



LC to LC FIBER OPTIC PATCH CORD

## 1. APPLICATION

This specification covers the general requirements for fiber optic patch cord, The cables are high grade duplex cable available FR-LSZH. The patch cords are low insertion loss and high return loss. Good in repeatability and exchangeability. The patch cord shall be factory assembled with high quality control and 100% test Provide label for easily to identify. The patch cord shall be available length in 3, 5, and 10 meters or other.

LINK fiber optic patch cord support application such as 40/100Gbps Ethernet, IEEE802.3ae,10G Ethernet, IEEE802.3z,Gigabit Ethernet, Fast Ethernet, Ethernet,100BASE-F, 52/155/622Mbps and 1.2Gbps ATM, FDDI, Fiber channel and others.

LINK fiber optic patch cord in accordance with

|                              |                             |
|------------------------------|-----------------------------|
| ANSI/TIA-568-C.3             | ISO/IEC 11801:2002          |
| ANSI/TIA/EIA-568-B.3         | ISO/IEC 11801:2011 (Ed.2.2) |
| ANSI/ICEA 696, ANSI/ICEA 596 | IEC 60793, IEC 60794        |
| FOTP EIA/TIA-455             | IEC 61300-2, IEC 61300-3    |
| ITU-T G.652D (Singlemode)    | TIA/EIA-604, FOCIS 10       |
| ITU-T G.651 (Multimode)      | RoHS Compliant, EN 50173-1  |
| GR 326 CORE (Singlemode)     | UL, FR-LSZH, OFNR           |

## 2. ORDER INFORMATION

### LC to LC FIBER OPTIC PATCH CORD, DUPLEX, SIMPLEX, FR-LSZH AND OFNR

| Descriptions                         | Part Number            |                           |                         |                         |                         |
|--------------------------------------|------------------------|---------------------------|-------------------------|-------------------------|-------------------------|
|                                      | 9/125 $\mu$ m<br>(OS2) | 62.5/125 $\mu$ m<br>(OM1) | 50/125 $\mu$ m<br>(OM2) | 50/125 $\mu$ m<br>(OM3) | 50/125 $\mu$ m<br>(OM4) |
| LC to LC Patch Cord, Duplex, 3.0mm.  | UFP922D3 <u>1</u> -XX  | UFP622D3 <u>1</u> -XX     | UFP522D3 <u>1</u> -XX   | UFP422D3 <u>1</u> -XX   | UFP322D3 <u>1</u> -XX   |
| LC to LC Patch Cord, Simplex, 3.0mm. | UFP922S3 <u>1</u> -XX  | UFP622S3 <u>1</u> -XX     | UFP522S3 <u>1</u> -XX   | UFP422S3 <u>1</u> -XX   | UFP322S3 <u>1</u> -XX   |
| LC to LC Patch Cord, Duplex, 2.0mm.  | UFP922D2 <u>1</u> -XX  | UFP622D2 <u>1</u> -XX     | UFP522D2 <u>1</u> -XX   | UFP422D2 <u>1</u> -XX   | UFP322D2 <u>1</u> -XX   |
| LC to LC Patch Cord, Simplex, 2.0mm. | UFP922S2 <u>1</u> -XX  | UFP622S3 <u>1</u> -XX     | UFP522S3 <u>1</u> -XX   | UFP422S3 <u>1</u> -XX   | UFP322S3 <u>1</u> -XX   |

Y = Polish Contact, 0 : PC-PC, 1 : UPC-UPC, 2 : APC-APC, 6 : UPC-APC, 8 : APC-UPC  
XX = Length, 03 : 3 meters, 05 : 5 meters, or available on request.

## 3. OPTICAL FIBER

| Items                                |                          | Specifications                                                                  |
|--------------------------------------|--------------------------|---------------------------------------------------------------------------------|
| Fiber Type                           |                          | 9/125 $\mu\text{m}$ (OS2)                                                       |
| Max. / Typ. Attenuation              | 1310 nm                  | $\leq 0.35 / \leq 0.33$ dB/km                                                   |
|                                      | 1383 nm                  | $\leq 0.35 / \leq 0.31$ dB/km                                                   |
|                                      | 1550 nm                  | $\leq 0.21 / \leq 0.19$ dB/km                                                   |
|                                      | 1625 nm                  | $\leq 0.23 / \leq 0.20$ dB/km                                                   |
| Core                                 | Mode Field Diameter      | 9.2 $\pm$ 0.4 $\mu\text{m}$ @ 1310 nm<br>10.4 $\pm$ 0.5 $\mu\text{m}$ @ 1550 nm |
| Cladding Diameter                    |                          | 125 $\pm$ 0.7 $\mu\text{m}$                                                     |
| Coating Diameter, Primary            |                          | 242 $\pm$ 5 $\mu\text{m}$                                                       |
| Coating Diameter, Secondary          |                          | 250 $\pm$ 5 $\mu\text{m}$                                                       |
| Cladding Non-circularity             |                          | $\leq 0.7$ %                                                                    |
| Core/Cladding Concentricity error    |                          | $\leq 0.5$ $\mu\text{m}$                                                        |
| Coating/Cladding Concentricity error |                          | $\leq 12$ $\mu\text{m}$                                                         |
| Zero Dispersion Wavelength           |                          | 1300 ~ 1324 nm                                                                  |
| Zero Dispersion Slope                |                          | $\leq 0.092$ ps/(nm <sup>2</sup> .km)                                           |
| Cut-off Wavelength                   | $\lambda_o$ (Fiber)      | 1150 ~ 1330 nm                                                                  |
|                                      | $\lambda_\infty$ (Cable) | $\leq 1260$ nm                                                                  |
| Proof Test Stress                    |                          | 100 Kpsi                                                                        |
| Chromatic Dispersion                 | $\lambda$ ; 1285~1340nm  | $\leq 3.5$ ps/nm.km                                                             |
|                                      | $\lambda$ = 1550nm       | $\leq 18$ ps/nm.km                                                              |
|                                      | $\lambda$ = 1625nm       | $\leq 22$ ps/nm.km                                                              |
| Polarization mode dispersion (PMD)   |                          | $\leq 0.20$ ps/ $\sqrt{\text{km}}$                                              |
| Fiber Curl                           |                          | $\geq 4$ M                                                                      |
| Numerical Aperture                   |                          | 0.130 $\pm$ 0.010                                                               |
| Group refractive index               | 1310nm                   | 1.4676                                                                          |
|                                      | 1550nm                   | 1.4682                                                                          |

**Table 1** The Optical, Geometrical Performance of the Singlemode Fiber (The specification conforms to the requirement of ISO/IEC11801, ANSI/TIA-568-C.3, IEC 60793-2B1.3, ITU-T G.652D)

| Items                                                  |         | Specifications                  |                               |                               |                               |
|--------------------------------------------------------|---------|---------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Fiber Type                                             |         | 62.5/125 $\mu\text{m}$<br>(OM1) | 50/125 $\mu\text{m}$<br>(OM2) | 50/125 $\mu\text{m}$<br>(OM3) | 50/125 $\mu\text{m}$<br>(OM4) |
| Max./ Typ. Attenuation (dB/km)                         | 850 nm  | $\leq 3.0 / \leq 2.7$           | $\leq 2.7 / \leq 2.5$         | $\leq 2.7 / \leq 2.3$         | $\leq 2.7 / \leq 2.3$         |
|                                                        | 1300 nm | $\leq 0.8 / \leq 0.6$           | $\leq 0.8 / \leq 0.7$         | $\leq 0.8 / \leq 0.6$         | $\leq 0.8 / \leq 0.6$         |
| Bandwidth (MHz/km)                                     | 850 nm  | $\geq 200$                      | $\geq 500$                    | $\geq 1500$                   | $\geq 3500$                   |
|                                                        | 1300 nm | $\geq 600$                      | $\geq 500$                    | $\geq 500$                    | $\geq 500$                    |
| 850nm Laser Bandwidth (MHz/km)                         |         | N.A                             | N.A                           | $\geq 2000$                   | $\geq 4700$                   |
| Core Diameter ( $\mu\text{m}$ )                        |         | 62.5 $\pm$ 2.5                  | 50.0 $\pm$ 2.5                | 50.0 $\pm$ 2.5                | 50.0 $\pm$ 2.5                |
| Cladding Diameter ( $\mu\text{m}$ )                    |         | 125 $\pm$ 1                     | 125 $\pm$ 1                   | 125 $\pm$ 1                   | 125 $\pm$ 1                   |
| Core Non-circularity (%)                               |         | $\leq 5$                        | $\leq 5$                      | $\leq 5$                      | $\leq 5$                      |
| Cladding Non-circularity (%)                           |         | $\leq 1.0$                      | $\leq 1.0$                    | $\leq 1.0$                    | $\leq 1.0$                    |
| Core/Cladding Concentricity error ( $\mu\text{m}$ )    |         | $\leq 1.5$                      | $\leq 1.5$                    | $\leq 1.5$                    | $\leq 1.5$                    |
| Coating Diameter, Primary ( $\mu\text{m}$ )            |         | 242 $\pm$ 5                     | 242 $\pm$ 5                   | 242 $\pm$ 5                   | 242 $\pm$ 5                   |
| Coating Diameter, Secondary ( $\mu\text{m}$ )          |         | 250 $\pm$ 5                     | 250 $\pm$ 5                   | 250 $\pm$ 5                   | 250 $\pm$ 5                   |
| Coating Non-Circularity (%)                            |         | $\leq 5$                        | $\leq 5$                      | $\leq 5$                      | $\leq 5$                      |
| Coating/Cladding Concentricity error ( $\mu\text{m}$ ) |         | $\leq 12$                       | $\leq 12$                     | $\leq 12$                     | $\leq 12$                     |
| Proof Test Stress (kpsi)                               |         | 100                             | 100                           | 100                           | 100                           |
| Bending Loss @ 850 & 1300 nm (100 turns, D=75 mm)      |         | $\leq 0.5$ dB                   | $\leq 0.5$ dB                 | $\leq 0.5$ dB                 | $\leq 0.5$ dB                 |
| Zero-Dispersion Wavelength                             |         | 1332~1354nm                     | 1295~1315nm                   | 1295~1315nm                   | 1295~1315nm                   |
| Zero-Dispersion Slope (ps/(nm <sup>2</sup> .km))       |         | $\leq 0.097$                    | $\leq 0.101$                  | $\leq 0.101$                  | $\leq 0.101$                  |
| Numerical Aperture                                     |         | 0.275 $\pm$ 0.015               | 0.200 $\pm$ 0.015             | 0.200 $\pm$ 0.015             | 0.200 $\pm$ 0.015             |
| Group refractive index                                 | 850nm   | 1.496                           | 1.482                         | 1.482                         | 1.482                         |
|                                                        | 1300nm  | 1.491                           | 1.477                         | 1.477                         | 1.477                         |

**Table 2** The optical, Geometrical Performance of the Multimode Fiber (The specification conforms to the requirement of ISO/IEC11801, ANSI/TIA-568-C.3, IEC 60793-2A1a, IEC 60793-2A1b, ITU -T G.651)

#### 4. PATCH CORD CONSTRUCTIONS AND MECHANICAL

The construction of the patch cord shall be in accordance with Table 3 below.

| Items                    | Specifications                 |
|--------------------------|--------------------------------|
| Ferrule                  | Zirconia ceramic, Pre-radiused |
| Boot                     | Thermoplastic, UL 94-0         |
| LC Housing               | PBT, Thermoplastic, UL 94V-0   |
| Jacket                   | FR-LSZH and OFNR (UL-1666)     |
| Cable Diameter(Approx.)  | 3.0 mm.                        |
| Cable Diameter (Approx.) | 2.0 mm.                        |
| Pulling Force            | 200 N                          |
| Minimum Bending Radius   | 30 mm.                         |

**Table 3** Construction and Mechanical of fiber optic patch cord.

#### 5. PERFORMANCE

| Items          |      | SINGLEMODE<br>(OS2) | MULTIMODE<br>(OM1, OM2, OM3, OM4) |
|----------------|------|---------------------|-----------------------------------|
| Insertion Loss | Typ. | $\leq 0.15$ dB      | $\leq 0.15$ dB                    |
|                | Max. | $\leq 0.30$ dB      | $\leq 0.30$ dB                    |
| Return Loss    | UPC  | $\geq 50$ dB        | $\geq 20$ dB                      |
|                | APC  | $\geq 60$ dB        | -                                 |

#### 6. TEMPERATURE RANGE

- Operation Temperature : -40°C to 85°C
- Storage/Shipping Temperature : -40°C to 85°C

- END OF SPECIFICATION -