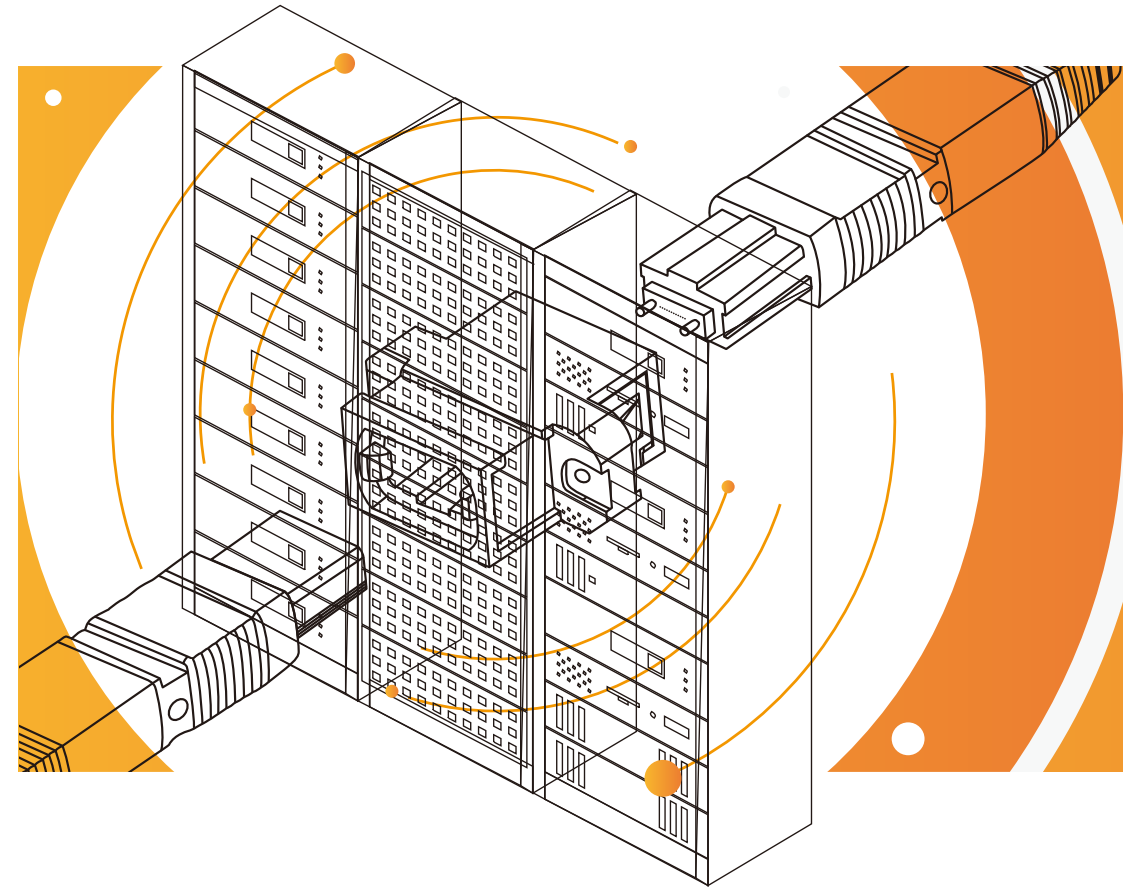


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MPO/MTP High Density
Cabling System Introduction

About Us

Jayani Technologies Limited, a distinguished subsidiary of Jayani Technologies LLP, was founded in the dynamic landscape of Hong Kong SAR. Since its establishment in 2011, our company has been a trailblazer in technological innovation. With our headquarters located in the bustling city of Mumbai, India, we have consistently pushed the boundaries of excellence. Specializing in the creation of premium optical fiber solutions, we play a pivotal role in empowering the backbone of modern communication networks. Our cutting-edge networking components are meticulously designed to enhance connectivity and facilitate seamless data transmission, ensuring unparalleled communication experiences. Additionally, we are pioneers in engineering advanced electric vehicle components that are shaping the future of eco-friendly transportation. At Jayani Technologies Limited, our commitment to innovation, quality, and sustainability drives us to continually provide groundbreaking solutions in the fields of communication technology and sustainable mobility.

JTOPTICS® (JAYANITECHNOLOGIES LLP) was established in 2011. It is an outstanding brand enterprise in the field of global optical communications, as well as an outstanding technology innovator and market application explorer in the field of global open optical network devices. We focus on developing decoupled optical network modules and subsystems to reduce CAPEX and OPEX for system deployment of data centers and telecom operators. Since its establishment, the company has actively cooperated with global operators to realize the interconnection of optical networks.

Based on the application requirements of the open optical network, especially the open data center, JTOPTICS has developed and produced many active and passive interconnection and connectivity products suitable for different networks, aiming to become a one-stop device integration solution provider in the open optical network field, products include MPO Cables, AOC cable, passive DAC cable, optical transceivers, silicon optical modules, HD video optical transmitter, coherent optical modules & subsystems, active & passive optical components and high-density cabling products etc. The development of JTOPTICS benefits from more than 50000 small and medium-sized customers widely distributed around the world. It is the needs of customers that foster the growth of the company and the progress of employees. JTOPTICS's unswerving goal is to create optical network middleware and subsystems with ultra-high compatibility and new technologies for open optical networks.

Vision

Our vision is to be recognized by clients as trustful a trusted business partner whose mission is to help our clients by offering state-of-the-art products and services.

Mission

Our mission is to catalyze the success of its clients by providing unparalleled technological solutions. The company envisions itself as a catalyst for positive change, aiming to reshape industries through innovation, integrity, and a relentless pursuit of excellence.



MPO CONNECTORS & ADAPTERS



MPO Introduction:

MPO (Multi-fiber Push On) fiber optic connector is a type of multi-core fiber optic connector. MPO is the abbreviation of English Multi Push On, which is adopted by IEEE standard as a type of connector for 40G/100G transmission.

MPO connectors usually have 12-core fibers in a row, which can support one or more columns of fibers in the same MPO connector. The standard is IEC 61754-7 and is divided into one column according to the number of cores discharged in the connector (12 cores.), multiple columns (24 cores).

The MPO connector type is distinguished by several factors according to IEC 61754-7: number of cores (Array Number), male-Female, polarity, polishing type (PC or APC), Applicable wire diameter type (bundle or ribbon cable).

MPO Advantage:

- Small size, smaller than SC fiber connector
- High precision, precision MT guiding pins and guiding holes ensure precise fiber alignment
- High density, is able to support 12 ~ 96 core fiber connection.

MPO Application range:

MPO high-density optical fiber pre-connection system is currently used in three major areas: high-density environment applications in data centers, fiber-to-building applications, and connection applications within optical transceivers such as optical splitters, 40G, 100G, and QSFP+.

MPO High performance sealed circuit breaker



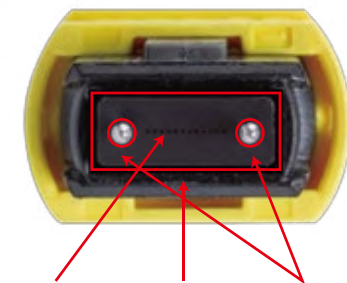
- Circuit for testing the transmit capability and receive sensitivity of network devices
- Meets Telcordia GR-1435-CORE and RoHS requirements

MT is an abbreviation of Mechanical Transfer, mechanical alignment transmission. He is a multi-core ferrule (conventional fiber is a single-core ferrule), the alignment accuracy of the MT ferrule directly affects the performance of the multi-core connector, and the alignment accuracy of the ferrule is determined by the eccentricity and spacing of the fiber.

The guiding pin (Pin needle) and the fiber matching accuracy are determined. Therefore, the MT ferrule and the MT ferrule forming process must have very high precision, and the shape and tolerance of the PIN pin are also critical.



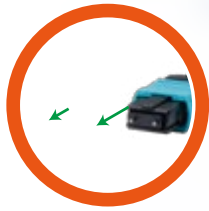
(MT Ferrule)



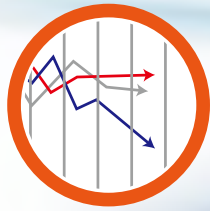
(Ribbon Fiber) (MT Ferrule) Guide pins (holes)



Outdoor MPO



Detachable housing



Lower insertion loss



High density panel application



Multiple optional tail sleeves

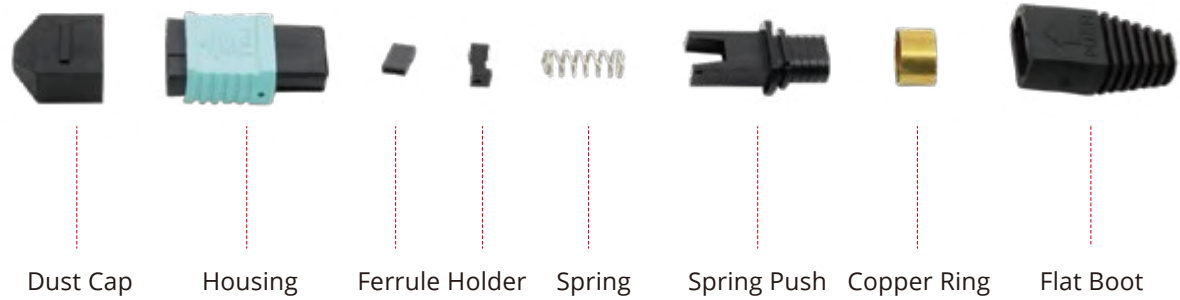
Table of MPO ferrules

Name	Aperture of ferrule (mm)	Aperture of pins (mm)	Concentricity error (mm)	Material
4MT (MM)	0.127±0.001	0.7±0.001	< 0.0025	PPS
8MT(MM)	0.127±0.001	0.7±0.001	< 0.0025	PPS
8MT(MM Low loss)	0.126+0.001/-0	0.7+0/-0.001	< 0.0014	PPS
8MT(SM)	0.125+0.001/-0	0.7+0/-0.001	< 0.0014	PPS
8MT(SM Low loss)	0.125+0.005/-0	0.6990	< 0.0007	PPS
12MT (MM)	0.127±0.001	0.7±0.001	< 0.0025	PPS
12MT (MM Low loss)	0.126+0.001/-0	0.7+0/-0.001	< 0.0014	PPS
12MT(SM)	0.125+0.001/-0	0.7+0/-0.001	< 0.0014	PPS
12MT(SM Low loss)	0.125+0.005/-0	0.6990	< 0.0007	PPS
24MT(MM)	0.127±0.001	0.7±0.001	< 0.0025	PPS
24MT(MM Low loss)	0.126+0.001/-0	0.7+0/-0.001	< 0.0014	PPS
24MT(SM)	0.125+0.001/-0	0.7+0/-0.001	< 0.0014	PPS
24MT(SM Low loss)	0.125+0.005/-0	0.6990	< 0.0007	PPS
48MT (MM)	0.127±0.001	0.7±0.001	< 0.0025	PPS
48MT (SM)	0.125+0.001/-0	0.7+0/-0.001	< 0.001	PPS



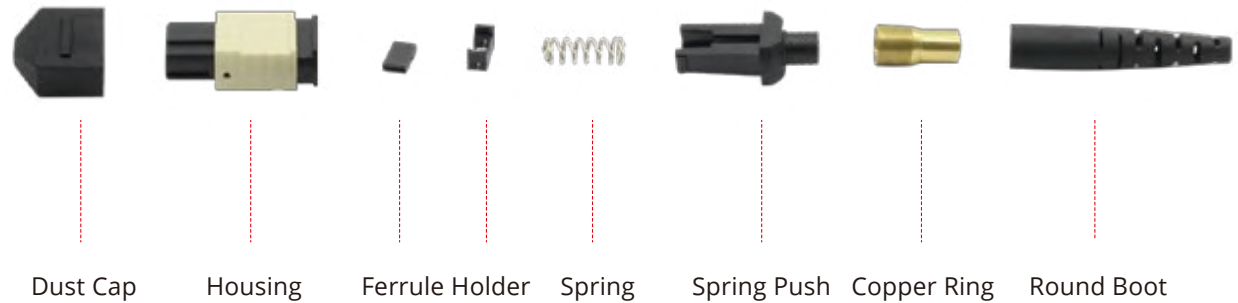
MPO/MTP PARTS CUSTOMIZATION

MPO connector of flat ribbon cable (一)



(一)

MPO connector of round bundle cable (二)



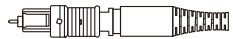
(二)

MPO connector of round bundle cable

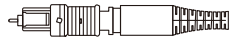
Such MPO connector is for round bundle cable only, and there're boots which are suitable for cables with different diameters: $\varnothing 2.0\text{mm}$, $\varnothing 3.0\text{mm}$, $\varnothing 3.6\text{mm}$, $\varnothing 4.5\text{mm}$, $\varnothing 5.0\text{mm}$, $\varnothing 5.5\text{mm}$.

2.0mm Round Boots

2.0mm Boot with Crimp

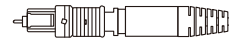


2.0mm Boot without Crimp

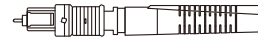


3.0mm Round Boots

3.0mm Boot

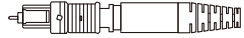


3.0mm Flex Angle

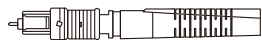


3.6mm Round Boots

3.6mm Boot



3.6mm Flex Angle



4.5/5.0/5.5 mm Round

4.5mm Boot



5.0mm Boot



5.5mm Boot

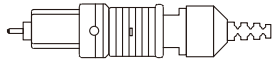


MPO connector of flat ribbon cable

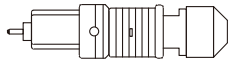
Such MPO connector is for flat ribbon cable only, and there types: normal connector for flat ribbon cables, bare ribbon type, and bare ribbon short type.

Ribbon Boots

Bare Ribbon



Bare Ribbon Short



Flat Ribbon Cable



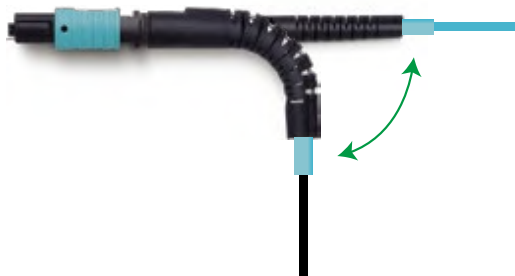
Ordinary panel

High density panel

- The density is increased 30%!
- The connector can be pulled out easily
- The push pull tab greatly simplify connectivity in the HD racks, then same spaces can hold more adapters and connectors.

As difference on boot and housing, there're these types for MPO connectors: Normal type, MPO-MINI Connector, High Density Push Pull Tab, and MPO Flex Angled Boot

MPO Flex Angled Boot MPO-MINI Connector High Density Push Pull Tab



It's flexible at any direction of 0-90°.



The total length is 37mm—shorter than normal connector.



The push pull tab allows high density rack applications



01
Fiber counts



02
Single mode or Multi mode



03
Round bundle cable or flat ribbon cable



04
With or without PIN (Male or Female)



05
Or special connectors, like types of HD, flex angled boot, and MINI connector.



06
Three polar methods: Type A (positive polarity), Type B (flip pair to correct polarity) and type C (cross polarity)

MPO ORDERING GUIDE

MPO branch fiber patch cord customization service



Male (with pin) Female head (without pins)



12 cores 8 cores



FC & ST FC & ST



OFNP LSZH



Male (with pin) Female head (without pins)



Round cable Flat cable

Connector specification

Usconec® MPO Connector		MM Elite® MT Ferrule	MM Standard MT Ferrule	SM Elite® MT Ferrule	SM Standard MT Ferrule
Typical Insertion Loss (dB)		0.25 (All Fibers)	0.2 (All Fibers)	0.1 (All Fibers)	0.25 (All Fibers)
	Maximum	0.35 (Single Fiber)	0.60 (Single Fiber)	0.35 (Single Fiber)	0.75 (Single Fiber)
Return Loss(dB)		> 20	> 20	> 60 (8°Angle Polish)	> 60 (8°Angle Polish)
Exchangeability(dB)		≤0.3			
Durability(dB)		<0.2 (500 Matings, per EIA-455-21A)			
Tensile Strength(dB)		≤0.3 (Max 66N)			
Operating Temperature (°C)		-20~+60			
Storage Temperature (°C)		-40~+80			
Polarity		TIA-568-C.3 A, B, C			
Fiber Count		8,12, 24, 48, 72, 96 and 144			

Cable specification

FIBER TYPEOS2 (ISO/IEC 11801 Nomenclature)(ITU 652.Dcompliant)	OM1	OM2	OM3	OM4
Core /Cladding Size (μm)9/125	62.5/125	50/125	50/125	50/125
Wavelength (nm)1310/1383/1550	850/1300	850/1300	850/1300	850/1300
Typical Attenuation (dB/km)0.34/0.34/0.20	2.7/0.6	2.2/0.6	2.2/0.6	2.2/0.6
Minimum Over Field Launch (OFL) Bandwidth (MHz-km)-- / -- / --	200/500	700/500	1500/500	3500/500
Laser Bandwidth/EMB (MHz-km)-- / -- / --	-- / --	950/500	2000/ 500	4700/500
1 Gigabit Ethernet Distance (m)5000 / -- / --	300/500	750/500	1000/600	1040/600
10 Gigabit Ethernet Distance (m)10000 / -- / 40000	33 / --	150 / --	300 / --	550 / --
40 Gigabit Ethernet Distance (m)-- / -- / --	-- / --	-- / --	140 / --	190 / --
100 Gigabit Ethernet Distance (m)-- / -- / --	-- / --	-- / --	140 / --	190 / --

According to different materials, there're two types: MPO plastic adapter & MPO metal adapter.

MPO plastic adapter



Metal housing with flange



Metal housing without flange



MPO single port fiber optic adapter



MTP/MPO Fiber Adapter

According to difference of the Key, there're: MPO adapter with keys on same direction & MPO with keys on opposite direction, and MPO adapter with keys Interchangeable

MPO adapter with keys on same direction



The keys are on the same direction

MPO with keys on opposite direction



The keys are on opposite direction

MPO adapter with keys Interchangeable



Polarities can be changed.



V-1 (Ø3.0)

V-1 (Ø3.0)

V-1 (Ø3.0)

V-1 (Ø3.0)

V-1 (Ø3.0)

V-1 (Ø3.0)

V-1 (Ø3.0)

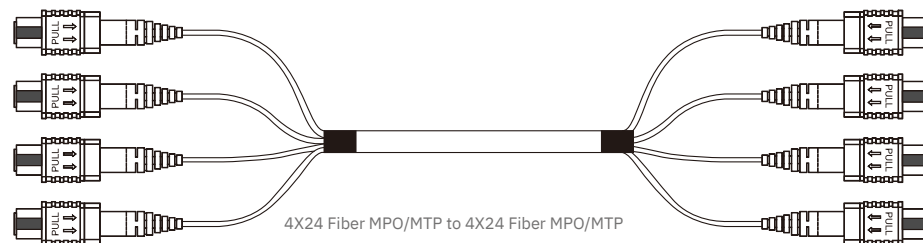
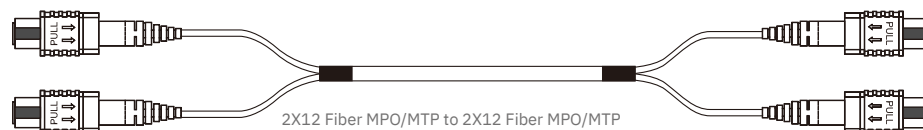
MPO TRUNK PATCH CORDS

MPO trunk patch cord is used for signal transmission, both sides are MPO connectors. Common cables are round type, and fiber counts are 12/24/36/48/72/144cores.

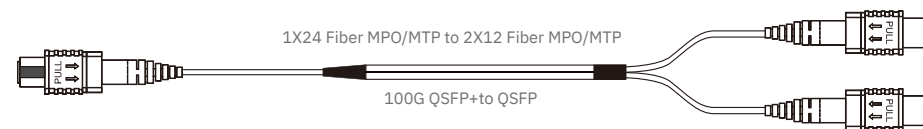
8/12/24cores-1*1 single tube



24/48/72/96/144cores-N*N multi- tubes



12/24/36 cores-1*N fanout multi-tubes





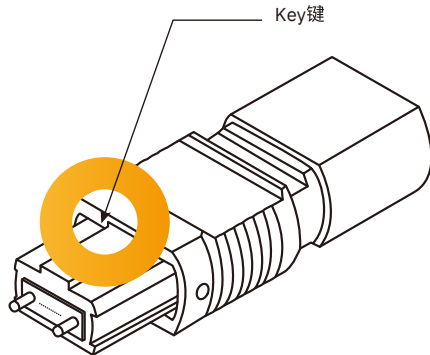
MPO STRUCTURE AND POLARITY INTRODUCTION

MPO Fanout Hybrid Patch cord is mainly used to connect QSFP and SFP modules, or MPO and the LC connectors. Normally OD of the fanout cables is 2.0mm.

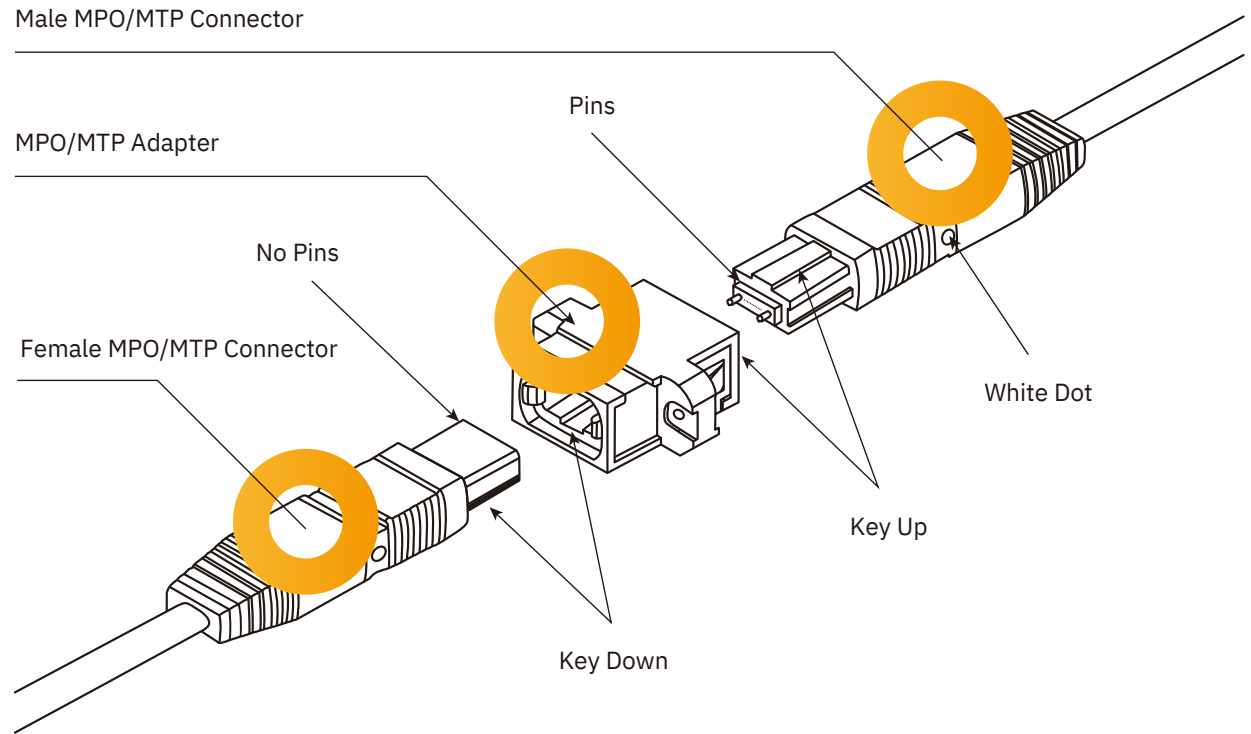
Connectors like LC and SC are frequently used in traditional cabling system, because such connectors do not have matter with polarity. But polarity of connecting systems like MTP/MPO is necessary, and we must be aware of this during installation.

Firstly, we must know keys' directions of the MPO connectors and adapters.

The MPO connector can be used for 2-12 core side-by-side fiber connections for up to two rows of 24-core fibers. The MPO/MTP fiber connector includes fiber, sheath, coupling assembly, metal ring, pin, dust cap, etc., and the pin portion is divided into male and female.



So direction of the keys is a standard to check polarity of the MPO-MPO patch cords.



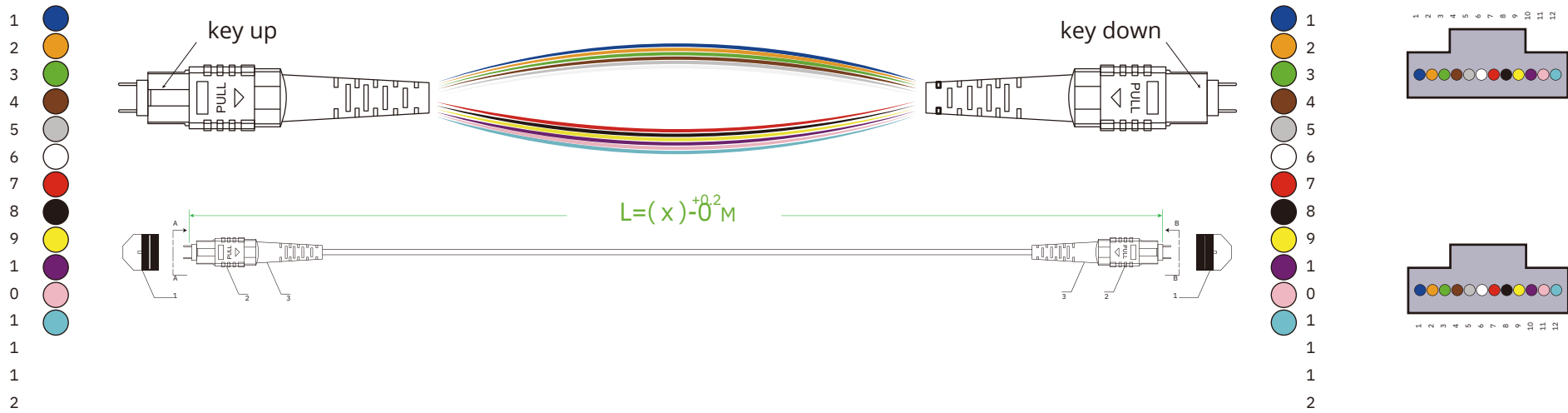
Like above picture- it's diagram for view of keys when MPO connector comes through MPO adapter, it's clear that there's a key on front of MPO connector, and there's a key groove inside the MPO adapter to match the key of the MPO connector.

Keys on both sides of normal MPO adapter are on opposite positions, so when we connect the adapter with two MPO connectors, key of one of the MPO connectors is up, the other one is down.

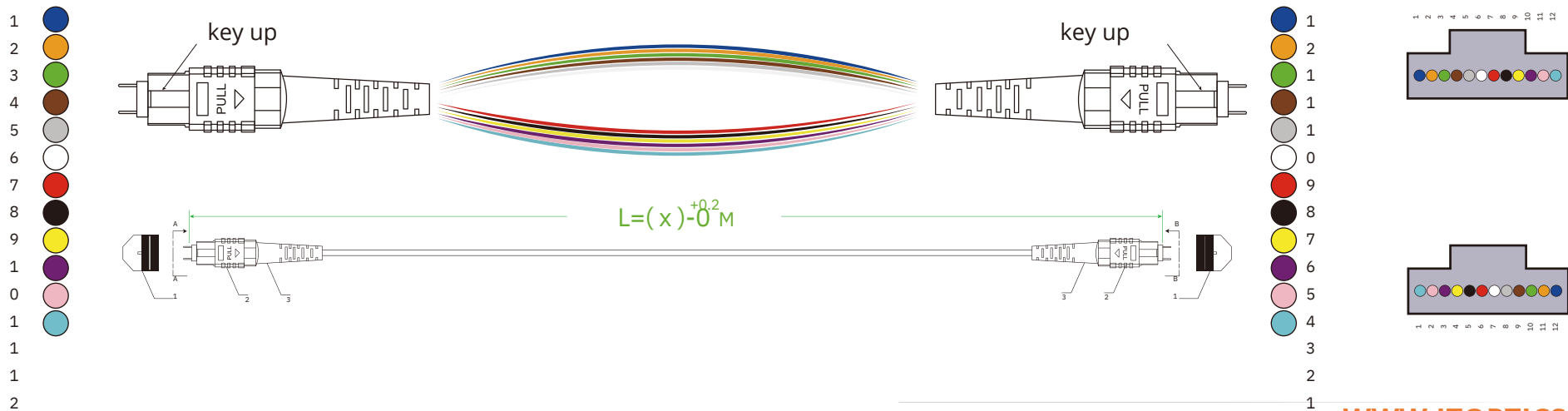


There are three types of polarity: Type A (key up- key down), Type B (key up - key up/ key down- key down), and Type C (key up- key down in pairs).

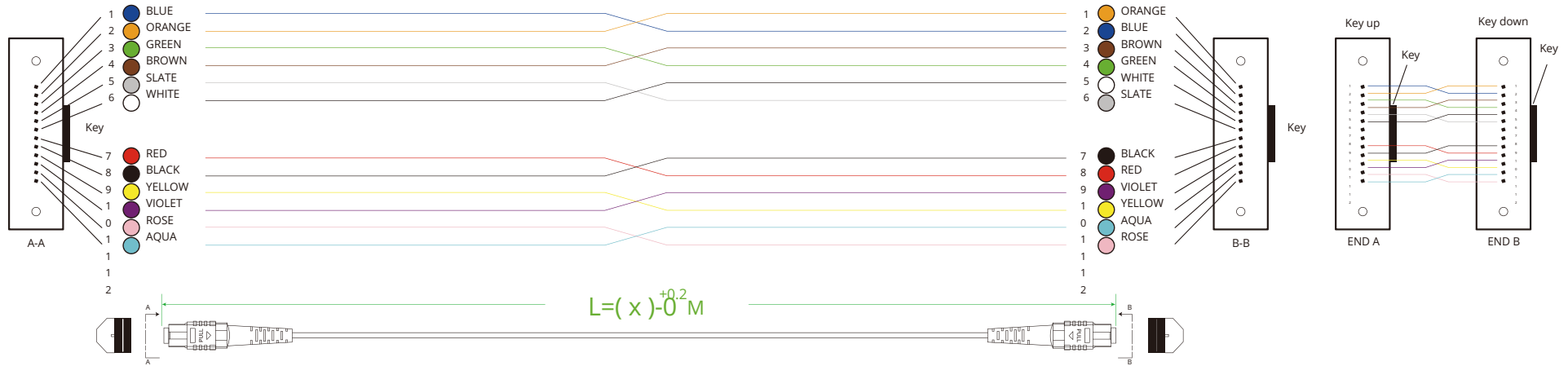
Type A (key up- key down)



Type B (key up - key up/ key down- key down)



Type C (key up- key down in pairs)

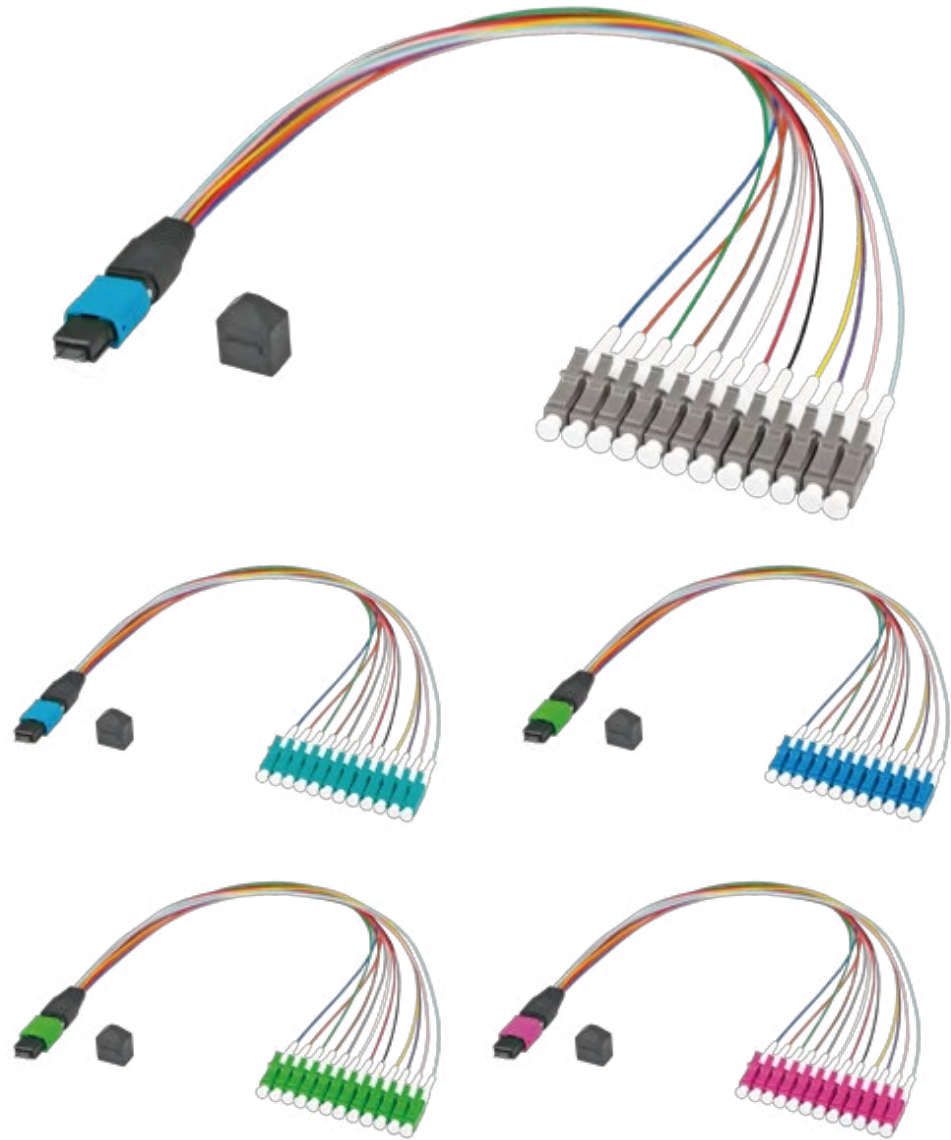
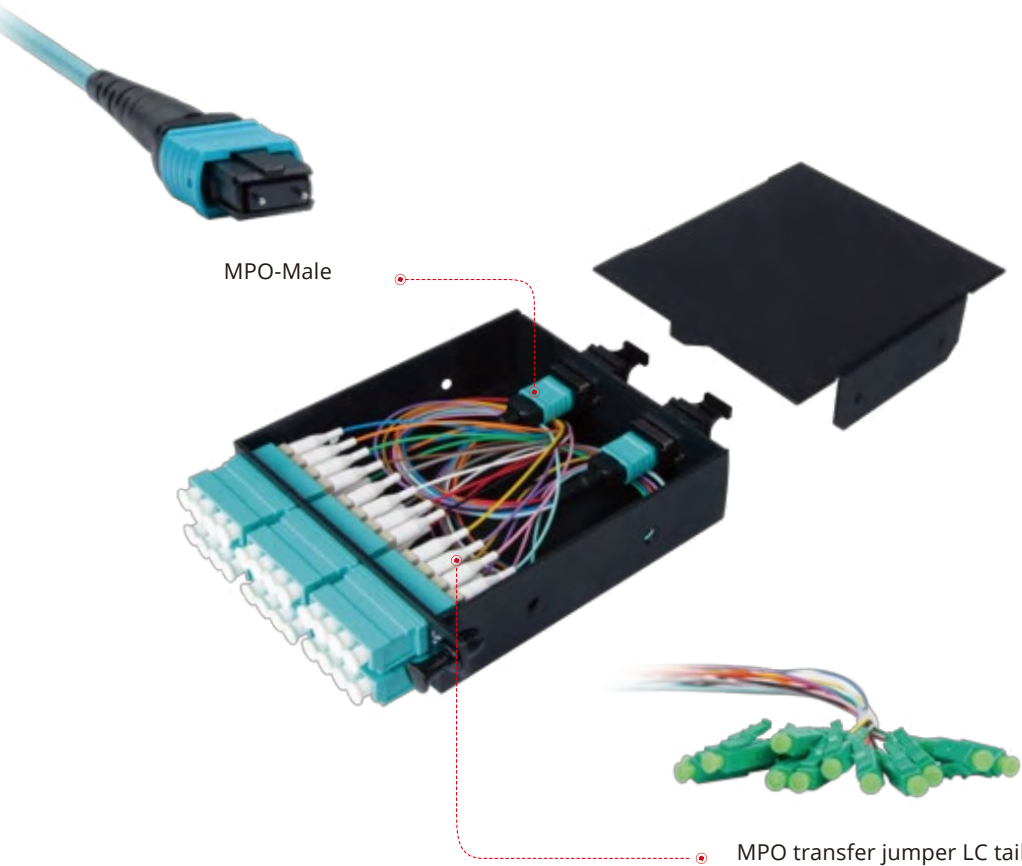


Ordering Information

Brand	Cable Type	Fiber Count	Cable Jackets	A End	Gender	Boot Type	B End	Gender	Boot Type	Length	Polarity						
JTMP	JTOPTICS	M3 OM3 08	8 Fiber	LSZH	MOS	MPO Standard	F Female	Round	MOS	MPO Standard	F Female	Round	XX	0-99 meter	-A	Polarity-A	
XXXX	OEM	M4 OM4 12	12 Fiber	P	PVC	MOE	MPO Elite	M Male	F	Flex	MOE	MPO Elite	M Male	F	Flex	-B	Polarity-B
		M5 OM5 16	16 Fiber	O	OFNR	MPE	MTP Elite		A	Angled	MPE	MTP Elite		A	Angled	-C	Polarity-C
		S2 OS2 24	24 Fiber			MPS	MTP Standard		M	Mini	MPS	MTP Standard		M	Mini		
		48	48 Fiber														

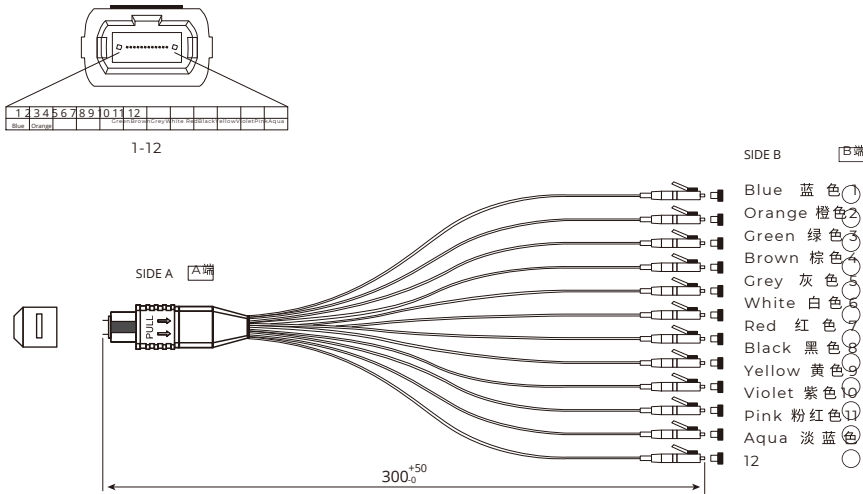
MPO HARNESS MODULE HYBRID PATCH CORDS

JTOPTICS MPO Harness module Hybrid Patch cords are used in MPO cassette only. Such patch cords are short, and OD of the fan-out cables are small. Normally it's $\varnothing 0.9\text{mm}$, and the MPO connector is male.

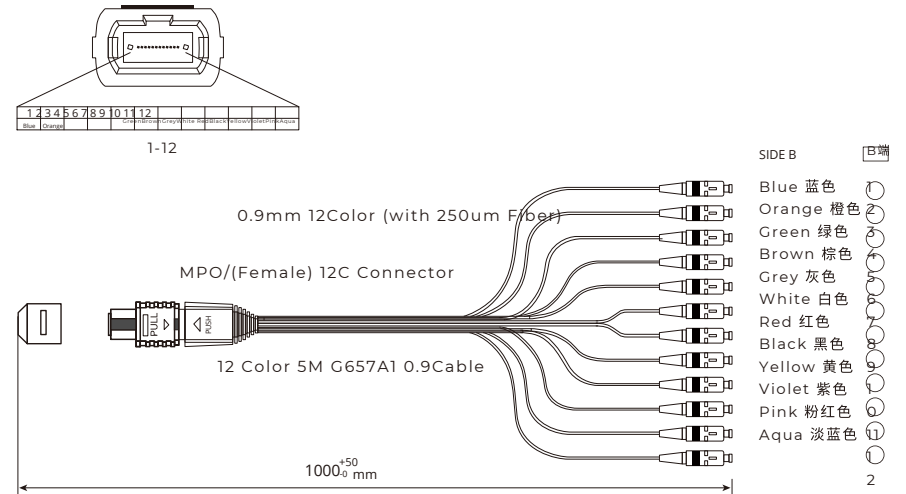


MPO Harness module Hybrid Patch cords

Drawing for MPO Harness 12cores module Hybrid Patch cords(To LC)



Drawing for MPO Harness 12cores module Hybrid Patch cords(To LC)

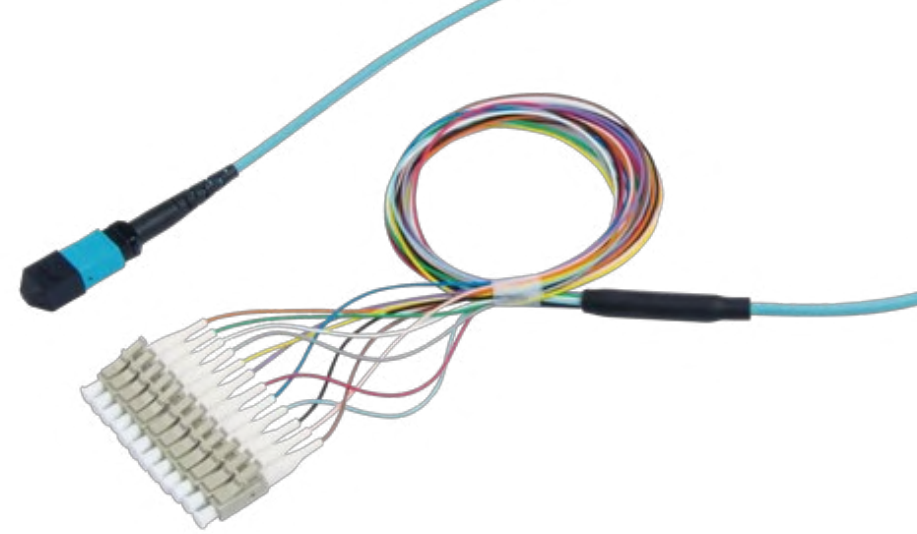


Ordering Information

Brand	Cable Type	Fiber Count	Cable Jackets	A End	Gender	Boot Type	B End	Polish Type	Boot Type	Length	Polarity
JTMP	JTOPTICS	M3 OM3 08 8 Fiber	LSZH	MOS MPO Standard	F Female	Round	LC LC Duplex	A APC	Round	XX 0-99 meter	-A Polarity-A
XXXX	OEM	M4 OM4 12 12 Fiber	P PVC	MOE MPO Elite	M Male	F Flex	SC SC Duplex	P PC	F Flex		-B Polarity-B
		M5 OM5 16 16 Fiber	O OFNR	MPE MTP Elite		A Angled	FC FC Duplex		A Angled		-C Polarity-C
		S2 OS2 24 24 Fiber		MPS MTP Standard		M Mini	ST ST Duplex		M Mini		
		48 48 Fiber							U Uniboot		

MPO Fanout Hybrid Patch cord

JTOPTICS MPO Fanout Hybrid Patch cord is mainly used to connect QSFP and SFP modules, or MPO and the LC connectors. Normally OD of the fanout cables is 2.0mm.



MPO single tube jumper



MPO branch multi-tube jumper

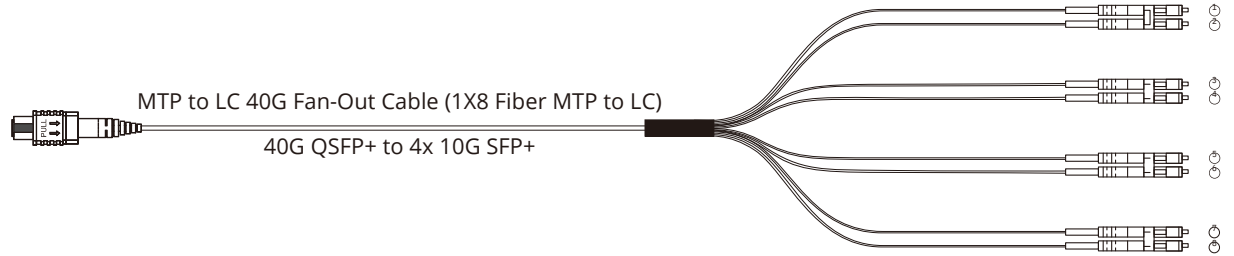


MPO Fanout Transfer Jumper

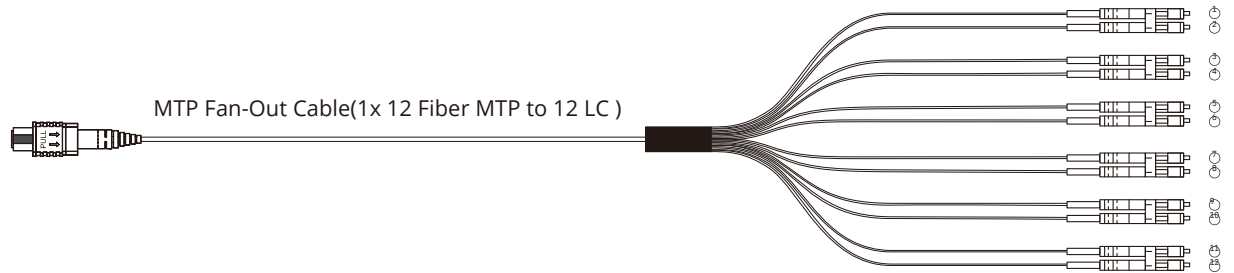


MPO Fanout Transfer multi-tube jumper

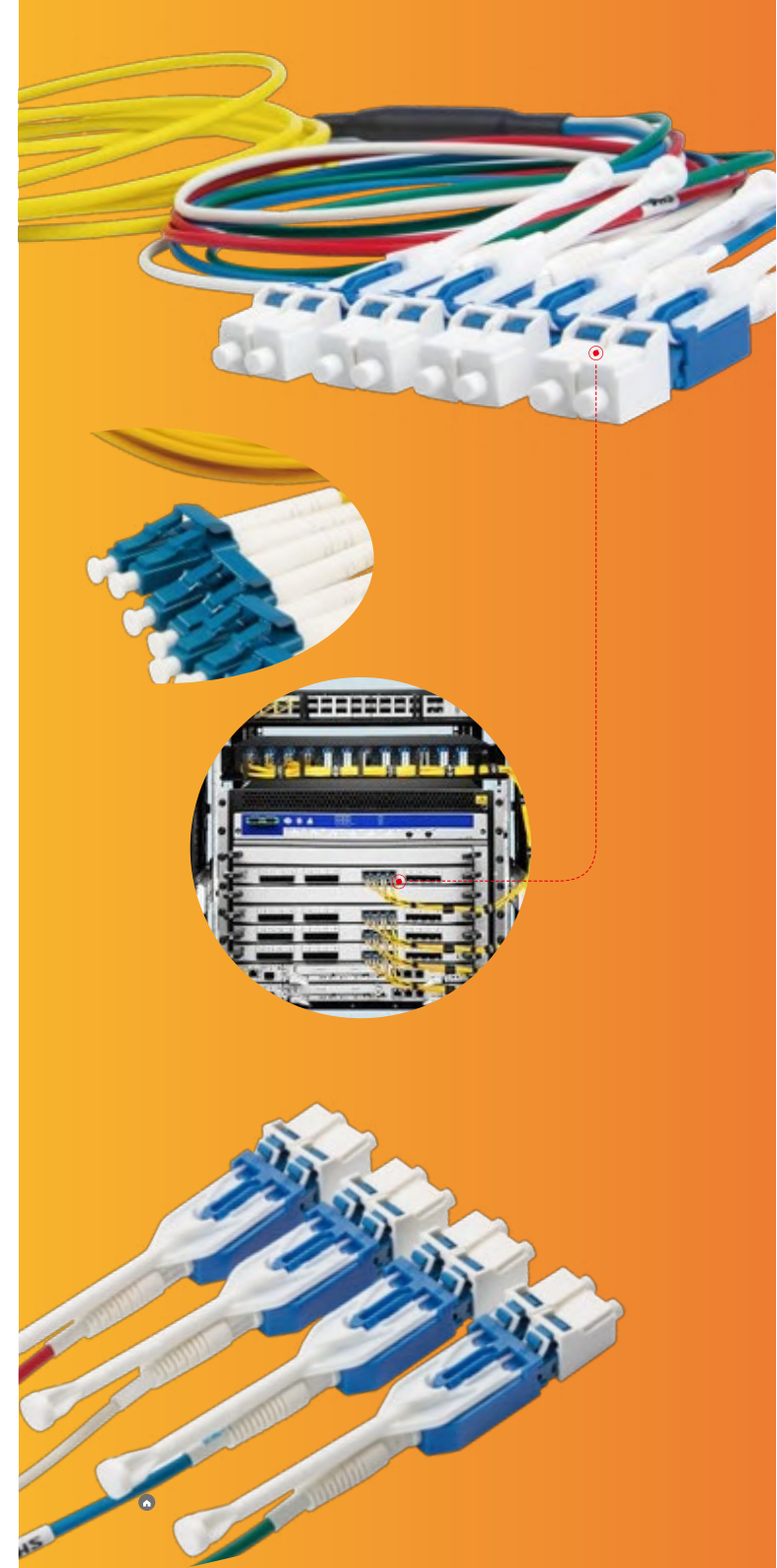
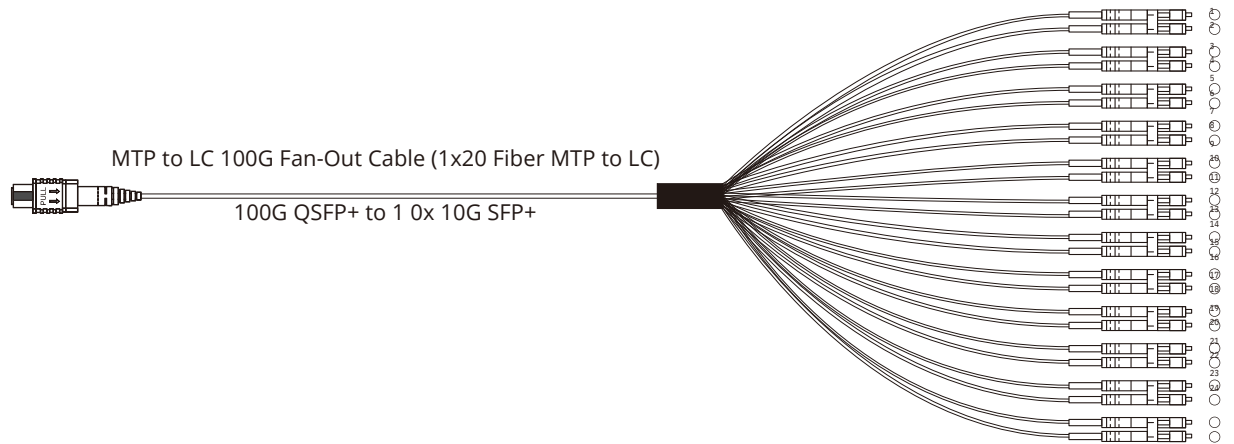
Drawing for MPO Fanout 8cores Hybrid patch cord(40G QSFP-4*10G SFP+)



Drawing for MPO Fanout 12cores Hybrid patch cord



Drawing for MPO Fanout 24cores Hybrid patch cord (100G QSFP-10*10G SFP+)





MPO OUTDOOR WATERPROOF CABLING SYSTEM



RMC-MPO(metal)



Fiber Cable for ODVA-MPO



Fiber Cable for ODVA-MPO

For special high density multi-core cabling system, like FTTA base station, RRU-BBU, emergent telecommunication repair and temporary multi-core wiring, We develops two types of MPO outdoor waterproof connector.



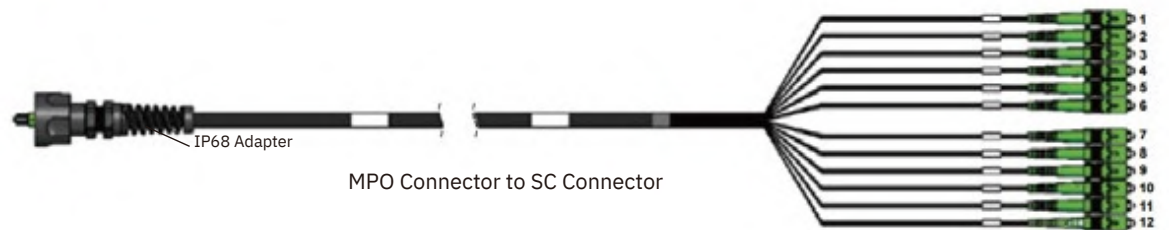
ODVA-MPO Fanout Patch Cord- Indoor



ODVA-MPO Fanout Patch Cord- Outdoor



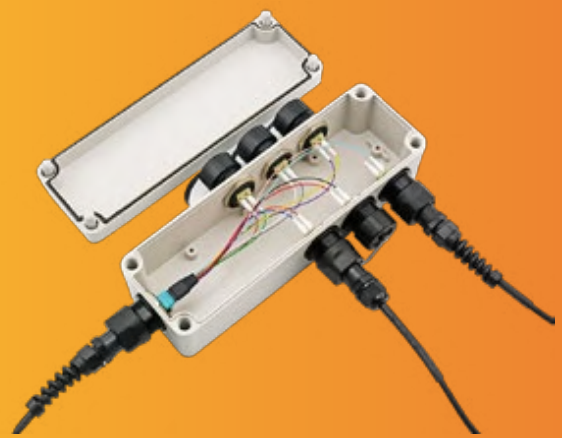
MPO Connector to MPO Connector



MPO Connector to SC Connector



ODVA-MPO Waterproof Box



ODVA-MPO Waterproof Box



ODVA-MPO Waterproof Box

RMC-MPO Waterproof Connector

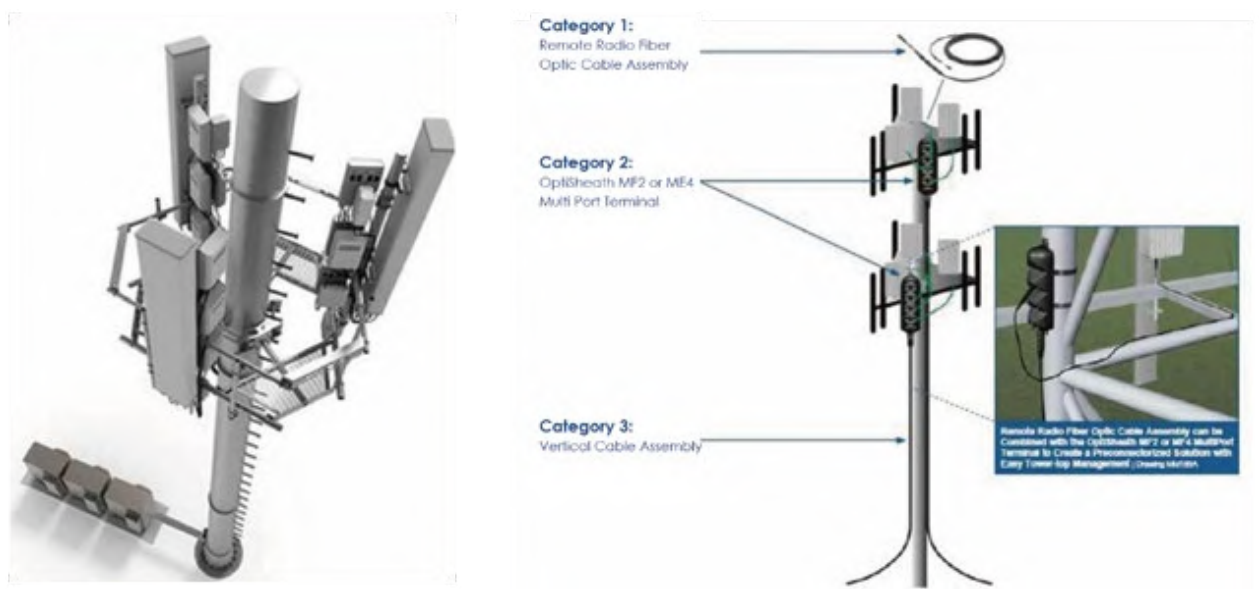


RMC-MPO Plug



RMC-MPO Socket

ODVA-MPO, RMC-MPO Applications



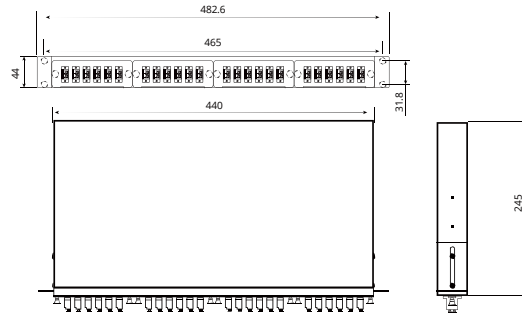
MPO-A

Both panel and cassette are made with cold rolled sheet, and the cassette is fixed on panel with clasps.

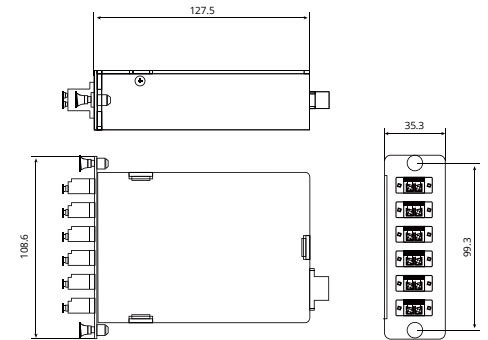


MPO HIGH DENSITY PATCH PANEL

Drawing for panel A



Drawing for cassette A



Cassette



Packing Information

Height	Dimension	Capacity of cassettes	Capacity/ Cores	Weight
1U	482.6*245*44mm	4	12-96	4.0kg
2U	482.6*245*85mm	8	96-192	7.0kg
3U	482.6*245*133mm	12	192-288	10.0kg
Capacity of each cassette is 12-24cores(LC ports)				Empty cassette + panel

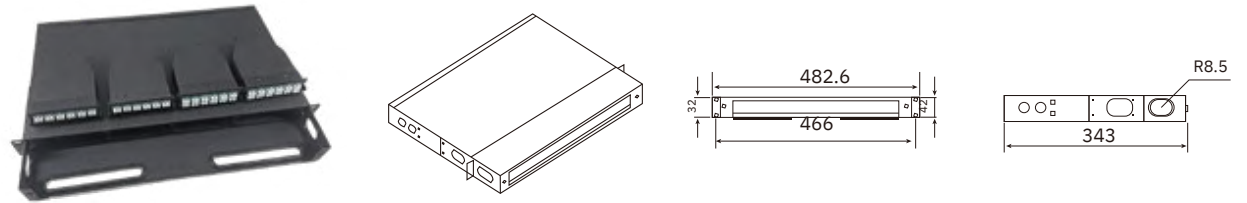
MPO-B

JTOPTICS High Density panel is made with cold rolled sheet and frosted painting; cassette is made with aluminum, and adapter plate is made with plastic. The cassette is fixed on the panel with pressing valve

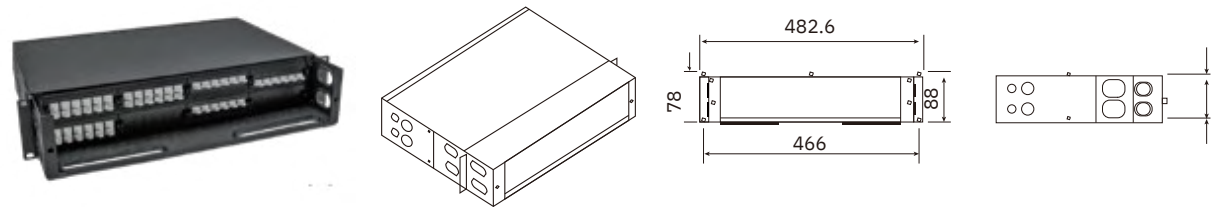


MPO HIGH DENSITY PATCH PANEL

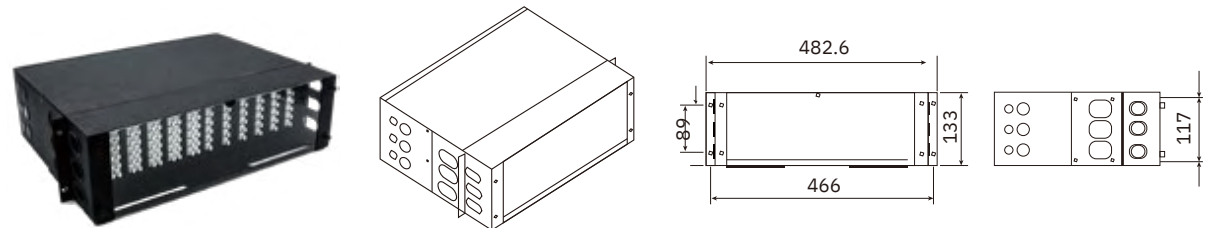
Picture of 1U



Picture of 2U



Picture of 3U



Packing Information

Height	Dimension	Capacity of cassettes	Capacity / Cores	Weight
1U	482.6*245*44mm	4	12-96	4.0kg
2U	482.6*245*85mm	8	96-192	7.0kg
3U	482.6*245*133mm	12	192-288	10.0kg
Capacity of each cassette is 12-24cores(LC ports)				Empty cassette + panel

MPO-D

JTOPTICS Ultra High Density (UHD) panel is made with stainless steel, unlike box structure of normal panels, this one is assembled with separated parts, such structure simplifies the installation. Aluminum and the simple structure make the panel lighter and more protective for environment. The cassette is also improved, it's fixed on the panel with clasps too, but the two clasps are on different positions, then more cassettes can be installed at the same space



MPO HIGH DENSITY PATCH PANEL

Picture of the Pane



Before assembly



1U 5ports- Fully assembled



45°fan shaped HD- fully assembled



Before assembly



2U 12ports- Fully assembled



45°fan shaped HD- fully assembled

Packing Information

Height	Dimension	Capacity of cassettes	apacity/ Cores	Weight
1U	482.6*255*42mm	4-5	12-96	4.0kg
2U	482.6*255*88mm	8	192-288	5.0kg
Capacity of each cassette is 12-24cores(LC ports)				Empty cassette + panel



MPO/MPT HIGH-DENSITY CABLING SYSTEM

With the popularity of 40G and 100G networks, more and more data centers, telecom centers, enterprises and even campuses are beginning to use MTP/MPO cabling systems. These cabling systems use MTP/MPO fiber patch cords and MTP/MPO fiber optic distribution. Wire box, MTP/MPO adapter and MTP/MPO adapter panel are built, and it offers unlimited possibilities for high-density cabling while saving network deployment time.

The JTOPTICS MTP/MPO cabling system not only saves wiring space, but also simplifies the cabling process and facilitates cable management.

1



Data center switch

Meet more business needs and upgrade your data center

2



Fiber terminal box

Mainly used for connection and storage between external fiber optic cable and equipment pigtail

3



Fiber distribution box

Meet more business needs and upgrade your data center

4



MTP/MPO-LC fiber distribution box

Flexible expansion of services to meet high-density cabling management

5



Fiber optic adapter panel

Connect to an electrical interface module or switch to transmit faster electrical signals

6



Optical module

Meet more business needs and upgrade your data center

7

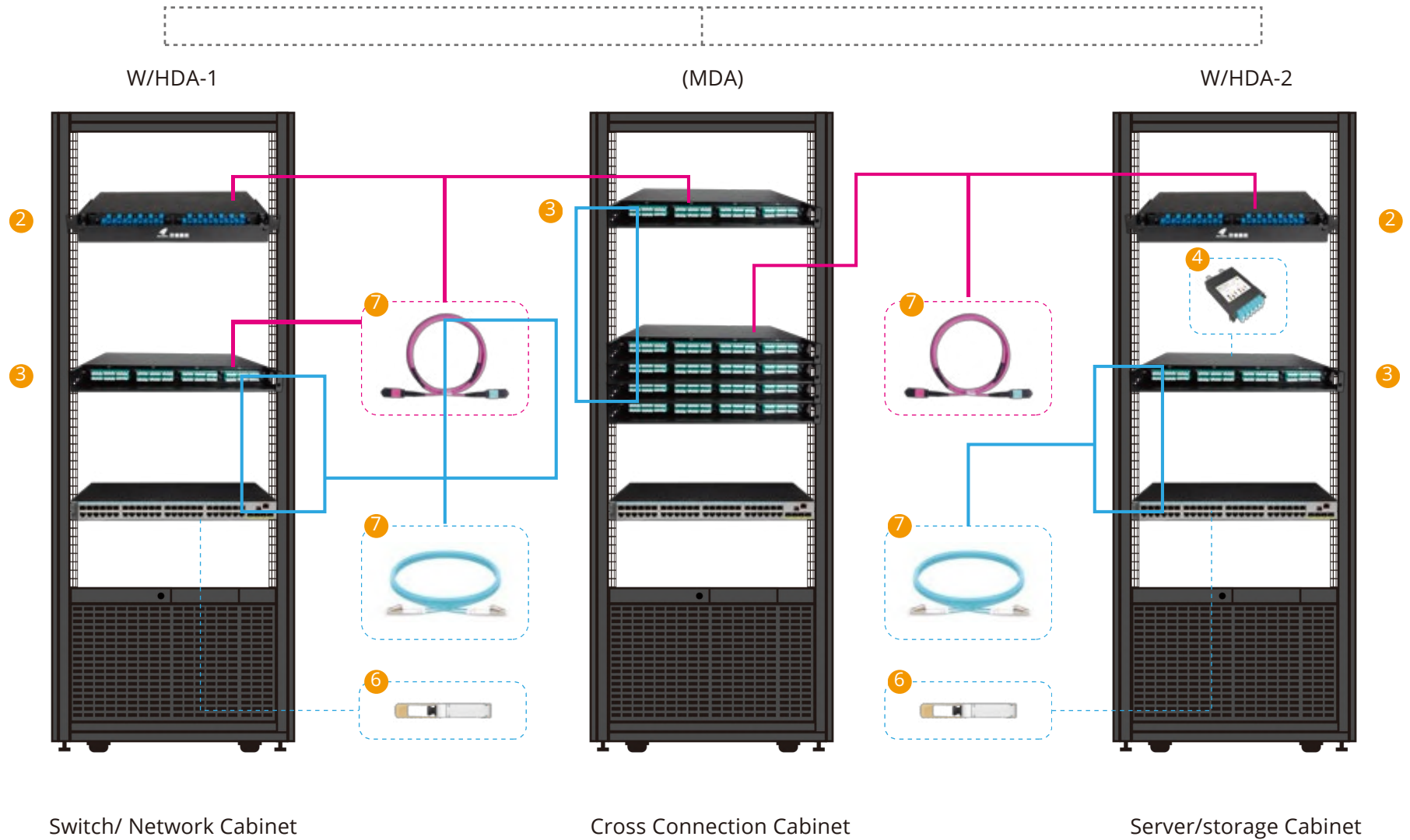


MTP/MPO fiber patch cord

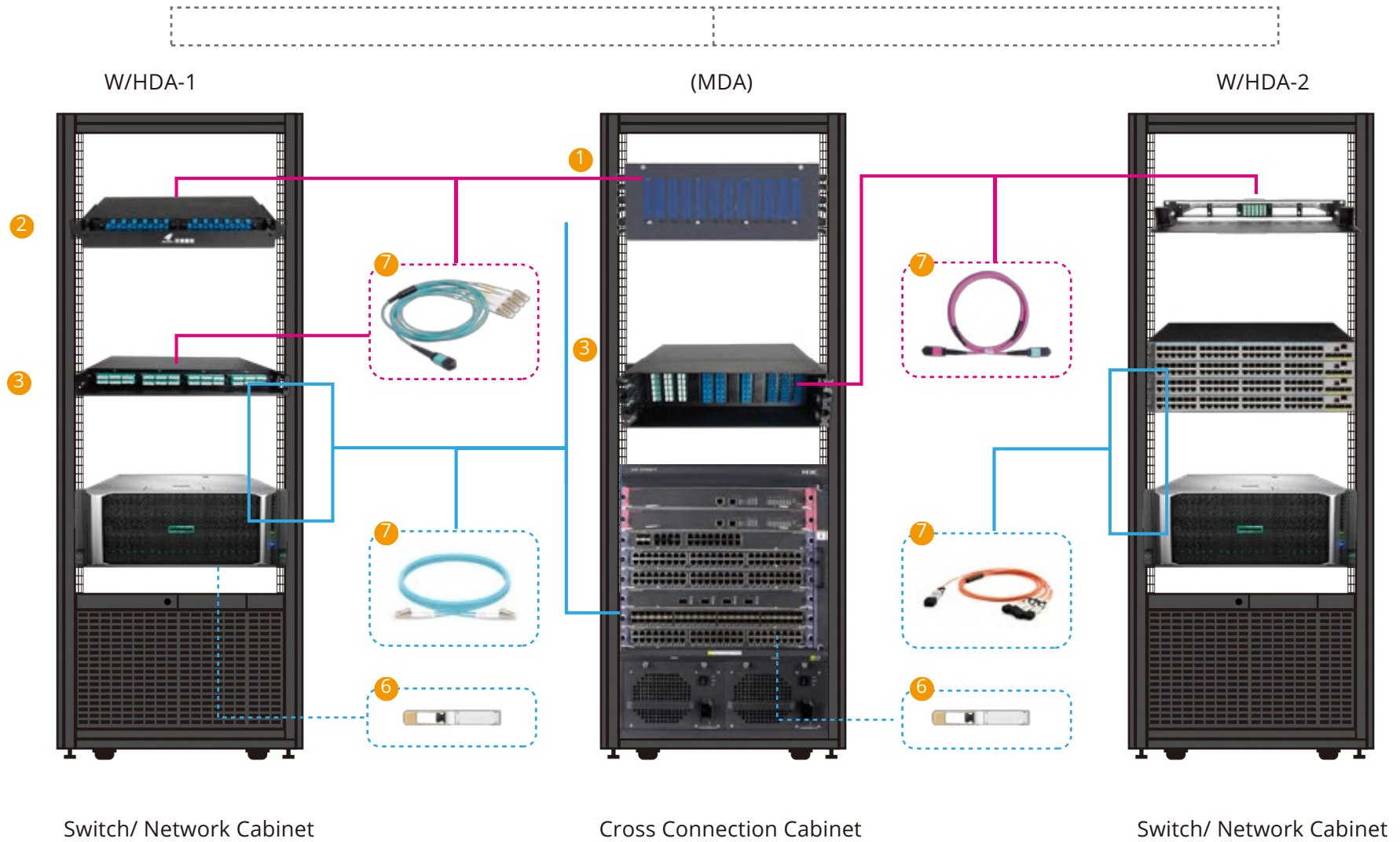
Comply with international telecommunication standards. Low loss, stable transmission signal



MPO high-density solutions in data center (一)



MPO high-density solutions in data center (二)



10 Gbps Interconnector solutions



10G-SFP MM 850nm SFPLC-LC Duplex OM3 Patch cord

MPO patch panel

MPO trunk patch cord

MPO distribution box

MPO to LC-OM3 patch cord

10G-SFP MM 850nm SFP

40 Gbps Interconnector solutions



10G-SFP MM 850nm SFP

MPO to LC-OM3 patch cord

MPO patch panel

Optical adapter panel

MPO to LC-OM3 patch cord

40G-QSFP MM 850nm SFP

100 Gbps Interconnector solutions

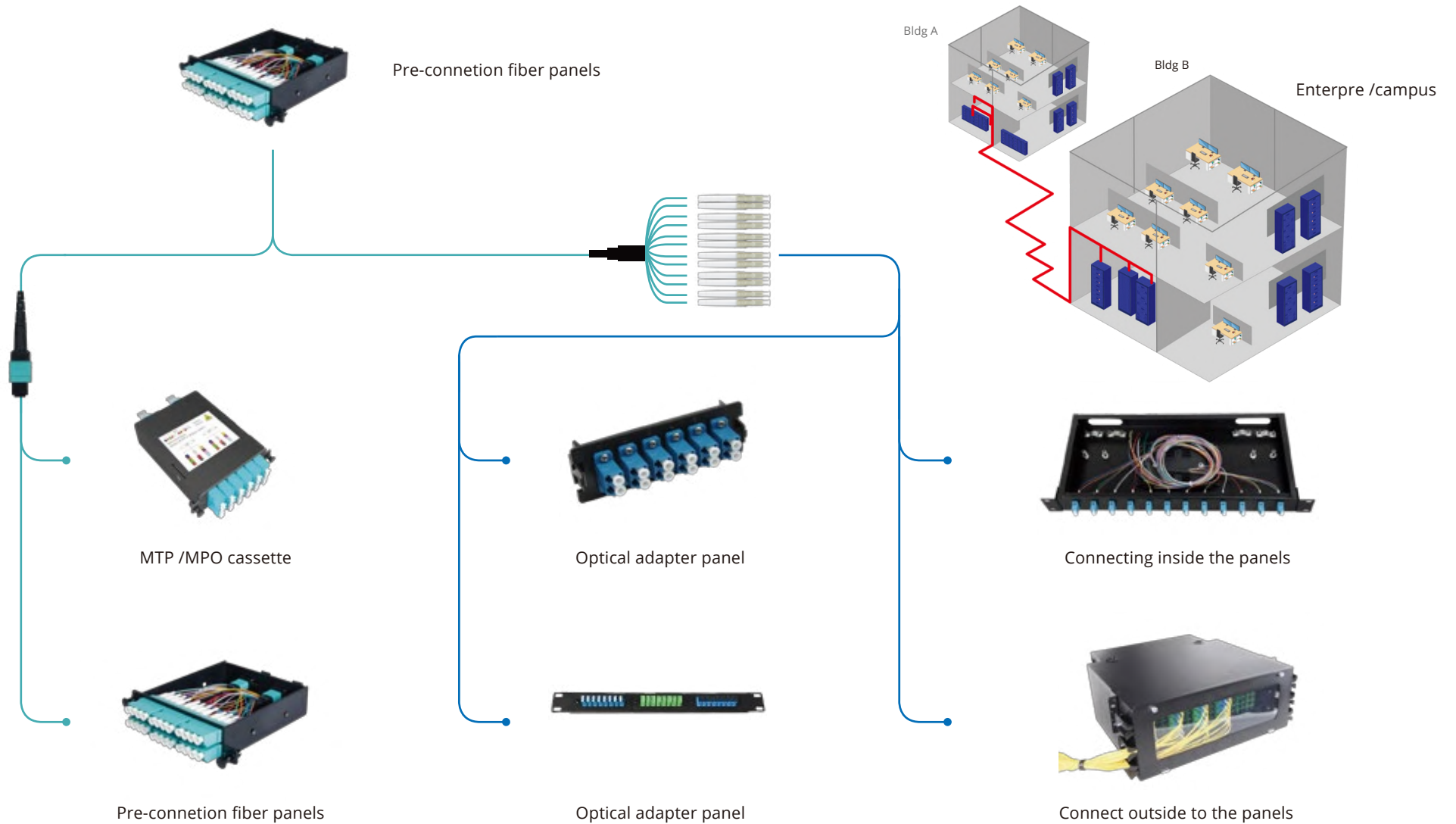


100G-QSFP MM 850nm SFP


MPO patch cord

100G-QSFP MM 850nm SFP

Enterprise /Campus wiring solution



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