

**SUN CONEC**  
-Singapore & Malaysia-

# MPO/MTP Connector

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**Make Connections Much Simpler**

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# CONTENTS

| Content                                        | Page     |
|------------------------------------------------|----------|
| Connector performance                          | pg.01    |
| Product naming,Standard Patch cable structure  | pg.02    |
| MPO connectors and product selection           | pg.03    |
| MPO(PUSH-PULL)connectors and product selection | pg.04-05 |
| SN-MT connectors                               | pg.06    |
| MMC connectors                                 | pg.07    |
| MPO-LC(12-core)connectors                      | pg.08    |
| MPO-LC/UNIBOOT(12-core)connectors              | pg.09    |

## Insertion Loss (IL) and Return Loss (RL)

| Optical Performance |                    | SM/APC | MM/APC | SM/UPC | MM/UPC |
|---------------------|--------------------|--------|--------|--------|--------|
| IL (dB)             | Standard           | 0.7    | 0.7    | 0.7    | 0.7    |
|                     | Low Insertion Loss | 0.35   | 0.35   | 0.35   | 0.35   |
| RL (dB)             | Standard           | 60     | 40     | 50     | 20     |
|                     | High Return Loss   | 65     | 45     | 55     | 25     |

## Fiber Endface Geometry Comparison

| MTP Single Mode/Multimode       |        |         |                                     |                |
|---------------------------------|--------|---------|-------------------------------------|----------------|
| Measurements Parameters         |        |         | Limits                              |                |
|                                 |        |         | Minimum                             | Maximum        |
| ROC                             | X-ROC  |         | 2000mm(Convex)<br>-10000mm(Concave) | N/A            |
|                                 | Y-ROC  |         | 50mm                                | N/A            |
| Angle                           | X-Axis |         | -0.15°                              | 0.15°          |
|                                 | Y-Axis | APC     | 7.8°                                | 8.2°           |
|                                 |        | Flat    | -0.2°                               | 0.2°           |
| Fiber Height                    |        |         | 1100nm                              | 3000nm         |
| Diff.Height                     |        |         | N/A                                 | 500nm          |
| Adj.Height                      |        |         | N/A                                 | 300nm          |
| Ferrule Length                  |        | PC      | 7.8mm                               | N/A            |
|                                 |        | APC     | 7.9mm                               | N/A            |
| Core Dip                        |        |         | /                                   | 120mm          |
| Geometry Limit(N)               |        | APC(SM) | N/A                                 | 22.6(4 Fiber)  |
|                                 |        |         |                                     | 17.9(8 Fiber)  |
|                                 |        |         |                                     | 17.4(12 Fiber) |
| Minus Side Coplanarity (nm)     |        | APC/PC  | N/A                                 | 400            |
| Fiber Tip Spherical Radius (mm) |        | APC/PC  | 1                                   | ∞              |



OPTICAL PATCHCORD

CODE STANDARDS

MP-SCA-S-09-Z-A

| A-SIDE CONNECTOR TYPE |      | B-SIDE CONNECTOR TYPE |      | CORE COUNT |             | OUTER DIAMETER |     | MATERIALS |      | OPTICAL FIBER TYPE |         |
|-----------------------|------|-----------------------|------|------------|-------------|----------------|-----|-----------|------|--------------------|---------|
| MP                    | MPO  | MP                    | MPO  | S          | single-core | 09             | 0.9 | Z         | LSZH | A                  | G652D   |
| MT                    | MTP  | MT                    | MTP  | D          | dual-core   | 12             | 1.2 | V         | PVC  | B                  | G657A1  |
| MJ                    | MTRJ | MJ                    | MTRJ | M          | multi-core  | 20             | 2.0 | O         | OFNP | C                  | G657A2  |
|                       |      |                       |      |            |             | 30             | 3.0 |           |      | D                  | G657B3  |
|                       |      |                       |      |            |             |                |     |           |      | E                  | G655    |
|                       |      |                       |      |            |             |                |     |           |      | F                  | OM1     |
|                       |      |                       |      |            |             |                |     |           |      | G                  | OM2     |
|                       |      |                       |      |            |             |                |     |           |      | H                  | OM3-150 |
|                       |      |                       |      |            |             |                |     |           |      | J                  | OM3-300 |
|                       |      |                       |      |            |             |                |     |           |      | K                  | OM4     |
|                       |      |                       |      |            |             |                |     |           |      | L                  | OM5     |

**Note:** Custom lengths available to meet your requirements.

STANDARD PATCH CORD STRUCTURE

MPO POLARITY & CABLE TYPES REFERENCE CHART

| Feature                 | Type A (straight-Through)                               | Type B (Cross-Over / Reversed)                             | Type C (Pair-Flipped)                                   |
|-------------------------|---------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------|
| Core Definition         | Fiber positions are identical on both ends.             | Fiber positions are completely reversedend-to-end.         | Adjacent fiber pairs are crossed within the cable.      |
| Key/Keyway Orientation  | One end key up, the other key down (Pinnedto Unpinned). | Same key orientation on both ends (e.g.. KeyUp to Key Up). | One end key up, the other key down (Pinnedto Unpinned). |
| Pin-Polish Illustration | 1→1,2→2,... 12→12                                       | 1-12,2→11... 12-1                                          | 1→2,2→1,3→4,4→3,...                                     |
| Typical Application     | Trunk Cables                                            | Trunk Cables                                               | Fanout / Breakout Cables                                |
| Common Jacket Color     | Black or Grey                                           | Aqua                                                       | Yellow                                                  |
| Usage Guide             | Connects equipment/modules of the same type.            | Connects equipment/modules of the same type.               | Breaks out a trunk cable to individual deviceports.     |

CONNECTOR BOOT COLOR



## MPO CONNECTOR

### CODE STANDARDS



MPO Connector

**MO12-GN-20-BU**

| CONNECTOR |                        | ENCLOSURE COLOR |            | BOOT TYPE(mm) |              | BOOT COLOR |       |
|-----------|------------------------|-----------------|------------|---------------|--------------|------------|-------|
| MO12      | 12-fibre MPO connector | BU              | BLUE       | 20            | 2.0 Standard | GN         | GREEN |
| MO16      | 16-fibre MPO connector | GN              | GREEN      | 30            | 3.0 Standard | BU         | BLUE  |
| MO24      | 24-fibre MPO connector | BG              | BEGI       |               |              | BG         | BEGI  |
|           |                        | AQ              | AQUA GREEN |               |              | AQ         | AQUA  |
|           |                        |                 |            |               |              | BK         | BLACK |

#### Performance:

- Sun Conec's connectors strictly follow the test standards of Telcordia GR-326-CORE.
- The use of our different ferrule types (Premium, Super premium, Ultra premium) enables performance matching from standard to high and ultra-high performance interconnection requirements.
- The dimensional design complies with IEC 61754-7.
- Can be selected according to the material to meet the UL94 flame retardant standards.
- Insertion/return loss performance not only exceeds the top 10% of industry benchmarks, but also far exceeds the performance requirements of the Grade B interchange test in the IEC 61753-1 standard.

## OPTICAL DATA

### Ferrule Performance

| Entry                     | Parameter                                             |                |         |             |
|---------------------------|-------------------------------------------------------|----------------|---------|-------------|
| Ferrule Type              | End-face Type                                         | Insertion Loss |         | Return Loss |
|                           |                                                       | Typical Value  | Maximum |             |
| Single-mode Low-loss      | APC 8° Angle                                          | 0.10dB         | ≤0.35dB | ≥60dB       |
| Single-mode Standard Loss |                                                       | 0.25dB         | ≤0.75dB |             |
| Multimode Low-loss        | PC                                                    | 0.10dB         | ≤0.35dB | ≥20dB       |
| Multimode Standard Loss   |                                                       | 0.20dB         | ≤0.60dB |             |
| Mating Cycles             | Insertion loss change < 0.2 dB over 50 mating cycles. |                |         |             |
| Operating Temperature     | -40~75°C                                              |                |         |             |

| ADAPTED CABLE OD | BOOT TYPE     | PICTURE | ENGINEERING DRAWING |
|------------------|---------------|---------|---------------------|
| 0.9 mm Simplex   | Standard Boot |         |                     |
| 3.0 mm Simplex   | Standard Boot |         |                     |
| 4.0 mm Simplex   | Flat Boot     |         |                     |

## MPO(PUSH-PULL) CONNECTOR

### CODE STANDARDS

**MO12-GN-20-BU**

| CONNECTOR |                        | ENCLOSURE COLOR |            | BOOT TYPE(mm) |             | BOOT COLOR |            |
|-----------|------------------------|-----------------|------------|---------------|-------------|------------|------------|
| MO12      | 12-fibre MPO connector | BU              | BLUE       | 20            | 2.0 Ferrule | GN         | GREEN      |
| MO16      | 16-fibre MPO connector | GN              | GREEN      | 30            | 3.0 Ferrule | BU         | BLUE       |
| MO24      | 24-fibre MPO connector | BG              | BEGI       |               |             | BG         | BEGI       |
|           |                        | AQ              | AQUA GREEN |               |             | AQ         | AQUA GREEN |
|           |                        |                 |            |               |             | BK         | BLACK      |

#### Performance:

- High precision guide pins for exact alignment.
- Compact design, up to 24 fiber ribbons.
- IEC 61754-7 Compliant.
- Telcordia GR-1435-CORE compliant.
- Polishing does not require diamond film.
- Removable Housing.
- Flex angle boot and other boot styles.
- Spring Push with Slit for easier assembly.

MPO(PUSH-PULL) Connector

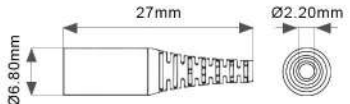
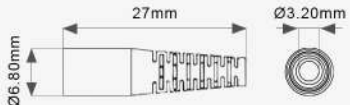
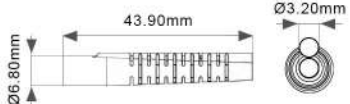
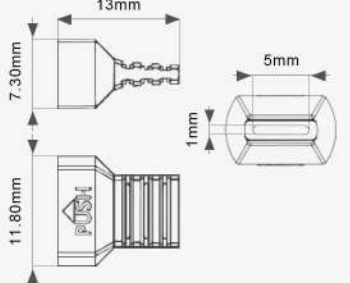
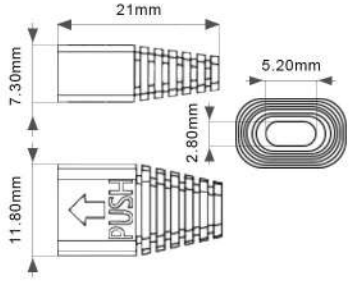
## OPTICAL DATA

| PARAMETERS                             | SINGLE-MODE               |          | MULTIMODE |          |
|----------------------------------------|---------------------------|----------|-----------|----------|
|                                        | APC                       |          | MM        |          |
|                                        | LOW LOSS                  | STANDARD | LOW LOSS  | STANDARD |
| Typical Insertion Loss (dB)<br>12-fber | 0.10                      | 0.20     | 0.08      | 0.15     |
| Max Insertion Loss (dB)<br>12-fber     | 0.25                      | 0.70     | 0.25      | 0.50     |
| Typical Insertion Loss (dB)<br>24-fber | 0.15                      | 0.25     | 0.15      | 0.20     |
| Max Insertion Loss (dB)<br>24-fber     | 0.35                      | 1.00     | 0.35      | 0.50     |
| Typical Insertion Loss (dB)<br>16-fber | 0.15                      | N/A      | 0.15      | 0.20     |
| Max Insertion Loss (dB)<br>16-fber     | 0.35                      | N/A      | 0.35      | 0.60     |
| Typical Insertion Loss (dB)<br>32-fber | N/A                       | N/A      | N/A       | 0.25     |
| Max Insertion Loss (dB)<br>32-fber     | N/A                       | N/A      | N/A       | 0.60     |
| Typical Return Loss (dB)               | ≥60                       |          | ≥25       |          |
| Operating Temperature<br>(°C)          | -40 to +75                |          |           |          |
| Durability                             | 500 matings per TIA-568.3 |          |           |          |

- Note:**
1. All insertion loss values are based on the performance of a single fiber.
  2. 95% of the single-mode low-loss and multimode low-loss fibers shall have a maximum insertion loss of 0.25 dB.
  3. For 24-fiber Single-Mode, standard 10N spring force is used.
  4. For 16-fiber Multimode, standard 10N spring force is used.
  5. For 32-fiber Multimode, standard 20N spring force is used.



## ORDERING INFORMATION

| BOOT TYPE           | CABLE BOOT TYPE        | PICTURE                                                                              | ENGINEERING DRAWING                                                                   |
|---------------------|------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 2.0mm Round Boot    | 2.0mm Mini Round Cable |     |    |
| 3.0mm Round Boot    | 3.0mm Mini Round Cable |     |    |
| 3.0mm Flexible Boot | 3.0mm Mini Round Cable |  |  |
| Bare Ribbon Boot    | Bare Fiber Ribbon      |   |  |
| Ribbon Cable Boot   | Ribbon Cable           |   |  |

## SN-MT CONNECTOR



SN-MT16 SM Connector  
APC for up to 2 mm Cable



SN-MT16 SM Connector  
APC with 44 mm Boot

SUN CONEC's SN-MT is an extension of the SN range and incorporates a single, compact SN-MT ferrule with 16 x 200  $\mu\text{m}$  fibers in a single row. Subsequently, the SN-MT ferrule can achieve 2.7 times the density of MPO16 whilst leveraging the same proven alignment methods. This combination ensures low-loss performance for singlemode and multimode APC applications whilst delivering optimized patch-panel density required in today's Hyperscale data centers.

### Performance:

- Sun Conec's connectors strictly follow the test standards of Telcordia GR-326-CORE.
- Same connector footprint as SN duplex.
- Insertion loss targeted 0.35dB max for SM.
- High-density trunks and patching.
- Push-pull boot.
- Hyperscale, edge, enterprise and colocation data centers.
- Effective size reduction compared to LC Duplex.
- Wide range of connector and adapter types for legacy upgrades or greenfield applications

## OPTICAL DATA

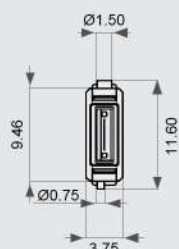
|                                    | Singlemode                                                | Multimode |
|------------------------------------|-----------------------------------------------------------|-----------|
|                                    | APC                                                       | MM        |
|                                    | SM Premium Low Loss                                       | Premium   |
| Typical Insertion Loss (dB)        | 0.15                                                      | 0.15      |
| Max.Insertion Loss (dB)            | 0.35                                                      | 0.35      |
| Typical Return Loss (dB)           | $\geq 60$                                                 | $\geq 45$ |
| Ferrule Diameter ( $\mu\text{m}$ ) | SN-MT ferrule 16-fiber, 200 $\mu\text{m}$ in a single row |           |

**Note:** Specifications provided are target only based on master grade jumper to low loss random mating test.

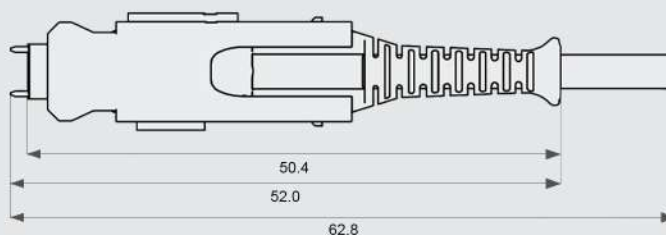
|                       | Value           |
|-----------------------|-----------------|
| Operating Temperature | -40°C to + 75°C |
| RoHS Compliance       | 2015/863 RoHS   |
| REACH Compliance      | Yes             |
| Free of Halogen       | Yes             |
| Humidity Resistance   | 95%             |

## SN-MT STANDARD DRAWING

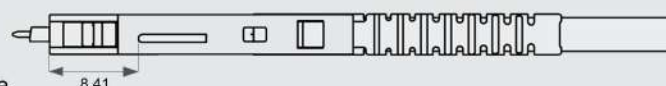
Front View



Side View



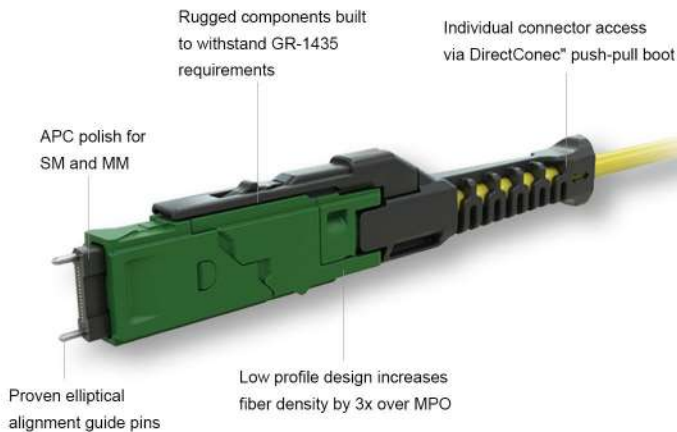
Top View



**Note:** 1. All dimensions are in mm  
2. Specifications subject to change without notice



## MMC CONNECTOR



SUN CONEC's MMC connector is a Very Small Form Factor (VSFF) multi-fiber optical connector designed for termination of single-mode and multimode fiber cables up to 2.5mm in diameter. The MMC connector employs novel TMT ferrule technology harmonized with the MT or MT-16 alignment structure. Individual connector access in the most extremely dense connector environments is easily accomplished using revolutionary DirectConec™ push-pull boot technology.

### Performance:

- 3x cabling port density over the MPO format
- TMT Elite™ low-loss, IEC Grade B insertion loss performance (0.25dB 97% random intermate)
- Tested to Telcordia GR-1435
- 250  $\mu$ m pitch for compatibility with standard 250  $\mu$ m and smaller OD optical fibers
- APC for both SM and MM applications
- Cables up to 2.5mm OD

## OPTICAL DATA

| PARAMETERS                  | SINGLE-MODE    |
|-----------------------------|----------------|
|                             | APC            |
|                             | LOW LOSS       |
| Typical Insertion Loss (dB) | 0.20           |
| Max Insertion Loss (dB)     | 0.50           |
| Typical Return Loss (dB)    | $\geq 55$      |
| Operating Temperature       | -40°C to +75°C |
| Durability                  | 500 matings    |

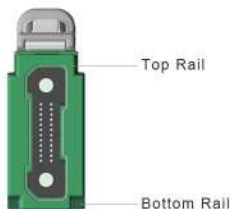
**Note:** 1. Parameters listed for Multimode are target values.

2. AirMT technology is licensed by Sumitomo Electric Industries, LTD.

3. Trademark of AirMT is jointly owned by Senko Advanced Components, inc, and Sumitomo Electric industries, LTD.

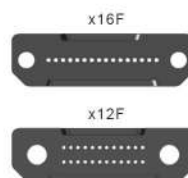
## FEATURES

### Simplified Polarity Management



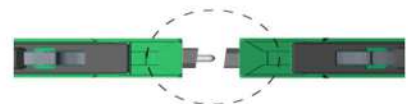
- Bottom rail features ensure connector is installed in correct polarity orientation.

### Proven Alignment Structure



- The TMT ferrule format is compliant with the IEC 61755 and 61754 precision alignment structure for MT Ferrules.

### Angle End-FaceMating



- MMC solutions enable Low Loss, IEC Grade B insertion loss performance and are APC for superior return loss.

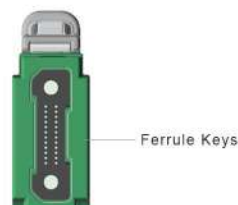
### High Density Footprint



| 1U Panel Max Density with (66) 4-port MMC Adapters |             |
|----------------------------------------------------|-------------|
| 16F MMC                                            | 4224 Fibers |
| 24F MMC                                            | 6336 Fibers |

- The MMC connector with DirectConec™ Push-Pull Boot enables functional high density applications.

### Error-Free Assembly



- The TMT ferrule is keyed to the MMC housing for error-free assembly

### MMC Engagement Length



- Long engagement length of precision features ensures mated ferrule stability, allowing a single latch design for maintaining industry standard 250 $\mu$ m pitch optical interface.

## MPO-LC (12-CORE)

### CODE STANDARDS

**MP-SCA-S-09-Z-A**

| A-SIDE CONNECTOR TYPE |      | B-SIDE CONNECTOR TYPE |        | CORE COUNT |         | FANOUT DIAMETER |     | MATERIALS |      | OPTICAL FIBER TYPE |         |
|-----------------------|------|-----------------------|--------|------------|---------|-----------------|-----|-----------|------|--------------------|---------|
| MP                    | MPO  | LCU                   | LC/UPC | S          | simplex | 09              | 0.9 | Z         | LSZH | A                  | G652D   |
| MT                    | MTP  | LCA                   | LC/APC | D          | duplex  | 12              | 1.2 | V         | PVC  | B                  | G657A1  |
| MJ                    | MTRJ |                       |        |            |         | 16              | 1.6 | O         | OFNP | C                  | G657A2  |
|                       |      |                       |        |            |         | 20              | 2.0 |           |      | D                  | G657B3  |
|                       |      |                       |        |            |         | 30              | 3.0 |           |      | E                  | G655    |
|                       |      |                       |        |            |         |                 |     |           |      | F                  | OM1     |
|                       |      |                       |        |            |         |                 |     |           |      | G                  | OM2     |
|                       |      |                       |        |            |         |                 |     |           |      | H                  | OM3-150 |
|                       |      |                       |        |            |         |                 |     |           |      | J                  | OM3-300 |

**Note:** Custom lengths available to meet your requirements.

### MPO-TYPE FIBRE OPTIC CONNECTOR PATCH CORD



Mini-Cable / Ribbon Cable with  
(Breakout Cable) 2.0/3.0mm Furcation



Mini-Cable / Ribbon Cable with  
(Breakout Cable) 0.9mm Furcation



MPO/MTP-0.9mm Furcation

## OPTICAL DATA

|                       |                          |                       |                                |
|-----------------------|--------------------------|-----------------------|--------------------------------|
| Connector A           | MPO                      | Connector B           | LC                             |
| Patch Cord Type       | Trunk/Branch Patch Cord  | Fiber Count           | 2-72 Core                      |
| MPO Loss Grade        | Standard Loss / Low Loss | Ferrule End-Face Type | Single-Mode APC / Multimode PC |
| IL (Typical Value)    | 0.1/0.2dB                | RL (return loss)      | ≥20dB (MM) ; ≥60dB             |
| RL (return loss)      | ≥20dB (MM) ; ≥60dB (SM)  | IL (Max.)             | 0.35/0.6dB                     |
| Cable OD              | 3.0/3.5/4.5/5.0mm        | Fiber Type            | G657A1/OM3/OM4/OM5             |
| Cable Material        | LSZH/PVC                 | Durability            | ≥ 500 cycles                   |
| Operating Temperature | -10~70°C (14to158°C)     | Storage Temperature   | -40~852°C (-40to185°C)         |

| BRANCH TYPE      | PICTURE | ENGINEERING DRAWING |
|------------------|---------|---------------------|
| Even Length      |         |                     |
| Staggered Length |         |                     |



## MPO-LC/UNIBOOT (12-CORE)

### CODE STANDARDS

**MP-SCA-S-09-Z-A**

| A-SIDE CONNECTOR TYPE |      | B-SIDE CONNECTOR TYPE |         | CORE COUNT |         | OUTER DIAMETER |     | MATERIALS |      | OPTICAL FIBER TYPE |         |
|-----------------------|------|-----------------------|---------|------------|---------|----------------|-----|-----------|------|--------------------|---------|
| MP                    | MPO  | UN                    | UNIBOOT | S          | simplex | 20             | 2.0 | Z         | LSZH | A                  | G652D   |
| MT                    | MTP  |                       |         | D          | duplex  | 30             | 3.0 | V         | PVC  | B                  | G657A1  |
| MJ                    | MTRJ |                       |         |            |         |                |     | O         | OFNP | C                  | G657A2  |
|                       |      |                       |         |            |         |                |     |           |      | D                  | G657B3  |
|                       |      |                       |         |            |         |                |     |           |      | E                  | G655    |
|                       |      |                       |         |            |         |                |     |           |      | F                  | OM1     |
|                       |      |                       |         |            |         |                |     |           |      | G                  | OM2     |
|                       |      |                       |         |            |         |                |     |           |      | H                  | OM3-150 |
|                       |      |                       |         |            |         |                |     |           |      | J                  | OM3-300 |

**Note:** Custom lengths available to meet your requirements.

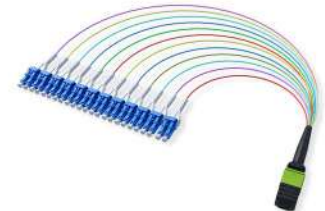
### MPO-TYPE FIBRE OPTIC CONNECTOR PATCH CORD



Ribbon Cable to MPO-LC/UNIBOOT  
2.0-3.0mm Sleeve Fanout



Ribbon Cable to MPO-LC/UNIBOOT  
0.9mm Sleeve Fanout



MPO-LC/UNIBOOT 0.9mm Furcation

## OPTICAL DATA

|                       |                          |                       |                                |
|-----------------------|--------------------------|-----------------------|--------------------------------|
| Connector A           | MPO                      | Connector B           | LC-UNIBOOT                     |
| Patch Cord Type       | Trunk/Branch Patch Cord  | Fiber Count           | 2-72 Core                      |
| MPO Loss Grade        | Standard Loss / Low Loss | Ferrule End-Face Type | Single-Mode APC / Multimode PC |
| IL (Typical Value)    | 0.1/0.2dB                | RL (return loss)      | ≥20dB (MM) ; ≥60dB             |
| RL (return loss)      | ≥20dB (MM) ; ≥60dB (SM)  | IL (Max.)             | 0.35/0.6dB                     |
| Cable OD              | 3.0/3.5/4.5/5.0mm        | Fiber Type            | G657A1/OM3/OM4/OM5             |
| Cable Material        | LSZH/PVC                 | Durability            | ≥ 500 cycles                   |
| Operating Temperature | -10~70°C (14to158°C)     | Storage Temperature   | -40~852°C (-40to185°C)         |

| BRANCH TYPE      | PICTURE | ENGINEERING DRAWING |
|------------------|---------|---------------------|
| Even Length      |         |                     |
| Staggered Length |         |                     |