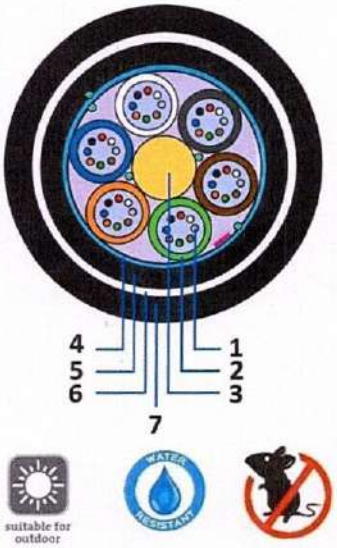
24F Non-Metallic Anti Rodent Cable

Applications

Multi-purpose Outdoor, Direct Buried, Long-Haul Networks



Cable Structure

1. Optical Fibers
2. Loose tube with gel
3. FRP as Central Strength member
4. Water blocking tape
5. PE Inner Jacket
6. Anti-rodent glass yarns
7. Anti-rodent PE Outer Jacket

Features

- Choice of fiber type
- High crush resistant
- Rodent resistant
- Complete dielectric design, applicable to lightning prone areas
- Anti-rodent sheath providing the chemical anti-rodent performance, which effectively delays the diffusion of anti-rodent additives to protect working environment and construction safety

Optics Specifications		
Attenuation(dB/km)	@1310nm	≤0.35db/km
	@1383nm (after hydrogen aging)	≤0.32db/km
	@1550nm	≤0.21db/km
	@1625nm	≤0.24db/km
Dispersion	@1285nm~1340nm	-3.0~3.0ps/(nm*km)
	@1550nm	≤18ps/(nm*km)
	@1625nm	≤22ps/(nm*km)
Zero-Dispersion wavelength		1300~1324nm
Zero-Dispersion slope		≤0.092ps/(nm^2*km)
Mode field diameter @ 1310nm		9.2±0.4μm
Mode field diameter @ 1550nm		10.4±0.8μm
PMD	Max. value for fiber on the reel	0.2ps/km 1/2
	Max. Designed value for link	0.08ps/km 1/2
Cable cutoff wavelength,λ cc		≤1260nm
Effective group index(Neff)@1310nm		1.4675
Effective group index(Neff)@1550nm		1.4680
Macro-bend loss(Φ60mm,100 turns)@1550nm		≤0.05db

Technical Specification

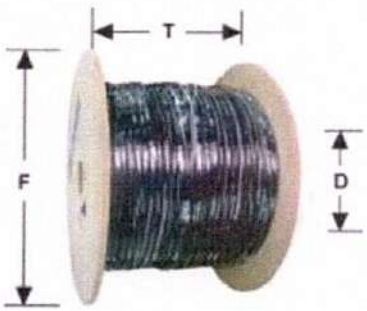
Fiber Number	24F
Max. No of loose tube / filler No.	4/2
Fiber Number. per Tube	6
Outer Diameter	12mm -/+0.2mm
Fiber Type	Single-mode G.652D or G.657A1, suitable for long-haul communication.
Installation	Designed for aerial (lashed/self-supporting ADSS) and duct installations.
Standards	Compliant with standards such as IEC 60794 and RoHS.
Glass Yarn/Fiberglass Armor	A layer of high-density glass yarn or flat FRP (Fiber Reinforced Plastic) armor is placed around the cable core or inner sheath. When a rodent bites the cable, the glass fibers prick its mouth, causing oral discomfort and discouraging further chewing.
Central Strength Member	FRP (Fiber Reinforced Plastic) rod (non-metallic)
Tensile Strength	4KN
Span	200 Meter
Crush Strength	2.5KN
Min. Bend Radius Operation (mm)	10 x OD
Min. Bend Radius Installation (mm)	20 x OD
Sheath Material	UV-resistant High-Density Polyethylene (HDPE)
Water Protection	Loose tubes filled with gel/water-blocking compound and water-swellable tape/yarn applied to the core.
Temperature Range	Operating: Typically -40°C to +70°C

Note:

Cable marking/Labeling:

- Manufacturer name
- Labelled "Tashicell"
- Year of manufacture
- Sequential length marking in meter

Delivery length: 2km per Drum.



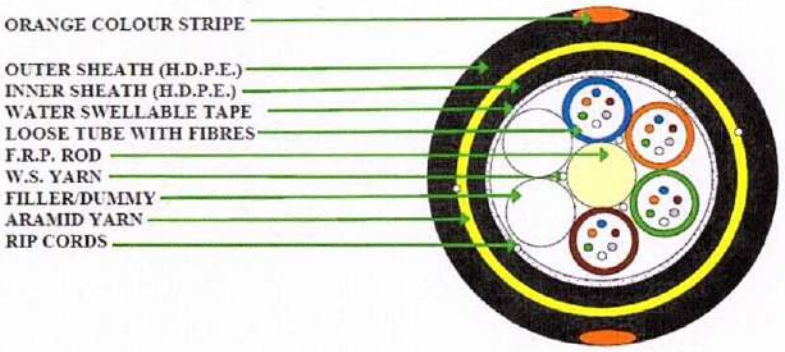
Flange Diameter (F) = 1000mm
Drum Diameter (D) = 500mm
Traverse (T) = 560mm

24F All-dielectric self-supporting cable (ADSS)

1. (G652D) Single Mode Fiber

Optics Specifications		
Attenuation(dB/km)	@1310nm	≤0.35db/km
	@1383nm (after hydrogen aging)	≤0.32db/km
	@1550nm	≤0.21db/km
	@1625nm	≤0.24db/km
Dispersion	@1285nm~1340nm	-3.0~3.0ps/(nm*km)
	@1550nm	≤18ps/(nm*km)
	@1625nm	≤22ps/(nm*km)
Zero-Dispersion wavelength		1300~1324nm
Zero-Dispersion slope		≤0.092ps/(nm^2*km)
Mode field diameter @ 1310nm		9.2±0.4μm
Mode field diameter @ 1550nm		10.4±0.8μm
PMD	Max. value for fiber on the reel	0.2ps/km 1/2
	Max. Designed value for link	0.08ps/km 1/2
Cable cutoff wavelength,λ cc		≤1260nm
Effective group index(Neff)@1310nm		1.4675
Effective group index(Neff)@1550nm		1.4680
Macro-bend loss(Φ60mm,100 turns)@1550nm		≤0.05db
Back scatter characteristic(@1310nm&1550nm)		
Point discontinuity		≤0.05db
Attenuation uniformity		≤0.05db/km
Attenuation coefficient difference for bi-directional measurement		≤0.05db/km
Geometrical characteristics		
Cladding diameter		125±1μm
Cladding non-circularity		≤1%
Core/cladding concentricity error		≤0.4μm
Fiber diameter with coating(uncolored)		245±5μm
Cladding/coating concentricity error		≤12.0μm
Curl		≥4m
Mechanical characteristic		
Proof test		0.69GPa
Coating strip force(typical value)		1.4N
Dynamic stress corrosion susceptibility parameter(typical value)		≥20
Environmental characteristics(@1310nm&1550nm)		
Temperature induced attenuation(-60~+85°C)		≤0.5dB/km
Dry heat induced attenuation(85±2°C,30days)		≤0.5dB/km
Water immersion induced attenuation(23±2°C,30days)		≤0.5dB/km
Damp heat induced attenuation(85±2°C,RH85%,30days)		≤0.5dB/km

2. Cable structure



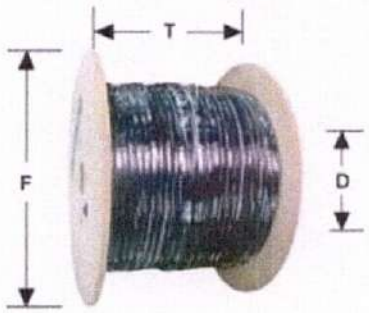
3. Technical specifications:

Fiber Number	24
Max. No of loose tube / filler No.	4/2
Fiber No. per tube	6
Loose tube diameter	2.0mm+/-0.1mm
Loose tube material	PBT polybutylece terephthalate
Gel filled in loose tube	Yes
Central strength material	FRP (**Fiber Reinforced Plastic**)
Outer sheath thickness/ material	HDPE black
Middle sheath and inner sheath thickness	HDPE black
Rip cord	2 red Rip cord in every layer
Cable OD	12mm +/-0.2mm
Operation temperature range	-40 deg C to + 70 deg C
Installation temperature range	-20 °C to + 60 °C
Span	200 meter
Maximum operation tensile	5KN
Crush resistance	2200N /10cm
Minimal installation bending radius	20 x OD
Minimal operation bending radius	10 x OD

4. **Marking:**
   - ❖ Manufacturer name
   - ❖ Labelled "24F ADSS Tashicell"
   - ❖ Year of manufacture
   - ❖ Sequential length marking in meter

   Two orange colour (UV stabilized) lines of minimum 3 mm width diametrically opposite each other, continuous over the length of the cable shall be applied (marked) for easy identification of this cable from other cables.

5. **Packing (Standard length per drum): 2 Km**



Flange Diameter (F) = 1000mm
Drum Diameter (D) = 500mm
Traverse (T) = 560mm

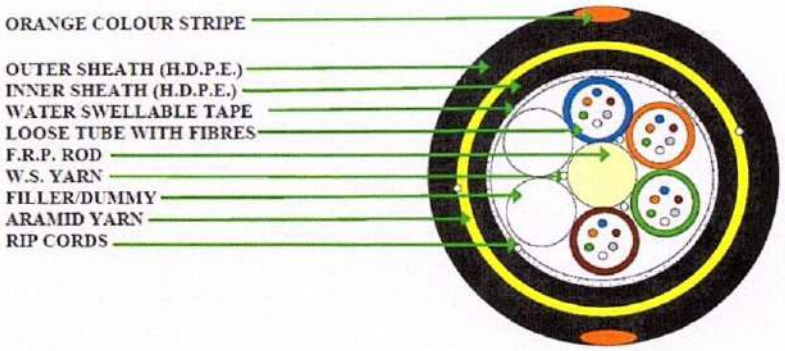
48F All-dielectric self-supporting cable (ADSS)

1. (G652D) Single Mode Fiber

Optics Specifications		
Attenuation(dB/km)	@1310nm	≤0.35db/km
	@1383nm (after hydrogen aging)	≤0.32db/km
	@1550nm	≤0.21db/km
	@1625nm	≤0.24db/km
Dispersion	@1285nm~1340nm	-3.0~3.0ps/(nm*km)
	@1550nm	≤18ps/(nm*km)
	@1625nm	≤22ps/(nm*km)
Zero-Dispersion wavelength		1300~1324nm
Zero-Dispersion slope		≤0.092ps/(nm^2*km)
Mode field diameter @ 1310nm		9.2±0.4μm
Mode field diameter @ 1550nm		10.4±0.8μm
PMD	Max. value for fiber on the reel	0.2ps/km 1/2
	Max. Designed value for link	0.08ps/km 1/2
Cable cutoff wavelength,λ cc		≤1260nm
Effective group index(Neff)@1310nm		1.4675
Effective group index(Neff)@1550nm		1.4680
Macro-bend loss(Φ60mm,100 turns)@1550nm		≤0.05db

Back scatter characteristic(@1310nm&1550nm)	
Point discontinuity	≤0.05db
Attenuation uniformity	≤0.05db/km
Attenuation coefficient difference for bi-directional measurement	≤0.05db/km
Geometrical characteristics	
Cladding diameter	125±1μm
Cladding non-circularity	≤1%
Core/cladding concentricity error	≤0.4μm
Fiber diameter with coating(uncolored)	245±5μm
Cladding/coating concentricity error	≤12.0μm
Curl	≥4m
Mechanical characteristic	
Proof test	0.69GPa
Coating strip force(typical value)	1.4N
Dynamic stress corrosion susceptibility parameter(typical value)	≥20
Environmental characteristics(@1310nm&1550nm)	
Temperature induced attenuation(-60~+85°C)	≤0.5dB/km
Dry heat induced attenuation(85±2°C,30days)	≤0.5dB/km
Water immersion induced attenuation(23±2°C,30days)	≤0.5dB/km
Damp heat induced attenuation(85±2°C,RH85%,30days)	≤0.5dB/km

2. Cable structure



3. Technical specifications:

Fiber Number	48
Max. No of loose tube / filler No.	12/2
Fiber No. per tube	12
Loose tube diameter	2.0mm+/-0.1mm
Loose tube material	PBT polybutylece terephthalate
Gel filled in loose tube	Yes
Central strength material	FRP (**Fiber Reinforced Plastic**)
Outer sheath thickness/ material	HDPE black
Middle sheath and inner sheath thickness	HDPE black
Rip cord	2 red Rip cord in every layer
Cable OD	12mm +/-0.2mm
Operation temperature range	-40 deg C to + 70 deg C
Installation temperature range	-20 °C to + 60 °C
Span	200 meter
Maximum operation tensile	5KN
Crush resistance	2200N /10cm
Minimal installation bending radius	20 x OD
Minimal operation bending radius	10 x OD

4. **Marking:**
   - ❖ Manufacturer name
   - ❖ Labelled "24F ADSS Tashicell"
   - ❖ Year of manufacture
   - ❖ Sequential length marking in meter

   Two orange colour (UV stabilized) lines of minimum 3 mm width diametrically opposite each other, continuous over the length of the cable shall be applied (marked) for easy identification of this cable from other cables.

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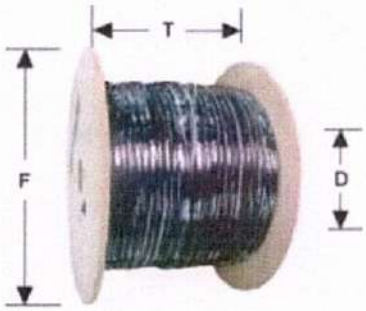
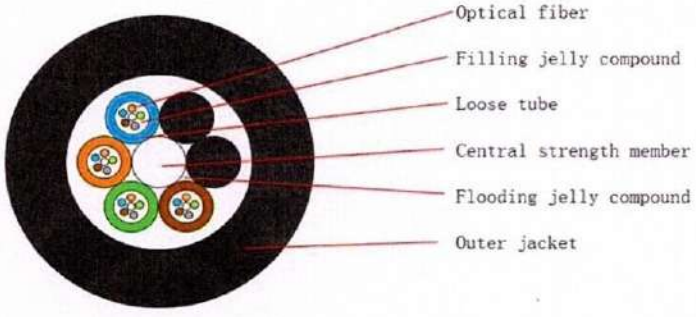


Flange Diameter (F) = 1000mm
Drum Diameter (D) = 500mm
Traverse (T) = 560mm

48F UG Duct cable without Armor

Cross Section of Cable



Item		Unit	Specification
Fiber Type			
Mode field diameter	1310nm	m	9.2 ± 0.4
	1550nm	m	10.4 ± 0.8
Cladding diameter		m	125.01
Cladding non-circularity		%	1.0
Core/cladding concentricity error		m	0.5
Coating diameter		m	242 ± 7
Coating/cladding concentricity error		m	12
Cable cut-off wavelength		nm	1260
Attenuation Coefficient	1310nm	dB/km	0.36
	1550nm	dB/km	0.22
Proof stress level	kpsi	≥100	

Note: Other parameters must meet standard ITU-T G.652

Dimension of Cable Construction

Fiber count	Structure	Fibers per tube	Loose tube diameter (mm)	CSM diameter /pad diameter(mm)	Thickness of outer jacket(mm)	Cable diameter (mm)	Cable Weight (kg/km)
48	2 fillers and 4 loose tubes	12	2.0±0.1	2.3 /2.3	1.6±0.1	14 ±0.5	78

Mechanical Properties Requirement

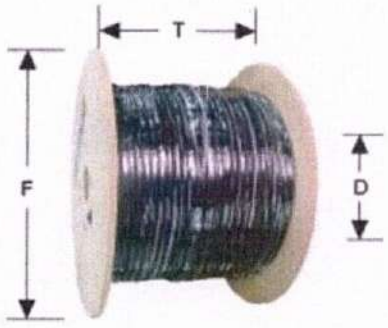
Item		Parameters
Loose tube	Material	PBT
	Color	Full color spectrum
Filler	Material	PE
	Color	Black
CSM	Material	FRP
Outer jacket	Material	MDPE
	Color	Black
Min. bending radius	Static	10 times cable diameter
	Dynamic	20 times cable diameter
Tensile performance	Short term	1500N
Crush	Short term	1000N/100mm

Labelling/Marking:

1. Manufacturer name:
2. Labelled: "24F ADSS Tashicell"
3. Year of manufacture
4. Sequential length marking in meter

Cable Packaging:

Standard Packaging: 2km/Drum (With properly packaged to prevent fiber cable damage during the transportation)



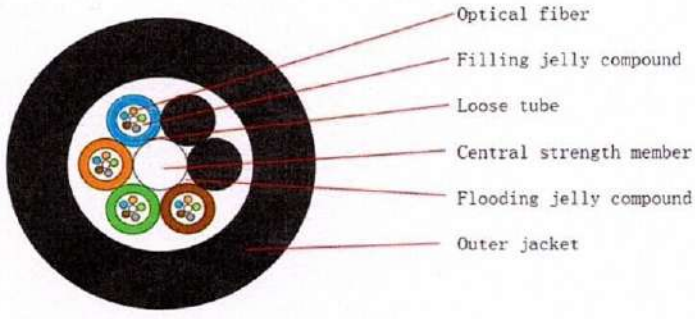
Flange Diameter (F)= 1100 mm to 1400 mm

Drum Diameter= 500mm

Traverse (T)= 600 mm to 850 mm

24F UG Duct cable without Armor

Cross Section of Cable



Item		Unit	Specification
Fiber Type			
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Coating/cladding concentricity error		m	12
Cable cut-off wavelength		nm	1260
Attenuation Coefficient	1310nm	dB/km	0.36
	1550nm	dB/km	0.22
Proof stress level	kpsi	≥100	

Note: Other parameters must meet standard ITU-T G.652

Dimension of Cable Construction

Fiber count	Structure	Fibers per tube	Loose tube diameter (mm)	CSM diameter /pad diameter(mm)	Thickness of outer jacket(mm)	Cable diameter (mm)	Cable Weight (kg/km)
24	2 fillers and 4 loose tubes	6	2.0±0.1	2.3 /2.3	1.6±0.1	14 ±0.5	78

Mechanical Properties Requirement

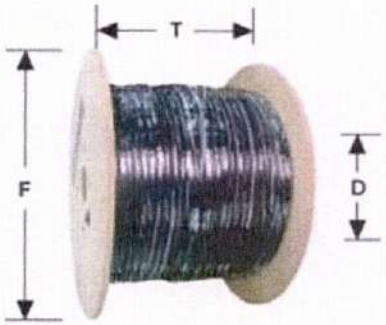
Item		Parameters
Loose tube	Material	PBT
	Color	Full color spectrum
Filler	Material	PE
	Color	Black
CSM	Material	FRP
Outer jacket	Material	MDPE
	Color	Black
Min. bending radius	Static	10 times cable diameter
	Dynamic	20 times cable diameter
Tensile performance	Short term	1500N
Crush	Short term	1000N/100mm

Labelling/Marking:

1. Manufacturer name:
2. Labelled: "24F ADSS Tashicell"
3. Year of manufacture
4. Sequential length marking in meter

Cable Packaging:

Standard Packaging: 2km/Drum (With properly packaged to prevent fiber cable during the transportation).



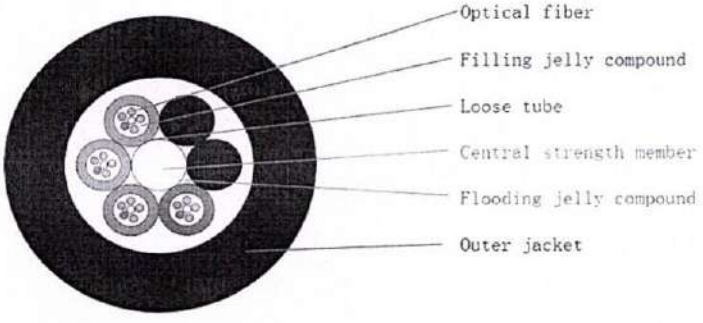
Flange Diameter (F)= 1100 mm to 1400 mm

Drum Diameter= 400mm to 500mm

Traverse (T)= 600 mm to 850 mm

Item 1: UG Fiber cable SM, 96 cores, G652D

Cross Section of Cable



Item: UG Fiber cable SM, 96 cores, G652D		Unit	Specification
Fiber Type			
Mode field diameter	1310nm	m	9.2 ± 0.4
	1550nm	m	10.4 ± 0.8
Cladding diameter		m	125.01
Cladding non-circularity		%	1.0
Core/cladding concentricity error		m	0.5
Coating diameter		m	242 ± 7
Coating/cladding concentricity error		m	12
Cable cut-off wavelength		nm	1260
Attenuation Coefficient	1310nm	dB/km	0.36
	1550nm	dB/km	0.22

Proof stress level	kpsi	≥100	

Note: Other parameters must meet standard ITU-T G.652

Dimension of Cable Construction

Fiber count	Structure	Fibers per tube	Loose tube diameter (mm)	CSM diameter /pad diameter(mm)	Thickness of outer jacket(mm)	Cable diameter (mm)	Cable Weight (kg/km)
96	8 loose tubes	12	2.0±0.1	2.3 /2.3	1.6±0.1	14 ±0.5	312

Mechanical Properties Requirement

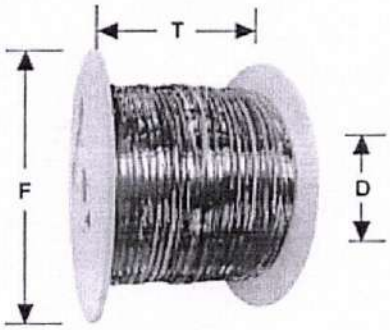
Item		Parameters
Loose tube	Material	PBT
	Color	Full color spectrum
Filler	Material	PE
	Color	Black
CSM	Material	FRP
Outer jacket	Material	MDPE
	Color	Black
Min. bending radius	Static	10 times cable diameter
	Dynamic	20 times cable diameter
Tensile performance	Short term	1500N
Crush	Short term	1000N/100mm

Labelling/Marking:

1. Manufacturer name:
2. Labelled: "**UG Fiber cable SM, 96 cores, G652D**"
3. Year of manufacture
4. Sequential length marking in meter

Cable Packaging:

Standard Packaging: 2km/Drum (With properly packaged to prevent fiber cable during the transportation).



Flange Diameter (F)= 1100 mm to 1400 mm
Drum Diameter= 400mm to 500mm
Traverse (T)= 600 mm to 850 mm

Item 2: UG Fiber cable SM, 24 cores, G652D

Item : UG Fiber cable SM, 24 cores, G652D		**Unit**	**Specification**
Fiber Type			
Mode field diameter	1310nm	m	9.2 ± 0.4
	1550nm	m	10.4 ± 0.8
Cladding diameter		m	125.01
Cladding non-circularity		%	1.0
Core/cladding concentricity error		m	0.5
Coating diameter		m	242 ± 7
Coating/cladding concentricity error		m	12
Cable cut-off wavelength		nm	1260
Attenuation Coefficient	1310nm	dB/km	0.36
	1550nm	dB/km	0.22
Proof stress level	kpsi	≥100	

Note: Other parameters must meet standard ITU-T G.652

Dimension of Cable Construction

Fiber count	Structure	Fibers per tube	Loose tube diameter (mm)	CSM diameter /pad diameter(mm)	Thickness of outer jacket(mm)	Cable diameter (mm)	Cable Weight (kg/km)
24	2 loose tubes	12	2.0±0.1	2.3 /2.3	1.6±0.1	14 ±0.5	78

Mechanical Properties Requirement

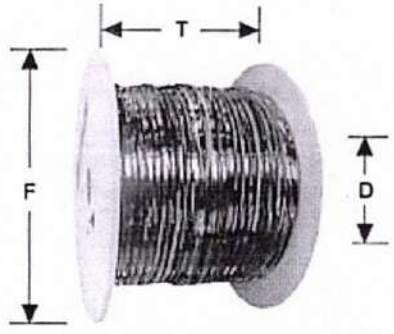
Item		Parameters
Loose tube	Material	PBT
	Color	Full color spectrum
Filler	Material	PE
	Color	Black
CSM	Material	FRP
Outer jacket	Material	MDPE
	Color	Black
Min. bending radius	Static	10 times cable diameter
	Dynamic	20 times cable diameter
Tensile performance	Short term	1500N
Crush	Short term	1000N/100mm

Labelling/Marking:

1. Manufacturer name:
2. Labelled: "**UG Fiber cable SM, 96 cores, G652D**"
3. Year of manufacture
4. Sequential length marking in meter

Cable Packaging:

Standard Packaging: 2km/Drum (With properly packaged to prevent fiber cable during the transportation).



Flange Diameter (F)= 1100 mm to 1400 mm
Drum Diameter= 400mm to 500mm
Traverse (T)= 600 mm to 850 mm

Non-metallic Fiber Optic Drop Cable

Technical specifications:

Fiber Number	2	6	12
Max. No of loose tube	1	1	1

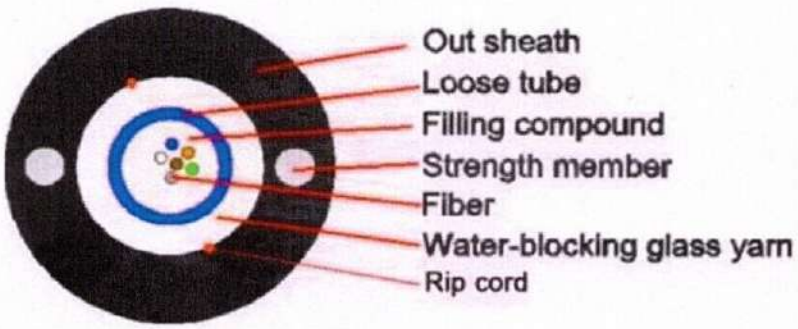
Fiber No. per tube	2/6/12
Loose tube diameter	2.0mm+/-0.1mm
Loose tube material	PBT polybutylece terephthalate
Gel filled in loose tube	Yes
strength material	FRP (**Fiber Reinforced Plastic) as shown below diagram**
Outer sheath thickness/ material	HDPE black
Rip cord	Red Rip cord in every layer
Cable OD	6-8mm
Cable weight	Approx.30 kg/km
Operation temperature range	-40 deg C to + 70 deg C
Installation temperature range	-20 ℃ to + 60 ℃
Transport and storage temperature range	-40 ℃ to + 70 ℃
Span	200 meter
Suitable lines	≤35kv
Maximum operation tensile	10KN
Crush resistance	2200N /10cm
Minimal installation bending radius	20 x OD
Minimal operation bending radius	10 x OD

Optical Characteristics

Optical Characteristics	G.652	G.655	50/125μm	62.5/125μm
Optical Characteristics		G.652	G.655	50/125μm	62.5/125μm
Attenuation (+20°C)	@850nm			≤3.0 dB/km	≤3.3 dB/km
	@1300nm			≤1.0 dB/km	≤1.0 dB/km
	@1310nm	≤0.36 dB/km	≤0.40 dB/km		
	@1550nm	≤0.22 dB/km	≤0.23dB/km		
Bandwidth	@850nm			≥500 MHz·km	≥200 MHz·km
	@1300nm			≥500 MHz·km	≥500 MHz·km
Numerical Aperture				0.200±0.015NA	0.275±0.015NA
Cable Cut-off Wavelength λcc		≤1260nm	≤1450nm		

Cable structure

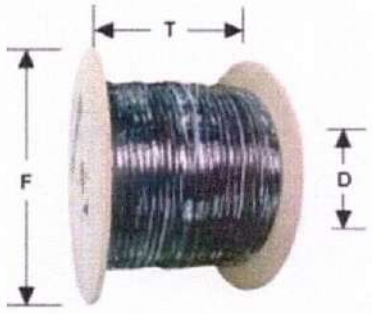
Cable Type: - Fiber Optic Non- metallic drop cable



Cable Marking:

- Manufacturer name
- Labelled "24F ADSS Tashicell"
- Year of manufacture
- Sequential length marking in meter

Packging: 2Km/Drum

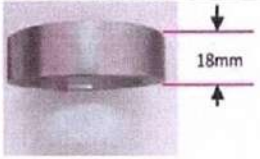


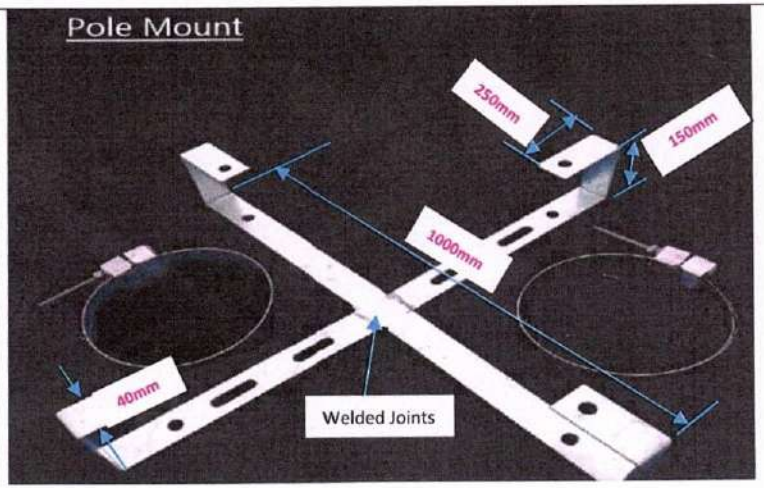
Flange Diameter(F)= 500mm to 600mm
Drum Diameter(D)=250mm to 350
Traverse (T)=300mm to 400mm

ADSS Cross Arm Set

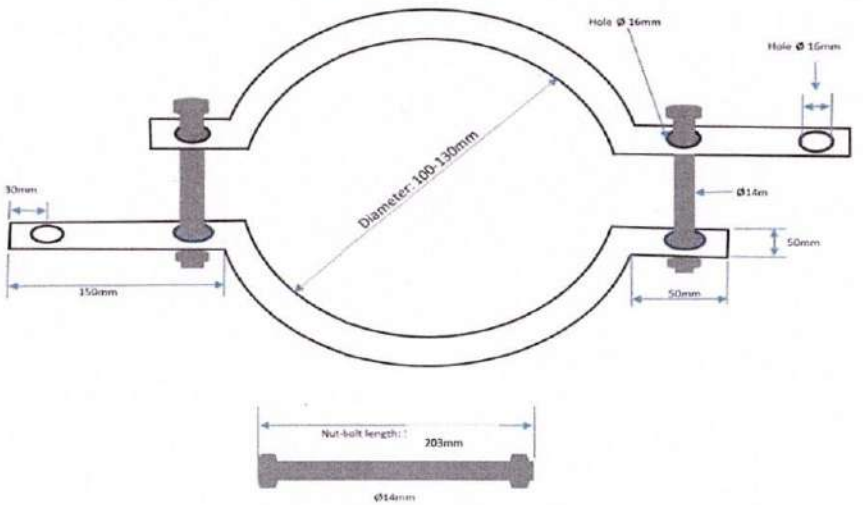
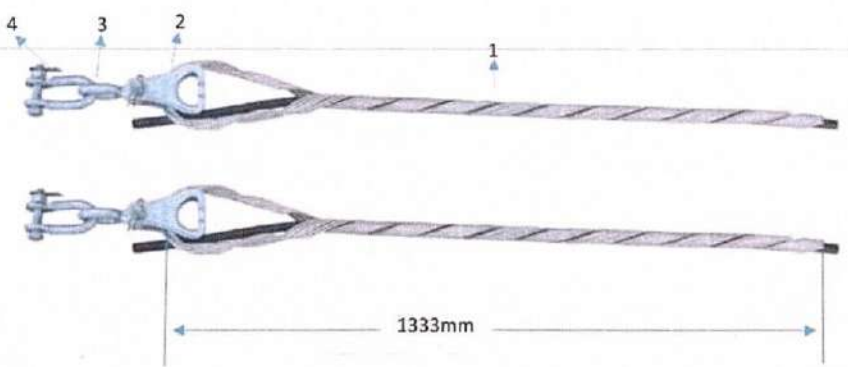
1) Cross Arm
   - Sheet Thickness=4mm
   - Length=1000mm
   - Width=40mm
   - Hot Galvanized Metal

2) Steel Bend Fastener
   - Length=700mm
   - Width=18mm
   - Thickness=0.7mm



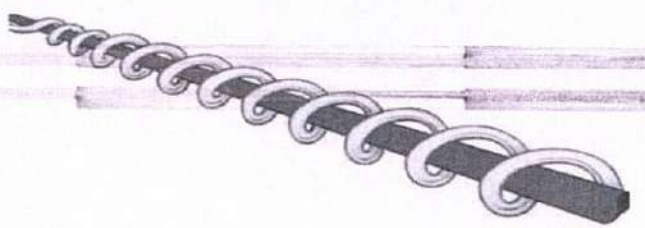


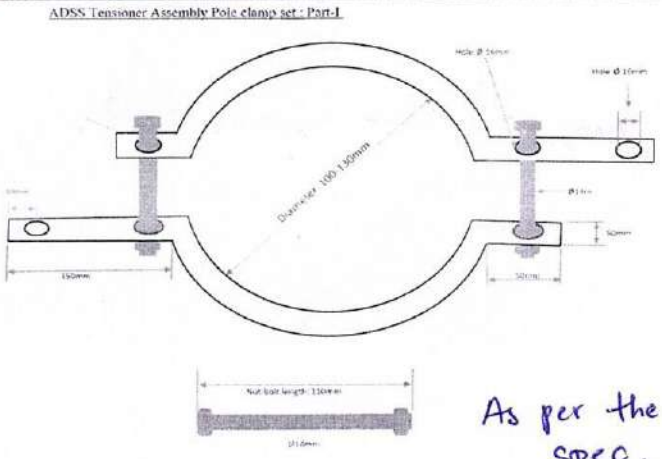
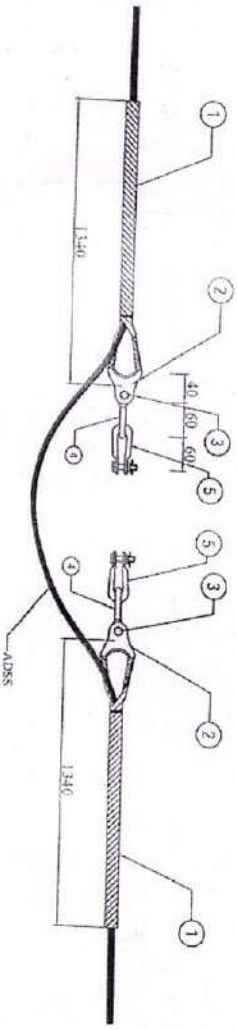
1. ADSS Tensioner Assembly Clamp Set

Sl-No	Description	Sketch
1	Pole clamp (double arm)/pole attached bracket: ❖ Suitable for pole diameter of ~~11mm~~ to ~~13mm~~ 130 mm (100) ❖ Sheet thickness= 5mm & flatness/width=50mm ❖ Hot dip galvanized surface treatment ❖ All dimensions are in millimeter	ADSS Tensioner Assembly Pole clamp set : Part-I 
2	Tension string for ADSS: ❖ Tension rod/grip should hold the cable diameter from 11mm to 13mm ❖ Length of Tension rod/grip=1333mm ❖ Max. Tensile force >15KN ❖ Application Span = 300 meters ❖ Grip Strength = 95% RTs ❖ All ferrous parts are hot dip galvanized ❖ All dimensions are in millimeter.	

Item	Qty	Description	Type	Material
1	2 nos	Tension rod/Grip	ANY 1500-150	AL Clad Steel
2	2 nos	Clevis Thimble	TC-2	Galv. steel
3	2	Eye chain Link		Galv. steel
4	2	Bow Shackle	U-4	Galv. steel

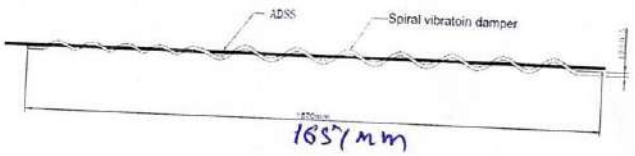
P.T.O

3	ADSS spiral vibration Damper: ❖ Suitable for cable diameter of 11mm to 13mm, ❖ Length: 1651mm, ❖ Material: UV resistant PVC, ❖ Diameter: 12mm	

3	Two Way Pole Clamp Tension Set: ❖ Suitable for pole diameter of ~~11~~100mm to ~~13~~130mm ❖ Sheet thickness= 5mm & flatness/width=50mm ❖ Hot dip galvanized surface treatment All dimensions are in millimeter	 As per the SPPD Spec.
4	**Terminating Helix Set** ❖ Application: Dead-end / termination of optical fiber cable on poles or towers ❖ Span Length: 100 meters ❖ Suitable Cable Diameter: 14.3 – 15.3 mm ❖ Maximum Tensile Strength: ≥ 13 kN **Set Configuration (per set):** ❖ Reinforcing Rod – Type: SAT015155 – Quantity: 2 pcs – Material: Aluminum-clad steel ❖ Clevis Thimble – Type: UXL-40 – Quantity: 2 pcs – Material: Steel or ductile iron ❖ Bolt – Size: M12 × 50 mm – Quantity: 2 pcs – Material: Forged steel ❖ Extension Link – Type: ZH-4 – Quantity: 2 pcs – Material: Forged steel ❖ Bow Shackle – Type: U-4 – Quantity: 2 pcs – Material: Forged steel ❖ Surface Treatment: Hot-dip galvanized (anti-corrosion)	

5 **Spiral Vibration damper**

Suitable for cable diameter of 11mm to ~~13mm~~, 15.3 mm
Length: 1651mm,
Material: UV resistant PVC,
Diameter: 12mm



NOTE:
1.To ensure for diameter of cable from 14.31 to 19.3 millimetre .
2.High-elasticity PVC plastic, nonmetallic.
3.All dimensions are in millimeters

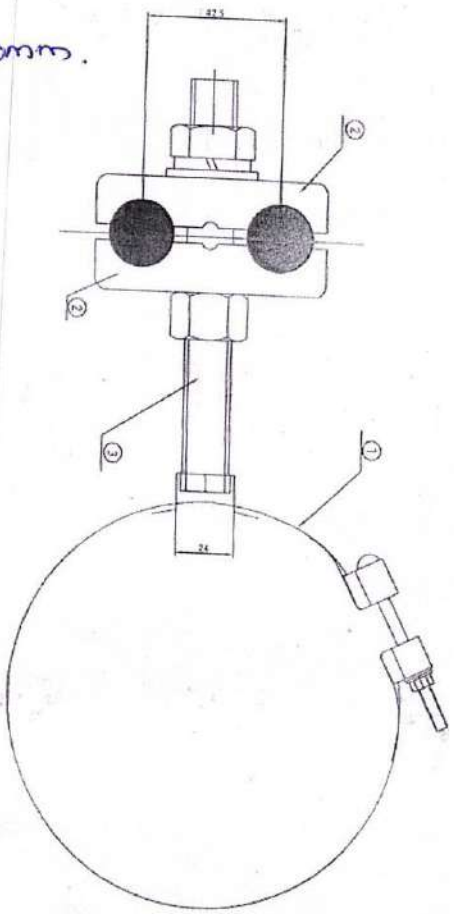
	Tolerance		Spiral vibration damper TYPE:AFZ 167 193	
MAX				
DRAWING		L.M.H		
VERIFY		ZHU	DATE:2022-08-01	DRAWING NO. AFZ 167 193
APPROVAL		ZHU		Version A

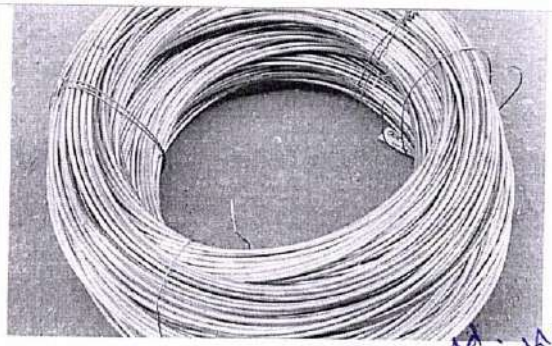
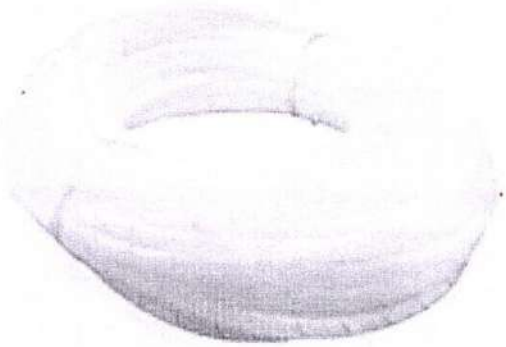
6 **Downward Clamp**

- Application: Down-lead fixation of optical fiber cable on pole
- Suitable Pole Diameter: 90 – ~~130~~ 130mm mm
- Suitable Cable Diameter: 14.3 – 15.3 mm

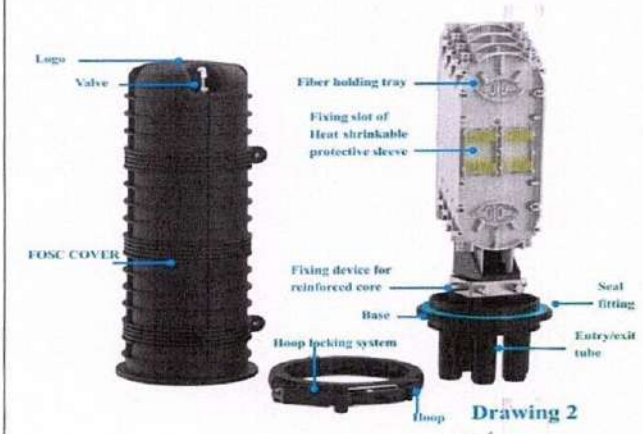
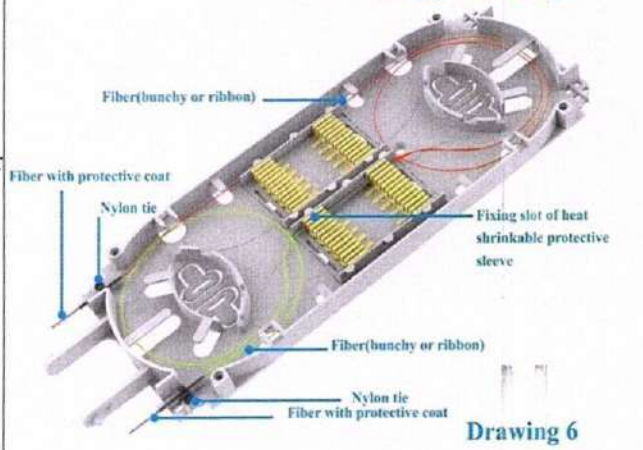
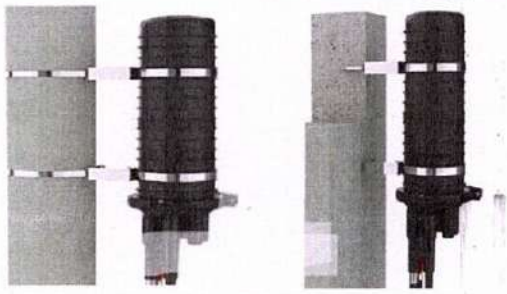
Set Configuration (per set):

- Hoop Cleat
  - Quantity: 1 pc
  - Material: Stainless steel
- Rubber Clamp
  - Quantity: 2 pcs
  - Material: Rubber
- Bolt
  - Size: M12 × 70 mm
  - Quantity: 1 pc
  - Material: Galvanized steel
- Surface Treatment: Corrosion-resistant (galvanized / stainless components)
- Function: Prevents cable slipping and reduces mechanical stress at pole drop section
- Installation: Pole-mounted, suitable for outdoor environment
- Durability: Designed for long-term exposure to UV, rain, and temperature variation



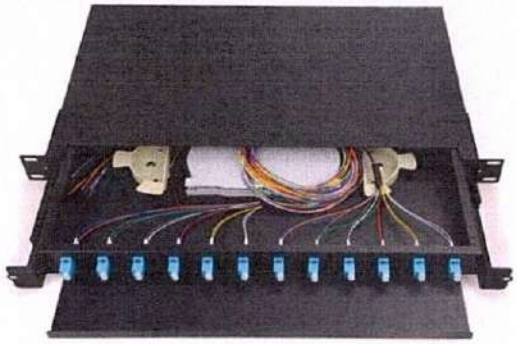
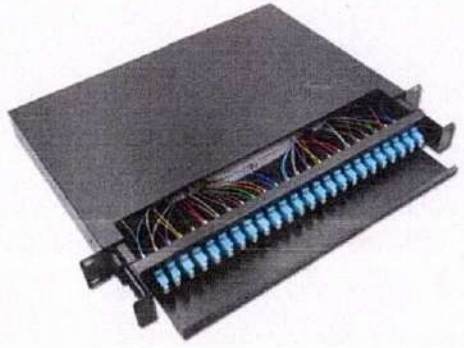
7	**Binding Wire – Aluminum Type** ❖ Application: Fixing and securing optical fiber cable to poles, clamps, and fittings ❖ Material: Aluminum ❖ Construction: Soft-drawn aluminum wire for easy handling and tight binding ❖ Surface Finish: Natural aluminum / corrosion-resistant ❖ Compatibility: Suitable for ADSS and aerial fiber optic cable installations ❖ Tensile Strength: Good mechanical strength for outdoor cable fixation ❖ Corrosion Resistance: Excellent in normal outdoor environments ❖ Flexibility: High, allows easy twisting and knotting without cracking ❖ Operating Environment: Outdoor / indoor use Optional Specifications (on request): ❖ Wire Diameter: 1.5 mm / 2.0 mm / 2.5 mm (typical) ❖ Coil Length: 50 m / 100 m / 200 m ❖ Standard: IEC / ASTM compliant (as required) ❖ Packing: Coil or reel packaging	 Purchase on Hold. We returned ABC cable from Yard.
8	**Spiral Cable Wire Wrap Protection Sleeve – For Fiber Patch Cords (12 mm Diameter)** ❖ Application: Organization and mechanical protection of fiber optic patch cords ❖ Product Type: Spiral cable wrap / cord organizer sleeve ❖ Nominal Diameter: 12 mm ❖ Material: Flexible PVC or PE (halogen-free option available) ❖ Color: Black (standard) ❖ Installation Method: Wrap-around spiral design, tool-free installation	

Cylindrical Enclosure (Specifications)

Description	Sketch
❖ Fiber Core: 96F ❖ Type: Round Cylindrical & Pole mountable. ❖ Dimension(mm) L x W (outer dimension): 526 x 235 ❖ Splice Tray: 4 (24c per tray) ❖ Color and finish: Black, Matt ❖ Cable Glanding: Yes ❖ Ingress Protection: IP68 ❖ Cable Ports: 5 Ports (1 Oval for express + 4 Round for branching) ❖ Cable Diameter: Supports Φ8mm to Φ25mm ❖ Material: High-strength Polypropylene (PP) and ABS ❖ Temperature Range: -10 – 70°C ❖ Sealing Method: Mechanical sealing with silicon rubber ❖ Protective Dome: High-impact, UV-resistant outer shell. ❖ Internal Bracket: A modular frame that holds the splice trays and provides a path for fiber routing. ❖ Strength Member Clamp: Dedicated metal anchors to secure the aramid yarns or central strength member of your 12mm ADSS cable. ❖ Storage Basket: A large space at the bottom for storing uncut loose tubes or expressed fiber buffers. ❖ Environmental Stability: Resistant to moisture, vibration, and extreme temperature cycling, making it suitable for aerial, pipeline, or direct burial. ❖ Bending Radius: Guaranteed at **≥40mm** inside the splice trays to prevent macro-bending losses in G.652.D fibers. ❖ Installation: Compatible with pole-mounting and wall-mounting brackets	 Drawing 2  Drawing 6 **Pole application.** **Wall mounting application.** 

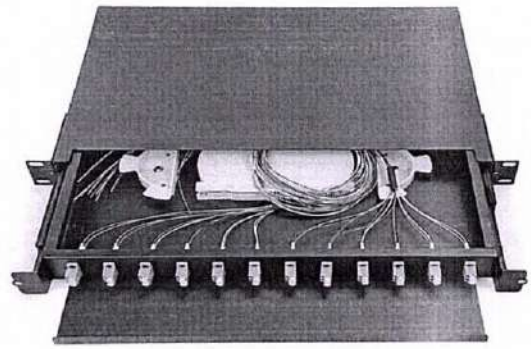
2	**Dome Fiber Optic Splice Closure (6–8 mm Cable Diameter):** ❖ Closure Type: Dome type fiber optic splice closure ❖ Fiber Capacity: 48 fibers ❖ Cable Diameter Support: 6–8 mm ❖ Number of Cable Ports: Up to 4 cable outlets ❖ Installation Method: Pole mounted / Direct buried / Manhole / Wall mounted ❖ Protection Class: IP66 ❖ Sealing Method: Mechanical seal ❖ Material: PC (Polycarbonate) ❖ Color: Black ❖ Dielectric Strength: 1.5 kV ❖ Operating Temperature: -10°C to +35°C Splicing & Mechanical Details: ❖ Splice Tray Quantity: Maximum 4 trays ❖ Splice Capacity per Tray: 12 fibers ❖ Total Splice Capacity: 48 fibers ❖ Housing Dimensions (L × W × H): 425 × 163.5 × 87 mm ❖ Net Weight: Approx. 1.5 kg per unit	

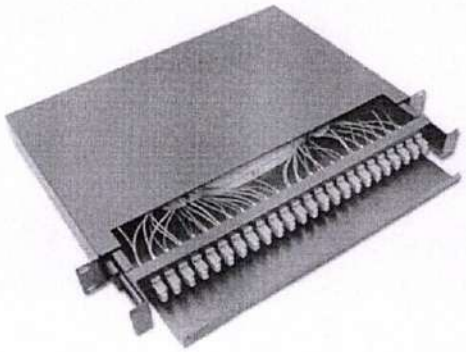
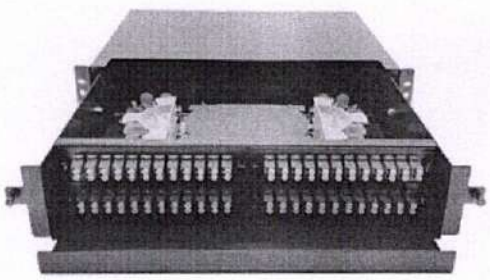
19" Indoor Terminal Box (FODP)

SN	Description	Sketch
1	Terminal Box Indoor 19inch rack drawer, 12ports Duplex: ❖ 1U Fiber Optic Patch Panel ❖ Front Panel Port: 12 Ports Duplex ❖ Adapter Type: LC Duplex ❖ Capacity: LC 24 Core ❖ Number of Tray: 2 ❖ Pigtail: LC 24 Fiber ❖ Material: Cold Rolled Steel Plate ❖ Installation Way: Rack Mount ❖ Connector Type: LC ❖ Mounting: 19" rack-mounted (horizontal). ❖ Design Type: Sliding (Drawer type for easy access). ❖ Cable Entry: Rear ❖ Protection: IP20 (Indoor rated, protected against solid objects). ❖ Operating Temperature: -25°C to +55°C or +60°C. ❖ Relative Humidity: ≤85% (at 30°C). ❖ Connector Loss: Designed for low insertion loss (high-quality porcelain bushings). ❖ Cable Management: Built-in cable management tools (rings, trays) to organize patch cords and reduce strain. ❖ Access: Front access panel with drawer/slide-out design for easy maintenance. ❖ Grounding: Includes independent insulated grounding devices.	
2	Terminal Box Indoor 19inch rack drawer, 24 Ports Duplex: ❖ 1U Fiber Optic Patch Panel ❖ Front Panel Port: 24 Ports Duplex ❖ Adapter Type: LC Duplex ❖ Capacity: LC 48 Core ❖ Number of Tray: 2 minimum ❖ Pigtail: LC 48 Fiber ❖ Material: Cold Rolled Steel Plate ❖ Installation Way: Rack Mount ❖ Connector Type: LC ❖ Mounting: 19" rack-mounted (horizontal). ❖ Design Type: Sliding (Drawer type for easy access). ❖ Cable Entry: Rear ❖ Protection: IP20 (Indoor rated, protected against solid objects).	

	❖ Operating Temperature: -25°C to +55°C or +60°C. ❖ Relative Humidity: ≤85% (at 30°C). ❖ Connector Loss: Designed for low insertion loss (high-quality porcelain bushings). ❖ Cable Management: Built-in cable management tools (rings, trays) to organize patch cords and reduce strain. ❖ Access: Front access panel with drawer/slide-out design for easy maintenance. ❖ Grounding: Includes independent insulated grounding devices.	
3	Terminal Box Indoor 19inch rack drawer 48 ports Duplex: ❖ 2U Fiber Optic Patch Panel ❖ Front Panel Port: 48 Ports Duplex ❖ Adapter Type: LC Duplex ❖ Capacity: LC 96 Core ❖ Number of Tray: 4 minimum ❖ Pigtail: LC 96 Fiber ❖ Material: Cold Rolled Steel Plate ❖ Installation Way: Rack Mount ❖ Connector Type: LC ❖ Mounting: 19" rack-mounted (horizontal). ❖ Design Type: Sliding (Drawer type for easy access). ❖ Cable Entry: Rear ❖ Protection: IP20 (Indoor rated, protected against solid objects). ❖ Operating Temperature: -25°C to +55°C or +60°C. ❖ Relative Humidity: ≤85% (at 30°C). ❖ Connector Loss: Designed for low insertion loss (high-quality porcelain bushings). ❖ Cable Management: Built-in cable management tools (rings, trays) to organize patch cords and reduce strain. ❖ Access: Front access panel with drawer/slide-out design for easy maintenance. ❖ Grounding: Includes independent insulated grounding devices.	

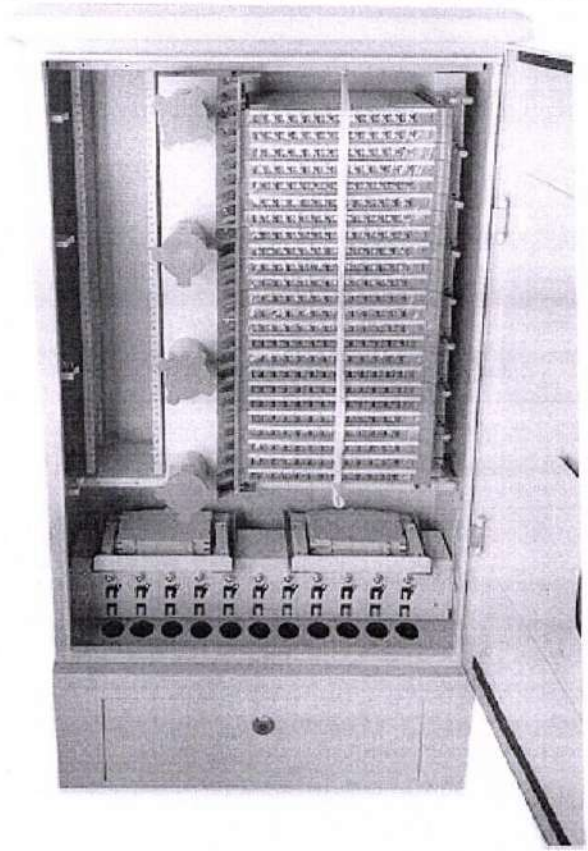
19" Indoor Terminal Box (FODP)

SN	Description	Sketch
3	FODB, 12 Port 19" rack mountable with loaded pigtail and adapters, SC/UPC: ❖ 1U Fiber Optic Patch Panel ❖ Front Panel Port: 12 Ports Duplex ❖ Adapter Type: LC Duplex ❖ Capacity: LC 24 Core ❖ Number of Tray: 2 ❖ Pigtail: LC 24 Fiber ❖ Material: Cold Rolled Steel Plate ❖ Installation Way: Rack Mount ❖ Connector Type: LC ❖ Mounting: 19" rack-mounted (horizontal). ❖ Design Type: Sliding (Drawer type for easy access). ❖ Cable Entry: Rear ❖ Protection: IP20 (Indoor rated, protected against solid objects). ❖ Operating Temperature: -25°C to +55°C or +60°C. ❖ Relative Humidity: ≤85% (at 30°C). ❖ Connector Loss: Designed for low insertion loss (high-quality porcelain bushings). ❖ Cable Management: Built-in cable management tools (rings, trays) to organize patch cords and reduce strain. ❖ Access: Front access panel with drawer/slide-out design for easy maintenance. ❖ Grounding: Includes independent insulated grounding devices.	

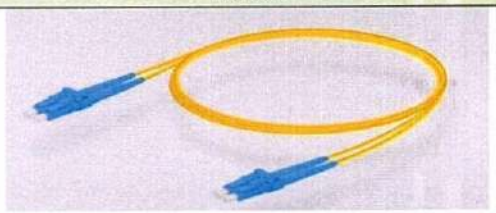
4	FODB, 24 Port 19" rack mountable with loaded pigtail and adapters, SC/UPC: ❖ 1U Fiber Optic Patch Panel ❖ Front Panel Port: 24 Ports Duplex ❖ Adapter Type: LC Duplex ❖ Capacity: LC 48 Core ❖ Number of Tray: 2 minimum ❖ Pigtail: LC 48 Fiber ❖ Material: Cold Rolled Steel Plate ❖ Installation Way: Rack Mount ❖ Connector Type: LC ❖ Mounting: 19" rack-mounted (horizontal). ❖ Design Type: Sliding (Drawer type for easy access). ❖ Cable Entry: Rear ❖ Protection: IP20 (Indoor rated, protected against solid objects). ❖ Operating Temperature: -25°C to +55°C or +60°C. ❖ Relative Humidity: ≤85% (at 30°C). ❖ Connector Loss: Designed for low insertion loss (high-quality porcelain bushings). ❖ Cable Management: Built-in cable management tools (rings, trays) to organize patch cords and reduce strain. ❖ Access: Front access panel with drawer/slide-out design for easy maintenance. ❖ Grounding: Includes independent insulated grounding devices.	
5	FODB, 96 Port 19" rack mountable with loaded pigtail and adapters, SC/UPC ❖ 2U Fiber Optic Distribution Box / Patch Panel ❖ Front Panel Ports: 96 Ports Simplex ❖ Adapter Type: SC/UPC ❖ Capacity: SC 96 Core ❖ Number of Splice Trays: 4 minimum (24 fibers per tray) ❖ Pigtails: SC/UPC, 96 fibers, single-mode (G.652D)	

		❖ Material: Cold Rolled Steel Plate ❖ Installation Method: Rack Mount ❖ Connector Type: SC/UPC ❖ Mounting: 19" rack-mounted (horizontal) ❖ Design Type: Sliding / Drawer type for easy maintenance ❖ Cable Entry: Rear (knock-out / gland entry supported) ❖ Protection Class: IP20 (indoor use) ❖ Operating Temperature: -25°C to +55°C ❖ Relative Humidity: ≤85% at 30°C ❖ Insertion Loss: ≤0.3 dB (typical, per adapter) ❖ Return Loss: ≥50 dB (UPC) ❖ Cable Management: Integrated fiber routing guides and splice management system ❖ Access: Front sliding drawer with full tray access ❖ Grounding: Dedicated grounding terminal with insulated grounding kit ❖ Color: Black (standard)	

Item 6: Fiber outdoor Distribution cabinet with 288 fiber splicing trays.

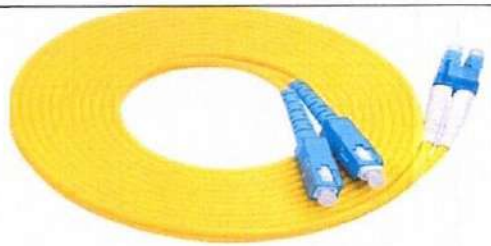
SN	Description	Sketch
6	❖ Application: Splicing, distribution, and storage of optical fibers ❖ Installation Type: Floor mounted / Pole mounted / Wall mounted ❖ Fiber Capacity: 288 cores (simplex) ❖ Connector Support: SC Simplex / LC Duplex ❖ Adapter Type: SC or LC (as specified) ❖ Splice Trays: Included (high-capacity modular trays) ❖ Pigtails: Included (factory loaded) ❖ Splitter: Included (as required) ❖ Material: Powder-coated iron or SMC (optional) ❖ Cabinet Structure: Fully enclosed, solid construction ❖ Protection Class: IP65 (dustproof and waterproof) ❖ Corrosion Resistance: Excellent anti-erosion performance ❖ Cable Entry: Bottom / side cable entry ports ❖ Cable Fixing: Each incoming cable fixed with grounding (earth) provision ❖ Supported Cable Types: Standard fiber cable and fan-out fiber cable ❖ Distribution Module: Integrated splice & distribution unit ❖ Module Design: Drawer-type distribution module (replaceable / expandable) ❖ Maintenance: Front access, modular design for easy future expansion and servicing ❖ Appearance: Neat, compact, and industrial outdoor finish ❖ Operating Environment: Suitable for harsh outdoor conditions (rain, dust, temperature variation.	

Patch Cord

SN	Description	Sketch
1	LC-LC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC/LC ❖ Cable Length: 2m ❖ Cable Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC ❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm ❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	
2	LC-LC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC-UPC/LC-UPC Duplex ❖ Length: 5m ❖ Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC ❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm ❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	

3	LC-LC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC-UPC/LC-UPC Duplex ❖ Length: 10m ❖ Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC ❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm ❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	
4	LC-FC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC-UPC/FC-UPC Duplex ❖ Length: 10m ❖ Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC ❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm ❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	
5	LC-FC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC-UPC/FC-UPC Duplex ❖ Length: 5m ❖ Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC	

	❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm ❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	
6	LC-SC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC-UPC/SC-UPC Duplex ❖ Length: 2m ❖ Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC ❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm ❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	
7	LC-SC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC-UPC/SC-UPC Duplex ❖ Length: 5m ❖ Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC ❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm	

	❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	
8	LC-SC Duplex Single Patch fiber: ❖ Fiber Type: G.657.A1 (Compatible with G.652.D) Bend insensitive. ❖ Patch Cord: LC-UPC/SC-UPC Duplex ❖ Length: 10m ❖ Diameter: 2mm ❖ Fiber: Single Mode ❖ Connector Polish: UPC ❖ Fiber Count: Duplex (2 Fiber) ❖ Insertion Loss: ≤-0.2dB ❖ Return Loss: ≥50dB ❖ Jacket: Yellow PVC ❖ Performance: Supports 1G, 10G, 25G, 40G, 100G+ Ethernet; ideal for long distances. ❖ Wavelength: 1310nm/1550nm ❖ Attenuation at 1310nm: 0.4dB/Km ❖ Attenuation at 1550nm: 0.3dB/Km ❖ Operating Temperature: -10 to 70°C	

Patch cords:

SL No.	Description
19	**SC–SC Duplex Single Mode Fiber Optic Patch Cord, 0.5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/SC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
20	**SC–SC Duplex Single Mode Fiber Optic Patch Cord, 2 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/SC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
21	**SC–SC Duplex Single Mode Fiber Optic Patch Cord, 5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/SC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
22	**SC–SC Duplex Single Mode Fiber Optic Patch Cord, 10 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/SC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
23	**SC–LC Duplex Single Mode Fiber Optic Patch Cord, 0.5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/LC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
24	**SC–LC Duplex Single Mode Fiber Optic Patch Cord, 2 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/LC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
25	**SC–LC Duplex Single Mode Fiber Optic Patch Cord, 5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/LC.

	Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
26	**SC–LC Duplex Single Mode Fiber Optic Patch Cord, 10 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/LC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
27	**LC–LC Duplex Single Mode Fiber Optic Patch Cord, 0.5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: LC/LC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
28	**LC–LC Duplex Single Mode Fiber Optic Patch Cord, 2 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: LC/LC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
29	**LC–LC Duplex Single Mode Fiber Optic Patch Cord, 5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: LC/LC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
30	**LC–LC Duplex Single Mode Fiber Optic Patch Cord, 10 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: LC/LC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
31	**SC–FC Duplex Single Mode Fiber Optic Patch Cord, 0.5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/FC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
32	**SC–FC Duplex Single Mode Fiber Optic Patch Cord, 2 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/FC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2

	fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
33	**SC–FC Duplex Single Mode Fiber Optic Patch Cord, 5 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/FC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.
34	**SC–FC Duplex Single Mode Fiber Optic Patch Cord, 10 m.** Fiber type: G.657.A1 (compatible with G.652.D), bend insensitive. Connector type: SC/FC. Cable diameter: 2 mm. Fiber: Single mode. Connector polish: UPC. Fiber count: Duplex (2 fibers). Insertion loss: ≤ 0.2 dB. Return loss: ≥ 50 dB. Jacket: Yellow PVC. Wavelength: 1310/1550 nm. Attenuation: 0.4 dB/km @1310 nm, 0.3 dB/km @1550 nm. Operating temperature: -10°C to +70°C. Supports 1G/10G/25G/40G/100G+ Ethernet.

S/L 39: Transceiver 100G
QSFP28- 100G, single mode, 2km, Sensitivity -11dBm, duplex LC,
Data Rate: 100 Gb/s (aggregate) over single-mode fiber (SMF)
Fiber Type: Single Mode Fiber (SMF), G.652 compatible
Maximum Reach: Up to 2 km over SMF with duplex LC connectors (typical implementation for 100GBASE-FR1 or CWDM4 variants)
Connectors: Duplex LC optical connectors
Transmission Wavelengths: Typically wavelength-division multiplexed CWDM lanes around ~1270-1330 nm (varies by specific QSFP28 subtype)
Sensitivity: Around –11 dBm

S/L 40: Transceiver 10G
SFP-10G-LR, single mode, 10km, Duplex LC, 1310nm
Standard Supported: IEEE 802.3ae 10GBASE-LR/LW compliant (10G Ethernet)
Data Rate: Up to ~10 Gb/s
Wavelength: 1310 nm single-mode laser transmitter (DFB)
Maximum Link Distance: Up to 10 km over standard single-mode fiber (SMF, OS2 / G.652)
Connector: Duplex LC optical interface

S/L 41: Transceiver 10G BIDI
10G BIDI SFP+ Simplex LC Interface, 1270nm&1330nm or 1490nm&1570nm, Up to 11.3 Gbps Bi-directional Data Links, 10km.
Bi-Directional (BiDi) Operation: Transmit and receive over a single strand of single-mode fiber (SMF) using two wavelengths.
Wavelength Options:
• 1270 nm Tx / 1330 nm Rx *or*
• 1490 nm Tx / 1570 nm Rx
Interface: Simplex LC connector
Data Rate: Up to 11.3 Gbps (supports 10G Ethernet full line rate)
Maximum Link Distance: Up to 10 km on standard single-mode fiber (OS2 / G.652)

S/L 42: Trancceiver 1G
SFP 1G single mode, 1310nm, 1.25Gbps, 10km
Data Rate: Up to 1.25 Gbps
Wavelength: 1310 nm single-mode laser
Max Reach: Up to 10 km on standard single-mode fiber (9/125 µm SMF)
Connector: Duplex LC / LC-UPC interface
Fiber Type: Single-mode fiber (SMF), IEEE 1000BASE-LX compliant
Form Factor: Hot-pluggable SFP module
Protocol: 1000BASE-LX Ethernet (1 GbE)

	❖ Function: Prevents tangling, abrasion, and excessive bending of patch cords ❖ Bend Protection: Helps maintain minimum bend radius of optical fibers ❖ Compatibility: Suitable for single-mode and multi-mode fiber patch cords ❖ Flame Retardancy: Optional (UL94-V0 on request) ❖ Temperature Resistance: -20°C to +60°C (typical) ❖ Durability: High flexibility, wear-resistant, long service life ❖ Usage Environment: Indoor racks, cabinets, patch panels, and data centers	
9	**1U 19" Rack Mount Cable Management Panel** ❖ Application: Organizing and routing fiber optic and network patch cords in racks ❖ Rack Standard: 19 inch ❖ Rack Height: 1U ❖ Installation Method: Rack mounted (horizontal) ❖ Material: Cold rolled steel or high-strength ABS (optional) ❖ Color: Black (standard) ❖ Design Type: Open type with fingers / rings for easy cable routing ❖ Cable Capacity: Supports multiple fiber and copper patch cords ❖ Function: Reduces cable congestion, maintains bend radius, improves airflow ❖ Mounting Compatibility: Standard 19" racks and cabinets ❖ Surface Finish: Powder coated, anti-corrosion ❖ Maintenance: Front access for easy cable rearrangement ❖ Usage Environment: Indoor data centers, telecom rooms, server racks