

# Fiber Optic Patch Cable|24C FTTA Optitap MPO-MPO Waterproof Armored Outdoor Fiber Patch Cord SM G657A1 5.0mm LSZH

## Fiber Cable

UnitekFiber provide patch cord. Patch cord means that the terminations are connect at both ends of the optical cable to realize the optical path active connection. Optical Fiber Patch cord is similar to coaxial cable except that there is no mesh shield. The light-transmitting glass core is in the central. The fiber core has a diameter of 9/125um 50/125µm and 65/125 µm for SM and multi mode fiber path cord, which is roughly equivalent to the thickness of a human hair. The diameter for single mode fiber core is 8µm to 10µm. The fiber core is wrapped by a glass which is having a lower index of refraction than the core to maintain the fiber within the core.



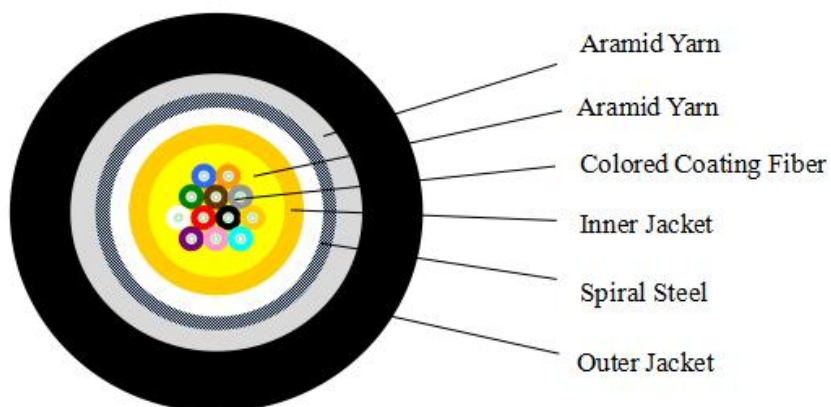
## Drawings:



## Connector Technical Parameter

| Model             |          | SM                  |
|-------------------|----------|---------------------|
| Connector A : MPO |          |                     |
| Insertion Loss    | Standard | $\leq 0.7\text{dB}$ |
| Return Loss       |          | $\geq 60\text{dB}$  |
| Test Wavelength   |          | 1310nm& 1550nm      |
| Connector B: MPO  |          |                     |
| Insertion Loss    | Standard | $\leq 0.7\text{dB}$ |
| Return Loss       |          | $\geq 60\text{dB}$  |
| Test Wavelength   |          | 1310nm& 1550nm      |

## Cable Structure Diagram



## Cable Dimensions and Constructions

| Items                 |           | Specifications                                                       |
|-----------------------|-----------|----------------------------------------------------------------------|
| Fiber Count           |           | 24                                                                   |
| Colored Coating Fiber | Dimension | $250\mu\text{m}\pm 15\mu\text{m}$                                    |
|                       | Material  | Blue、Orange、Green、Brown、Gray、White、Red、Black、Yellow、Purple、Pink、Aqua |
| Cable subunit         | Diameter  | $2.2\pm 0.1\text{ mm}$                                               |
|                       | Material  | PVC                                                                  |
|                       | Color     | Aqua                                                                 |

|                 |           |                 |
|-----------------|-----------|-----------------|
| Spiral Steel    | Dimension | 3.0±0.2mm       |
|                 | Material  | Stainless steel |
| Strength Member | Material  | Aramid Yarn     |
| Jacket          | Dimension | 5.0±0.2mm       |
|                 | Material  | TPU             |
|                 | Color     | Black           |

## Mechanical and Environmental Characteristics

| Items                      | Descriptions |            |
|----------------------------|--------------|------------|
| Crush Resistance           | short-term   | 800N/100mm |
|                            | long-term    | 400N/100mm |
| Allowable Tensile Strength | short-term   | 3000N      |
|                            | long-term    | 1000N      |
| Min.BendRadius (Dynamic)   | mm           | 10D        |
| Min.BendRadius (Static)    | mm           | 20D        |
| Impact Resistance          | 200 Impacts  |            |
| Flex Resistance            | 2000 Cycles  |            |
| OperatingTemperature       | -40 C-+ 90 C |            |
| Temperature Range          | -40 C-+ 90 C |            |

## Fiber Attenuation

### The properties of single mode optical fiber (ITU-T Rec. G.657A1)

| Characteristic                                        | condition   | data      | unit       |
|-------------------------------------------------------|-------------|-----------|------------|
| <b>Optical properties</b>                             |             |           |            |
| Attenuation                                           | 1310nm      | ≤0.35     | dB/km      |
|                                                       | 1383nm      | ≤0.35     | dB/km      |
|                                                       | 1490nm      | ≤0.23     | dB/km      |
|                                                       | 1550nm      | ≤0.22     | dB/km      |
|                                                       | 1625nm      | ≤0.23     | dB/km      |
| Relative wavelength attenuation<br>@1310nm<br>@1550nm | 1285~1330nm | ≤0.05     | dB/km      |
|                                                       | 1525~1575nm | ≤0.05     | dB/km      |
| Dispersion in the wavelength<br>range of              | 1285~1340nm | ≤3.5      | ps/(nm.km) |
|                                                       | 1550nm      | ≤18       | ps/(nm.km) |
| Zero dispersion wavelength                            |             | 1300~1324 | nm         |

|                                                             |                                                                        |               |                          |
|-------------------------------------------------------------|------------------------------------------------------------------------|---------------|--------------------------|
| A zero-dispersion slope                                     |                                                                        | $\leq 0.092$  | ps/(nm <sup>2</sup> .km) |
| Polarization Mode Dispersion Coefficient PMD                |                                                                        | $\leq 0.2$    | ps/                      |
| Single fiber maximum                                        |                                                                        | $\leq 0.1$    | ps/                      |
| Fiber link value (M=20, Q=0.01%)                            |                                                                        | 0.04          | ps/                      |
| Typical value                                               |                                                                        |               | ps/                      |
| Cable cut-off wavelength ( $\lambda_{cc}$ )                 |                                                                        | $\leq 1260$   | nm                       |
| Mode field diameter (MFD)                                   | 1310nm                                                                 | $8.8 \pm 0.4$ | $\mu\text{m}$            |
|                                                             | 1550nm                                                                 | $9.8 \pm 0.5$ | $\mu\text{m}$            |
| Attenuation discontinuities                                 | 1310nm                                                                 | $\leq 0.05$   | dB                       |
|                                                             | 1550nm                                                                 | $\leq 0.05$   | dB                       |
| <b>Geometric characteristics</b>                            |                                                                        |               |                          |
| Core diameter                                               |                                                                        | $125 \pm 0.7$ | $\mu\text{m}$            |
| Cladding roundness                                          |                                                                        | $\leq 0.7$    | %                        |
| Coating diameter                                            |                                                                        | $245 \pm 5$   | $\mu\text{m}$            |
| Coating / package concentricity error                       |                                                                        | $\leq 12.0$   | $\mu\text{m}$            |
| Core / package concentricity error                          |                                                                        | $\leq 0.5$    | $\mu\text{m}$            |
| The warpage (radius)                                        |                                                                        | $\geq 4$      | m                        |
| <b>Environmental characteristics</b> (1310nm、1550nm、1625nm) |                                                                        |               |                          |
| Temperature additional attenuation                          | $-60^{\circ}\text{C} \sim +85^{\circ}\text{C}$                         | $\leq 0.05$   | dB/km                    |
| Temperature-humidity cycle additional attenuation           | $-10^{\circ}\text{C} \sim +85^{\circ}\text{C}$ , 98% Relative humidity | $\leq 0.05$   | dB/km                    |
| Flooding additional attenuation                             | $23^{\circ}\text{C}$ , 30 days                                         | $\leq 0.05$   | dB/km                    |
| Hot and humid additional attenuation                        | $85^{\circ}\text{C}$ & 85% Relative humidity, 30 days                  | $\leq 0.05$   | dB/km                    |
| Dry heat aging                                              | $85^{\circ}\text{C}$                                                   | $\leq 0.05$   | dB/km                    |
| <b>Mechanical properties</b>                                |                                                                        |               |                          |
| Screening tension                                           |                                                                        | $\geq 9.0$    | N                        |

|                                       |                 |        |    |
|---------------------------------------|-----------------|--------|----|
| The macro bend Additional attenuation |                 |        |    |
| 10 CircleΦ30mm                        | 1550nm          | ≤0.025 | dB |
| 10 CircleΦ30mm                        | 1625nm          | ≤1.0   | dB |
| 1 CircleΦ20mm                         | 1550nm          | ≤0.75  | dB |
| 1 CircleΦ20mm                         | 1625nm          | ≤1.5   | dB |
| Coating peeling force                 | Typical average | 1.5    | N  |
| Dynamic fatigue parameters            |                 | ≥20    |    |