



# OPTICAL FIBRE C A B L E S

**CONTRIBUTING TO DIGITAL INDIA** 

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# OUTDOOR CABLES (2-12F)

# **Applicatons**

Inside Duct, Pulled or Blown For CATV applicaton, aerial applicaton along with messenger wire

# **Cable Construction**

Up to 12 low water peak single mode fibres in compliance with ITU-T-G.652D Metallic / Non metallic rod used as strength member embedded in sheath Loose buffer tubes jelly filled and centrally placed in the cable UV stabilized PE outer sheath, black

# **Mechanical Characteristics**

Temperature Range Laying & Installation Operation (IEC 60794-1-2-F1) -10°C to +50°C -20°C to +60°C

## Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation20D, D=Cable DiameterInstalled15D, D=Cable DiameterRepeated Bending30 Cycle, r=20D, 5 Kg,Load, D=Cable Diameter(IEC 60794-1-2-E6)30 Cycle, r=20D, 5 Kg,Load, D=Cable Diameter

## Tensile Force (IEC 60794-1-2-E1)

During Installation Installed Torsion Resistance (IEC 60794-1-2-E7) Crush Resistance (IEC 60794-1-2-E3) Kink Resistance (IEC 60794-1-2-E10) Water Penetration (IEC 60794-1-2-F5B) 800 N 500 N 10 Cycle (± 360°) 5 Kg weight, L=1 Mtr 500 N (100 X 100 mm) for 60 sec 15D, D=Cable Diameter 1 Mtr Water Head,3 Mtr Cable Sample, 24 Hours

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC~LSZH, and HOPE \*Strength member can be Steel or FRP \*These are general characteristics; customized designs are available as per requirements

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
2 to 8	6.0	30	800	500
12	6.5	35	800	500



LOOSE TUBE WITH

**JELLY & FIBRE** 

1

# OUTDOOR CABLES (2-144 F)

# Applicatons

Inside Duct, Pulled or Blown

# Multi-tube Single Sheath Unarmoured Cable Multi Loose Tube Design



During Installation Installed Torsion Resistance (IEC 60794-1-2-E7) Crush Resistance (IEC 60794-1-2-E3)

Kink Resistance (IEC 60794-1-2-E10)

1800 N 1000 N 10 Cycle (± 360°) 5 Kg,Weight, L=1 Mtr 1800 N (100 X 100 mm)for 60 sec 10D, D=Cable Diameter

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC, LSZH, and HDPE

\*Strength member can be Steel or FRP

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
Upto 72	10.0	85	1800	1000
96	12.0	115	1800	1000
144	15.0	180	1800	1000

# Applicatons

Inside Duct, Pulled or Blown

## **Cable Construction**

288 low water peak single mode fibres in compliance with ITU-T-G.652D Metallic / Non metallic element used as central strength member for Tensile Strength Loose buffer tubes jelly filled Loose buffer tubes S-Z Stranded Cable core filled with jelly S-Z core wrapped with polyester tape UV stabilized PE outer sheath, black

# **Special Features**

Flexible buffer tubes provide easy fibre routing inside closure Lighter weight cable for fast and easy installation

# **Mechanical Characteristics**

Temperature Range (IEC 60794-1-2-F1)Laying & Installation-10°C to +50°COperation-20°C to +60°C

# Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation Installed 15D, Repeated Bending (IEC 60794-1-2-E6) 20D, D=Cable Diameter D=Cable Diameter 30 Cycle, r=20D, 5 Kg Load, D=Cable Diameter

## Tensile Force (IEC 60794-1-2-E1)

During Installation Installed Torsion Resistance (IEC 60794-1-2-E7) Crush Resistance (IEC 60794-1-2-E3) Kink Resistance (IEC 60794-1-2-E10) Water Penetration (IEC 60794-1-2-F5B) 3000 N 1500 N 10 Cycle (± 360°) 5 Kg,weight, L=1 Mtr 1500 N (100 X 100 mm) for 60 sec 15D, D=Cable Diameter 1 Mtr Water Head,3 Mtr Cable Sample, 24 Hours

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC, LSZH, and HDPE \*Strength member can be Steel or FRP

\*These are general characteristics; customized designs are available as per requirements

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
96	17.0	250	3000	1500
288	18.5	330	3000	1500



**8F / 12F RIBBON** 

**Ribbon Type Unarmoured Cable Multi** 

# **Applicatons**

Inside Duct, Pulled or Blown In areas where high mechanical load is required In areas where rodent attack is there

# **Cable Construction**

Up to 12 low water peak single mode fibres in compliance with ITU-T-G.652D Metallic / Anti buckling element steel wires are used as Peripheral Strength Member Loose buffer tube jelly filled and centrally placed in the cable UV stabilized PE outer sheath, black

# **Special Features**

Lighter weight cable for fast and easy installation Robust Construction

# **Mechanical Characteristics**

Temperature Range (IEC 60794-1-2-F1)Laying & Installation-10°C to +50°COperation-20°C to +60°C

# Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation Installed Repeated Bending (IEC 60794-1-2-E6) 20D, D=Cable Diameter 15D, D=Cable Diameter 30 Cycle, r=20D, 5 Kg Load, D=Cable Diameter

# Tensile Force (IEC 60794-1-2-E1)

During Installation Installed Torsion Resistance (IEC 60794-1-2-E7) Crush Resistance (IEC 60794-1-2-E3) Kink Resistance (IEC 60794-1-2-E10) Water Penetration (IEC 60794-1-2-F5B) 1800 N 1000 N 10 Cycle (± 360°) 5 Kg, weight, L=1 Mtr 1000 N (100 X 100 mm), for 60 sec 10D, D=Cable Diameter 1 Mtr Water Head, 3 Mtr Cable Sample, 24 Hours

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC, LSZH, and HDPE \*Strength member can be Steel or FRP

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
Upto 12	8.5	70	1800	1000

# **Uni Tube Unarmoured Cable Design**



# Applicatons

# Multi-tube Single Sheath Armoured Cable Design



## Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation	20D, D=Cable Diameter
Installed 15D,	D=Cable Diameter
Repeated Bending	30 Cycle, r=20D, 5 Kg
(IEC 60794-1-2-E6)	Load, D=Cable Diameter

## Tensile Force (IEC 60794-1-2-E1)

During Installation	2700 N
Installed	1500 N
Torsion Resistance (IEC 60794-1-2-E7)	10 Cycle (± 360°) 5 Kg,
Crush Resistance (IEC 60794-1-2-E3)	1800 N (100 X 100 mm)
Kink Resistance (IEC 60794-1-2-E10)	10D, D=Cable Diamete
Water Penetration (IEC 60794-1-2-F5B)	1 Mtr Water Head, 3 Mt

2700 N 1500 N 10 Cycle (± 360°) 5 Kg, weight, L=1 Mtr 1800 N (100 X 100 mm),for 60 sec 10D, D=Cable Diameter 1 Mtr Water Head, 3 Mtr Cable Sample, 24 Hours

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC, LSZH, and HDPE

\*Strength member can be Steel or FRP

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
Upto 72	11.5	125	2700	1500
96	13.5	170	2700	1500
144	16.5	250	2700	1500

# **Applicatons**

# Multi-tube Double Sheath Armoured Cable Design



## Cable Bending Radius (IEC 60794-1-2-E11A)

20D, D=Cable Diameter
15D,D=Cable Diameter
30 Cycle, r=20D, 5 Kg
Load, D=Cable Diameter

## Tensile Force (IEC 60794-1-2-E1)

During Installation Installed Torsion Resistance (IEC 60794-1-2-E7) Crush Resistance (IEC 60794-1-2-E3) Kink Resistance (IEC 60794-1-2-E10) Water Penetration (IEC 60794-1-2-F5B) 3500 N 2000 N 10 Cycle (± 360°) 5 Kg, weight, L=1 Mtr 1800 N (100 X 100 mm), for 60 sec 10D, D=Cable Diameter 1 Mtr Water Head, 3 Mtr Cable Sample, 24 Hours

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC, Nylon, LSZH, and HDPE

\*Strength member can be Steel or FRP

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
Upto 48	14.0	180	2700	1500
96	15.5	220	2700	1500
144	19.0	300	2700	1500

# Applicatons

Self supporting aerial installation with rigorous

# All Dielectric Self Supporting Cable Multi Loose Tube Design



## Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation	20D, D=Cable Diameter
Installed	15D, D=Cable Diameter
Repeated Bending	30 Cycle, r=20D, 5 Kg
(IEC 60794-1-2-E6)	Load, D=Cable Diameter

# Tensile Force (IEC 60794-1-2-E1)

During Installation Installed Torsion Resistance (IEC 60794-1-2-E7) Crush Resistance (IEC 60794-1-2-E3) Kink Resistance (IEC 60794-1-2-E10) Water Penetration (IEC 60794-1-2-F5B) 5W \* 9.81 N 2W \* 9.81 N 10 Cycle (± 360°) 5 Kg, weight, L=1 Mtr 2000 N (100 X 100 mm), for 60 sec 20D, D=Cable Diameter 1 Mtr Water Head, 3 Mtr Cable Sample, 24 Hours

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC, LSZH, and HDPE

\*Cable construction can be jelly filled or dry core

\*Strength member can be Steel or FRP

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
Upto 48	12.5	135	4000	2000
96	15.0	180	4000	2000
144	18.0	250	4000	2000

# **Applicatons**

Lashed aerial installation with rigorous load conditions Including heavy wind & ice Suitable for span length of 100 mtrs

# **Cable Construction**

Up to 144 low water peak single mode fibres in compliance with ITU-T-G.652D Non metallic and anti buckling element FRP rod used as Central Strength Member Loose buffer tubes jelly filled Loose buffer tubes S-Z Stranded Cable core filled with jelly / WS Yarn S-Z core wrapped with polyester tape / WS Tape High tensile, stranded steel wire used as messenger UV stabilized outer sheath. black

# **Special Features**

Single layer stranded construction Offers exceptional strength and corrosion resistance for Aerial application with high tensile messenger Flexible buffer tubes provide easy fibre routing inside closure

# **Mechanical Characteristics**

Temperature Range (IEC 60794-1-2-F1)Laying & Installation-10°C to +50°COperation-20°C to +60°C

# Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation Installed Repeated Bending (IEC 60794-1-2-E6) 20D, D=Cable Diameter 15D, D=Cable Diameter 30 Cycle, r=20D, 5 Kg Load, D=Cable Diameter

# Tensile Force (IEC 60794-1-2-E1)

During Installation Installed Torsion Resistance (IEC 60794-1-2-E7) Crush Resistance (IEC 60794-1-2-E3) Kink Resistance (IEC 60794-1-2-E10) Water Penetration (IEC 60794-1-2-F5B) 5W \* 9.81 N 2W \* 9.81 N 10 Cycle (± 360°) 5 Kg, weight, L=1 Mtr 2000 N (100 X 100 mm), for 60 sec 20D, D=Cable Diameter 1 Mtr Water Head, 3 Mtr Cable Sample, 24 Hours

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50μm & 62.5μm) \*Outer Jacket can be of PVC, LSZH, and HDPE \*Cable construction can be jelly filled or dry core

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
Upto 48	11.0	135	5000	2500
96	12.5	180	5000	2500
144	15.5	250	5000	2500

# Self Supporting Aerial Cable Multi Loose Tube Design



# FTTH Cable (2F)

# **Applicatons**

Low bending cable suitable for Indoor application

## **Cable Construction**

Primary coated fibre – G.657 Strength Member – ARP Rods Sheath – White LSZH Loose buffer tubes S-Z Stranded

#### Variants\*

#### \*\*Strength member can be Steel or FRP

\*These are general characteristics; customized designs are available as per requirements

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
1 to 2 F	3.2 * 2.1	20	150	100

## **Suitable for Outdoor Application**



# Drop Cable (2 to 6F)

#### **Applicatons**

Drop cable suitable for outdoor application Suitable for introducing fibre into the building

#### Cable Design

2, 4, 6 No of Single Mode Fibre – G.652D Strength Member – ARP Rods UV Stabilized HDPE Sheath, black Supporting FRP Rod / Steel WIre

## **Mechanical Characteristics**

Temperature Range (IEC 60794-1-2-F1)Laying & Installation-10°C to +50°COperation-20°C to +60°C

## Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation	20D, D=Cable Diameter
Installed	15D, D=Cable Diameter

## Tensile Force (IEC 60794-1-2-E1)

Installed	500 N
During Installation	1000 N

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
2 to 6 F	6.8 * 3.0	20	1000	500



# Outdoor FO Cable (2-8 F)

# **Applicatons**

Indoor or Outdoor Military or civil applications Rapid Deployment in harsh conditions

# **Cable Construction**

Up to 8 fibres, Single Mode or Multimode fibres Gel-filled stainless steel loose tube, centrally placed in the cable Armouring & strain relief made of stainless steel wires Outer Sheath is of Polyamide with extra abrasion resistnce

## **Special Features**

Lighter weight cable for fast and easy installation Robust Construction Rodent Proof High crush resistance

## **Temperature Range**

Laying & Installation-50°C to +70°COperation-40°C to +60°C

## **Mechanical Characteristics**

Tensile ForceDuring Installation1800 NInstalled1100 NCrush Resistance1000 N (100 X 100 mm)

## Min Bending Radius

Permanent	10*D, D=Cable Diameter
Installed	15*D, D=Cable Diameter

#### Variants\*

\*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50µm & 62.5µm) \*Outer Jacket can be of PVC, Nylon, PU, LSZH, and HDPE \*\*These are general characteristics; customized designs are available as per requirements

\*\*These are general characteristics; customized designs are available as per requirements

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
Upto 8	4.0	28	1000	800

# Stainless Steel Loose Tube with Stainless Steel Wire Armouring Cable



# Tactical Cable (2-12 F)

# **Applicatons**

Suitable for Aerial, Pipeline Intra Building Backbones & Installation inharsh environment for Distribution

# **Cable Construction**

Tight Buffered Fiber without jelly compound

## **Special Features**

Light weight cable for fast and easy installation

## **Mechanical Characteristics**

Temperature Range (IEC 60794-1-2-F1)Laying & Installation-10°C to +50°COperation-20°C to +60°C

# Cable Bending Radius (IEC 60794-1-2-E11A)

During Installation	25D, D=Cable Diameter
Installed	20D, D=Cable Diameter
Crush Resistance	1000 N

#### Tensile Force (IEC 60794-1-2-E1)

During Installation	1000 N
Installed	800 N

## **Drum Length**

2000 / 3000 / 4000 meters ± 10%

## **Cable Sheath Marking**

Cable sheath shall be marked in white color with hot indentation method. Marking details can be customized. Below mentioned details are generally marked on the cable sheath.

Drum Number, Telephone Symbol, Laser Symbol, Number of Fibers, Month & Year of Manufacturing , Manafacturer's Name Sequential Length Marking

#### Variants\*

- \*Cable can be supplied with single mode (ITU-T-G652, G655, and G657) & Multimode (50µm & 62.5µm) \*Outer Jacket can be of PVC, NYLON, LSZH, HDPE and PU
- \*Cable construction can be jelly filled or dry core

\*Strength member can be Steel or FRP

\*These are general characteristics; customized designs are available as per requirements

Fibre Count	Diameter (mm) (Nominal)	Weight (kg/km)	Tensile Strength Installation	Tensile Strength Installed
2 to 8	6.0	30	1000	800
12	8	40	1000	800



## **Cable Drum Packing**

Every lenght will be delivered on non-returnable wodden drums. Generally the cable drum flange will be marked with following.

Arrow showing rolling direction of drum. Manufacturer's name Number of fibers Cable lenght in meters Drum Number Net & gross weight Customer's name & destination

Both ends of the cable shall be sealed to prevent the ingress of moisture during transportation & storage, physical damage

# 4F + 5 Pair (Hybrid Cable)

# **Cable Construction details**

# Paramount/Hybrid (4F+5Pr)/2016/01 Single Mode Fibre G.652D + 5 Pair



Individual Max 3000 pF/Km Average Max 750 pF/Km

Average Max 8.25 dB/Km

Min 55.0 dB

Min 55.0 dB/Km

Min 5000 Mohm.Km

2.4 KV DC for 3 Second

Capacitance Unbalance Pair to Ground

Attenuation at 150 KHz at 20°C Near End Cross-talk at 150 Khz Far End Cross-Talk at 150 Khz Insulation Resistance **Dielectric Strength** 

## **Physical Characteristics**

Cable Diameter - 10.5 mm (Nominal) Cable Weight per Km - 110 Kg (Nominal) Tensile 1000 N Crush 500 N Impact Resistance 10 N, 0.5 Mtr, 3 Nos. Torsion Resistance ± 180°, 5 turns, 20 N 20 D, D = Cable Diameter Cable Bend **Temperature Range** -10°C to +60°C

Fibre Colour	Fibre Type	No.of Fibres
Blue	G-652 D	1
Orange	G-652 D	1
Green	G-652 D	1
Natural	G-652 D	1

Pair No	Insulation Col	No of Pair
1st Pair	White & Blue	1
2nd Pair	White & Orange	1
3rd Pair	White & Green	1
4th Pair	White & Brown	1
5th Pair	White & Slate	1

POLYESTER TAPE

# **General Instructions**

Drum Length 2000 meters ± 5%

# **Cable Sheath Marking**

Cable sheath shall be marked in black colour with hot foil indentation / inkjet printing. Marking details can be customized. Below mentioned details are generally marked on the cable sheath.

Drum Number, Telephone Symbol, Laser Symbol, Number of Fibres, Cable Type, Manufacturer's Name, Year, Sequential Length Marking.

# **Cable Drum Packing**

Every length will be delivered on non-returnable wooden drums. Generally the cable drum flange will be marked with following.

- Arrow showing rolling direction of the drum.
- Manufacturer's name
- Number of fibres
- Cable length in meters
- Drum Number
- Net & gross weight
- Customer's name & destination

Both ends of the cable shall be sealed to prevent the ingress of moisture during transportation and storage, physical damage.

# **Other Product Range**

- Medium Voltage (HT) and Low Voltage (LT) XLPE Power Cables, from 1.1kv to 33kv, including FR and FRLS cables
- Medium Voltage (HT) and Low Voltage (LT) Aerial Bunch Cables, from 1.1kv to 33kv
- Low Voltage PVC Power and Control Cables, 1.1kv, including FR and FRLS cables
- Instrumentation Cables
- Thermocouple Extension and Compensating Cables
- Jelly Filled Telecom Cables
- Aerial Telecom Cables
- Railway Signaling Cables
- Axle Counter Cables for Railways
- Fire Punch and Fire Punch Secure Fire Performance Cables
- Solar Cables
- MDF and Switch Board Cables
- Lead Free, Heat Resistant FR, FRLS and ZHLS Building Wires
- Flat 3 Core Cables for Submersible Pumps
- Single Core and Multi Core Flexible Cables
- Other Specialized Cables