

MPO&MTP[®] Breakout Cables Datasheet

MTP[®]/MPO Breakout Cables Applications

MTP[®]/MPO Breakout fiber patch cord is a multi-core branched fiber optic connection solution designed for parallel optical communication and high-speed interconnection. This patch cord divides a main-end MPO connector (8-core or 16-core) into two equivalent MPO branches (such as 2×4-core or 2×8-core), and is widely used in 1:2 beam splitting interconnection of high-speed optical modules such as QSFP+/QSFP28/QSFP-DD/OSFP or high-density wiring between modules and patch panels.

This product adopts high-precision end-face grinding technology, equipped with standard or low insertion loss MTP[®]/MPO connectors, supports single-mode (OS2) and multi-mode (OM3/OM4/OM5) fiber types, and has the advantages of low insertion loss, compact structure and high reliability. Its branch structure is flexible, and the coaxial parallel or opposite side pull-out design can be selected according to the link direction, which is convenient for modular deployment, link splitting and upgrade expansion in data center and cloud network environments.

Features

- OS2, OM4 fiber modes
- High-precision end face grinding, 0.35 dB low insertion loss connection
- Available in Plenum (OFNP), Riser (OFNR), and LSZH Cable Jacket
- Connector polish type support UPC or APC (8° angle)
- All connector ends are available in Male(Pinned) or Female(Pinless)
- Support 8F/12F/16F/24F to multi-channel branch jumper customization

Standards Compliance

- IEC 61754-7 / IEC 61754-7-1
- TIA/EIA-568.3-D(ANSI/TIA-568.3-D)
- ISO/IEC 11801-1/-5
- RoHS / REACH
- GR-326 / GR-1435

12 Fibers Arrangement Corresponding Table

MTP®/MP01	Connection	MTP®/MP02	MTP®/MP03
1	----->	12	-
2	----->	11	-
3	----->	-	12
4	----->	-	11
5	Not Connected	-	-
6	Not Connected	-	-
7	Not Connected	-	-
8	Not Connected	-	-
9	←-----	-	2
10	←-----	-	1
11	←-----	2	-
12	←-----	1	-

16 Fibers Arrangement Corresponding Table

MTP®/MP01	Connection	MTP®/MP02	MTP®/MP03
1	----->	12	-
2	----->	11	-
3	----->	10	-
4	----->	9	-
5	----->	-	12
6	----->	-	11
7	----->	-	10
8	----->	-	9
9	←-----	-	4
10	←-----	-	3
11	←-----	-	2
12	←-----	-	1
13	←-----	4	-
14	←-----	3	-
15	←-----	2	-
16	←-----	1	-

Optical Properties

Type	Single-mode (APC polish)	Single-mode (UPC polish)	Multi-mode (APC polish)	Multi-mode (UPC polish)
Fiber count	8,16 etc.	8,16 etc.	8,16 etc.	8,16 etc.

Fiber type	G.652.D/G.657.A1	G.652.D/G.657.A1	50/125 μm	50/125 μm
Maximum Insertion Loss	MTP: ≤0.35 dB(standard); ≤0.2 dB(Low Loss) MPO:≤0.35 dB(Low Loss)			
Return Loss	≥60 dB	≥50 dB	≥35 dB	≥30 dB
Durability	≥500-1000 times			
Test Wavelength	1310nm / 1550nm		850nm / 1300nm	
Attenuation	≤0.35dB/km; ≤0.21dB/km		≤2.3dB/km; ≤1.0dB/km	
Tensile Strength (Long Term/Short Term)	150/80N			
Cable Diameter	3.0mm			
Breakout Length	0.5m±50mm			
Minimum Bend Radius	OS2: 10.0mm, OM4: 7.5mm			

3D Geometry Performance

Type			Grade A		Grade B	
Item			Min	Max	Min	Max
Radius of Curvature(mm)	X		-10000 < or >2000		-10000 < or >2000	
	Y		-500 < or >50		-500 < or >50	
Angle[°]	X		-0.15	0.15	-0.2	0.2
	Y	APC	7.85	8.15	7.8	8.2
		UPC	-0.15	0.15	-0.2	0.2
Minus Coplanarity(nm)			0	300	0	300
Fiber Height(nm)			1200	3000	1000	3500
Max All Diff(nm)			0	300	0	500
Max Adj Diff(nm)			0	150	0	300
Core Dip(nm)						
Only MM			-100	100	-100	100

Environmental Performance

No.	Item	Testing Conditions	Requirements	
			Before test	After test
1	Thermal Age Test	85 $^{\circ}$ C 168hrs	IL ≤ 0.80 dB, RL ≥ 60 dB(APC)/30dB(UPC)	IL ≤ 0.80 dB, Δ IL ≤ 0.3 dB RL ≥ 60 dB(APC)/30dB(UPC)
2	Thermal Cycle Test	-40 $^{\circ}$ C~75 $^{\circ}$ C	IL ≤ 0.80 dB,	IL ≤ 0.80 dB, Δ IL ≤ 0.3 dB

		21cycles 168hrs	RL $\geq$ 60dB(APC)/30dB(UPC)	RL $\geq$ 60dB(APC)/30dB(UPC)
3	Humidity Age Test	75°C / 95%RH 168hrs	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)
4	Humidity / Condensation Cycling Test	-10°C~65°C, 90-100%RH 21cycles 168hrs	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)

Mechanical Behavior

No.	Item	Testing Conditions	Requirements	
			Before test	After test
1	Vibration Test	1.5mm p-p 10~55Hz 2hrs for each axis	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)
2	Flex Test	0.9kgf for Type I, 0.9kgf for small form 0°, 90°, 0°, -90°, 0°, and repeat for 100 cycles	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)
3	Twist Test	Load 1.33kgf 1 revolution, 9 times	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)
4	Proof test – Side Pull	Load 3.37kgf for 5 sec Load 4.5kgf for 5 sec	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)
5	Proof test – Straight Pull	Load 4.5kgf for 5 sec Load 6.8kgf for 5 sec	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)
6	Transmission with Applied Load Test	Apply load: 4.95lbf @ 0° Apply load: 0.49lbf @ 90°	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)
7	Impact Test	1.5m 10 cycles	IL $\leq$ 0.80dB, RL $\geq$ 60dB(APC)/30dB(UPC)	IL $\leq$ 0.80dB, Δ IL $\leq$ 0.3dB RL $\geq$ 60dB(APC)/30dB(UPC)

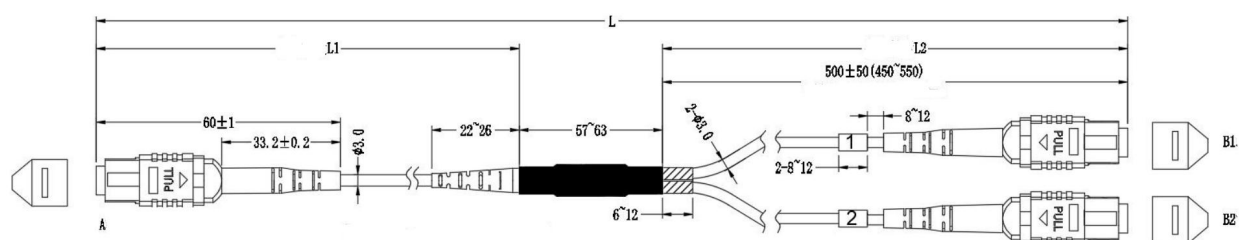
Color Requirements

Color Codes	OS2	OM5	OM4	OM3
Cable Jackets	Yellow	Lime Green	Magenta	Aqua
Connectors	Green	Lime Green	Aqua (UPC) Green (APC)	Aqua

Environmental Characteristics

Environmental Characteristics	Description
Operating Temperature	-20°C to 70°C (14 to 158°F)
Storage Temperature	-40°C to 85°C (-40 to 185°F)

Technical Drawing



Cable Length Tolerances

Cable Length	Length Tolerance(Δ L)
L1	$L \leq 10m: +150/0mm$ $L > 10M: +1.5\% * L/0$
L2	0.5m ± 50mm

Ordering Information

Product number	Description
S2MPOA2x4F	MPO-12 APC Female to 2 MPO-4 APC Female Single Mode Elite Breakout Cable
M4MPOA2x8F	MPO-16 APC Female to 2 MPO-8 UPC Female Multimode Elite Breakout Cable
M4MPOA2x4F	MPO-12 APC Female to 2 MPO-4 APC Female Multimode Elite Breakout Cable

Further Information:

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