

**PRODUCT INFO / 2021**

- Pigtail & Patch Cord
- Fiber Adapter
- Fiber Attenuator
- Fiber Splitter & Coupler
- Field Assembly Connector
- Fusion Splice Protective Sleeve
- Splice Tray
- Open Rack
- Wall Rack & Closed Rack Cabinet
- Outdoor Cabinet & OFCCC
- Fiber Distribution Frame
- Fiber Enclosure & Termination Box
- Optical Fiber Cable (OFC)
- LAN Cable (UTP & STP)
- SFP & XFP
- Media Converter
- Industrial Ethernet Switch
- Fusion Splicing Machine
- Test Equipment
- Mechanical Splicer
- EFLEX
- Pipe and Conduit
- Other Accessories

บริษัท บายลอสส์ จำกัด  
BYE LOSS COMPANY LIMITED

[www.byeloss.com](http://www.byeloss.com)

2/1 Soi Pho Kao 3 Yaek 22,  
Klongchan, Bangkok, 10240 THAILAND

M: +666 1982 9328 T: +66 2075 6843 F: +66 2075 6843  
eMail: [byeloss2012@gmail.com](mailto:byeloss2012@gmail.com)

**OVERVIEW:**

**BYE LOSS** was founded by a group of dynamic people who have ever accumulated a lot of experience in TELECOM & IT industries to be the unique company on November 8<sup>th</sup>, 2012 to completely support our TARGET CUSTOMER GROUP and perfectly fulfill by our SMART RESOURCES and ACTIONS.

Our positioning is “SMART WORK” and “CUSTOMER SATISFACTION”

**PURPOSE:**

To ROUTE your OPTICAL FIBER NETWORK be SMOOTH and HIGH SPEED by “BYE LOSS”, so

- We work smart closely with you
- We propose quality assurance
- We complete your requirement by various solutions of OEM, ODM and OBM

**MISSION:**

Route iT! to smooth iNFO.

**VISION:**

WORK SMART with the Target Group of TELECOM SERVICE PROVIDERs (TSP) and TURNKEY CONTRACTORs

by INNOVATION MANAGEMENT and QUALITY ASSURANCE

to ACHIEVE their MIND Share, MARKET Share and HEART Share.

**VALUES:**

SMART Work → SMOOTH Jobs ∴ SATISFIED Customers → SUSTAINABLE Company

**CULTURE:**

**“B-Y-E-L-O-S-S”**

|                 |   |
|-----------------|---|
| B: Broad,       | Broad Vision (วิสัยทัศน์กว้างไกล)       |
| Y: Young,       | Young Brain (สมองสดใสพร้อมเติมเต็ม)     |
| E: Excellent,   | Excellent Thinking (เข้มข้นทางความคิด)  |
| L: Loyal,       | Loyal Heart (มีจิตใจซื่อสัตย์)          |
| O: Opportune,   | Opportune Biz (เร่งรัดโอกาสธุรกิจ)      |
| S: Smart,       | Smart Work (พิชิตงานอย่างชาญฉลาด)       |
| S: Sustainable, | Sustainable Company (เก่งกาจดำรงองค์กร) |

**SLOGAN:**

*everything's smooth*

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**OPTICAL FIBER PIGTAIL AND PATCH CORD**



Pigtail, SM, Dia 0.9mm



Patch Cord, Simplex, SM, Dia 2.0/2.4/3.0mm

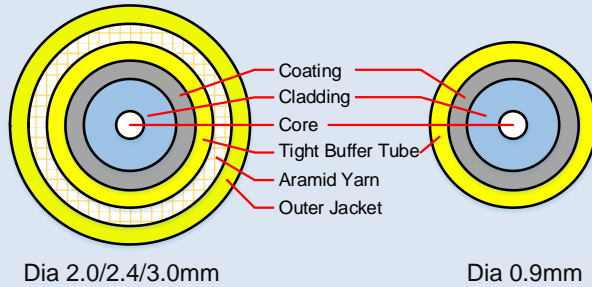


Pigtail, SM, Dia 2.0/2.4/3.0mm



Patch Cord, Duplex, MM, Dia 2.0/2.4/3.0mm

**Fiber Cord Structure:**



**Availability:**

- Various Pigtailed, Patch Cords and Fan-outs
- Various Fiber Connector Types (FC, SC, LC, ST, DIN, E2000, D4, MU, MTRJ, SMA, etc.)
- Various Connector Boot Colors and Types (Short, Long, Angle)
- Ferrule Polishing Type Selectability (PC, UPC and APC)
- Various Fiber Cord Diameters (0.9, 2.0, 2.4, 3.0mm)
- Various Simplex, Duplex and Multi-Cores Cables
- Various Fiber Cord Lengths (m), such as 1, 1.5, 3, 5, 10, etc.
- Single Mode (SM) or Multi Mode (MM) Selectability
- Identifiable Cable Jacket Marking (Depend on MOQ)

**Applications:**

- FTTx Applications
- Telecommunication Networks
- Gigabit Ethernet (LAN & WAN)
- Active Device Termination
- Data processing networks
- Multimedia, Video and CCTV
- Industrial, Mechanical and Military
- Premise Installations
- Test Equipment

**Features:**

- Low Insertion Loss
- High Reflection Loss
- High Temperature Stability
- High Quality Ceramic Ferrule
- Low Cost
- Good Durability
- Easy of Installation and Using
- Compliant with IEC Standard 61753-1 and Telecordia GR-326 (SM) & GR-1435 (MM)

**SPECIFICATION:**

| •Optical Fiber Cord                                   | Type      | Simplex, Duplex and Multi Core  |                                 |  | Remark                  |
|---|-----------|---|---------------------------------|--|-------------------------|
| Optical Fiber Characteristic & International Standard |           | Multi Mode (MM)   |                                 | Single Mode (SM)                           |                         |
|   |           | TIA. OM1  | TIA. OM2, OM3, OM4              | ITU-T Rec. G.652D, G.655, G.657A1, G.657A2 |                         |
| Core/Cladding (Generic)                               | (µm)      | 62.5/125  | 50/125                          | 9/125                                      |                         |
| Tight Buffer Tube                                     | Material  | PBT filled with FR (Frame Retardant, UL94-V0)   |                                 |  |                         |
|   | Color     | Orange  | Orange (OM2)<br>Aqua (OM3, OM4) | Yellow                                     | Or custom specification |
|   |           | (or specification)  |                                 |  |                         |
| Outer Jacket  | Material  | PE filled with FR (UL94-V0), LSZH (Low Smoke and Zero Halogen)                                  |                                 |  |                         |
|   | Color     | Orange  | Orange (OM2)<br>Aqua (OM3, OM4) | Yellow                                     | Or custom specification |
|   |           | (or specification)  |                                 |  |                         |
| •Optical Fiber Connector                              | Material  | Metallic Part: Ni Plated Brass or Stainless Steel<br>Plastic Part: PBT filled with FR (UL94-V0) |                                 |  |                         |
|   | Type      | FC, SC, LC, ST, DIN, E-2000, D4, MU, MTRJ, SMA, etc.  |                                 |  |                         |
| Ferrule   | Material  | Zirconia Ceramic  |                                 |  |                         |
|   | Polishing | UPC   | UPC                             | APC  |                         |
| •Insertion Loss (IL)                                  | (dB)      | ≤ 0.3   | ≤ 0.2                           | ≤ 0.2                                      | IEC61300-3-34 Met.2     |
| •Return Loss (RL)                                     | (dB)      | ≥35   | ≥50                             | ≥60  | IEC61300-3-6            |
| •Operating Temperature                                | (°C)      | -40 to +85  |                                 |  |                         |
| •Mating Durability                                    | (Time)    | >1,000  |                                 |  | IEC61300-3-2            |

**OPTICAL FIBER ADAPTER**

**Applications:**

- FTTx Applications
- Telecommunication Networks
- Gigabit Ethernet (LAN & WAN)
- Active Device Termination
- Data processing networks
- Multimedia, Video and CCTV
- Industrial, Mechanical and Military
- Premise Installations
- Test Equipment

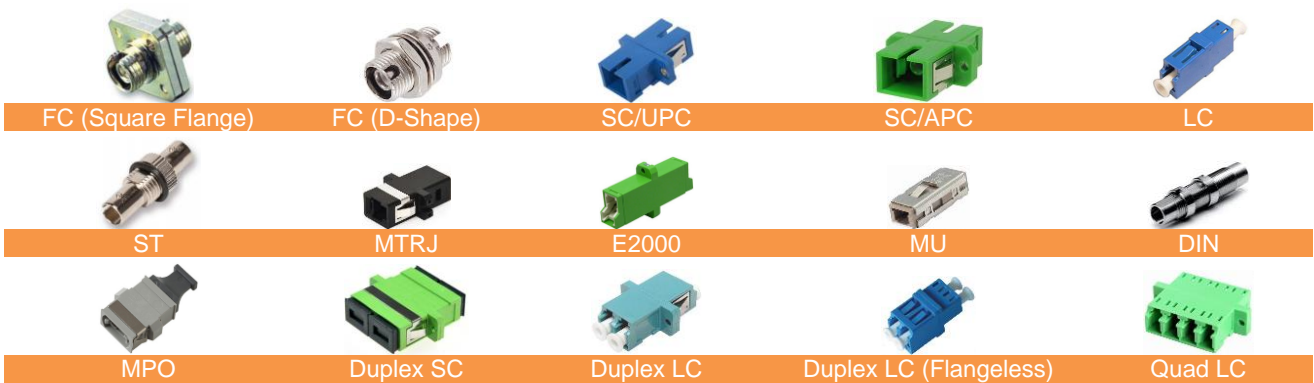
**Features:**

- Compatible with Connector Type
- Low Insertion Loss
- High Reflection Loss
- High Precision Alignment
- High Temperature Stability
- High Quality Sleeve Material
- Low Cost
- Good Durability
- Easy of Installation and Using
- Compliant with TIA/EIA-568-B.3

**Availability:**

- Option for Polishing Type (UPC and APC)
- Option for Tough Adapter or Hybrid Adapter
- Option for Single Mode (SM) or Multi Mode (MM)
- Option for Female-Female (F-F) or Male-Female (M-F) Type
- Various Simplex and Duplex Types
- Various Mounting Configurations
- Choice for Sleeve Materials, Zirconia Ceramic or Phosphor Bronze Type
- Choice of Housing Shape and Color
- Special Flangeless Housing for SC, LC
- Special Shetter Dust Cover

**THROUGH ADAPTER**



**HYBRID ADAPTER (Female - Female)**



**HYBRID ADAPTER (Male - Female)**



**SPECIFICATION:**

|                              |          |   |
|------------------------------|----------|---|
| <b>Insertion Loss (IL)</b>   | (dB)     | ≤ 0.15  |
| <b>Operating Temperature</b> | (°C)     | -40 to +85  |
| <b>Mating Durability</b>     | (Time)   | >1,000  |
| <b>Material</b>              | Metallic | Ni Plated Brass or Better Corrosion Resistance Material |
|                              | Plastic  | PBT filled with FR                                      |

**Note:** Return Loss (RL) is depended on Ferrule of Connector Polishing (UPC or APC),  
UPC ≥ 50dB, APC ≥ 60dB



Option: Shutter Dust Cap

**OPTICAL FIBER ATTENUATOR**

**Applications:**

- FTTx Applications
- Telecommunication Networks
- Gigabit Ethernet (LAN & WAN)
- Active Device Termination
- Data processing networks
- Multimedia, Video and CCTV
- Industrial, Mechanical and Military
- Premise Installations
- Test Equipment

**Features:**

- Fixed Attenuator Type
- Variable Attenuation and Connector Types
- Low Insertion Loss Deviation
- Easy to Handle
- Environmental Stable
- Customer Defined Specifications
- Has Dust Cap on Both Sides
- Suitable for Various Fiber Types, MM, SM

**Availability:**

- Option for Ferrule Polishing Type (UPC and APC)
- Option for Single Mode (SM) or Multi Mode (MM)
- Option for Tough Adapter or Hybrid Adapter
- Male-Female (M-F) or Female-Female (F-F) Type
- Various Simplex and Duplex Types
- Choice of Housing Shape and Color

**MALE - FEMALE (M-F)**



FC



SC



LC



ST

**HYBRID ADAPTER (Female - Female)**



FC



SC



LC



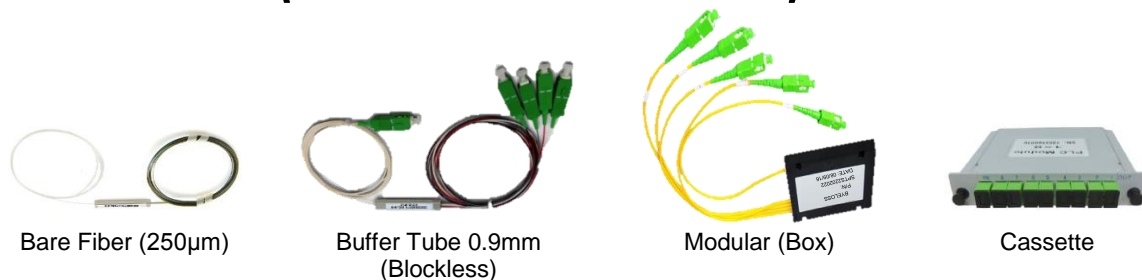
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*Remark: Other types as per requirement*

**SPECIFICATION:**

|                                    |   |
|------------------------------------|---|
| <b>Material</b>                    | Metal part: Corrosion resistance material   |
|                                    | Plastic part: Flame Retardant (UL94-V0) material                                      |
| <b>Mating Durability</b>           | 1000 Times (IEC 61300-2-2)  |
| <b>Attenuation Range</b>           | 0-35dB  |
| <b>Available Wavelength</b>        | 1310nm or 1550nm  |
| <b>Fixed Attenuation Value</b>     | 1, 2, 3, 4, 5, 10, 15, 20, 25, 30, 35dB   |
| <b>Attenuation Tolerance (AT)</b>  | 1,2,3,4,5dB = ±0.75dB, 10dB = ±1.50dB, 15dB = ±2.25dB, 20dB = ±3.00dB (IEC 61300-3-5) |
| <b>Return Loss (RL)</b>            | ≥50 dB (UPC) ≥60 dB (APC) (IEC 61300-3-6 Method 1)                                    |
| <b>Polarization Dependent Loss</b> | ≤0.2dB according to GR-910 CORE   |
| <b>Temperature Range</b>           | -40°C ~ +80°C   |
| <b>Humidity Range</b>              | +/- 0.2 dB change in 10% to 90% relative Humidity Range                               |
| <b>Vibration</b>                   | ≤0.1 dB change between 10Hz to 55Hz   |
| <b>Drop</b>                        | +/- 0.2dB after 8 drops (3 axes) from 1.8 meters onto a hard surface                  |
| <b>Operating Wavelength</b>        | SM: 1200—1625nm or 1310nm, 1550nm MM: 850nm, 1300nm                                   |
| <b>Attenuation Accuracy</b>        | +/-0.3 (1-10dB) +/-1.0 (11-30dB)  |
| <b>Maximum Optical Input Power</b> | 250mW   |

## PLC (PLANAR LIGHTWAVE CIRCUIT) SPLITTER



### Applications:

- FTTH Network
- FTTx Deployment
- Data Communications
- LAN and CATV System
- Optical Signal Distribution
- DWDM and CWDM Systems
- Passive Optical Networks (PON)
- Measuring System and Laser System

### Features:

- Planar Lightwave Circuit (PLC) Technology
- High Reliability and High Performance for both Fiber Array and Splitter Chip Materials
- For Indoor and Outdoor use
- Bidirection transmission and Fiber signal distribution has more than 1 service point
- Various types of Fiber signal splitting ratio
- Various Splitter types for compatible Tray, Closure, Terminal (SDP, SDP-T), Rack, FDF, OFCCC and Installation Application
- Easy for handling, Installation and Fiber access during installation and Maintenance
- Non-Toxic and Non-Hazardous Materials. Metallic Parts are antirust
- No sharp edges, corners, burrs or other hazardous points to damage fibers or injure craftsmen
- Fiber is used for this splitter conforms to ITU-T Rec. G.657A1 or G.657A2 (Custom specification), Fiber Color Identification accords with EIA/TIA-598-A and lifetime, Standard Fiber length or custom
- Selectable Fiber Connector Type termination, such as FC, SC, LC, etc (UPC or APC Ferrule polishing)
- Complied with Telecordia GR-1221 (Test) & GR-1209 Criteria (IL, RL, PDL)

### SPECIFICATION:

| Item                    |    | 1x2  | 1x4  | 1x8   | 1x16  | 1x32  | 1x64  | Remark                             |
|-------------------------|----|--|------|-------|-------|-------|-------|------------------------------------|
| Fiber Type              |    | ITU-T Recommendation G.657.A2 (or Specify) |      |       |       |       |       | Refer to ITU-T Rec.                |
| Working Wavelength      | nm | 1260 ~1650                                 |      |       |       |       |       |                                    |
| Standard Insertion Loss | dB | ≤4.0                                       | ≤7.2 | ≤10.4 | ≤13.7 | ≤16.9 | ≤20.5 | Refer to IEC 61300-3-5*            |
| Uniformity              | dB | ≤0.6                                       | ≤0.6 | ≤0.8  | ≤1.0  | ≤1.5  | ≤2.0  | Refer to IEC 61300-3-5*            |
| PDL                     | dB | ≤0.2                                       | ≤0.2 | ≤0.2  | ≤0.2  | ≤0.2  | ≤0.2  | Refer to IEC 61300-3-2 Opt.1 Met.A |
| Return Loss             | dB | ≥55 (SC/APC, LC/APC)                       |      |       |       |       |       | Refer to IEC 61300-3-6 Met.A       |
| Directivity             | dB | ≥55 (SC/APC, LC/APC)                       |      |       |       |       |       | Refer to IEC 61300-3-20            |
| Operating Temperature   | °C | -40 ~ +85                                  |      |       |       |       |       |                                    |
| Item                    |    | 2x2  | 2x4  | 2x8   | 2x16  | 2x32  | 2x64  | Remark                             |
| Fiber Type              |    | ITU-T Recommendation G.657.A2 (or Specify) |      |       |       |       |       | Refer to ITU-T Rec.                |
| Working Wavelength      | nm | 1260 ~ 1650                                |      |       |       |       |       | O, S, C, L Band                    |
| Standard Insertion Loss | dB | ≤4.2                                       | ≤7.5 | ≤11.0 | ≤14.2 | ≤17.4 | ≤21.0 | Refer to IEC 61300-3-5*            |
| Uniformity              | dB | ≤0.8                                       | ≤1.2 | ≤1.6  | ≤1.6  | ≤2.0  | ≤2.5  | Refer to IEC 61300-3-5*            |
| PDL                     | dB | ≤0.3                                       | ≤0.3 | ≤0.4  | ≤0.4  | ≤0.4  | ≤0.4  | Refer to IEC 61300-3-2 Opt.1 Met.A |
| Return Loss             | dB | ≥55 (SC/APC, LC/APC)                       |      |       |       |       |       | Refer to IEC 61300-3-6 Met.A       |
| Directivity             | dB | ≥55 (SC/APC, LC/APC)                       |      |       |       |       |       | Refer to IEC 61300-3-20            |
| Operating Temperature   | °C | -40 ~ +85                                  |      |       |       |       |       |                                    |

\*using cutback method as described in IEC 61300-3-4

**FIBER & CABLE STRUCTURE:**

| Splitter Type | Input Fiber  | Output Fiber  |
|---------------|--|---|
| Bare Fiber    | Dia 250 µm (or custom Dia 0.9mm)   | Dia 250 µm (Ribbon Fiber with Fiber Color Identification) |
| Buffer Tube   | Dia 0.9mm Loose Tube with Fiber Core Identification Marking  |   |
| Modular       | Dia 2.0mm (or 3.0mm) PE with UL94-V0 and LSZH Jacket, Yellow Color with Fiber Core Identification Marking (Different Cable Color for Input side)<br><b>Remark:</b> Cable Structure is Dia 0.9mm, Non-Blocking TBE Tight Buffer Tube with UL94-V0, full Aramid Yarn (no adhesion) and Outer PE Jacket |   |

**SIZE & DIMENSION:**

| Splitter Type | Size & Dimension (LxWxH mm) |            |            |            |             |             | Fiber Length (m)** |
|---------------|-----------------------------|------------|------------|------------|-------------|-------------|--------------------|
|               | 1x2                         | 1x4        | 1x8        | 1x16       | 1x32        | 1x64        |                    |
| Bare Fiber    | 40x4x4                      | 40x4x4     | 40x4x4     | 50x7x4     | 50x7x4      | 60x12x4     | 2                  |
| Buffer Tube   | 40x4x4                      | 50x7x4     | 50x7x4     | 60x12x4    | 80x20x6     | 100x40x6    | 1                  |
| Modular       | 90x20x10                    | 100x80x10  | 100x80x10  | 120x80x18  | 120x80x18   | 140x115x18  | 2                  |
| Cassette      | 130x100x25                  | 130x100x25 | 130x100x25 | 130x100x50 | 130x100x102 | 130x100x206 | N/A                |

| Splitter Type | Size & Dimension (LxWxH mm) |            |            |            |             |             | Fiber Length (m)** |
|---------------|-----------------------------|------------|------------|------------|-------------|-------------|--------------------|
|               | 2x2                         | 2x4        | 2x8        | 2x16       | 2x32        | 2x64        |                    |
| Bare Fiber    | 40x4x4                      | 40x4x4     | 40x4x4     | 50x7x4     | 50x7x4      | 60x12x4     | 2                  |
| Buffer Tube   | 40x4x4                      | 50x7x4     | 50x7x4     | 60x12x4    | 80x20x6     | 100x40x6    | 1                  |
| Modular       | 90x20x10                    | 100x80x10  | 100x80x10  | 120x80x18  | 120x80x18   | 140x115x18  | 2                  |
| Cassette      | 130x100x25                  | 130x100x25 | 130x100x25 | 130x100x50 | 130x100x102 | 130x100x206 | N/A                |

\*\*Custom length is available

**Remark:** If required

- Detail of Splitter Label indicated Trademark, Splitter ratio, Serial No., MFG. Date
- Packing 1 Set/Box with detail of Product, Supplier, others (if any)

**PERFORMANCE TEST:**

| Test Item            |                            | Method   | Criteria |
|----------------------|----------------------------|--|----------|
| Endurance            | High Temperature Storage   | +85°C, 2000 Hrs  | Pass     |
|                      | Low Temperature Storage    | -40°C, 2000 Hrs  | Pass     |
|                      | Temperature Cycle          | -40°C ~ +85°C, 500 Cycles  | Pass     |
|                      | Damp Heat                  | +85°C / 85% R.H., 2000 Hrs   | Pass     |
|                      | Cyclic Moisture Resistance | -40°C ~ +75°C (90 R.H.), 5 Cycles                                      | Pass     |
|                      | Water Immersion            | +43°C, pH 5.5, Water Height 150m, 168 Hrs                              | Pass     |
| Mechanical Integrity | Thermal Shock              | Liquid- to-Liquid, ΔT = +100°C (0°C to +100°C), 15 Cycles              | Pass     |
|                      | Mechanical Shock           | 500 G (Shock Level), 1 ms, 5 Times/Direction, 6 Directions (on 3 Axis) | Pass     |
|                      | Vibration                  | 20 G (Max Acc.), 20 ~ 2000 Hz, 4 Min/Cycle, 4 Cycles/Axis              | Pass     |
|                      | Side Pull                  | 0.23 Kg at 90° (2 Directions) for 5 Sec                                | Pass     |
|                      | Fiber Flex                 | 0.45 Kg, 30 Cycles   | Pass     |

**Remark:** Refer to Telcordia GR-1221 (Test) & GR-1209 Criteria (IL, RL, PDL)

**FIELD ASSEMBLY OPTICAL CONNECTOR (FAOC)**



LC/UPC



SC/UPC



FC/UPC

**Applications:**

- FTTx Applications
- Telecommunication Networks
- Gigabit Ethernet (LAN & WAN)
- Active Device Termination
- Data processing networks
- Multimedia, Video and CCTV
- Industrial, Mechanical and Military
- Premise Installations
- Test Equipment

**Features:**

- Low Insertion Loss
- High Reflection Loss
- High Quality Ceramic Ferrule
- High Precision Alignment
- High Temperature Stability
- High Tensile Strength
- Good Durability
- Easy Installation and Using
- Reusable Fiber Termination

**Availability:**

- Various Fiber Connector Types; FC, SC, LC
- Option for Polishing Type, UPC or APC
- For Single Mode (SM) and Multi Mode (MM) Fiber
- For Optical Fiber Drop Cable and Fiber Cord Termination
- Various Connector Boot Sizes

**SPECIFICATION:**

|                              |         |  |               |                     |
|------------------------------|---------|--|---------------|---------------------|
| <b>Insertion Loss (IL)</b>   | (dB)    | Avg. $\leq 0.3$ (Max. $\leq 0.5$ ) @ 1310nm & 1550nm |               | IEC61300-3-34 Met.2 |
| <b>Return Loss (RL)</b>      | (dB)    | UPC $\geq 50$  | APC $\geq 60$ | IEC61300-3-6        |
| <b>Material</b>              | Ferrule | Ceramic  |               |                     |
|                              | Plastic | PBT filled with FR (UL94-V0)                         |               |                     |
| <b>Mating Durability</b>     | (Time)  | $>500$ ( $\Delta IL \leq 0.2$ dB)                    |               | IEC61300-3-2        |
| <b>Operating Temperature</b> | (°C)    | -40 to +85   |               |                     |
| <b>Tensile Strength</b>      | N       | $>50$  |               |                     |
| <b>Length</b>                | (mm)    | 53   |               |                     |
| <b>Cable Size</b>            | mm      | 3.1 x 2.2  |               |                     |

**Option:** Optical Fiber Stripper (A tool is useful for fiber length measurement and stripping)



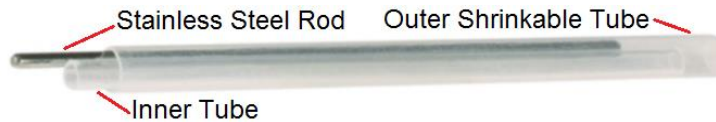


**FUSION SPLICE PROTECTIVE SLEEVE**



- Feature:**
- Single fiber splicing point protection
  - Heat-bonded assembly
  - Easy operation and reduction of the risk of mangling fiber
  - External tube clearly showing the status of connection
  - Custom lengths available

**SPECIFICATION:**

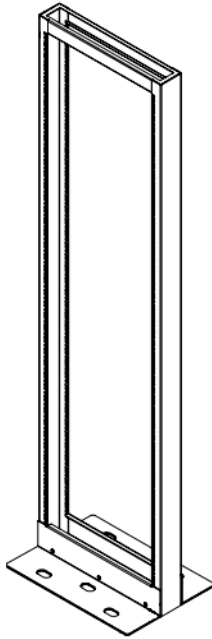


|                           |                       |                 |    |
|---------------------------|-----------------------|-----------------|----|
| Length                    | mm                    | 40              | 60 |
|                           |                       | (or specify)    |    |
| Material                  | Rod                   | Stainless Steel |    |
|                           | Inter Tube            | EVA             |    |
|                           | Outer Shrinkable Tube | PE              |    |
| Working Temperature Range |                       | -40°C – 100°C   |    |

**Option:**

- Color-coded outer tube is available

## 19" Open Rack and Wall Rack



- Conform to standard of ANSI/EIA-310D – 1992 (Rev. EIA-310-C), IEC 60297-1, IEC 60297-2, BS 5954: Part 2 และ DIN 41494
- Modular Knock Down design
- Structure is an Electro-Galvanized Steel
- Certified by ISO 9001:2008 and ISO 14001

### BL0 Series: 19" Smart Open Rack

| Series No. | Height |      |
|------------|--------|------|
|            | (U)    | (cm) |
| BL0-600036 | 36U    | 175  |
| BL0-600042 | 42U    | 202  |



### BL1 Series: 19" Smart Wall Rack

| Series No.  | Height |            | Dimension<br>WxDxH (cm) |
|-------------|--------|------------|-------------------------|
|             | (U)    | (U)        |                         |
| BL1-604006C | 6U     | 60x40x32.0 |                         |
| BL1-604006  | 6U     | 60x40x32.0 |                         |
| BL1-604009  | 9U     | 60x40x45.5 |                         |
| BL1-604012  | 12U    | 60x40x59.0 |                         |
| BL1-605006  | 6U     | 60x50x32.0 |                         |
| BL1-605009  | 9U     | 60x50x45.5 |                         |
| BL1-605012  | 12U    | 60x50x59.0 |                         |
| BL1-606006  | 06U    | 60x60x32.0 |                         |
| BL1-606009  | 09U    | 60x60x45.5 |                         |
| BL1-606012  | 12U    | 60x60x59.0 |                         |

**19" SMART RACK CABINET: BL3 Series**

- Conform to standard of ANSI/EIA-310D – 1992 (Rev. EIA-310-C), IEC 60297-1, IEC 60297-2, BS 5954: Part 2 and DIN 41494
- Modular Knock Down design
- Structure is an electro galvanized steel sheet
- Mounting Angle Pole indicate each RU high by figure.
- Front door: Steel frame with Acrylic. Door edge is bored with dust rubber seal (3 fins) and secure by Cam lock with Master keys.
- Rear door: Steel frame with Ventilate slots at bottom and cover with a moveable dust filter for cleaning. Door edge is bored with dust rubber seal (3 fins) and secure by Cam lock with Master keys.
- Side panels (Right hand side and Left hand side) are steel frame with Slide latch on the top, secure with Cam lock and Master key.
- Hinges for Front door and Rear door are high strength PVC and anti-dust.
- Roof cover supports 3" or 4" Fan (up to 3 Fans) and can be change for Vented Raised Roof.
- Castro made of black Nylon Six that is equipped on 360° swivel that is moveable conveniently, support static load 100Kg/Castor.
- Adjustable pedestal made of Black ABS is equipped with Castro and is adjustable 180° freely to suit for slope and protect all effects from static electricity and earth leakage.
- 4 Grounding wires (Green & Yellow color) are provided for Grounding system.
- Certified by ISO 9001:2008 and ISO 14001



**BL3 Series: 19" Smart Rack Cabinet**

| Series No. | Height (U) | Dimension WxDxH (cm) |
|------------|------------|----------------------|
| BL3-606015 | 15U        | 60x60x85             |
| BL3-606027 | 27U        | 60x60x139            |
| BL3-606036 | 36U        | 60x60x179            |
| BL3-606039 | 39U        | 60x60x185            |
| BL3-606042 | 42U        | 60x60x205            |
| BL3-606045 | 45U        | 60x60x218.5          |
| BL3-608015 | 15U        | 60x80x85             |
| BL3-608027 | 27U        | 60x80x139            |
| BL3-608036 | 36U        | 60x80x179            |
| BL3-608039 | 39U        | 60x80x185            |
| BL3-608042 | 42U        | 60x80x205            |
| BL3-608045 | 45U        | 60x80x218.5          |
| BL3-609027 | 27U        | 60x90x139            |
| BL3-609042 | 42U        | 60x90x205            |
| BL3-601015 | 15U        | 60x100x85            |
| BL3-601027 | 27U        | 60x100x139           |
| BL3-601036 | 36U        | 60x100x179           |
| BL3-601042 | 42U        | 60x100x205           |
| BL3-601045 | 45U        | 60x100x218.5         |
| BL3-601127 | 27U        | 60x110x139           |
| BL3-601136 | 36U        | 60x110x179           |
| BL3-601142 | 42U        | 60x110x205           |
| BL3-601145 | 45U        | 60x110x218.5         |
| BL3-808027 | 27U        | 80x80x139            |
| BL3-808042 | 42U        | 80x80x205            |
| BL3-808045 | 45U        | 80x80x218.5          |
| BL3-809027 | 27U        | 80x90x139            |
| BL3-809042 | 42U        | 80x90x205            |
| BL3-801042 | 42U        | 80x100x205           |
| BL3-801142 | 42U        | 80x110x205           |
| BL3-801145 | 45U        | 80x110x218.5         |

**19" SMART SERVER RACK: BL4 Series**

- Conform to standard of ANSI/EIA-310D – 1992 (Rev. EIA-310-C), IEC 60297-1, IEC 60297-2, BS 5954: Part 2 and DIN 41494
- Modular Knock Down design
- Structure is an electro galvanized steel sheet
- Mounting Angle Pole indicate each RU high by figure.
- Front door: Steel frame with Ventilate slots and Acrylic. Door edge is bored with dust rubber seal (3 fins) and secure by Swing handle lock.
- Rear door: Steel frame with full Ventilate slots. Door edge is bored with dust rubber seal (3 fins) and secure by Cam locks with Master keys.
- Side panels (Right hand side and Left hand side) are steel frame with Slide latch on the top, secure with Cam lock and Master key.
- Hinges for Front door and Rear door are high strength PVC and anti-dust.
- Roof cover supports 3" or 4" Fan (up to 3 Fans) and can be change for Vented Raised Roof.
- Castro made of black Nylon Six that is equipped on 360° swivel that is moveable conveniently, support static load 100Kg/Castor.
- Adjustable pedestal made of Black ABS is equipped with Castro and is adjustable 180° freely to suit for slope and protect all effects from static electricity and earth leakage.
- 4 Grounding wires (Green & Yellow color) are provided for Grounding system.
- Certified by ISO 9001:2008 and ISO 14001



Front Side

Rear Side

**BL4 Series: 19" Smart Server Rack**

| Series No. | Height (U) | Dimension WxDxH (cm) |
|------------|------------|----------------------|
| BL4-606015 | 15U        | 60x60x85             |
| BL4-606027 | 27U        | 60x60x139            |
| BL4-606036 | 36U        | 60x60x179            |
| BL4-606042 | 42U        | 60x60x205            |
| BL4-608015 | 15U        | 60x80x85             |
| BL4-608027 | 27U        | 60x80x139            |
| BL4-608036 | 36U        | 60x80x179            |
| BL4-608042 | 42U        | 60x80x205            |
| BL4-609027 | 27U        | 60x90x139            |
| BL4-609042 | 42U        | 60x90x205            |
| BL4-609045 | 45U        | 60x90x218.5          |
| BL4-601027 | 27U        | 60x100x139           |
| BL4-601042 | 42U        | 60x100x205           |
| BL4-601045 | 45U        | 60x100x218.5         |
| BL4-601115 | 15U        | 60x110x85            |
| BL4-601127 | 27U        | 60x110x139           |
| BL4-601142 | 42U        | 60x110x205           |
| BL4-601145 | 45U        | 60x110x218.5         |
| BL4-808036 | 36U        | 80x80x179            |
| BL4-808042 | 42U        | 80x80x205            |
| BL4-809042 | 42U        | 80x90x205            |
| BL4-801042 | 42U        | 80x100x205           |
| BL4-801142 | 42U        | 80x110x205           |
| BL4-801145 | 45U        | 80x110x218.5         |

**19" SMART DATA CENTER RACK: BL5 Series**

- Conform to standard of ANSI/EIA-310D – 1992 (Rev. EIA-310-C), IEC 60297-1, IEC 60297-2, BS 5954: Part 2 and DIN 41494.
- Modular Knock Down design.
- Structure is an electro galvanized steel sheet.
- Front door: Curve design, Swing handle lock and full Ventilate slots (Single door or Double door is selectable).
- Rear door: full Ventilate slots
- Certified by ISO 9001:2008 and ISO 14001

Curve design



**BL5 Series: 19" Smart Data Center Rack**

| Series No. | Height (U) | Dimension WxDxH (cm) |
|------------|------------|----------------------|
| BL5-606015 | 15U        | 60x60x85             |
| BL5-606027 | 27U        | 60x60x139            |
| BL5-606036 | 36U        | 60x60x179            |
| BL5-606042 | 42U        | 60x60x205            |
| BL5-606045 | 45U        | 60x60x218.5          |
| BL5-608015 | 15U        | 60x80x85             |
| BL5-608027 | 27U        | 60x80x139            |
| BL5-608042 | 42U        | 60x80x205            |
| BL5-608045 | 45U        | 60x80x218.5          |
| BL5-609027 | 27U        | 60x90x139            |
| BL5-609042 | 42U        | 60x90x205            |
| BL5-609045 | 45U        | 60x90x218.5          |
| BL5-601027 | 27U        | 60x100x139           |
| BL5-601036 | 36U        | 60x100x179           |
| BL5-601042 | 42U        | 60x100x205           |
| BL5-601045 | 45U        | 60x100x218.5         |
| BL5-601142 | 42U        | 60x110x205           |
| BL5-601145 | 45U        | 60x110x218.5         |
| BL5-808027 | 27U        | 80x80x139            |
| BL5-808042 | 42U        | 80x80x205            |
| BL5-808045 | 45U        | 80x80x218.5          |
| BL5-809042 | 42U        | 80x90x205            |
| BL5-809045 | 45U        | 80x90x218.5          |
| BL5-801042 | 42U        | 80x100x205           |
| BL5-801045 | 45U        | 80x100x218.5         |
| BL5-801142 | 42U        | 80x110x205           |
| BL5-801145 | 45U        | 80x110x218.5         |

**19" SMART RACK ACCESSORIES**

**AC Power Distribution**



BL7-00004 รางไฟ 4 Outlet Cable 1.8 m. & Surge Protection  
 RI 7-00006 รางไฟ 6 Outlet Cable 3 m. & Surge Protection  
 BL7-00012 รางไฟ 12 Outlet Cable 3 m. & Surge Protection  
 BL7-00020 รางไฟ 20 Outlet Cable 3 m. & Surge Protection  
 BL7-05112 Thermostat Panel Set พร้อม 2 Outlet ควบคุมการเปิด-ปิดของพัดลมระบายอากาศ

| Code No.  | Description   |
|-----------|---|
| BL7-00004 | AC POWER DISTRIBUTION 4 Universal Outlet w/ Cable 1.8 m.& Surge Protection ( with breaker ) |
| BL7-00006 | AC POWER DISTRIBUTION 6 Universal Outlet w/ Cable 3 m.& Surge Protection ( with breaker )   |
| BL7-00012 | AC POWER DISTRIBUTION 12 Universal Outlet w/ Cable 3 m.& Surge Protection ( with breaker )  |
| BL7-00020 | AC POWER DISTRIBUTION 20 Universal Outlet w/ Cable 3 m.& Surge Protection ( with breaker )  |

**Component Shelf**



BL7-01025 แผงยึดหน้า 2 ถัง  
 BL7-02045/65/75/95 ถาดยึดมือ 4 ถัง  
 BL7-03045/65/75/95 ถาดสไลด์

| Code No.  | Description  |
|-----------|--|
| BL7-01025 | FRONT PANEL FIX SHELF Deep 25cm For WALL RACK & OPEN RACK ( รางยึดหน้า 2 ถัง ) |
| BL7-02045 | FIX COMPONENT SHELF Deep 48cm For RACK 60cm ( ถาดยึดมือ 4 ถัง )                |
| BL7-02065 | FIX COMPONENT SHELF Deep 65cm For RACK 80cm ( ถาดยึดมือ 4 ถัง )                |
| BL7-02075 | FIX COMPONENT SHELF Deep 75cm For RACK 90cm ( ถาดยึดมือ 4 ถัง )                |
| BL7-02095 | FIX COMPONENT SHELF Deep 95cm For RACK 110cm ( ถาดยึดมือ 4 ถัง )               |
| BL7-03045 | SLIDE COMPONENT SHELF Deep 48cm For RACK 60cm ( ถาดสไลด์ )                     |
| BL7-03065 | SLIDE COMPONENT SHELF Deep 65cm For RACK 80cm ( ถาดสไลด์ )                     |
| BL7-03075 | SLIDE COMPONENT SHELF Deep 75cm For RACK 90cm ( ถาดสไลด์ )                     |
| BL7-03095 | SLIDE COMPONENT SHELF Deep 95cm For RACK 110cm ( ถาดสไลด์ )                    |

**Heavy Duty Fan**



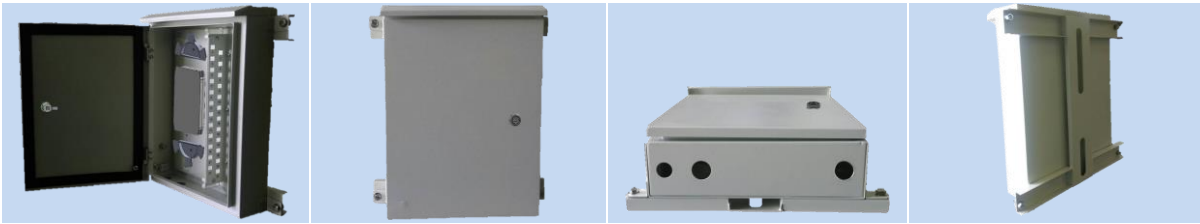
BL7-05001 พัดลม 1 ตัว (รางไฟ 1.8 เมตร) 1x 4" Heavy Duty Fan  
 BL7-05002 พัดลม 2 ตัว (รางไฟ 1.8 เมตร) 2x 4" Heavy Duty Fan  
 BL7-05003 พัดลม 3 ตัว (รางไฟ 1.8 เมตร) 3x 4" Heavy Duty Fan

**Other**



BL7-06003 แผงจัดสายมีฝาครอบ  
 BL7-09100 ขุดต่องู  
 BL7-09300 ขุดต่องู

**COMPACT OUTDOOR FIBER DISTRIBUTION FRAME 24 FIBERS, 3 CABLE PORTS**



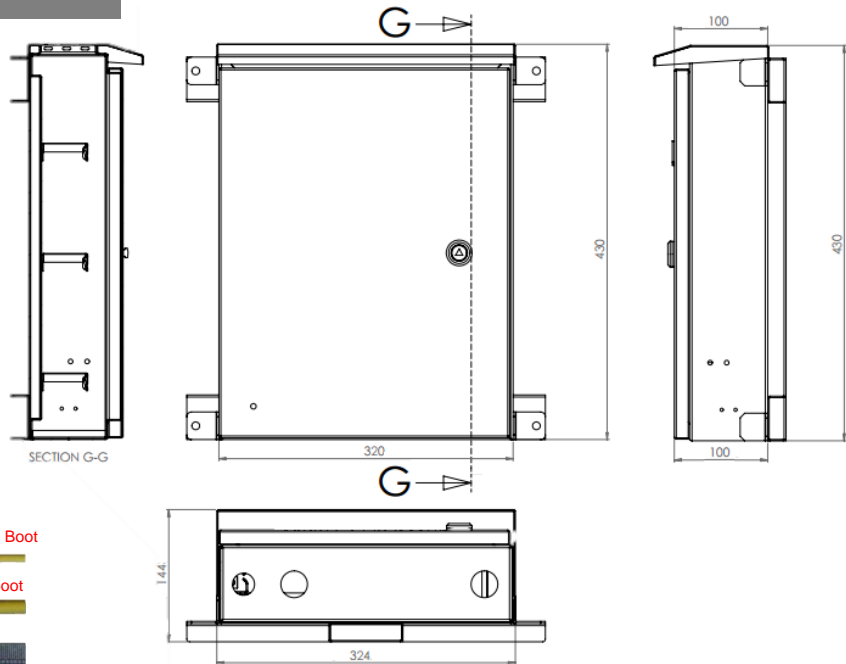
- Applications:**
- FTTx Applications
  - Active Device Termination
  - Industry
  - Telecommunication Networks
  - Data processing networks
  - Military
  - Gigabit Ethernet (LAN & WAN)
  - Multimedia, Video and CCTV

- Feature:**
- Outdoor installation design with IP55 Rate for Pole or Wall mounting method
  - Front Cover with Waterproof Key-Lock system
  - 3 Cable ports with Cable Gland on bottom for Feeder Cable part and Distribution Cable part
  - Provide OFC and CSM Holding Points
  - Provide Splice tray for fiber splicing up to 24 fibers
  - Provide Patch panel (Zigzag holes) for fiber termination and patching
  - Provide space area and bending radius >30 mm for Fiber management and storage
  - Provide Pole Mount Bracket for installation

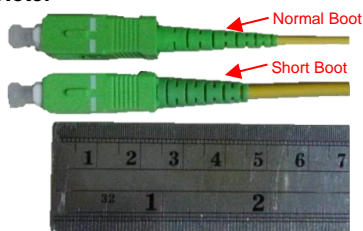
**SPECIFICATION:**

|                    |                       | Model                                |
|--------------------|-----------------------|--------------------------------------|
|                    |                       | BL-OFDF24-AWN                        |
| <b>Capacity</b>    | <b>Fibers</b>         | 24                                   |
| <b>Dimension</b>   | <b>W x H x D (mm)</b> | 320 x 430 x 100                      |
| <b>Patch Panel</b> |                       | Up to 24 holes of connector type     |
| <b>Cable Port</b>  |                       | 3 Ports (Dia 3/4", 1" and 1")        |
| <b>Material</b>    |                       | Aluminum                             |
| <b>Coating</b>     |                       | Beige Color by powder coating method |
| <b>IP Rate</b>     |                       | IP55 Rate                            |

**DRAWING:**



**Note:**



If use SC Connector, "SC Connector with Short Boot" will be provided for Pigtail and Patch Cord to be suitable for optical fiber bending.

**OUTDOOR FIBER CROSS CONNECT CABINET (OFCCC)**



**Applications:**

- FTTx Applications
- Telecommunication Networks
- Traffic Control System
- Fiber Remote Terminal Unit (FRTU)
- Multimedia, Video and CCTV
- Other Outdoor Applications

**Features & Functions:**

- SMC (Sheet Moulding Compound) material structure: Heat insulation, Waterproof and Corrosion resistance
- High performance rubber seals: Effective rain and dust proof for outdoor environment
- Modules individually removable: easy to construct and maintain
- Reliable cable fixing and grounding protection devices
- Safe and reliable fiber optic storage and protection

**SPECIFICATION:**

| Parameter                    | Specification  |                  |                  |                  |                     |                   |
|------------------------------|--|------------------|------------------|------------------|---------------------|-------------------|
| Model                        | BL-OFCCC-SMC0096   | BL-OFCCC-SMC0144 | BL-OFCCC-SMC0288 | BL-OFCCC-SMC0576 | BL-OFCCC-SMC0576-LR | BL-OFCCC-SMC1152  |
| Max. No. of Cores            | 96   | 144              | 288              | 576              | 576                 | 1152              |
| Max. No. of Adapter          | 96   | 144              | 288              | 576              | 576                 | 1152              |
| Max. No. of Splitters        | 2  | 6                | 10               | 20               | 20                  | 32                |
| Working Side                 | Front  | Front            | Front            | Front-Back       | Front               | Front-Back        |
| Cabinet Material             | SMC  |                  |                  |                  |                     |                   |
| Adapter Panel                | FC square, SC, DLC (SC type), (ST and FC small D type can be customized) |                  |                  |                  |                     |                   |
| Insulation Resistance (MΩ)   | 1000 @500V (DC)  |                  |                  |                  |                     |                   |
| Withstanding Voltage (V/min) | 3000 (DC), no breakdown, no flashover                                    |                  |                  |                  |                     |                   |
| Installation Type            | Wall, pole   | Ground           | Ground           | Ground           | Ground              | Ground            |
| Protection Rating            | IP65   |                  |                  |                  |                     |                   |
| Operating Temp. (°C)         | -40~ +60   |                  |                  |                  |                     |                   |
| Dimensions (H x W x D mm)    | 710 x 550 x 180  | 940 x 550 x 310  | 1450 x 750 x 320 | 1450 x 750 x 540 | 1550 x 1460 x 360   | 1550 x 1460 x 620 |
| Weight (kg)                  | 36.5   | 79               | 119              | 159              | 170                 | 310               |



**COMPACT WALL MOUNTED FIBER DISTRIBUTION FRAME 24 FIBER**



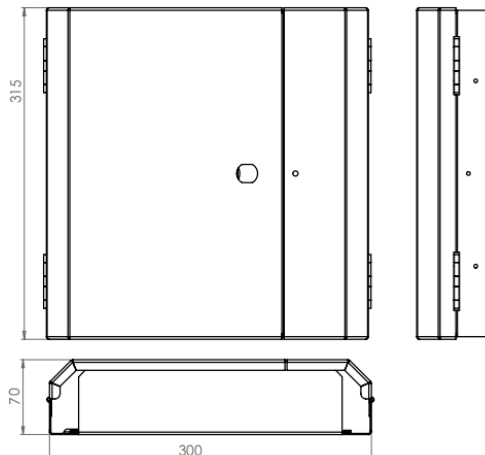
- Applications:**
- FTTx Applications
  - Active Device Termination
  - Industry
  - Telecommunication Networks
  - Data processing networks
  - Military
  - Gigabit Ethernet (LAN & WAN)
  - Multimedia, Video and CCTV

- Feature:**
- Wall mounted FDF complies with IP20 protection
  - Has 2 swing doors to separate Splicing area and patching area
  - Designed to support 30 mm bend radius of fiber for management.
  - Cable ports on the top and bottom of each side for in-out cables
  - Splicing part has splice trays with cover to support fiber splicing up to 24 fibers
  - Patch panel is provided to support up to 24 fiber connectors patching, hole shape is designed depend on type of connectors such as FC, SC, ST, etc.
  - Standard kit set is supplied for wall mounted installation.

**SPECIFICATION:**

| Model           |                 | WM-SP-24XX           | WM-OP-24XX     |
|-----------------|-----------------|----------------------|----------------|
| Cable Port      |                 | 4 (Sealed ports)     | 4 (Open ports) |
| Fiber Capacity  | Splicing (Core) | 24                   |                |
|                 | Patching (Core) | 24                   |                |
| Dimension (mm)  | W x H x D (mm)  | 280 x 235 x 50       |                |
| Material        | FDF             | Mild Steel           |                |
|                 | Splice Tray     | ABS                  |                |
| Coloring Method |                 | Powder color coating |                |
| Color           |                 | Beige                |                |

**DRAWING:**



**COMPACT WALL MOUNTED FIBER DISTRIBUTION FRAME 12 FIBER**



- Applications:**
- FTTx Applications
  - Telecommunication Networks
  - Gigabit Ethernet (LAN & WAN)
  - Active Device Termination
  - Data processing networks
  - Multimedia, Video and CCTV
  - Industry
  - Military

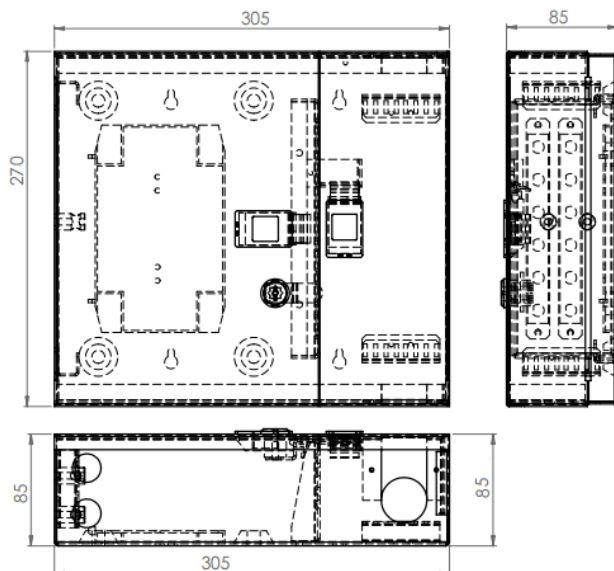
- Feature:**
- Wall mounted FDF complies with IP20 protection, Indoor type
  - Wall mounted and Pole mounted installation
  - Compact sizes design for easy installation and work
  - Cable Port on top (2 Ports) and bottom (2 Ports) at Left hand side (LHS)
  - Openable Cable Ports on top (1 Port) and bottom (1 Port) at Right hand side (RHS) to be easy for cables move out, Loop-through or Mid-span installation
  - 2 Front doors, Left hand side door has both Latch lock and Key lock with Master key to secure for Fiber splicing area. Right hand side (RHS) door has Latch lock and 2 step for opening to secure Fiber patching area and easy working in narrow area
  - Central Strength Member (CSM) anchors are provided
  - Support 30 mm bend radius of fiber for management
  - Spicing part has enough splice trays with cover to support Fiber cores splicing
  - Snap-in patch panel is provided for various Fiber connector types (Selectable for FC, SC, LC, ST, etc.)
  - Standard kit set is provided

**SPECIFICATION:**

|                    |                |
|--------------------|----------------|
| <b>Capacity</b>    | Fibers         |
| <b>Dimension</b>   | W x H x D (mm) |
| <b>Patch Panel</b> |                |
| <b>Cable Port</b>  |                |
| <b>Material</b>    |                |
| <b>Coating</b>     |                |
| <b>IP Rate</b>     |                |

| Model  |  |
|--|--|
| BL-WMFDF012-SYM  |  |
| 12   |  |
| 305 x 270 x 85   |  |
| Snap-in Type 6 Connector Holes                                     |  |
| 2 Ports on Top and Bottom at LHS + 1 Port on Top and Bottom at RHS |  |
| Mild Steel Sheet   |  |
| Beige Color by powder coating method                               |  |
| IP20 Rate  |  |

**DRAWING:**



**ULTRA WALL MOUNTED FIBER DISTRIBUTION FRAME**



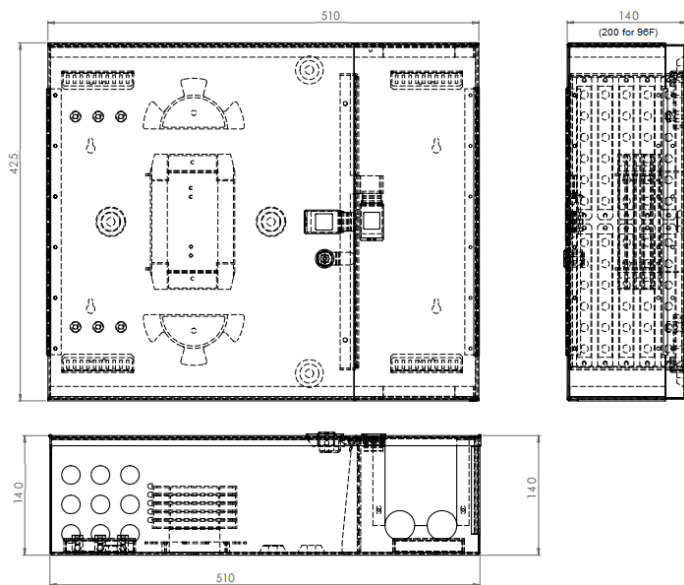
- Applications:**
- FTTx Applications
  - Active Device Termination
  - Industry
  - Telecommunication Networks
  - Data processing networks
  - Military
  - Gigabit Ethernet (LAN & WAN)
  - Multimedia, Video and CCTV

- Feature:**
- Wall mounted FDF complies with IP20 protection, Indoor type
  - Wall mounted and Pole mounted installation
  - Big sizes design for easy work
  - Knockable Cable Port on top (9 Ports) and bottom (9 Ports) at Left hand side (LHS)
  - Openable Cable Ports on top (2 Ports) and bottom (2 Ports) at Right hand side (RHS) to be easy for cables move out, Loop-through or Mid-span installation
  - 2 Front doors, Left hand side door has both Latch lock and Key lock with Master key to secure for Fiber splicing area. Right hand side (RHS) door has Latch lock to secure Fiber patching area
  - Central Strength Member (CSM) anchors are provided
  - Support 30 mm bend radius of fiber for management
  - Splicing part has enough splice trays with cover to support Fiber cores splicing
  - Snap-in patch panel is provided for various Fiber connector types (Selectable for FC, SC, LC, ST, etc.)
  - Standard kit set is provided

**SPECIFICATION:**

|         |             |                | Model   |                 |
|---------|-------------|----------------|---|-----------------|
|         |             |                | BL-WMFDF060-SYM   | BL-WMFDF096-SYM |
| Housing | Capacity    | Fibers         | 60  | 96              |
|         | Dimension   | W x H x D (mm) | 510 x 425 x 140   | 510 x 425 x 200 |
|         | Patch Panel |                | Snap-in Type 6 Connector Holes                                      |                 |
|         | Cable Port  |                | 9 Ports on Top and Bottom at LHS + 2 Ports on Top and Bottom at RHS |                 |
|         | Material    |                | Mild Steel Sheet  |                 |
|         | Coating     |                | Beige Color by powder coating method                                |                 |
|         | IP Rate     |                | IP20 Rate   |                 |

**DRAWING:**



**OPTICAL FIBER DISTRIBUTION FRAME 4 PORTS (METAL BOX)**



**Applications:**

- Broadband Network
- LAN and CATV System
- Fiber Optic Network
- Data Communications

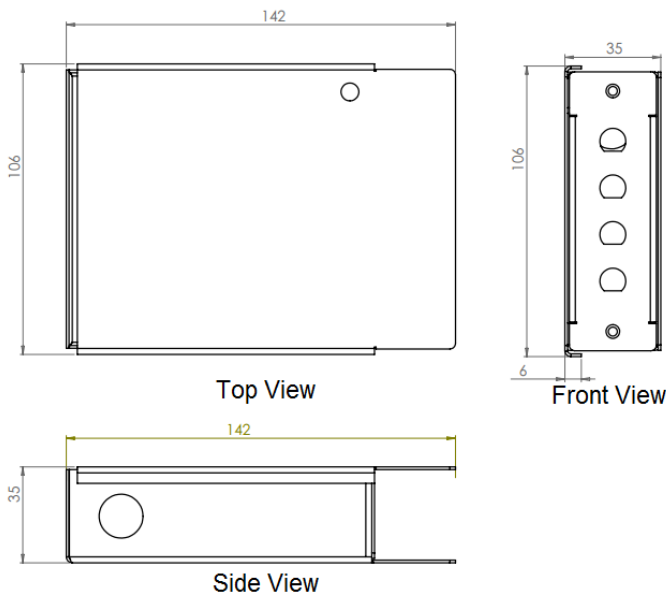
**Features:**

- Hingeable Top Cover with Plastic Pin for locking
- 2 Cable Entry Ports support  $\varnothing$  9 mm Cable, 1 Port on Back Side and 1 Port on Right Hand Side (Provided with 1 Cable Gland and 1 Rubber Dummy Port)
- Support 6 Fibers Splicing
- Support 4 Fibers Patching (Selectable Patch Panel for various Fiber Connector types)
- Support Fiber bending radius 30 mm
- Enough space area for Fiber Storage

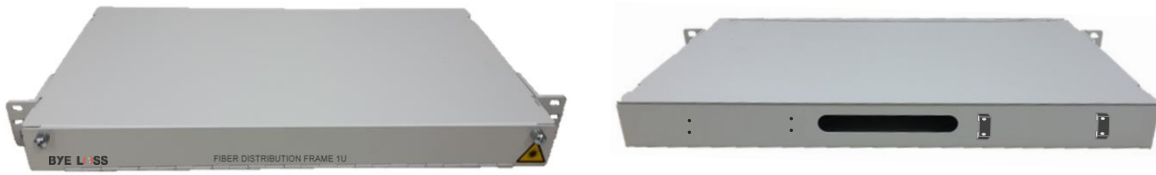
**SPECIFICATION :**

|                |           |                               |   |
|----------------|-----------|-------------------------------|---|
| Dimension      | W x D x H | mm                            | 106 x 142 x 35                          |
| Fiber Capacity | Splicing  | Core                          | 6                                       |
|                | Patching  | Core                          | 4<br>(Selectable Fiber Connector Types) |
| Material       |           | Mild Steel                    |   |
| Color          |           | Beige (Powder coating method) |   |

**DRAWING :**



**RACK MOUNTED FIBER DISTRIBUTION FRAME, 1U, DRAWER TYPE  
MODEL : FDFRM1D0122UUSO**



**Applications:**

- FTTx Applications
- Gigabit Ethernet (LAN & WAN)
- Data processing networks
- Industrial, Mechanical and Military
- Telecommunication Networks
- Active Device Termination
- Multimedia, Video and CCTV

**Feature & Function:**

- Slim size, 1U high for rack mounted installation with 19" Rack (or 21" Rack)
- Drawer type design by using Ball-Bearing Drawer Runners
- Front access security by Hingeable Full Cover with Screw knob and maker of Trademark and LASER warning symbol
- Cable Entry Port on Back side with Cable Clamp Kit that has excellent pull strength characteristics
- Inside FDF support Fibers laying, loop and strogae with Fiber bendig radius is not less than 30 mm
- Fiber Loose Tubes will be free moving during sliding in/out of drawer tray
- Hingeable Splice Tray with cover (Stackable type) supports 12 fibers per tray for fusion splicing part
- Support 12 Fibers (Up to 24 Fibers) splicing, patching and splitting
- SC Patch Panel, Angle type for 12 SC/UPC Adapters (Up to 24 Fibers)
- Fiber Adapters on Patch Panel are provided equal to Fiber Cores of Used Cable and are installed strongly on column of Patch panel by Screws
- Cable ties are provided enough for using

*Remark: 1. This FDF support Fiber splicing and patching up to 24 fibers  
2. Various Fiber Connector and Adapter types are available by changing Patch panel*

**SPECIFICATION:**

|                    |           |                               |            |
|--------------------|-----------|-------------------------------|------------|
| <b>FDF</b>         | Capacity  | Fibers                        | 12 – 24    |
|                    | W x D x H | mm                            | 483x44x273 |
|                    | Color     | White by Powder color coating |            |
|                    | Material  | Electro Galvanized Steel      |            |
| <b>Splice Tray</b> | Capacity  | Fibers/Tray                   | 12         |
|                    | Color     | White                         |            |
|                    | Material  | ABS                           |            |

**ACCESSORIES SET:**

| Item | Description                              | Unit | Q'ty |     |
|------|--|------|------|-----|
|      |  |      | 12F  | 24F |
| 1.   | Rack Mounted Fiber Distribution Frame 1U | Set  | 1    | 1   |
| 2.   | Splice Tray (12F/Tray)                   | Pc   | 1    | 2   |
| 3.   | Through Adapter                          | Pc   | 12   | 24  |
| 4.   | Fusion Splice Protective Sleeve 60mm     | Pc   | 12   | 24  |
| 5.   | Cable Tie                                | Set  | 1    | 1   |
| 6.   | Pigtail SM, SC/UPC, Dia 0.9mm, 1.5m      | Pc   | 12   | 24  |
| 7.   | Other Accessories                        | Set  | 1    | 1   |

*Remark: SC/UPC Connector and SC/UPC Adapter; IL ≤ 0.2dB, RL ≥ 50dB*

**OPTICAL FIBER CABLE (OFC)**

**Outdoor, Optical Fiber Cable, Loose Tube (Main Cable / Feeder Cable)**

| Type   | Structure | Cross Section  |
|--|-----------|--|
| Fig.8, Multi-tubes (Single Layer Tube)                     |           | <ul style="list-style-type: none"> <li>1/4" Galvanized Steel Strand (6.6M)</li> <li>Jacket Web</li> <li>MDPE Outer Jacket</li> <li>Water Blocking Tape</li> <li>Central Strength Member</li> <li>Gel Buffer Tube with Optical Fibers</li> <li>Ripcord</li> </ul>   |
| Fig.8, Multi-tubes (Single Layer Tube with Armour)         |           | <ul style="list-style-type: none"> <li>1/4" Galvanized Steel Strand (6.6M)</li> <li>Jacket Web</li> <li>MDPE Outer Jacket</li> <li>Ripcord</li> <li>Water Blocking Tape</li> <li>Central Strength Member</li> <li>Gel Buffer Tube with up to 12 Optical Fibers</li> <li>Corrugated Steel Armor</li> </ul>  |
| Round, Multi-tubes (Microduct, Single Layer Tube)          |           | <ul style="list-style-type: none"> <li>Water Blocking Elements</li> <li>Jacket (optimized for jetting)</li> <li>Central Strength Member</li> <li>Gel-Filled Buffer Tube Containing (up to 12 fibers)</li> <li>Ripcords</li> </ul>  |
| Round, Multi-tubes (Single Layer Tube with Armour)         |           | <ul style="list-style-type: none"> <li>MDPE Outer Jacket</li> <li>Prepreg Corrugated Steel Armor (optional)</li> <li>Central Strength Member</li> <li>Water Blocking Tape</li> <li>2.0 mm Buffer Tube (gel-filled)</li> <li>Ripcord</li> </ul>   |
| Round, Multi-tubes (Single Layer Tube with Double Jackets) |           | <ul style="list-style-type: none"> <li>Fiberglass Yarn</li> <li>Water Blocking Elements</li> <li>MDPE Inner Jacket</li> <li>Central Strength Member</li> <li>Buffer Tube Containing up to 12 Fibers</li> <li>Ripcords</li> <li>HDPE Outer Jacket</li> </ul>  |
| ADSS, Multi-tubes (Single Layer Tube)                      |           | <ul style="list-style-type: none"> <li>MDPE Outer Jacket</li> <li>Aramid Strength Yarns</li> <li>Inner Jacket Polyethylene (optional)</li> <li>Central Strength Member</li> <li>Water Blocking Tube</li> <li>Gel-Filled Buffer Tube Material</li> <li>Ripcord</li> </ul>   |
| Round, Multi-tubes (Ribbon Fiber)                          |           | <ul style="list-style-type: none"> <li>MDPE Outer Jacket</li> <li>Water Blocking Tape</li> <li>MDPE Inner Jacket (Double Jacket Designs Only)</li> <li>Central Strength Member</li> <li>Outer Strength Members</li> <li>Gel-Filled Buffer Tube With Fiber Ribbons</li> <li>Ripcord</li> <li>Corrugated Steel Armor (Armored Designs Only)</li> </ul> |

**Outdoor, Optical Fiber Drop Cable (Access Cable)**

| Type  | Structure | Cross Section  |
|---|-----------|--|
| Fig.8, Mono-tube (Optical Fiber Drop Cable)                     |           | <ul style="list-style-type: none"> <li>Stranded Steel Messenger</li> <li>PVC Messenger Jacket</li> <li>Jacket Web</li> <li>Fiber Sub-Unit</li> <li>Gel-Filled Buffer Tube Containing up to 12 Fibers</li> <li>Aramid Strength Yarns</li> </ul> |
| Round, Mono-tube (Optical Fiber Drop Cable with Armour)         |           | <ul style="list-style-type: none"> <li>MDPE Outer Jacket</li> <li>Corrugated Steel Armor</li> <li>Water Blocking Strength Members</li> <li>Buffer Tube - up to 12 Fibers</li> <li>Water Blocking Tape</li> <li>Ripcords</li> </ul>             |
| Round, Mono-tube (Optical Fiber Drop Cable with CSM and Armour) |           | <ul style="list-style-type: none"> <li>Dry Water Blocking Material Strength Member(s)</li> <li>Optical Fibers</li> <li>Gel-Filled Buffer Tube</li> <li>Armor (optional)</li> <li>MDPE Outer Jacket</li> </ul>                                  |

**Outdoor, Optical Fiber Drop Cable for FTTH (Distribution Cable)**

| Type  | Structure | Cross Section |
|---|-----------|---------------|
| Fig.8, Flat Type<br>(7 Strands Messenger Wire)  |           |               |
| Fig.8, Flat Type<br>(Single Messenger Wire)     |           |               |
| Flat Type (Indoor)                              |           |               |
| Fig.8, Round Type<br>(7 Strands Messenger Wire) |           |               |

**Indoor/Outdoor, Optical Fiber Cable**

| Type                        | Structure | Cross Section |
|-----------------------------|-----------|---------------|
| Indoor/Outdoor Loose Tube   |           |               |
| Indoor/Outdoor Tight Buffer |           |               |

**Indoor, Optical Fiber Cable**

| Type                            | Structure | Cross Section |
|---------------------------------|-----------|---------------|
| Indoor Breakout Cable           |           |               |
| Indoor Multi-Cores Tight Buffer |           |               |
| Indoor Simplex Cord             |           |               |
| Indoor Duplex Cord (Zip Cord)   |           |               |

**OPTICAL FIBER CHARACTERISTIC:**
**• Optical Fiber Single Mode (SM) Type**

| Attribute                     | Detail             | Unit                   | Specification |               |                   |               |
|-------------------------------|--------------------|------------------------|---------------|---------------|-------------------|---------------|
|                               |                    |                        | SM<br>G.652D  | SM<br>G.657A1 | SM<br>G.657 A2&B2 | SM<br>G.657B3 |
| Attenuation<br>Coefficient    | at 1310nm          | dB/km                  | ≤ 0.40        | ≤ 0.40        | ≤ 0.40            | ≤ 0.40        |
|                               | at 1550nm          |                        | ≤ 0.30        | ≤ 0.30        | ≤ 0.30            | ≤ 0.30        |
| Chromatic<br>Dispersion       | at 1290nm ~ 1330nm | ps/nm.km               | ≤ 2.8         | ≤ 2.8         | ≤ 2.8             | ≤ 2.8         |
|                               | at 1550 nm         |                        | ≤ 18          | ≤ 18          | ≤ 18              | ≤ 18          |
| Zero Dispersion Wavelength    |                    | nm                     | 1300 ~ 1324   | 1300 ~ 1324   | 1300 ~ 1324       | 1300 ~ 1324   |
| Zero Dispersion Slope         |                    | ps/nm <sup>2</sup> .km | ≤ 0.095       | ≤ 0.095       | ≤ 0.095           | ≤ 0.095       |
| PMD Coefficient               |                    | ps/√ km                | ≤ 0.4         | ≤ 0.4         | ≤ 0.4             | ≤ 0.4         |
| Cut-off Wavelength            |                    | nm                     | ≤ 1260        | ≤ 1260        | ≤ 1260            | ≤ 1260        |
| Mode Field Diameter           | at 1310nm          | μm                     | 9.2 ± 0.5     | 8.6 ± 0.5     | 8.6 ± 0.5         | 8.6 ± 0.5     |
| Cladding Diameter             |                    | μm                     | 125 ± 1       | 125 ± 1       | 125 ± 1           | 125 ± 1       |
| Core/Clad concentricity error |                    | μm                     | ≤ 0.8         | ≤ 0.8         | ≤ 0.8             | ≤ 0.8         |
| Cladding Non-circularity      |                    | %                      | ≤ 1           | ≤ 1           | ≤ 1               | ≤ 1           |
| Coating Diameter              |                    | μm                     | 245 ± 15      | 245 ± 15      | 245 ± 15          | 245 ± 15      |

**• Optical Fiber Multi Mode (MM) Type**

| Attribute                         | Detail     | Unit   | Specification   |               |               |               |
|-----------------------------------|------------|--------|-----------------|---------------|---------------|---------------|
|                                   |            |        | MM62.5<br>(OM1) | MM50<br>(OM2) | MM50<br>(OM3) | MM50<br>(OM4) |
| Attenuation<br>Coefficient        | at 850nm   | dB/km  | ≤ 3.5           | ≤ 3.0         | ≤ 3.0         | ≤ 3.0         |
|                                   | at 1300nm  |        | ≤ 1.5           | ≤ 1.0         | ≤ 1.0         | ≤ 1.0         |
| Bandwidth                         | at 850nm   | MHz.km | ≥ 200           | ≥ 500         | ≥ 1500        | ≥ 3500        |
|                                   | at 1300 nm |        | ≥ 500           | ≥ 500         | ≥ 500         | ≥ 500         |
| Numerical Aperture                |            | -      | 0.275 ± 0.015   | 0.20 ± 0.015  | 0.20 ± 0.015  | 0.20 ± 0.015  |
| Core Diameter                     |            | μm     | 62.5 ± 3.0      | 50 ± 3.0      | 50 ± 3.0      | 50 ± 3.0      |
| Cladding Diameter                 |            | μm     | 125 ± 2.0       | 125 ± 2.0     | 125 ± 2.0     | 125 ± 2.0     |
| Cladding Non-circularity          |            | %      | ≤ 2.0           | ≤ 2.0         | ≤ 2.0         | ≤ 1.0         |
| Core/Cladding Concentricity Error |            | μm     | ≤ 3.0           | ≤ 3.0         | ≤ 3.0         | ≤ 3.0         |
| Coating Diameter                  |            | μm     | 245 ± 15        | 245 ± 15      | 245 ± 15      | 245 ± 15      |



**CONCLUSION:**

“We move forward together”

**ALIVE:**

**BYE LOSS COMPANY LIMITED**

2/1 Soi Pho Kaeo 3 Yaek 22, Klongchan,  
Bangkapi, Bangkok 10240 THAILAND

Latitude: 13.808, Longitude: 100.633  
N: 13°48'28.807", E: 100°37'58.476"

M: +666 1982 9328

T: +66 2075 6843 F: +66 2075 6843

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