

M-H Optical Fiber Components



**Connectors
Adapters
Attenuators**

Optical Fibre Components

Connectors

SC connector



The SC connector comprises a polymer body with a ceramic ferrule/spring/crimp barrel assembly plus a crimp-over sleeve and rubber boot. These connectors are suitable for 900µm, 2mm and 2.8mm cables. The connector is precision made to demanding specifications.

The combination of a ceramic ferrule with a precision polymer housing provides consistent, long-term mechanical and optical performance.

The SC connector is a push-pull type connector that gives an audible click when mated into its adapter. The SC connector can also be tuned in 4 positions to provide the lowest insertion loss.

Optical Performance

Singlemode

Insertion loss: Max. 0.3dB Typical 0.2dB

Return Loss: UPC > 50dB Typical 55dB
APC > 60dB Typical 65dB

Multimode

Insertion loss: Max. 0.3dB Typical 0.2dB

(IEC 61300 - 3 - 4)

Intermateability

Optically and mechanically compatible with all equivalent connectors.

(Compliant with IEC 61754-4)

Mechanical

Ferrule ID / tolerance:

Singlemode - 126 +1/-0mm

Multimode - 126 -0/+2µm

Ferrule Diametre : 2.5 ± 0.001mm (MM) / 2.4990 ± 0.0005 (SM)

Pre-radiused, PC-end finish for Physical Contact ferrule to ferrule.
R 10 to 25mm

Tensile Strength Cable retention: >50N
(2 & 3mm boot versions only)

Temperature Cycle:

(61300-2-18)
-40 to +75°C, 40 cycles
<0.2dB Change

High Temperature:

(61300-2-18)
70°C for 96 hours
< 0.2dB Change

Damp Heat:

(61300-2-19)
40°C at 93% RH, 96 hours
< 0.2dB Change

Product Packaging:

Standard packaging:
100pcs Bulk packed
(Special packaging available by request)

Colours:

2 and 2.8mm : Blue, Red, Black, Green

Termination Procedures:

Cable pre-termination, polishing and crimping on Epoxy Glue.

Simplex & Duplex versions available

(Duplex version uses two simplex connectors with a clip to be coupled as required)

Vibration (Mated Pair):

(61300-2-1)
10-55 Hz, 1.5mm P to P
< 0.2dB Change

Mating Durability:

(61300-2-2)
500 mating cycles
Clean every 25
< 0.2 dB Change

Operating Temperature:

-40°C to +85°C

Back Shell:

Connector versions available for:
3mm Cable
2mm Cable
900µm Buffered Fibre

Optical Fibre Components

Connectors

SC Multimode connectors

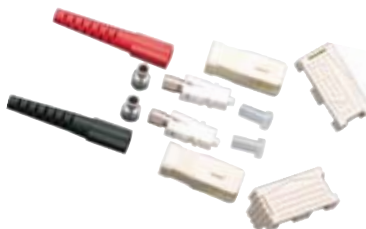


SC MULTIMODE SIMPLEX

3mm Cable

Beige body

Black, Beige or Red Boots



SC MULTIMODE DUPLEX

3mm Cable

Beige body

Black, Beige or Red Boots



SC MULTIMODE PIGTAIL

900µm Cable

Beige body

Black, Beige or Red Boots

SC Singlemode connectors



SC SINGLEMODE SIMPLEX

3mm Cable

Blue body

Blue Boots



SC SINGLEMODE DUPLEX

3mm Cable

Blue body

Blue Boots



SC SINGLEMODE PIGTAIL

900µm Cable

Blue body

Blue Boots

APC Singlemode connectors (Angle Polished Connector)

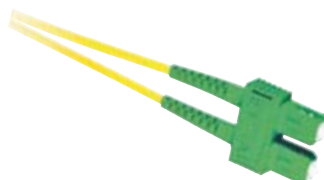


SC SINGLEMODE APC SIMPLEX

3mm Cable

Green Body

Green Boots



SC SINGLEMODE APC DUPLEX

3mm Cable

Green Body

Green Boots



SC SINGLEMODE APC PIGTAIL

900µm Cable

Green Body

Green Boots

Optical Fibre Components

Connectors

ST Connector



The ST connector has been the main stay of optical fibre connectors for many years. It can be found in almost every communications room worldwide, but is used mainly in data communications systems. The simple to use bayonet locking mechanism reduces the risks of accidental disconnection of fibre connections.

The ST optical fibre connector is comprised of a nickel plated brass body and a ceramic ferrule/spring/crimp bar assembly, plus a crimp-over sleeve with rubber boot. These connectors are suitable for 900µm, 2mm and 3mm cables. The connector is precision made and manufactured to demanding specifications. The combination of a ceramic ferrule with precision metal housing provides consistent, long-term mechanical and optical performance.

Optical Performance

Singlemode

Insertion Loss: Max. 0.3dB Typical 0.2dB

Return Loss: UPC > 50dB Typical 55dB

Multimode

Insertion loss: Max. 0.3dB Typical 0.2dB

Intermateability

Optically and mechanically compatible with all equivalent connectors.

(Compliant with IEC 61754-2)

Mechanical

Ferrule ID / tolerance:

SM - 126 +1/-0mm

MM - 126 -0/ +2µm

Ferrule Diameter: 2.5 ± 0.001mm (MM) / 2.4990 ± 0.0005 (SM)

Pre-radiused, PC-end finish for Physical Contact ferrule to ferrule.

R 10 to 25mm

Tensile Strength Cable retention: >50N (2 & 3mm boot versions only)

Temperature Cycling:

(61300-2-18)

-40° to +85°C, 40 cycles

< 0.2 dB Change

High Temperature:

(61300-2-18)

70°C for 96 hours

< 0.2dB Change

Damp Heat:

(61300-2-19)

40°C at 93% RH, 96 hours

< 0.2dB Change

Vibration (Mated Pair):

(61300-2-1)

10-55 Hz, 1.5mm P to P

< 0.2 dB Change

Mating Durability:

500 mating cycles

Clean every 25

< 0.2 dB Change

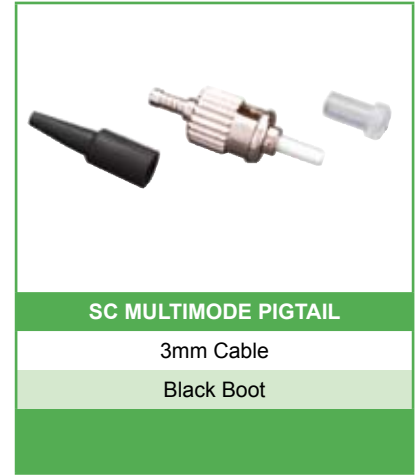
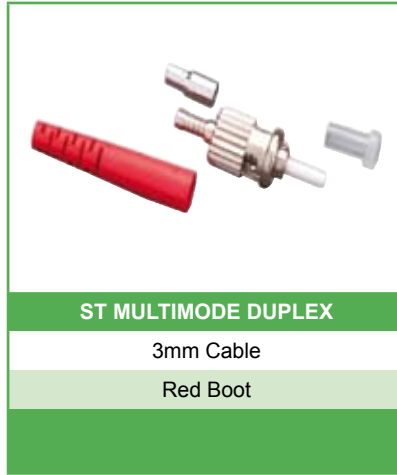
Operating Temperature:

-40°C to +85°C

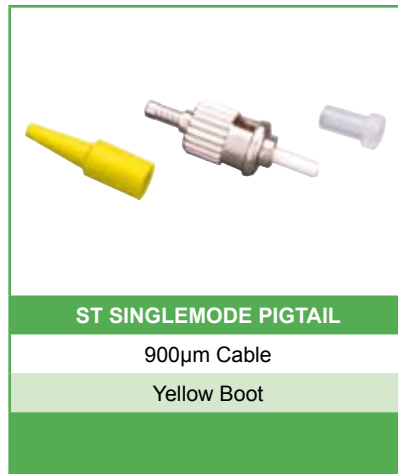
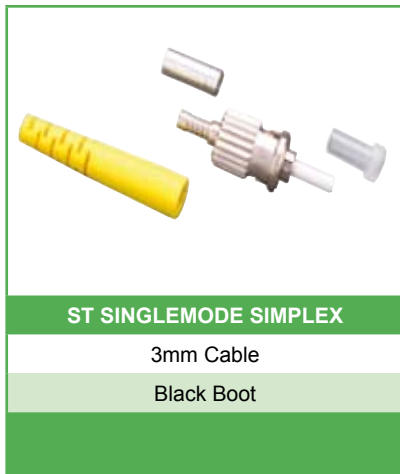
Optical Fibre Components

Connectors

ST Multimode connectors



ST Singlemode connectors



Optical Fibre Components

Connectors

FC connector



The FC connector is used extensively in the telecommunications market, where long singlemode optical fibre cables can run upwards of 50km. In these extreme situations, the connector needs to have very low losses and accurate geometry.

The FC connector has a screw thread fitting into the adapter to provide a secure connection. The FC connector is comprised of a nickel plated brass body and a ceramic ferrule/spring/crimp barrel assembly plus a crimp-over sleeve and rubber boot. These connectors are suitable for 900µm, 2mm and 3mm cable. The connector is precision made and manufactured to demanding specifications. The combination of a ceramic ferrule with precision nickel plated brass housing provides consistent, long-term mechanical and optical performance.

Optical Performance

Singlemode

Insertion loss: Max. 0.3dB Typical 0.2dB

Return Loss: UPC > 50dB Typical 55dB
APC > 60dB Typical 65dB

Multimode

Insertion loss: Max. 0.3dB Typical 0.2dB

Intermateability

Optically and mechanically compatible with all equivalent connectors.
(Compliant with IEC 61754-13)

Mechanical

Ferrule ID / tolerance:
SM - 126+1/-0mm
MM - 126 -0/+2µm
Ferrule Diameter: 2.5 ± 0.001mm (MM) / 2.4990 ± 0.0005 (SM)
Pre-radiused, PC-end finish for Physical Contact ferrule to ferrule.
R 10 to 25mm

Tensile Strength Cable retention: >50N
(2 & 3mm boot versions only)

Temperature Cycling:

(61300-2-18)
-40 to +75°C, 40 cycles
< 0.2dB Change

High Temperature:

(61300-2-18)
70°C for 96 hours
< 0.2dB Change

Damp Heat:

(61300-2-19)
40°C at 93% RH, 96 hours
< 0.2dB Change

Vibration (Mated Pair):

(61300-2-1)
10-55 Hz, 1.5mm P to P
< 0.2dB Change

Mating Durability:

(61300-2-2)
500 mating cycles
Clean every 25
< 0.2 dB Change

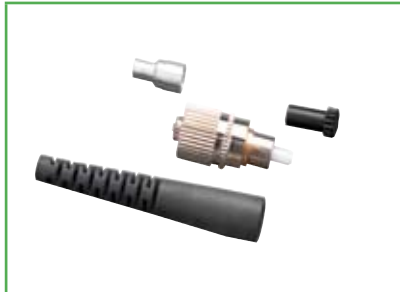
Operating Temperature:

-40°C to +85°C

Optical Fibre Components

Connectors

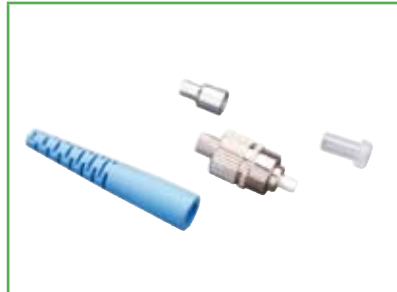
FC connectors



FC MULTIMODE SIMPLEX

3mm Cable

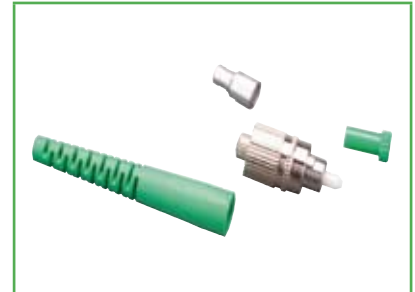
Black Boot



FC SINGLEMODE SIMPLEX

3mm Cable

Blue Boot



FC SINGLEMODE APC SIMPLEX

3mm Cable

Green Boot



FC MULTIMODE PIGTAIL

900µm Cable

Black Boot



FC SINGLEMODE PIGTAIL

900µm Cable

Blue Boot



FC SINGLEMODE APC PIGTAIL

900µm Cable

Green Boot

Optical Fibre Components

Connectors

LC Connectors



The LC connector was the first small form factor (SFF) connector on the market. The LC features a latched lever mechanism to provide secure mating into the adapter. The LC has been designed to meet the need for a small optical fibre connector that uses half the space of the SC connector. The duplex version, which is two simplex connectors with a clip, plugs into an adapter with the same footprint as the SC connector.

The LC optical fibre comprises of a polymer body and a ceramic ferrule/spring/crimp barrel assembly plus a crimp over sleeve and rubber boot. These connectors are suitable for 900µm, 2mm and 3mm cables. The connector is precision made and manufactured to demanding specifications. The combination of a ceramic ferrule with polymer housing provides consistent, long-term mechanical and optical performance. The LC connector is available in singlemode UPC and APC versions as well as multimode.

Optical Performance

Singlemode

Insertion loss: Max. 0.3dB Typical 0.2dB

Return Loss: UPC > 50dB Typical 55dB
APC > 60dB Typical 65dB

Multimode

Insertion Loss: Max. 0.3dB Typical 0.2dB

Intermateability:

Optically and mechanically compatible with all equivalent connectors.

(Compliant with IEC 61754-20)

Mechanical

Capillary diameter tolerance: 125 -0/ µm

Ferrule Diameter: 1.25 ± 0.001mm (MM) / 2.4990 ± 0.0005 (SM)

Temperature Cycling:

(61300-2-18)
-40 to +75°C, 40 cycles
< 0.2dB Change

High Temperature:

(61300-2-18)
70°C for 96 hours
< 0.4dB Change

Damp Heat:

(61300-2-19)
40°C at 93% RH, 96 hours
< 0.2dB Change

Vibration (Mated Pair):

(61300-2-1)
10-55 Hz, 1.5mm P to P
< 0.2dB Change

Mating Durability:

(61300-2-2)
500 mating cycles
Clean every 25
< 0.2 dB Change

Operating Temperature:

-40°C to +85°C

Optical Fibre Components

Connectors

LC Connectors



LC MULTIMODE SIMPLEX

2mm Cable

Beige Body

White Boots



LC MULTIMODE DUPLEX

2mm Cable

Beige Body

White Boots



LC SINGLEMODE PIGTAIL

900µm Cable

Beige Body

White Boots

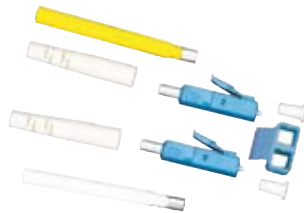


LC SINGLEMODE SIMPLEX

2mm Cable

Blue Body

Blue Boots



LC SINGLEMODE DUPLEX

2mm Cable

Blue Body

White Boots



LC SINGLEMODE PIGTAIL

900µm Cable

Blue Body

Blue Boots

Optical Fibre Components

Connectors

MTRJ Connector



The MTRJ connector is a development of the, now legendary, MT ferrule. This amazing technology is at the heart of many state-of-the-art connectors. The MT ferrule, in its various designs, has the ability to connect anything from 2 fibres in the MTRJ connector, to 72 fibres in the latest versions of the MPO connector.

The version of the MTRJ, is capable of terminating any 125µm fibre. The flexibility of the connector allows it to be used in short run local area networks in addition to longer haul cabling using singlemode fibre. It is designed to terminate two fibres within a single connector, reducing the risk of operator error when inter-connecting equipment and distribution panels. The MTRJ has been deliberately designed to look and feel like the industry standard copper connector.

The high-density MTRJ connector allows the termination of high fibre count backbone cables into smaller distribution panels.

Description

The MTRJ connector is a high-density small form factor (SFF) connector, designed to reduce the space required in the distribution cabinets.

We have a full range of tools and products to assist you with the termination of the MTRJ connector. For those who prefer to purchase pre-terminated pigtailed, We can supply all your needs.

For information on the full range MTRJ products and tooling please contact us for a data sheet.

Specifications

Fibre Type:
9/125S Singlemode
50/125 Multimode
62.5/125 Multimode

Fibre Count available: 2

Insertion Loss (With master plug)
Standard Loss: < 0.5 dB
Low Loss: < 0.35 dB

Return Loss: =45dB (SM only)

Cable Type: Mini Zip

Adapter Bulkhead:
Single connector-Duplex

Intermateability:
Optically and mechanically compatible with all equivalent connectors.
Compliant with IEC 61754-18.

Product Packaging
Connector in kit form, packaged in 100pcs

Temperature Cycling:
(61300-2-18)
-40 to +75°C, 40 cycles
< 0.2dB Change

High Temperature:
(61300-2-18)
70°C for 96 hours
< 0.2dB Change

Damp Heat:
(61300-2-19)
40°C at 93% RH, 96 hours
< 0.2dB Change

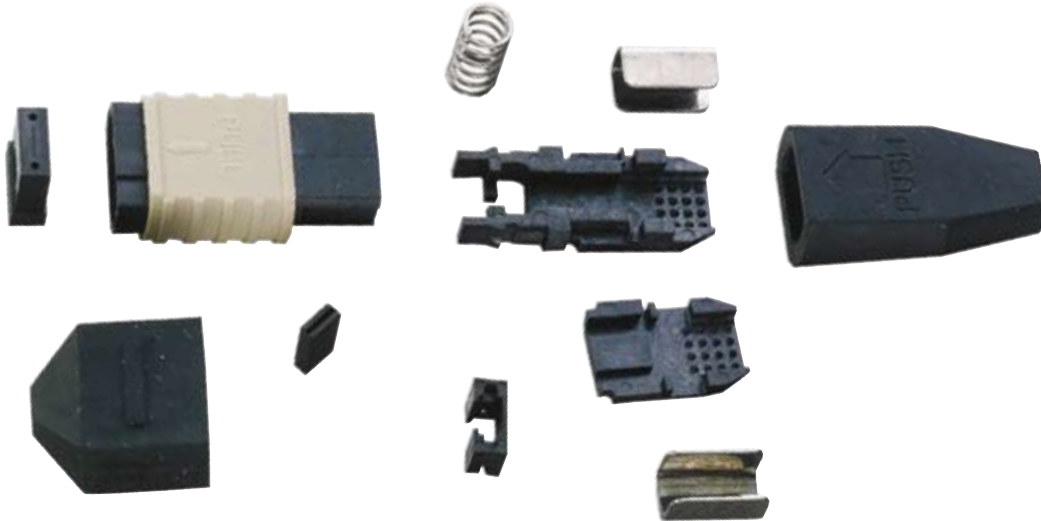
Vibration (Mated Pair):
(61300-2-1)
10-55 Hz, 1.5mm P to P
< 0.2dB Change

Mating Durability:
(61300-2-2)
500 mating cycles
Clean every 25
< 0.2 dB Change

Operating Temperature:
-40°C to +85°C

Connectors

MTP®/MPO Connector



The MTP®/MPO connector is the latest development of the now legendary MT ferrule. The MT ferrule technology is at the heart of many state of the art connectors. The Mulder-Hardenberg range of MTP®/MPO connectors are capable of connecting between 4 and 12 fibres. The next generation of this ferrule will be used to terminate up to 72 fibres in a single connector. This allows totally new designs of fibre distribution, using densities unheard of before now.

This version of this interface is the market leader in this new and exciting field of optical fibre termination. Manufactured in ISO 9001 approved facilities, the MTP®/MPO connector gives the user total flexibility in the design of their backbone, reducing costs and keeping distribution space to a minimum.

As the use of pre-terminated fibre cables grows, the MTP®/MPO gives the perfect solution to the ever-present problem of protecting the terminated fibres. The small size of the MTP®/MPO allows pre-terminated fibre cable to be fed through the smallest holes, making the installation benefits of pre-terminated fibre even greater than before.

Description

The high density MTP®/MPO connector allows the simple termination of the fibre backbone. Once installed the backbone needs to have the correct interface to suit the needs of the network hardware. Using the MTP®/MPO connector on pre-terminated fibre solutions, allows you to prepare the distribution units in the comfort of your own workshop. This can be taken a step further by having the distribution cabinets built in a clean facility and only taken to site when the installation is due to go live. This saves time, reduces the possibility of damage to the fragile optical tails and limits the risk of dirt ingress into fibre couplers.

Features

- ▶ MT based ferrule that can support up to 12 fibres.
- ▶ Very high density connector.
- ▶ Reliable quality supported by more than 15 years of experience.

Specifications

Fibre Type:
9/125 µm singlemode
50/125 µm multimode
62.5/125 µm multimode

Fibre Count available: 4, 8, 12

Polishing: Angled or Flat

Insertion Loss (With master plug)
Standard Loss: <0.75dB
Low Loss: <0.35dB

Return Loss: >55dB (SM only)

Cable Type: Ribbon Fibre, Ribbon Cord, Microcore

Adapter Bulkhead: Simplex

Intermateability
Optically and mechanically compatible with all equivalent connectors.
Compliant with IEC 61754-7.

Product Packaging
Connector in kit form, packaged in 100pcs

Temperature Cycling:
(61300-2-18)
-40 to +75°C, 40 cycles
=0.2dB Change

High Temperature:
(61300-2-18)
70°C for 96 hours
< 0.2dB Change

Damp Heat:
(61300-2-19)
40°C at 93% RH, 96 hours
< 0.2dB Change

Vibration (Mated Pair):
(61300-2-1)
10-55 Hz, 1.5mm P to P
< 0.2dB Change

Mating Durability:
(61300-2-2)
500 mating cycles
Clean every 25
< 0.2 dB Change

Operating Temperature:
-40°C to +85°C

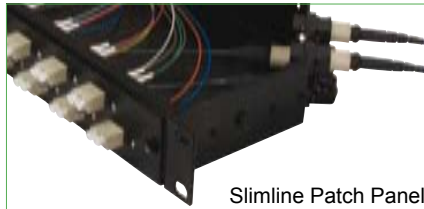
Optical Fibre Components

Connectors

MTP® Technology



Trunk Cable



Slimline Patch Panel



Modular Patch Panel



Patch Leads



Connector



Module

Key Features

Installation is simple and fast.
MTP®/MPO connectors are robust.
Connectors click into their adaptors and are reverse polarity protected.
Easy to use cable management solutions.

High Density

72 fibres per 1U of space.
12 fibres per connector.
Less cable yields more space in cabinets and cable raceways, giving better airflow.
Up to 15,000 fibres per rack.

Reliability

Cables terminated and factory tested.
State of the art termination processes.
Quality controlled at every step.
Immune to EMI/RFI

Low Cost of Ownership

Reduces labour cost and saves time on installation and testing.
Reduces cost of consumables and space requirements for cabinets.

Scalability

Future proof network infrastructure, to protect your investment.
Supports 10/100-1Gbps ethernet and fibre channel standards.
Singlemode capability beyond 10Gbps.

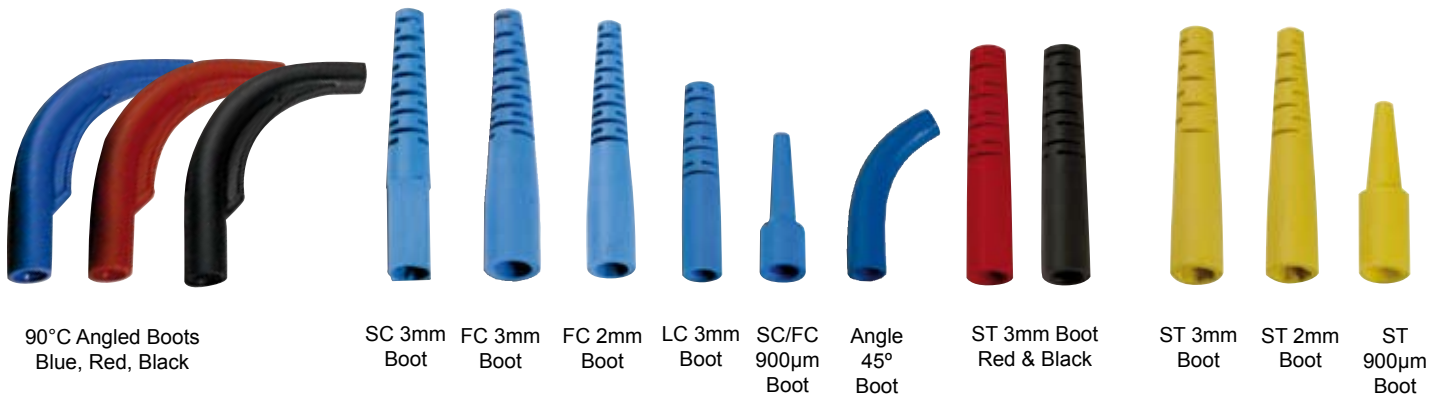
Simplicity

Modular systems designed for the fastest adds, moves and changes.
Designed for simple, easy, handling, installing and testing.

MTP is a registered EC trademark of US Conec Ltd

Connectors

Boots



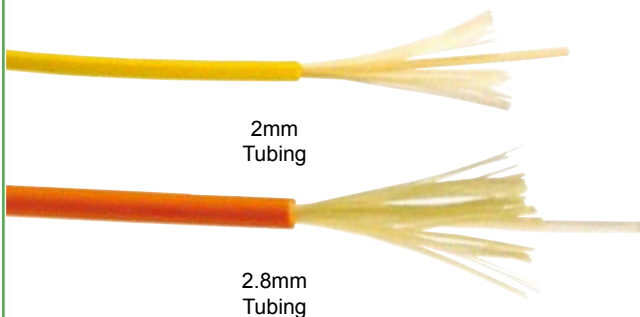
DESCRIPTION

90°C Angled Boot Blue
90°C Angled Boot Red
90°C Angled Boot Black
SC 3mm Boot
FC 3mm Boot
FC 2mm Boot
LC 3mm Boot

DESCRIPTION

SC/FC 900µm Boot Blue
45°C Angled Boot Blue
ST 3mm Boot Red
ST 3mm Boot Black
ST 3mm Boot
ST 2mm Boot
ST 900µm Boot

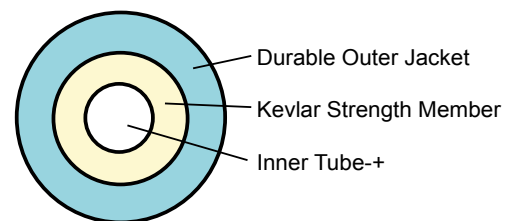
Fan-out Tubing



2.8MM FAN-OUT TUBING DESCRIPTION

Orange Fan-out Tubing, 2.8mm
Yellow Fan-out Tubing, 2.8mm

Tubing Cross Section



2MM FAN-OUT TUBING DESCRIPTION

Orange Fan-out Tubing, 2mm
Yellow Fan-out Tubing, 2mm

Optical Fibre Components

Adapters



An optical fibre adapter or uniter is used to mate two connectors together, usually mounted in a distribution panel or wall box.

Our optical fibre adapters are precision made to ensure perfect alignment of connectors, reducing insertion loss. In most cases, it is the critical part of the system that aligns the ferrule part of the connectors, keeping the fibres in perfect alignment.

Phosphor bronze sleeves are for general use, while the ceramic versions are normally only used in singlemode low loss environments.

In the case of the MTRJ and MTP®/MPO the alignment is carried out by two small pins fitted to one of the connectors. The adapter is purely to support and lock the connectors together in the distribution panel or wall box.

Features

- ▶ Available as FC, SC, ST, LC, MTRJ, E2000 and MTP®/MPO
- ▶ Available in simplex, duplex, quad(LC) and hybrid versions
- ▶ High precision zirconia or standard phosphor bronze sleeves
- ▶ Low insertion loss
- ▶ High repeatability and stability

Applications

- ▶ Fibre distribution
- ▶ LAN and WAN
- ▶ FTTx Applications
- ▶ CATV
- ▶ Testing instruments
- ▶ Telecommunications systems

Optical Fibre Components

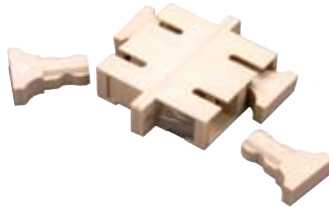
Adapters

SC Adapters



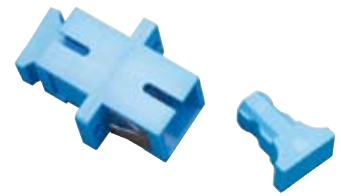
SC MULTIMODE SIMPLEX

Beige



LC MULTIMODE DUPLEX

Beige



SC SINGLEMODE SIMPLEX

Blue



SC SINGLEMODE DUPLEX

Blue



SC SINGLEMODE APC SIMPLEX

Green



SC SINGLEMODE APC DUPLEX

Green

MTRJ, MTP®/MPO & Hybrid Adapters



MTRJ SIMPLEX

Grey



SC-ST MULTIMODE DUPLEX

Beige



SC-FC SINGLEMODE SIMPLEX

Blue

*Metal Version also available
Part No.. SCSTDUPHBRMETAL



MPO SIMPLEX

Black



SC-ST SINGLEMODE DUPLEX

Blue

Optical Fibre Components

Adapters

ST, FC, LC, E2000 Adapters



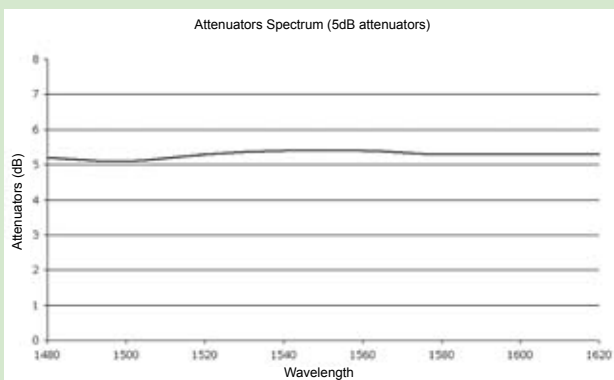
Optical Fibre Components

Attenuators



Our singlemode attenuators are used in communication systems to reduce optical power launched onto the photo detector. These high performance devices are designed to give accurate attenuation over a wide range of wavelengths. The plug type configuration allows use directly on the ends of the fibre jumpers and insert directly into the adapter.

Available in FC, SC, LC, ST and MU connector styles with PC or APC finish providing the ultra low return loss. These attenuators comes to you from a world class manufacturing facility backed by 20 years of experience in manufacturing passive and active fibre optic devices. Products coming out of this facility have found worldwide applications in computer networking, telecommunications and cable TV.



Features

- ▶ Plug-in type package
- ▶ Accurate attenuation
- ▶ Ultra low back reflection
- ▶ Broad wavelength band
- ▶ Flat response over all wavelengths
- ▶ Environmentally stable
- ▶ Quick delivery

Applications

- ▶ Telecommunication networks
- ▶ Fibre optic sensors
- ▶ Test and Measurement
- ▶ CATV
- ▶ LAN and WAN
- ▶ FTTx
- ▶ Attenuation values available
01= 1dB, 02= 2dB, 03= 3dB, 04= 4dB,
05= 5dB
06= 6dB, 07= 7dB, 08= 8dB, 09= 9dB,
10= 10dB
15= 15dB, 20= 20dB

Optical Fibre Components

Attenuators



Description

Available Range of attenuation	1 to 30dB with 1dB increments
Operating Wavelength	1310 and 1550nm (Or single wavelength)
Operating Band pass	Dual Window 1310 and 1550nm ($\pm 25\text{nm}$)
Attenuators = 5dB	$\pm 0.5 \text{ dB}$
Attenuators 6 to 30dB	$\pm 10\%$ of attenuation
Reflectance	UPC = 55dB APC = 60dB
International Standard	Telcordia GR-910-CORE

Other versions available.