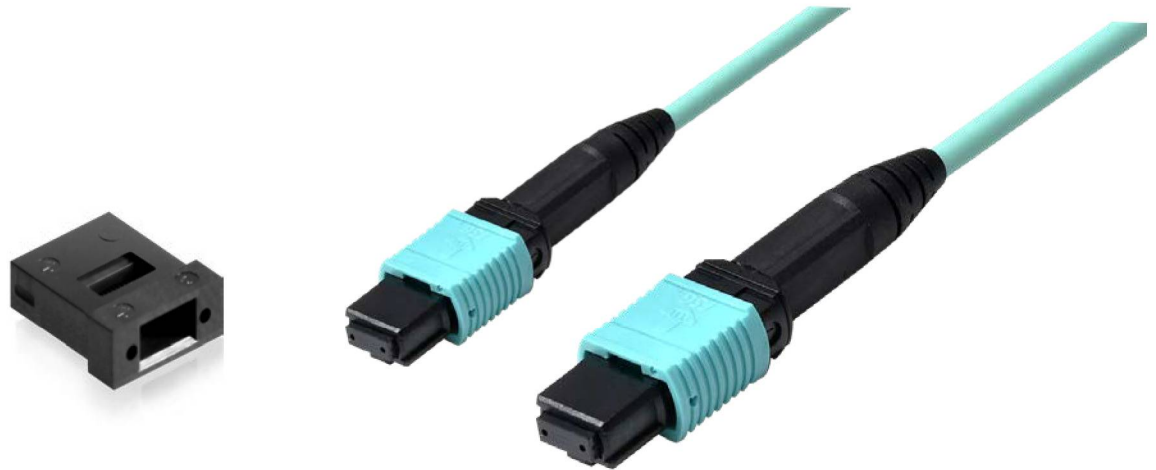


# FIBER OPTICS



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## Fiber Optics Application

- An optical fiber is a flexible, transparent fiber made by drawing glass (silica) or plastic to a diameter slightly thicker than that of a human hair. Optical fibers are used most often as a means to transmit light between the two ends of the fiber and find wide usage in fiber-optic communications, where they permit transmission over longer distances and at higher bandwidths (data rates) than electrical cables. Fibers are used instead of metal wires because signals travel along them with less loss; in addition, fibers are immune to electromagnetic interference, a problem from which metal wires suffer.

## Application

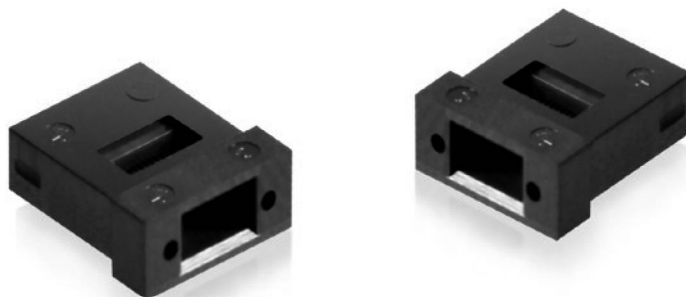
- Telecommunication
- Computer Networking
- Sensors
- Power Transmission

## Product Characteristics

- Long-distance and higher bandwidth(data rate) than electrical cable
  - Multi-mode fibers generally have a wider core diameter and are used for short-distance communication links and for applications where high power must be transmitted.
  - Single-mode fibers are used for most communication links longer than 1,000 meters.
  - MPO (Multi Push On) was developed to enable multi-fiber connectivity for higher density, higher bandwidth based applications requiring parallel or channel based optics.
- 12 and 24 fiber versions are currently used to direct connect into 40G and 100G transceivers and also used in high density fiber distribution areas.



MT/MPO Ferrule



Specification

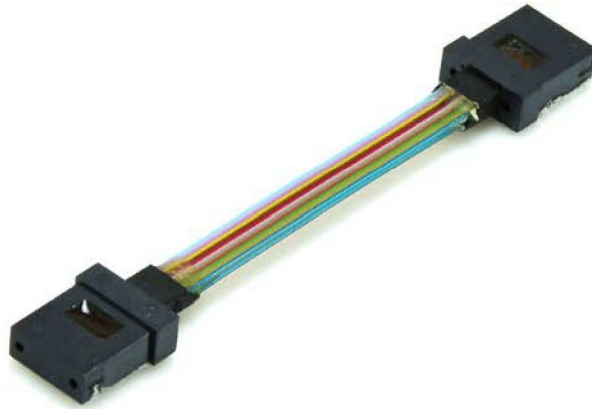
| Ferrule Hole | Type        | Hole Diameter(mm) | Guide Pin Hole Diameter(mm) | Eccentricity |
|--------------|-------------|-------------------|-----------------------------|--------------|
| 2-Fiber      | MM Standard | 0.126+0.002/-0    | 0.7±0.001                   | <0.0025      |
|              | SM Standard | 0.125+0.001/-0    | 0.7+0/-0.001                | <0.0014      |
| 4-Fiber      | MM Standard | 0.126+0.002/-0    | 0.7±0.001                   | <0.0025      |
|              | MM Low Loss | 0.126+0.001/-0    | 0.7±0.001                   | <0.0014      |
|              | SM Standard | 0.125+0.001/-0    | 0.7+0/-0.001                | <0.0014      |
| 12-Fiber     | MM Standard | 0.126+0.002/-0    | 0.7±0.001                   | <0.0025      |
|              | MM Low Loss | 0.126+0.001/-0    | 0.7+0/-0.001                | <0.0014      |
|              | SM Standard | 0.125+0.001/-0    | 0.7+0/-0.001                | <0.0014      |
|              | SM Low Loss | 0.126+0.0005/-0   | 0.699+0.0005/-0             | <0.0007      |
| 24-Fiber     | MM Standard | 0.126+0.002/-0    | 0.7±0.001                   | <0.0025      |
|              | MM Low Loss | 0.126+0.002/-0    | 0.7±0.001                   | <0.0014      |
|              | SM Standard | 0.126+0.001/-0    | 0.7+0/-0.001                | <0.0014      |
| 16-Fiber     | MM Standard | 0.125+0.001/-0    | 0.55±0.001                  | <0.0025      |
|              | MM Low Loss | 0.126+0.002/-0    | 0.55±0.001                  | <0.0014      |
|              | SM Standard | 0.126+0.001/-0    | 0.55+0/-0.001               | <0.0014      |
| 32-Fiber     | MM Standard | 0.125+0.001/-0    | 0.55±0.001                  | <0.0025      |

Optical Performance

|                | Multimode MT Ferrule               |                                    | Single-mode MT Ferrule            |
|----------------|------------------------------------|------------------------------------|-----------------------------------|
|                | Standard                           | Low Loss                           |                                   |
| Insertion Loss | 0.45 dB Typical<br>0.50 dB Maximum | 0.20 dB Typical<br>0.30 dB Maximum | 0.45 dB Typical<br>0.5 dB Maximum |
| Return Loss    | >20dB                              | >20dB                              | >50dB (8" Angle Polish)           |



## MT(F)/PC-MT(F)/PC



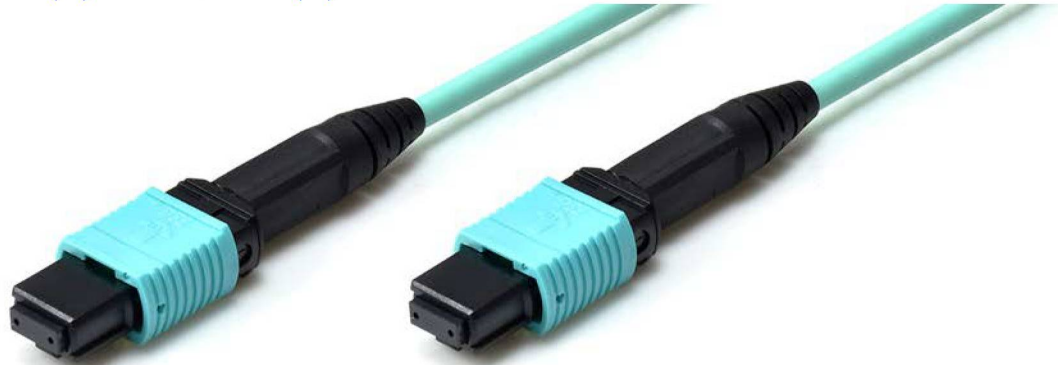
### Specification

| Description                       | MT(F)/PC-MT(F)/PC OM3 12F 38MM |
|-----------------------------------|--------------------------------|
| MT Type                           | MM/OM3                         |
| Insertion Loss                    | $\leq 0.5\text{dB}$            |
| Return Loss                       | $\geq 30\text{ dB}$            |
| Wavelength                        | 850nm                          |
| Method                            | B Type                         |
| Clean Dust Cap on Both MT Ferrule |                                |





## MPO/UPC(F)-MPO/UPC(F)



### Specification

| Description        | MPO/UPC(F)-MPO/UPC(F) MM/8F/50/125/OM3 |
|--------------------|--|
| MPO Insertion Loss | <0.7 dB                                |
| MPO Return Loss    | >20 dB                                 |
| Fiber Height       | 1000-3000 nm                           |
| Radius Long        | 500nm Min.                             |
| Radius Short       | 50nm Min.                              |
| Angle Long         | 0±0.2 deg.                             |
| Angle Short        | 0±0.2 deg.                             |
| Max. Differential  | 300nm Max.                             |
| Max. Adj. Diff     | 250nm Max.                             |
| Ferrule Height     | 7.85nm Min.                            |
| Core Dip           | -150 ~ +150 nm                         |

### Patchcord Length

| Length L | Tolerance T |
|----------|-------------|
| L < 5M   | +0.1 m/ -0  |
| 5M ≤ L   | +2% * L/ -0 |



### MPO/MPO Ferrule

|   | Description  |
|---|--|
|    | MT/MPO Ferrule<br>Ferrule Hole : 2,4,12,16,24,32 Fiber             |
|    | MPO/UPC(F)-MPO/UPC(F) Cable<br>MM/50/125/OM3<br>Cable Color : Aqua |
|    | MPO/PC(F)-MPO/PC(F) Cable<br>MM/50/125/OM4<br>Cable Color : Purple |
|  | MPO/APC(F)-MPO/APC(F) Cable<br>SM/9/125<br>Cable Color : Yellow    |



### Fiber Array

|   | Description         |
|---|---------------------|
|    | MT(F)-MT(F)         |
|    | MT(M)-FA/LC(M)*4    |
|    | MT(M)-Fiber Array*2 |
|  | MT(F)-FA/LC(M)*4    |
|  | MT(F)-MT(F)/LC(M)*4 |
|  | Fiber Array-LC(F)   |



|   | Description                      |
|---|----------------------------------|
|    | MPO/12F/APC/SM - 12*FC/UPC Cable |
|    | MPO/12F/APC/SM - 12*LC/PC Cable  |
|    | MPO/12F/APC/SM-12*LC/UPC Cable   |
|   | MPO/12F/APC/SM-12*SC/PC Cable    |
|  | SC/UPC-FC/UPC MM OM3 Cable       |
|  | LC/UPC-FC/APC SM Cable           |
|  | LC/UPC-FC/UPC SM Cable           |
|  | LC/UPC-FC/UPC MM OM3 Cable       |
|  | FC/APC-FC/APC SM Cable           |