

**LanPlus+**

**LanPlus 2F Drop Outdoor**

FRP. SMW, LSZH, Black, 1000m

SKU: LP-2FO-SMWFLB-1000

## Product Description

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The optical fiber unit is positioned in the centre. Two parallel Fiber Reinforced Plastics (FRP) are placed at the two sides. A steel wire as the additional strength member is also applied. Then the cable is completed with a black or color LSZH sheath.

## Product Features

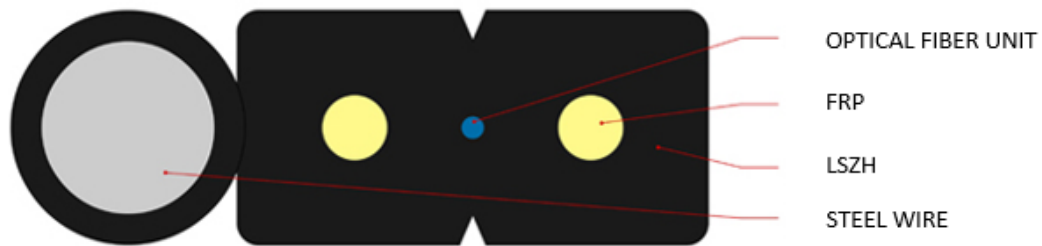
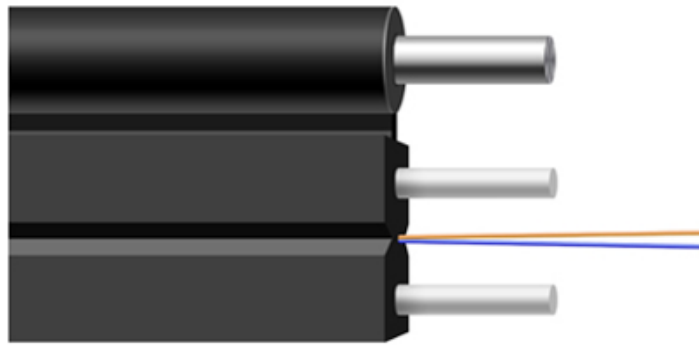
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- Special low-bend-sensitivity fiber provides high bandwidth and excellent communication transmission property
- Two parallel FRP strength members ensure good performance of crush resistance to protect the fiber
- Single steel wire or messengers as the additional strength member ensures good performance of tensile strength
- Simple structure, light weight and high practicability
- Novel flute design, easily strip and splice, simplify the installation and maintenance
- Low smoke, zero halogen and flame retardant sheath

## Product Standards

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- Complies with Standard YD/T 1997-2009



## Cable structure and parameters

|                                   |                            |                                |      |
|-----------------------------------|----------------------------|--------------------------------|------|
| No. of optical fiber              |                            | <b>2</b>                       |      |
| Optical Fiber Model               |                            | G.657A1                        |      |
| Fiber color                       |                            | Blue/Orange                    |      |
| Strength member                   | Material                   | FRP (Fiber Reinforced Plastic) |      |
|                                   | Diameter ( $\pm 0.03$ ) mm | 0.50                           |      |
|                                   | No.                        | 2pcs                           |      |
| Messenger                         | Material                   | FRP (Fiber Reinforced Plastic) |      |
|                                   | Diameter ( $\pm 0.03$ ) mm | 1.0                            |      |
| Outer Jacket                      | Material                   | LSZH                           |      |
|                                   | Color                      | Black                          |      |
| Cable size ( $\pm 0.2$ ) mm       |                            | 2.0 $\times$ 5.0               |      |
| Cable Weight ( $\pm 2$ ) kg/km    |                            | 20                             |      |
| Allowable Tensile Strength        | Short Term                 | N                              | 600  |
|                                   | Long Term                  |                                | 300  |
| Allowable Crush Resistance        | Short Term                 | N/100mm                        | 2200 |
|                                   | Long Term                  |                                | 1000 |
| Min. bending radius               | Without Tension            | 10 $\times$ Cable- $\phi$      |      |
|                                   | Under Maximum Tension      | 20 $\times$ Cable- $\phi$      |      |
| Temperature range ( $^{\circ}$ C) | Installation               | -20~+60                        |      |
|                                   | Transport&Storage          | -40~+70                        |      |
|                                   | Operation                  | -40~+70                        |      |

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

| Characteristic  | condition                               | data          | unit                     |
|---|---|---------------|--------------------------|
| <b>Optical properties</b>   |   |               |                          |
| Attenuation   | 1310nm                                  | $\leq 0.35$   | dB/km                    |
|   | 1383nm                                  | $\leq 0.35$   | dB/km                    |
|   | 1490nm                                  | $\leq 0.23$   | dB/km                    |
|   | 1550nm                                  | $\leq 0.22$   | dB/km                    |
|   | 1625nm                                  | $\leq 0.23$   | dB/km                    |
| Relative wavelength<br>attenuation<br>@1310nm<br>@1550nm  | 1285 ~ 1330nm                           | $\leq 0.05$   | dB/km                    |
|   | 1525 ~ 1575nm                           | $\leq 0.05$   | dB/km                    |
| Dispersion in the wavelength<br>range of  | 1285 ~ 1340nm                           | $\leq 3.5$    | ps/(nm.km)               |
|   | 1550nm                                  | $\leq 18$     | 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<br>Coefficient PMD<br>Single fiber maximum<br>Fiber link value (M=20,<br>Q=0.01%)<br>Typical value |   | $\leq 0.2$    | ps/                      |
|   |   | $\leq 0.1$    | ps/                      |
|   |   | 0.04          | ps/                      |
|   |   |               | 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<br>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 (1310nm, 1550nm, 1625nm)</b>   |   |               |                          |
| Temperature additional<br>attenuation   | -60°C ~ +85°C                           | $\leq 0.05$   | dB/km                    |
| Temperature-humidity cycle<br>additional attenuation  | -10°C ~ +85°C, 98%<br>Relative humidity | $\leq 0.05$   | dB/km                    |
| Flooding additional attenuation   | 23°C, 30 days                           | $\leq 0.05$   | dB/km                    |
| Hot and humid additional  | 85°C 和 85% Relative                     | $\leq 0.05$   | dB/km                    |

|                                       |                   |        |       |
|---------------------------------------|-------------------|--------|-------|
| attenuation                           | humidity, 30 days |        |       |
| Dry heat aging                        | 85°C              | ≤0.05  | dB/km |
| <b>Mechanical properties</b>          |                   |        |       |
| Screening tension                     |                   | ≥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    |       |

## Main mechanical & environmental performance test

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| Item   | Test Method  | Acceptance Condition  |
|--|--|---|
| Tensile Strength<br>IEC 794-1-2-E1             | - Load: Short term tension<br>- Length of cable: about 50m   | - Fiber strain ≤ 0.36%<br>- Loss change ≤ 0.1 dB @1550 nm<br>- No fiber break and no sheath damage. |
| Crush Test<br>IEC 60794-1-2-E3                 | - Load: Short term crush<br>- Load time: 1min  | - Loss change ≤ 0.05dB@1550nm<br>- No fiber break and no sheath damage.                             |
| Impact Test<br>IEC 60794-1-2-E4                | - Points of impact: 3<br>- Times of per point: 1<br>- Impact energy: 5J                                    | - Loss change ≤ 0.1dB@1550nm<br>- No fiber break and no sheath damage.                              |
| Temperature Cycling Test<br>YD/T901-2001-4.4.1 | - Temperature step:<br>+20°C→-40°C→+70°C<br>→+20°C<br>- Time per each step: 12 hrs<br>- Number of cycle: 2 | - Loss change ≤ 0.05 dB/km@1550 nm<br>- No fiber break and no sheath damage.                        |