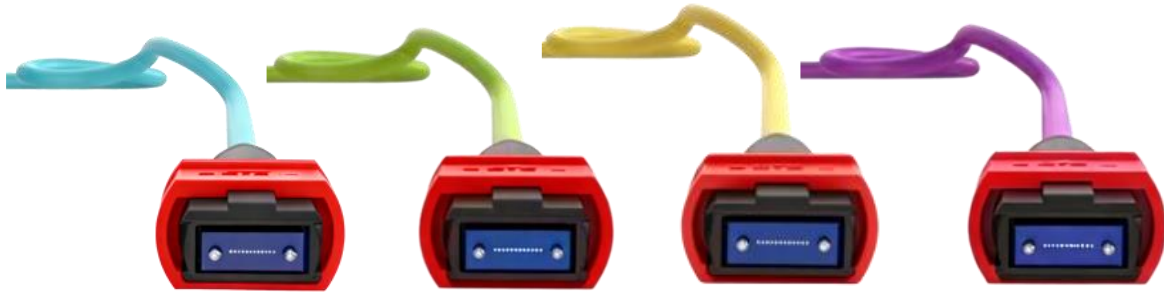


MNC™ Master Cables

Selection Guide

Modified Non-Contact (MNC) MPO / MTP® Master Reference Cable | For 400G / 800G / 1.6T optical module testing



1. Product Overview

The MNC™ (Modified Non-Contact) master reference jumper is an enhancement of the standard MPO / MTP® connector. Its form factor is fully identical to traditional MPO / MTP connectors, allowing direct compatibility with existing MPO / MTP adapters and panel platforms without any hardware modification.

Each fiber end-face is slightly recessed below the plastic ferrule surface (recess depth approx. 0.6 ~6μm), forming a Depressed Core Tip, and is coated with an anti-reflection (AR) film. After mating, an air gap of approximately 1.2 μm is maintained between the fiber tips, with no physical contact between fibers. This eliminates end-face scratches and wear caused by repeated mating, while the AR coating suppresses the fiber-air interface reflection (about 4%) and prevents the formation of Fabry-Perot interference cavities, thereby achieving lower and more stable insertion loss and higher return loss.

The red housing is the signature feature of MNC™ connectors. This series is compatible with both single-mode and multimode fibers, and is especially suited to high-frequency mating applications such as optical module testing and master reference cords.



8/12/24F MNC®/UPC-MNC®/UPC

Example: Single-mode MNC™ jumper

This series offers two end-face coating configurations: MNC-MPO (single-side coated) has an MNC™-coated non-contact end-face on one end and a standard MPO / MTP® on the other, allowing direct mating with traditional MPO / MTP interfaces on live networks and test equipment; MNC-MNC (double-side coated) has MNC™-coated end-faces on both ends, providing the optimal MNC™-to-MNC™ non-contact mating for the best return loss and insertion-loss stability.

End-Face Structure & Mating

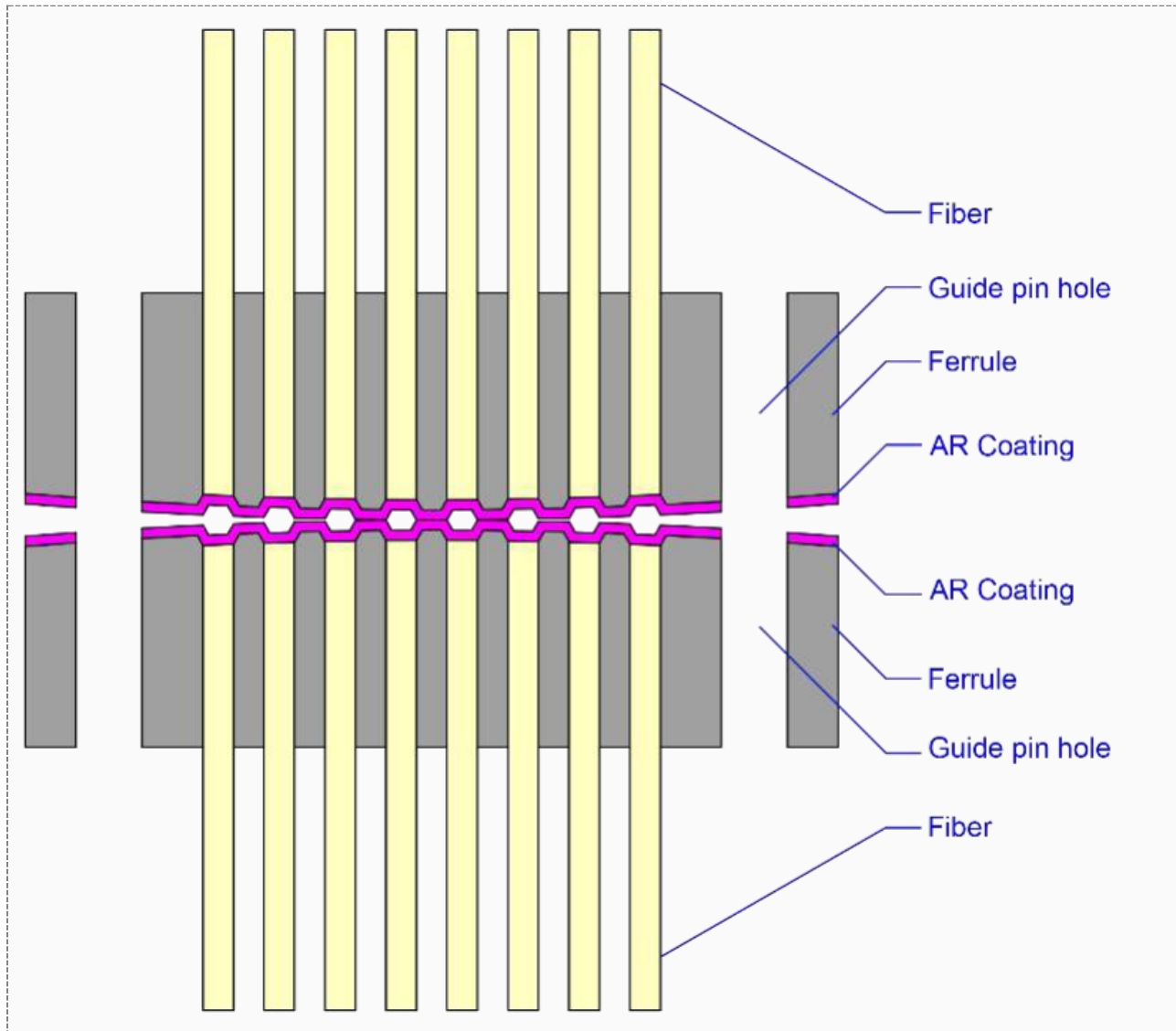


Fig. 1 MNC™ end-face structure & mating (for reference only)

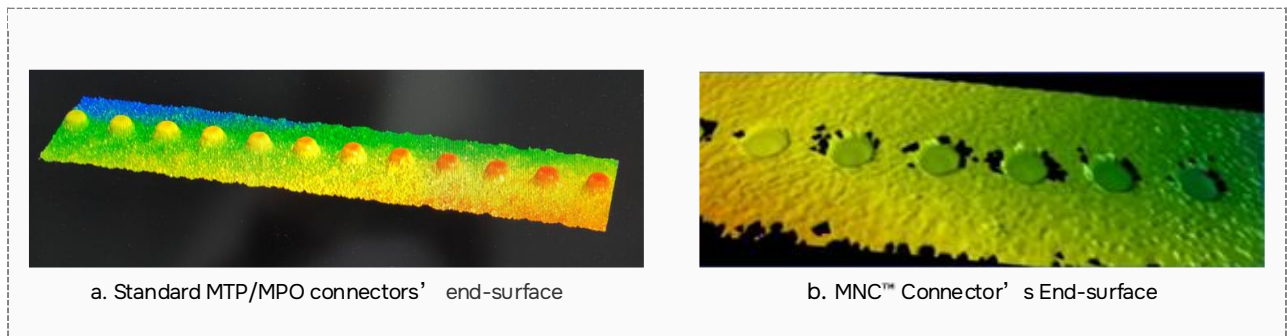


Fig. 2 MNC™ end-face vs. traditional MPO / MTP end-face

Optical Test Link

Beyond serving as a high-frequency master reference jumper, the MNC™ can also be used to optimize the optical test link. In a test system, the optical signal passes through multiple connections – “test equipment – reference jumper – MPO/MTP cable product under test (DUT)”. Reflection, end-face contamination, or insertion-loss fluctuation at any connection interface introduces measurement error and degrades link consistency and repeatability. With its non-contact, AR-coated end-face structure, the MNC™ effectively suppresses back-reflection at each interface, eliminates insertion-loss drift caused by repeated mating, and avoids damage to the DUT end-face, thereby building a cleaner, more stable and repeatable test link, as shown below.

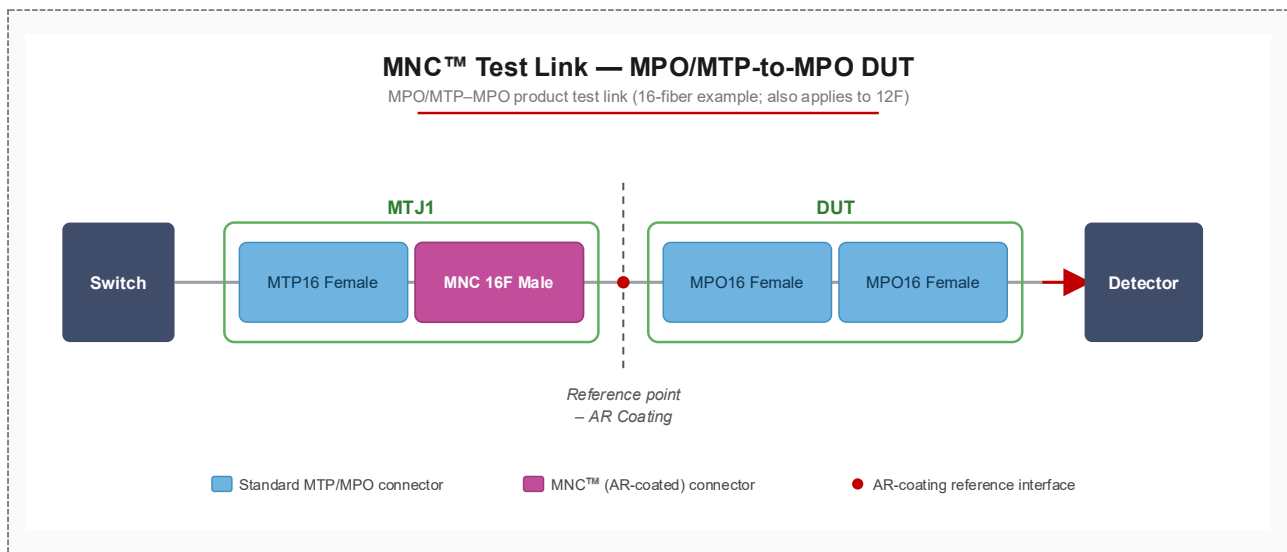


Fig. 3 MNC™ test-link topology (for reference only)

In actual high-speed optical module (100G ~ 1.6T) testing, the MNC™ master reference cable connects the test equipment to the module under test (DUT). A typical test topology (the transmitter Tx and receiver Rx paths) is shown in Fig. 4.

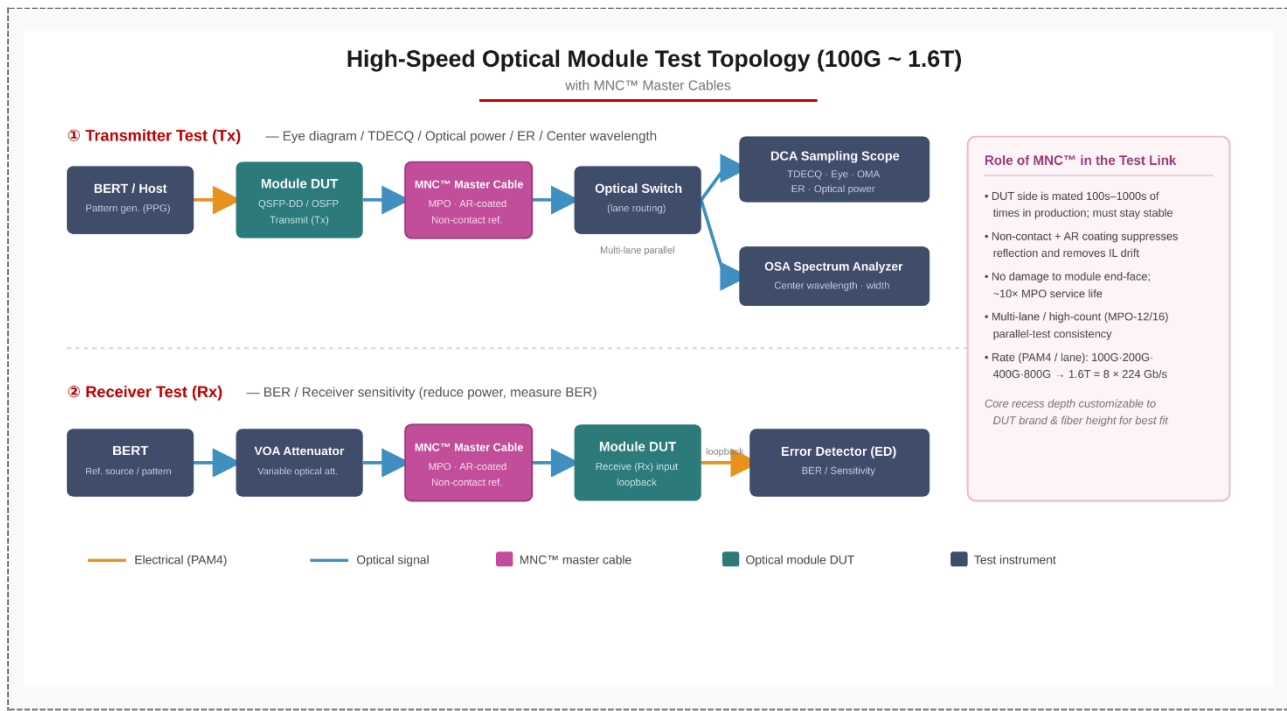


Fig. 4 High-speed optical module (100G ~ 1.6T) test topology (for reference only)

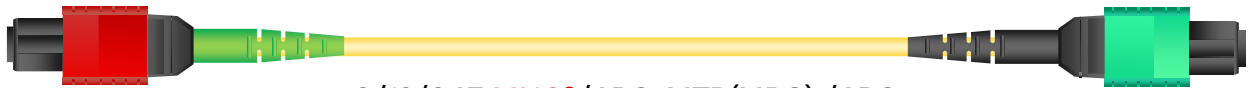
Notes

If your application is optical test-link optimization, please specify this to your sales manager when ordering. We will tune the MNC™ core recess depth to best match the actual connector brand and fiber height of your device under test (DUT).

2. Mechanical Drawing



8/12/24F MNC®/UPC-MTP(MPO) /APC



8/12/24F MNC®/APC-MTP(MPO) /APC



8/12/24F MNC®/APC-MNC/UPC



8/12/24F MNC®/APC-MNC®/APC



8/12/24F MNC®/UPC-MNC®/UPC



8/12/24F MNC®/UPC Female



8/12/24F MNC®/APC Female



16F MNC®/APC Female



16F MNC®/UPC Female

Fig. 5 MNC™ Master Cable typical appearance & color reference (connector and cable colors may be adjusted as appropriate during production)

4. Optical Performance

Insertion Loss IL (Low Loss)	≤ 0.40 dB
Insertion Loss IL (Ultra Low Loss)	≤ 0.35 dB
Insertion Loss (typical measured)	approx. 0.2 dB
Return Loss RL (PC / UPC)	> 50 dB
Return Loss RL (APC)	> 65 dB
IL Repeatability	< 0.05 dB (virtually no fluctuation after mating)
Wavelength	SM 1310 / 1550 nm; MM 850 / 1300 nm
Mating Durability	Min. 500 cycles, ΔIL ≤ 0.2 dB
Air gap / Core recess	air gap approx. 1.2 μm after mating; fiber core recess 0.6~6μm

5. General Specifications

Product Type	MNC™ master reference jumper (Modified Non-Contact)
Fiber Count	4 / 8 / 16 / 24
Fiber Type	SM G.652.D, G.657.A1 / A2; MM OM3 / OM4 / OM5
Fiber Brand	CORNING / YOFC
Connector	MPO / MTP®
Connector Brand	US Conec MTP®, Kaihang MPO, TASLO MPO, FSG MPO
End-Face Structure	non-contact AR coating, depressed fiber core tip; APC / UPC
Coating Configuration	MNC-MNC (double-side coated) / MNC-MPO (single-side coated)
Gender	Male (M) / Female (F)
Polarity	Type A / Type B / Type C (per TIA-568.3-D)
Cable Construction	round / ribbon (flat)
Flame Rating	LSZH / OFNR (Riser) / OFNP (Plenum)
Housing Color	red (MNC™ signature color)
Boot Color	black / red / gray / others
Jacket Color	yellow (SM) / aqua (OM3) / magenta (OM4) / lime (OM5) / others
Operating Temperature	-20°C ~ +70°C
Storage Temperature	-40°C ~ +85°C

Notes

If your application is optical test-link optimization, please specify this to your sales manager when ordering. We will tune the MNC™ core recess depth to best match the actual connector brand and fiber height of your device under test (DUT).

- Insertion loss is shipped in two grades: Low Loss (≤ 0.40 dB) and Ultra Low Loss (≤ 0.35 dB).

Please specify when ordering.

- The MPO end of MNC-MPO (single-side coated) can mate directly with traditional MPO / MTP® equipment.
- If not otherwise specified, the connector brand defaults to OPTICO standard.

3. Ordering Information (Part Number Configurator)

The part number is built by combining the following fields; each field is defined in the table below:

FC – SERIES – FT – EF – GN – PO – CT – FR – LEN – BR

①Fiber Count – ②Series – ③Fiber Type – ④End-Face – ⑤Gender – ⑥Polarity – ⑦Construction – ⑧Flame Rating – ⑨Length – ⑩Brand

Code	Description / Options
① Fiber Count (FC)	
04	4-fiber
08	8-fiber
16	16-fiber
24	24-fiber
② Series / Coating Configuration (SERIES)	
MNC	MNC-MNC (double-side coated): MNC™-coated end-faces on both ends
MPO	MNC-MPO (single-side coated): one end MNC™-coated, the other standard MPO / MTP®
③ Fiber Type (FT)	
S2	Single-mode SM G.652.D
S7	Single-mode SM G.657.A2 (bend-insensitive)
M3	Multimode MM OM3
M4	Multimode MM OM4
M5	Multimode MM OM5
④ End-Face / Polish (EF) ※ all MNC™ end-faces are non-contact AR-coated with recessed core	
A	APC (8°, single-mode)
U	UPC / PC (0°, multimode / single-mode)

⑤ Connector Gender (GN, End A / End B)	
MM	Male / Male
FF	Female / Female
MF	Male / Female
FM	Female / Male
⑥ Polarity (PO, per TIA-568.3-D)	
A	Type A (straight / Key Up–Key Down)
B	Type B (reversed / Key Up–Key Up)
C	Type C (pair-flipped)
⑦ Construction (CT)	
R	Round
F	Flat / Ribbon
⑧ Flame Rating (FR)	
L	LSZH
R	OFNR (Riser)
P	OFNP (Plenum)
⑨ Length (LEN)	
0001	1 m (4-digit meters, e.g., 0003 = 3 m)
XXXX	Custom length (please specify)
⑩ Connector Brand (BR, optional)	
U	US Conec MTP®
K	Kaihang MPO
T	TASLO MPO
G	FSG MPO
O	OPTICO standard

Ordering Examples

16-MNC-S7-A-FF-B-R-L-0003-U → 16F, MNC-MNC double-side coated, SM G.657.A2, APC, Female–Female, Type B, round, LSZH, 3 m, US Conec MTP®

24-MPO-M4-U-MM-A-R-R-0002-K → 24F, MNC-MPO single-side coated, MM OM4, UPC, Male–Male, Type A, round, OFNR Riser, 2 m, Kaihang MPO

08-MNC-S2-A-FM-C-F-P-0001-O → 8F, MNC-MNC double-side coated, SM G.652.D, APC, Female–Male, Type C, ribbon, OFNP Plenum, 1 m, OPTICO standard

Note: MNC™ is fully interoperable with standard MPO / MTP systems and can mate directly with traditional (non-coated) MPO / MTP connectors.

6. MNC™ vs. Traditional MPO / MTP

Item	Traditional MPO / MTP	MNC™ connector
Connection	Physical contact between most fibers	Non-contact; air gap maintained between fibers
Optical Reflection	Multiple reflections forming Fabry-Perot cavity	AR coating suppresses reflection; stable signal
End-Face Wear Risk	High	Extremely low
Contamination Sensitivity	High	Low
Required Mating Pressure	High	Low; small pressure is sufficient
High-Fiber-Count Performance	Poor; instability increases with fiber count	Excellent; stably supports high fiber counts
Service Life	Baseline	~10× MPO/MTP; > 500 mating cycles
Impact on DUT	Possible end-face damage	No damage; protects valuable devices under test

7. Applications & Standards

Typical Applications

- 400G / 800G / 1.6T optical module (transceiver) testing
- Master line for module cassette testing / master reference cords
- High-density interconnects in data centers and storage networks
- Inside fiber optical equipment
- High-frequency mating reference-jumper systems

Standards

- ISO/IEC 11801
- IEC 61754-7 (MPO interface)
- EIA/TIA-604-5 (FOCIS-5)
- TIA/EIA-568.3-D
- GR-1435-CORE
- RoHS

Specifications are subject to change without notice. For details, visit www.fiberopticom.com or contact OPTICO GROUP CO., LIMITED.