

# Data Centre Solutions

Catalogue

# About FibreFab

## FibreFab<sup>™</sup>

Established in 1992, FibreFab is a leading provider of fibre optic connectivity products used in data communications and telecommunication networks. The company designs, develops, manufactures and sells fibre optic cabling, connectivity, management and systems solutions. It offers a broad range of products directly and through distributors, installers and OEM partners.

### Customer Service

FibreFab's growth has been founded on quality products, rapid response and excellent customer service.

### Quality

All products are manufactured in ISO9001:2000 certified facilities and conform to applicable international standards. FibreFab is dedicated to value and continuous improvement of all its products and services.

### Global Logistics

With headquarters in Milton Keynes (UK), FibreFab has manufacturing activities in the UK, China and US. The Company has both volume and quick response manufacturing capabilities and is able to support the global logistics requirements of its customers. FibreFab provides customised and customer branded products for OEM customers.



## OPTRONICS

In 1994 FibreFab acquired Optronics, a company with over 20 years experience in fibre optic manufacturing. Optronics products are available directly from FibreFab or from our worldwide distribution partners.

### Wide Range

The Optronics fibre optic cable range includes simplex, duplex and flat ribbon patchcords, tight buffered, single loose tube and multi loose tube distribution cables for internal and external applications as well as many variations of armoured, aerial, rodent resistant and water blocked cables.

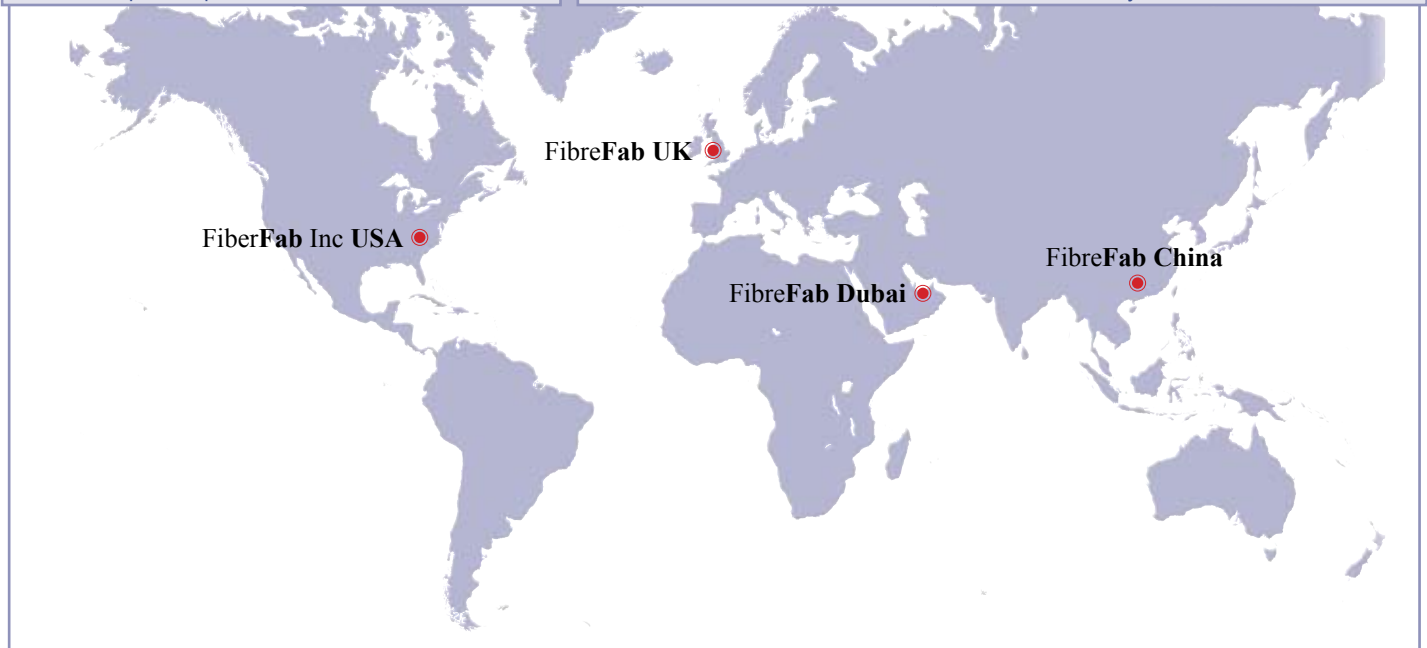
### Solutions

The FibreFab Optronics range has the solution for almost any application and can offer a cut to length service for specific fibre optic bulk and patch cables. Please call the sales team for more information.



UK Rapid Response & Production Facilities

Chinese Production Facility



# Data Centre Solutions

Demand for greater processing power, efficient data centre design and high-speed internet access means choosing the right cabling infrastructure is essential.

The FibreFab MTP® solution provides a high density, high performance, robust, modular solution, for fast

installation of enterprise data centre and other high fibre count cabling implementation.

This cabling infrastructure system is designed to deliver mission-critical applications to a data network that demands reliability, speed and availability.





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# Multi Fibre High Density Connectivity System

## Rapid Deployment

A factory terminated optical fibre cabling solution is a simple, yet scalable, reliable method of network deployment. Installation time compared to traditional fibre cabling systems can be reduced by up to 75%. Simply pull, plug and complete installation on time, eliminating all unpredictable field termination variables.

## High Performance and Reliability

A combination of high quality branded components and FibreFab's manufacturing quality control guarantees products are of the highest standard. State -of-the-art MTP® manufacturing facilities provide high performance assemblies for the most demanding applications.

## Cost Saving

Installation time involving a costly highly qualified workforce can be reduced to a minimum. A customised tailor-made system means that there is no waste of connectors or fibre cable.

## Scalability

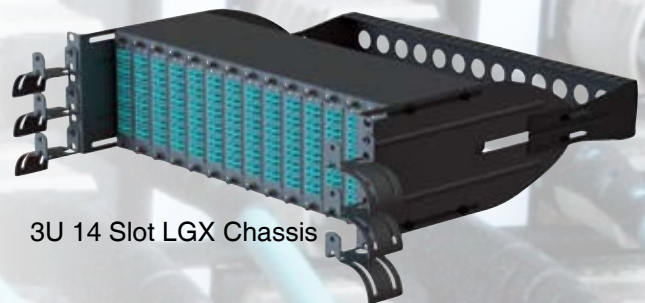
The ever increasing demand for higher bandwidth rates requires more complex networks. A modular system is the choice to ease future expansion and for quick and easy system reconfiguration.

## High Density

Thousands of optical ports can be hosted in a SAN (Storage Area Network) or contemporary data centre. FibreFab High Density Systems allow for scaling up to 144 fibres in a single assembly.

## Next Generation Network Proof

The evolving future protocols of 40 and 100Gbps Ethernet utilise parallel optics. With MTP® connections in your network the infrastructure will be unchanged and easily fit into the new network standard topologies.



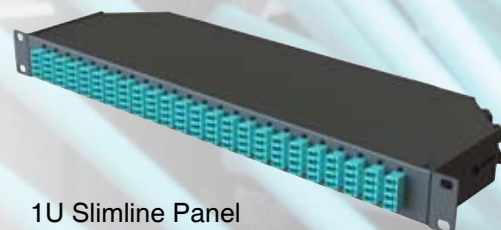
3U 14 Slot LGX Chassis



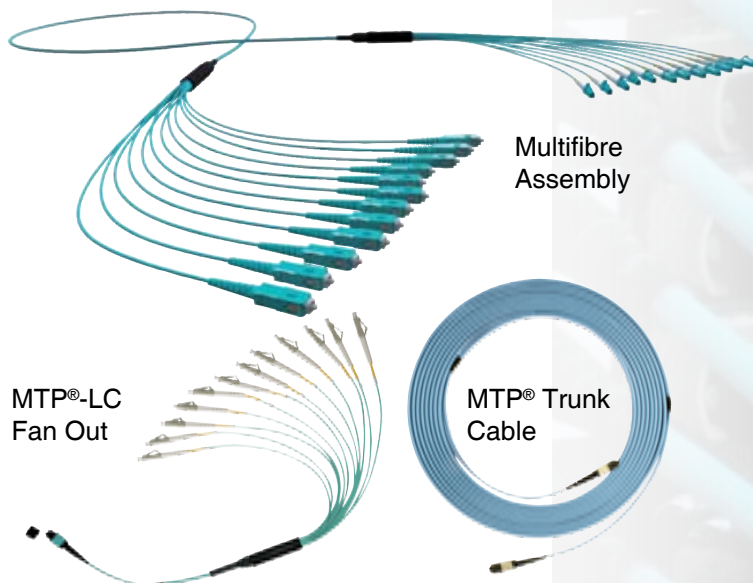
High Density  
1U 5 Slot Chassis



1U 3 Slot Chassis



1U Slimline Panel



Multifibre  
Assembly

MTP®-LC  
Fan Out

MTP® Trunk  
Cable

FOR MORE INFORMATION CALL **+44 (0)870 127 3330**

# MTP® The Right Solution

To reduce deployment time and improve project ROI

## Unique

The FibreFab MTP® cabling solution utilises MTP® branded MPO connectors manufactured by US Conec Ltd. The MTP® connector features a multifibre ferrule and provides rapid connection of 12 or 24 fibres.

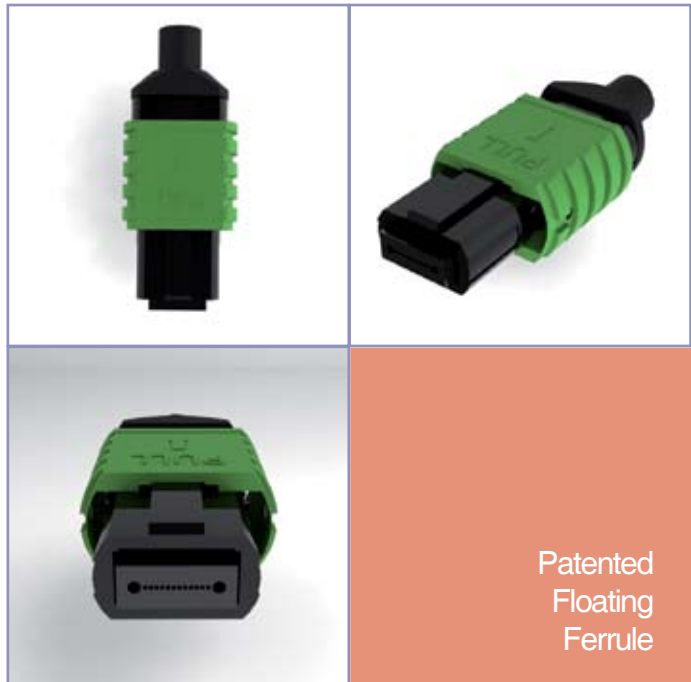
US Conec MTP® connector introduces many features which give technical superiority over the standard MPO design providing excellent physical and optical properties. The integrity of the connection is provided by latches within the adaptor which are secured into place on the connector with a spring loaded mechanism. Precision alignment is achieved with specially designed guide pins. MTP® connectors have a unique removable housing which allows for a quick change of gender, ferrule cleaning, interferometric inspection or connector re-work.

## Features

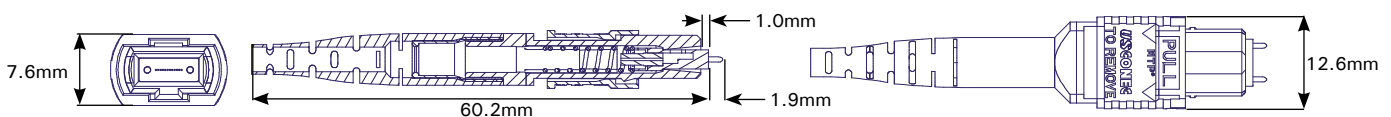
- ▶ 12 / 24 fibres ferrule
- ▶ Patented floating ferrule design ensures fibre contact integrity
- ▶ Low loss Elite version
- ▶ Patented elliptical guide pin tip to minimise ferrule debris
- ▶ Ruggedised round cable, oval cable and bare ribbon options available
- ▶ Housing is removable for quick change of pin clamps and easy ferrule cleaning / re-polishing
- ▶ Alignment achieved with high precision guide pins
- ▶ Family of bulkhead adaptors available

## Applications

- ▶ Fibre channel - SAN
- ▶ Parallel optics
- ▶ Infiniband
- ▶ Data Centre infrastructure
- ▶ Optical backplane connections
- ▶ Optical switch and routers
- ▶ Emerging 40 and 100Gbs Ethernet



Patented Floating Ferrule

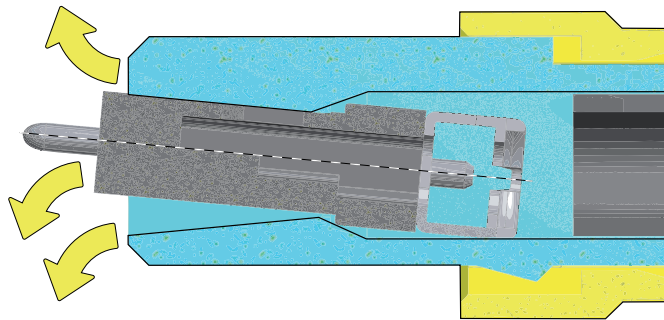


# MTP® High Grade MPO

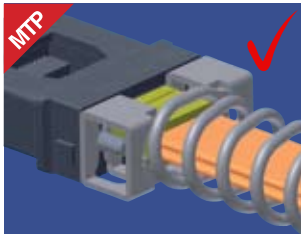
## MTP® Innovative design features Improve optical performance and reliability

### Floating Ferrule

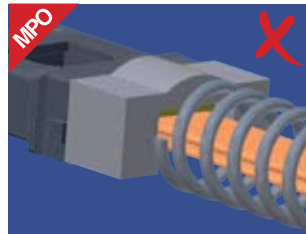
The MT ferrule can move freely inside the MTP® housing while mated. This protects it from strain during side load and improves optical performance and reliability.



### Optimised Internal Components

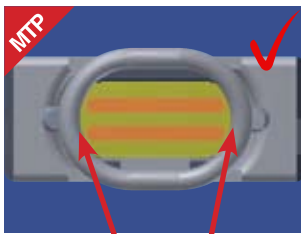


MTP® recessed metal pin clamp and oval spring.

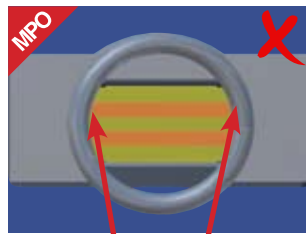


MPO's feature a plastic pin clamp and round spring. The spring is not constrained and may damage the ribbon.

### Oval Spring



MTP® oval spring provides more ribbon clearance; enhances mechanical performance.



MPO round spring allows less ribbon clearance; limits mechanical performance.

### Improved MTP® Pin Clamp

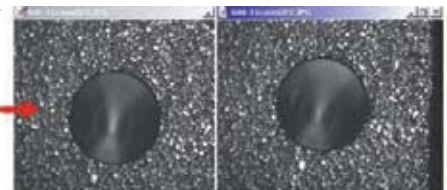


MTP® Recessed pin clamp makes pin transfer impossible

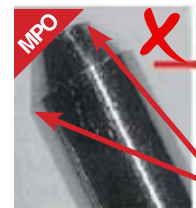
### Elliptical Guide Pin



MTP® Guide Pin



Round pin inside ferrule  
No damage or debris



MPO Guide Pin



Sharp edged pins cause damage, reducing durability

### Removable Housing



Allows easy transition from male to female and vice versa  
Allows re-polishing



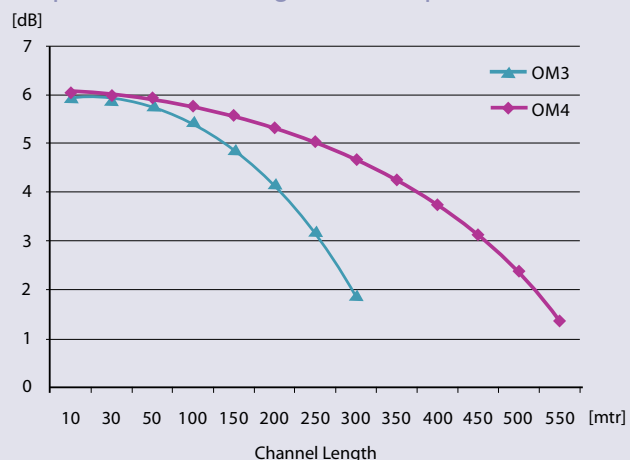
# Connector Performance Specifications

	12 Fibre				24 Fibre	48 Fibre
						
	MTP® Elite® Singlemode MT Ferrule	Standard Singlemode MT Ferrule	MTP® Elite® Multimode MT Ferrule	Standard Multimode MT Ferrule	MTP® Elite® Multimode MT Ferrule	MTP® Multimode MT Ferrule
Insertion Loss	<b>BEST IN CLASS</b>		<b>BEST IN CLASS</b>			
	<b>0.10dB Typical</b> <b>0.35dB Max</b>	<b>0.25dB Typical</b> <b>0.75dB Max</b>	<b>0.10dB Typical</b> <b>0.35dB Max</b>	<b>0.20dB Typical</b> <b>0.60dB Max</b>	<b>0.20dB Typical</b> <b>0.60dB Max</b>	
Return Loss	>55dB (Angle Polish)	>55dB (Angle Polish)	>20dB	>20dB	>20dB	
Operational Temp	- 40°C to + 70°C	- 40°C to + 70°C	- 40°C to + 70°C	- 40°C to + 70°C	- 40°C to + 70°C	

## Why high quality MTP® matters

In high end data centre application **quality of connectors matters!** Power budget in high performance networks like 8/10Gbps Fibre Channel or 10Gbps Ethernet must be carefully controlled. In 300mtr OM3 channel total connection losses must be lower than 1.5dB! High quality low loss MTP® connectors are the only choice for high end application.

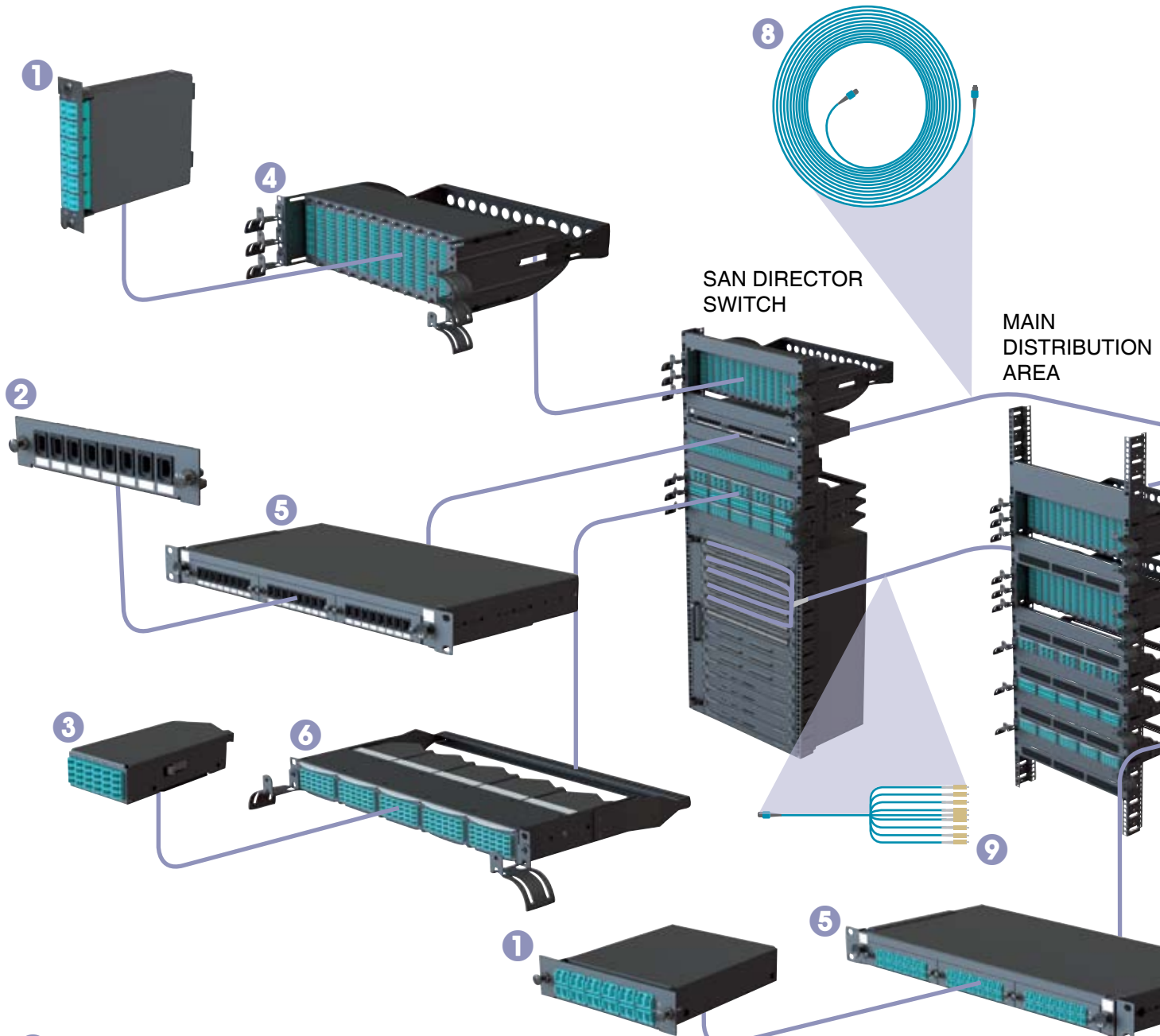
Optical Power Budget in 10Gbps Ethernet Link



# High Density

# Flexible Architecture

# Advanced Technology

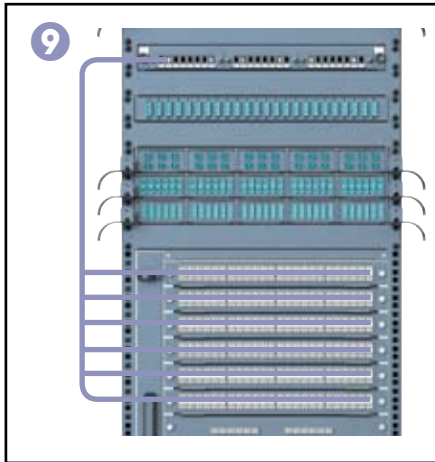


- 1 MTP® Cassette
- 2 LGX Style MTP® Adaptor Plate
- 3 HD MTP® Cassette
- 4 3U 14 Slot Chassis
- 5 1U 3 Slot Chassis
- 6 1U High Density 5 Slot Chassis
- 7 1U Slimline Panel
- 8 MTP® Trunk Cable
- 9 MTP®-LC Fan Out Cable

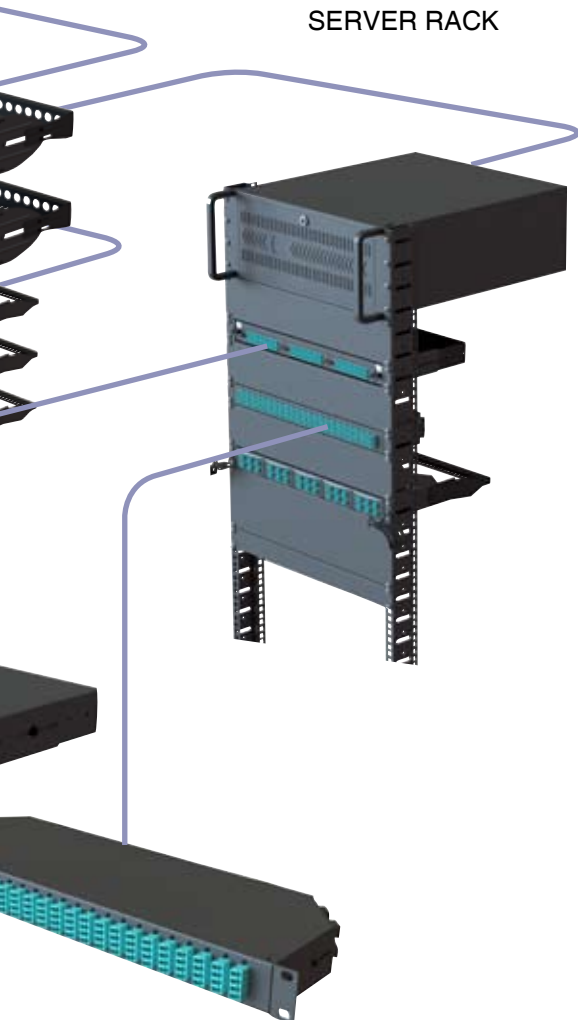
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## The challenge

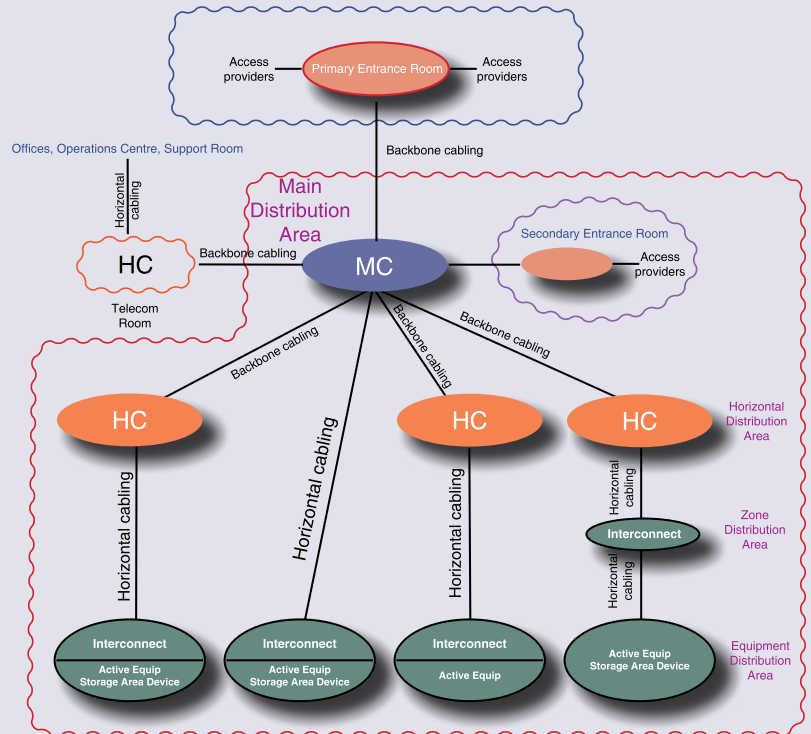
In the enterprise environment all data must be stored and archived by storage area networks (SAN). Data centre backbone products like SAN directors support hundreds of optical ports therefore single cabinets must host thousands of optical interconnections and patchcords. SAN must feature high density and modularity for easy reconfiguration of cabling infrastructure.



SERVER RACK



# Enterprise Data Centre Topology



The amount of enterprise data transmitted and stored is continuing to grow exponentially. Data centres which host a large number of interconnections between servers, switches and storage devices are especially affected. Contemporary SAN (Storage Area Network) can contain thousands of FC (Fibre Channel) ports. Mission-critical applications require the highest reliability, as no downtime is acceptable. New trends and technologies like server virtualisation will require even more bandwidth and increase the demand for high density low insertion loss cabling.

Data centre cabling infrastructure guidance was introduced by standard bodies in Europe (EN50173-5) and America (TIA/EIA-942);

### Entrance Room

The primary entrance room is the demarcation point between the access provider and the data centre cabling.

### Main Distribution Area (MDA)

The main distribution area is the centre of the cabling system including the main cross-connect.

### Horizontal Distribution Area (HDA)

The HDA is the transition point between backbone and horizontal cabling.

### Zone Distribution Area (ZDA)

If additional cross connect between the HDA and active equipment is needed- zone distribution area is implemented.

### Equipment Distribution Area (EDA)

The equipment distribution area houses the racks and cabinets that hold the computing and storage modules.



# Fibre Management

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<i>High Density Modular Assembly</i>	22
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# MTP® Cassette Modules

## Description

FibreFab MTP® Cassette Modules provide secure transition between MTP® and LC or SC discrete connectors. They are used to interconnect MTP® backbones with LC or SC patching.

Modular system allows for rapid deployment of high density data centre infrastructure as well as improved troubleshooting and reconfiguration during moves, adds and changes. Cassettes can be mounted in 1U or 3U 19" multislot chassis.

MTP® Cassettes contain factory controlled and tested MTP®-LC Fan Outs to deliver optical performance and reliability. Premium versions of low loss MTP® Elite and LC or SC connectors are offered featuring low insertion loss for demanding power budget high speed networks.

## Features

- ▶ MTP® (US Conec) brand MPO standard compliant multifibre connector
- ▶ LC (SFF Data Centre standard), SC discrete interface
- ▶ OS1/2, OM3, OM4 fibre grades (OM1 and OM2 available)
- ▶ 12 and 24 fibre versions - 12 LC (Duplex) / SC (Simplex) adaptors
- ▶ Polarity A (standard), B or C
- ▶ Factory terminated and tested
- ▶ High performance zirconia sleeve adaptors

## Benefits

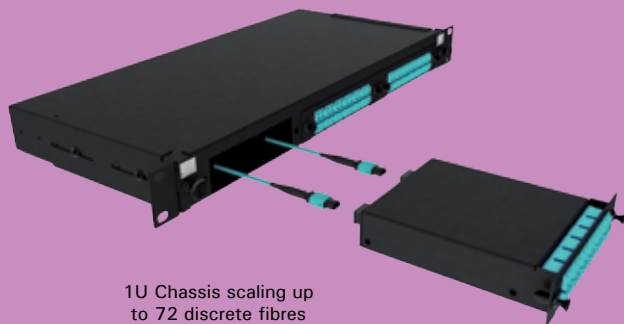
- ▶ Rapid Deployment - factory terminated modular system saves installation and reconfiguration time during moves, adds and changes
- ▶ MTP® Interface - MTP® US Conec brand components feature superior optical and mechanical properties
- ▶ Optimised Performance - low loss MTP® Elite, discrete Premium connectors and OM4 fibre assures low insertion losses and power penalties in tight power budget high speed network environment
- ▶ High Density - 12 or 24 fibre cassettes can be mounted in 1 U scaling up to 72 or in 3 U scaling up to 336 discrete connectors
- ▶ Reliability - 100% tested- combination of high quality components and FibreFab manufacturing quality control guarantees product to the highest standards

## Application

- ▶ Data Centre Infrastructure
- ▶ Storage Area Network- Fibre Channel
- ▶ Parallel Optics



## Compatibility:



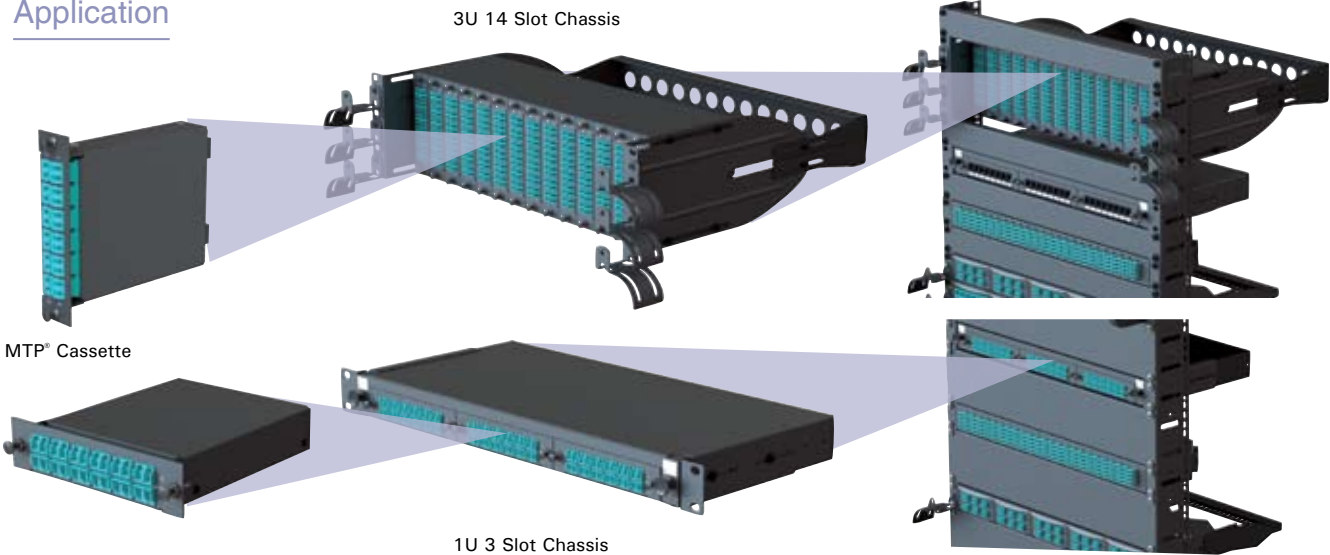
1U Chassis scaling up to 72 discrete fibres  
see page 16



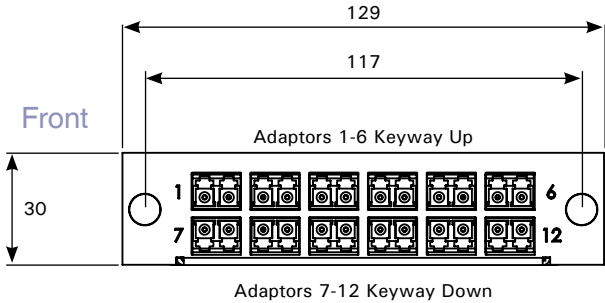
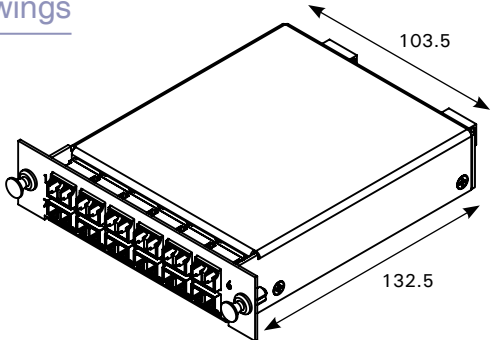
3U Chassis scaling up to 336 discrete fibres  
see page 16

# Technical Information

## Application

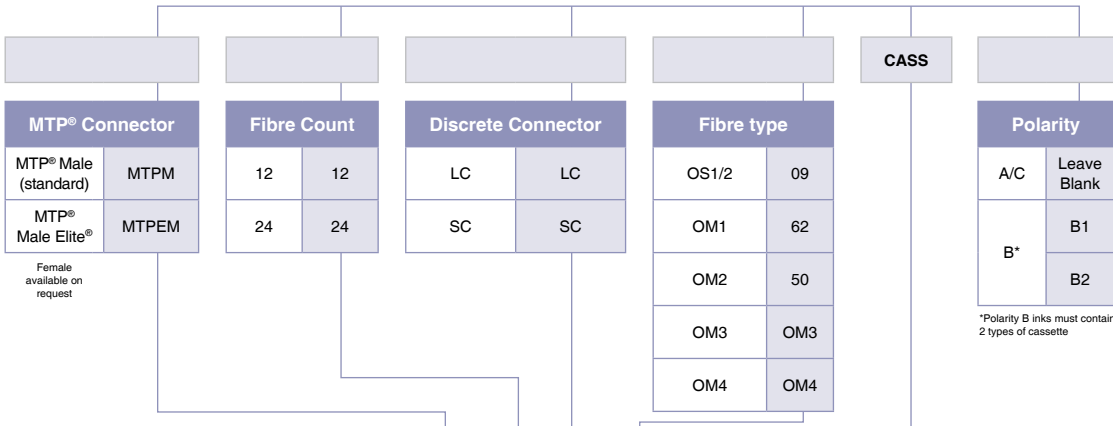


## Drawings



## Part Number Generator

All dimensions in mm



Example Part Number: **MTPM 24 LC OM4 CASS**

MTPM24LCOM4CASS configures a 24 fibre OM4 cassette with MTP® male rear and LC front interface, polarity method A or C.

# Patch Panels for use with MTP® Cassette Modules

## 1U 3 Port Sliding Patch Panel For MTP® Modules

FibreFab offers an innovative, robust 1U sliding patch panel. This panel has been designed to accept up to 3 LGX Modules or MTP® cassettes within a 1U space. With the ability to use a full array of adaptor types offering a flexible solution to the end user, enabling them to incorporate a multi functional panel which allow easy access during installation or re-work with no disturbance of the existing cable or fibres. In the addition to the array of adaptors the panel also offers multiple cable entry solutions, up to 6 standard cable entry points for, loose tube, tight buffer, steel tape armoured cable or pre-terminated assembly.



1U Chassis  
scaling up to  
72 discrete fibres  
Part Number: S13XXX00

### Applications

- ▶ Data centres, premise installations, telecommunication networks
- ▶ Ethernet, Fibre Channel, ATM, LAN, MAN and WAN
- ▶ Data communication and telecommunication networks
- ▶ Indoor applications

### Features

- ▶ Up to 3 LGX/MTP® modules in 1U
- ▶ Multiple adaptor options available
- ▶ 24 adaptor positions
- ▶ Individually labelled ports
- ▶ 45° open working angle
- ▶ Accepts loose tube, distribution and pre-terminated cables
- ▶ RoHS, REACH SvHC and UL rated
- ▶ Fits standard 19" cabinet

## Ultra High Density 14 Slot 3U LGX Style Chassis For MTP® Modules

FibreFab offers an innovative, robust, high density 3U Chassis. This panel has been designed to accept up to 14 LGX style cassettes.

The ability to use a full array of adaptor types offers a flexible solution to the end user, enabling them to incorporate a multi functional chassis which allows easy access during installation or re-work with no disturbance of the existing cable or fibres.

In addition to the array of adaptors, the chassis also offers multiple cable entry solutions: MTP® trunk cables connected to 14 individual MTP® cassettes with up to 24 fibres in each, loose tube cable connecting to 14 individual extended cassettes to allow standard splicing or 14 LGX style modules for pre-terminated solutions. Making this chassis one of the most flexible on the market.



3U Chassis  
scaling up to  
336 discrete fibres  
Part Number: LGXCHASSIS

### Applications

- ▶ Data centres, premise installations, telecommunication networks
- ▶ Ethernet, Fibre Channel, ATM, LAN, MAN and WAN
- ▶ Data communication and telecommunication networks
- ▶ Indoor applications

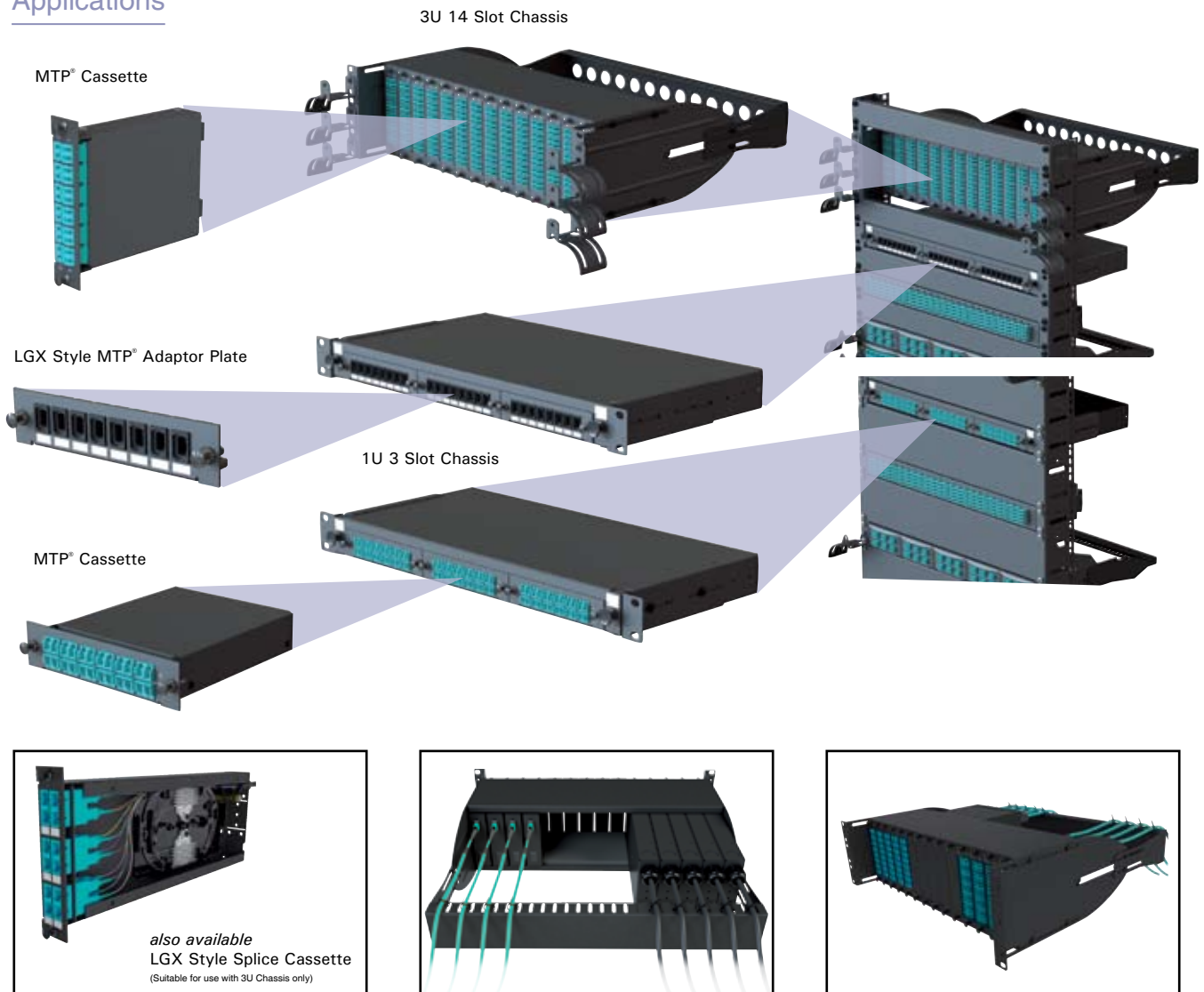
### Features

- ▶ Up to 14 LGX style adaptor plates/cassettes
- ▶ Up to 14 x 24 fibre MTP® cassettes
- ▶ Multiple adaptor options available
- ▶ Fully integrated fibre management
- ▶ Splicing option available
- ▶ Flat pack for easy shipment
- ▶ Patchcord exit retrofit cable management available
- ▶ 30mm bend radius maintained throughout
- ▶ Accepts loose tube, distribution cable and MTP® trunk cable
- ▶ RoHS, REACH SvHC and UL rated
- ▶ Fits standard 19" cabinet
- ▶ Rear cable management bar as standard



# Technical Information





## Applications



## Ordering Information

Description	Part Number
1U 3 Port Modular Patch Panel for use with MTP® Cassette Modules	S13XXX00
3U 14 Port Modular Patch Panel for use with MTP® Cassette Modules	LGXCHASSIS

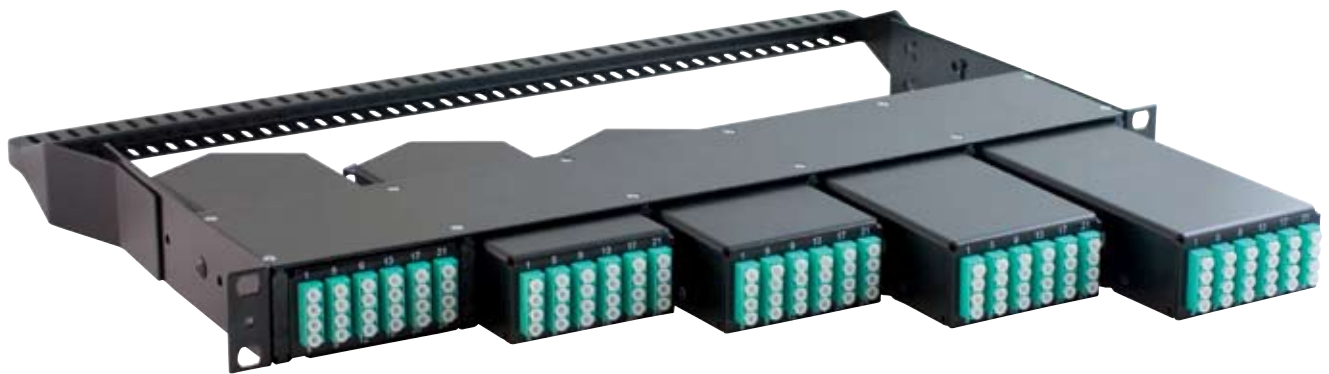
## Adaptor Plates

MTP® to MTP®	L06
 8 adaptor 	L06MTP®08
LC Multimode Duplex	L01
 8 adaptor 	L01LCM08/CAS

LC Multimode Quad	L03
 6 adaptor 	L03LQM06/CAS
SC Multimode Duplex	L03
 6 adaptor 	L03SCM06/CAS

# 1U Ultra High Density Modular Patch Panel System

# 120 fibres

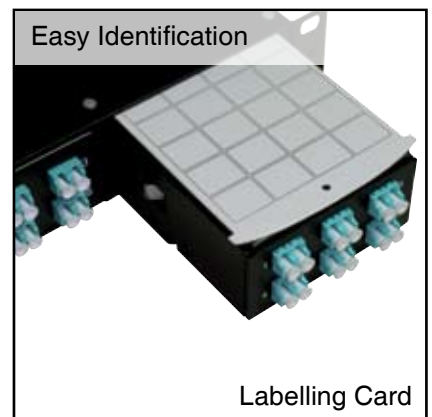
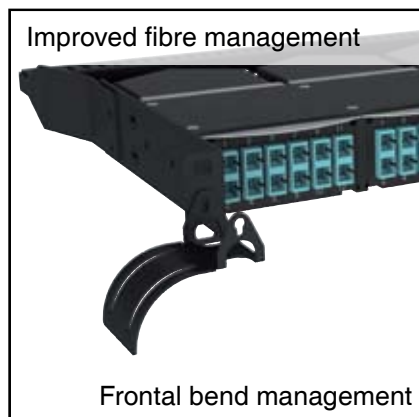
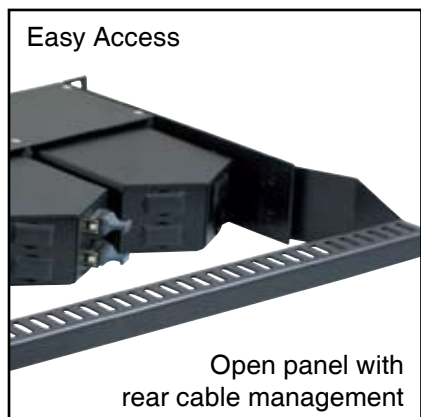
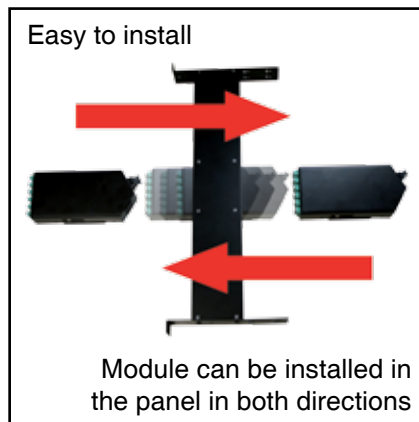
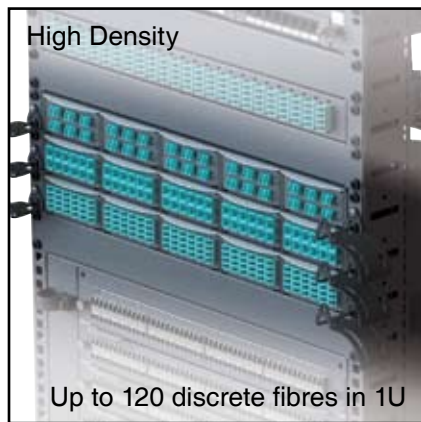


## Description

FibreFab's innovative, high density patch panel is designed to accommodate up to 120 discrete connections within a 1U panel space or 480 connections when utilising a multifibre MTP® interface. The panel accepts up to 5 modules,

each module accepts incoming fibres from either MTP® trunk cables or directly terminated cable being connected to the module. Each module is supplied with a separate labelling card for ease of channel identification. Cable entry is managed

via a retrofit management bar allowing entry from either the left or the right hand side. Exiting patchcords are managed by a retrofit bracket allowing cables to be routed in any direction.



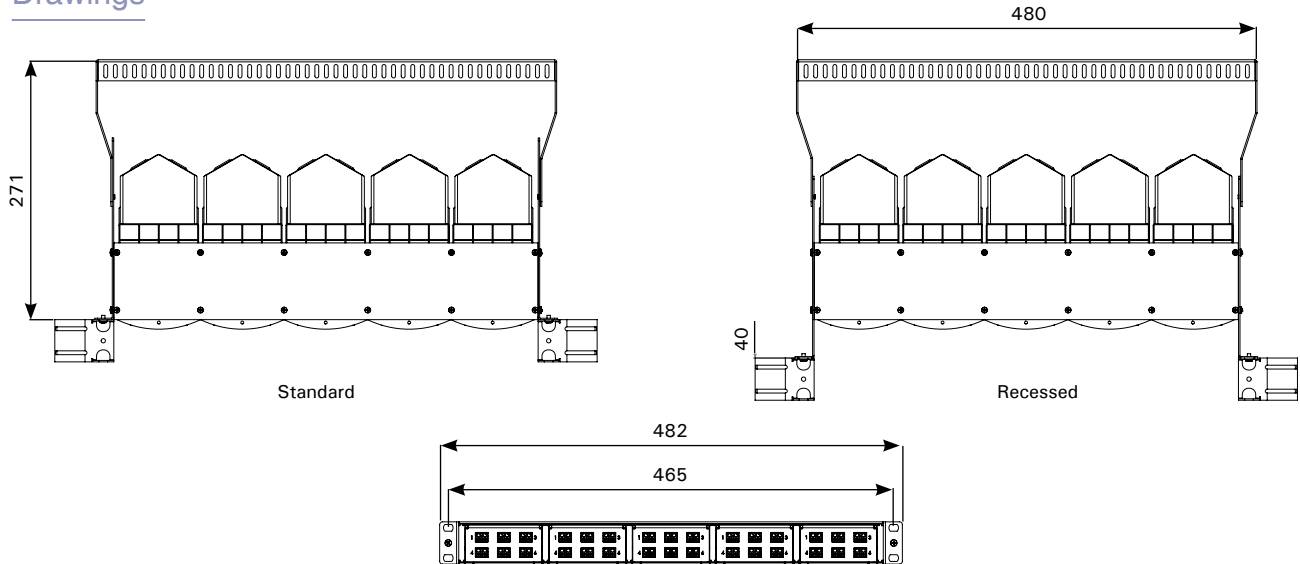
# Technical information

## Applications

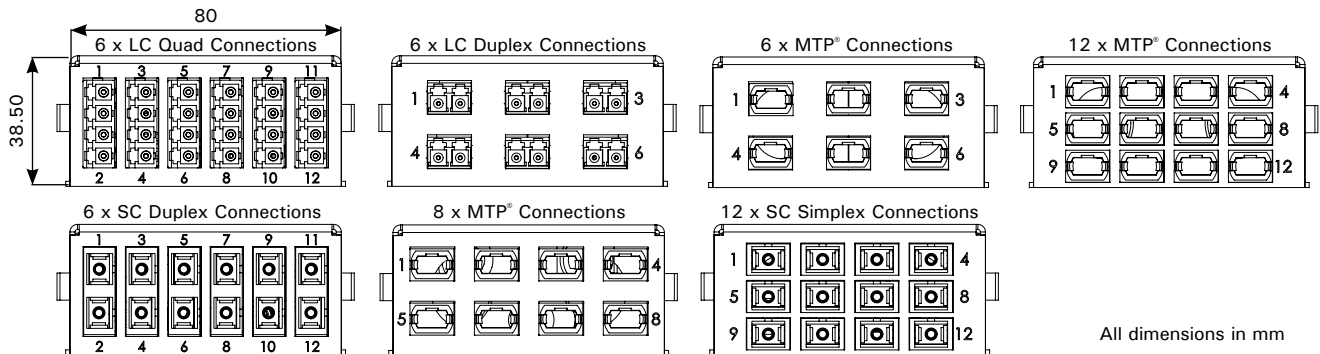
1U High Density S Module Chassis



## Drawings



## Pluggable Module Options



All dimensions in mm

## Ordering Information

Description	Part Number
High Density Modular Panel (unloaded)	HDCHASSIS

# High Density MTP® Cassette

## Description

The High Density MTP® cassette system is compatible with a 1U 5 slot modular chassis scaling up to 120 discrete fibres in a 1U space. FibreFab's High Density MTP® Cassette Modules provide secure transition between MTP® and LC or SC discreet connectors. They are used to interconnect MTP® backbones with LC or SC patching. Modular systems allow for rapid deployment of high density data centre infrastructure as well as improved troubleshooting and reconfiguration during moves, adds and changes.

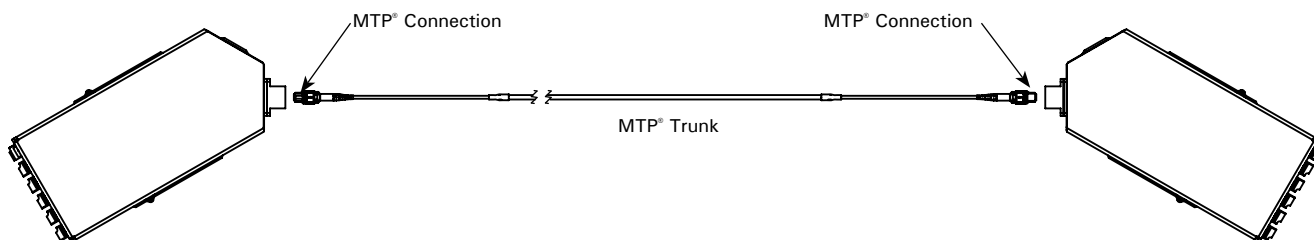
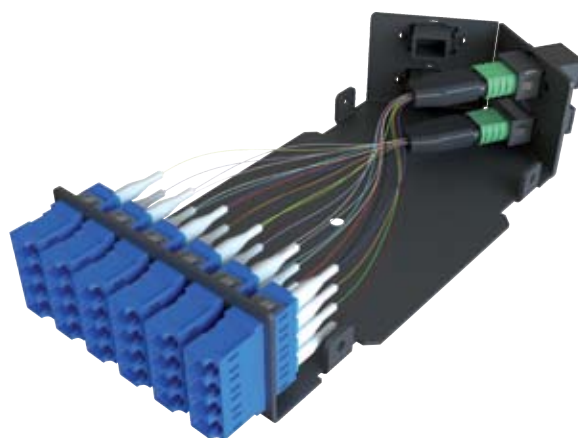
## Features

- ▶ Compatible with High Density Modular 5 Slot Chassis
- ▶ MTP® (US Conec) brand MPO standard compliant multifibre connector
- ▶ LC (SFF Data Centre standard), SC discreet interface
- ▶ OS1/2, OM3, OM4 fibre grades (OM1 and OM2 available)
- ▶ 12 and 24 fibre versions
- ▶ Polarity A (standard), B or C
- ▶ Factory terminated and tested
- ▶ High performance zirconia sleeve adaptors

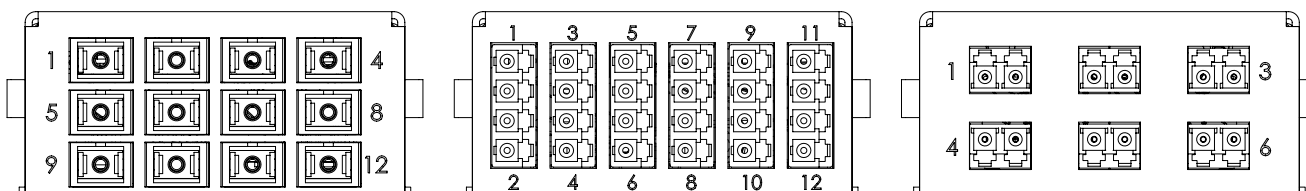
## Benefits

- ▶ Rapid Deployment - factory terminated modular system saves installation and reconfiguration time during moves, adds and changes.
- ▶ MTP® Interface- MTP® US Conec brand components feature superior optical and mechanical properties.
- ▶ Optimised Performance- low loss MTP® Elite, discreet Premium connectors and OM4 fibre assures low insertion losses and power penalties in tight power budget high speed network environment.
- ▶ High Density- 5 x fibre cassettes can be mounted in 1U chassis scaling up to 120 discrete fibres in 1U
- ▶ Reliability- 100% tested- combination of high quality components and FibreFab manufacturing quality control guarantees product to the highest standards

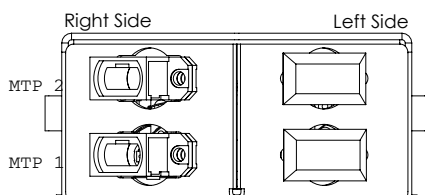
*“Increase Fibre Density to 120 in 1U”*



## Pluggable Module Options



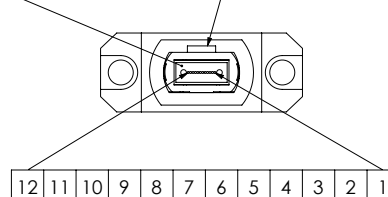
MTP adaptors can be placed on left side or right side



Internal MTP connector

Keyway up - keyway down.

External connector key up.



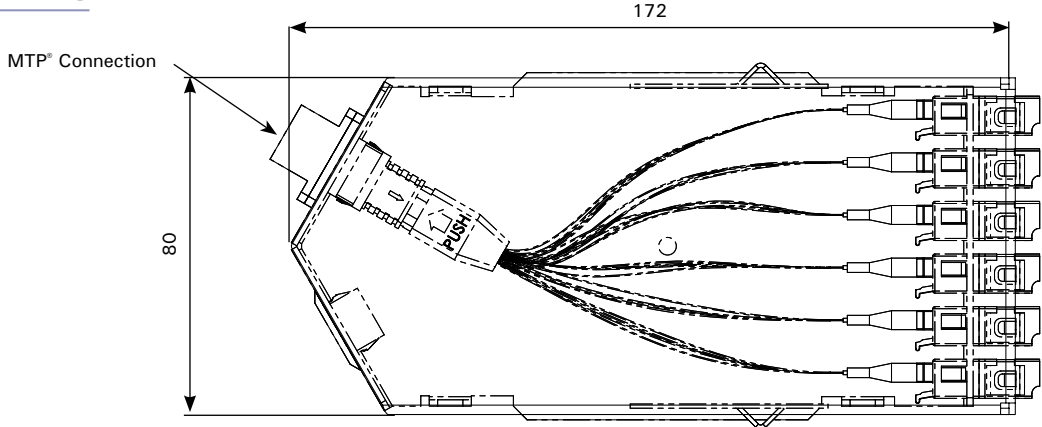
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# Technical Information

## Application

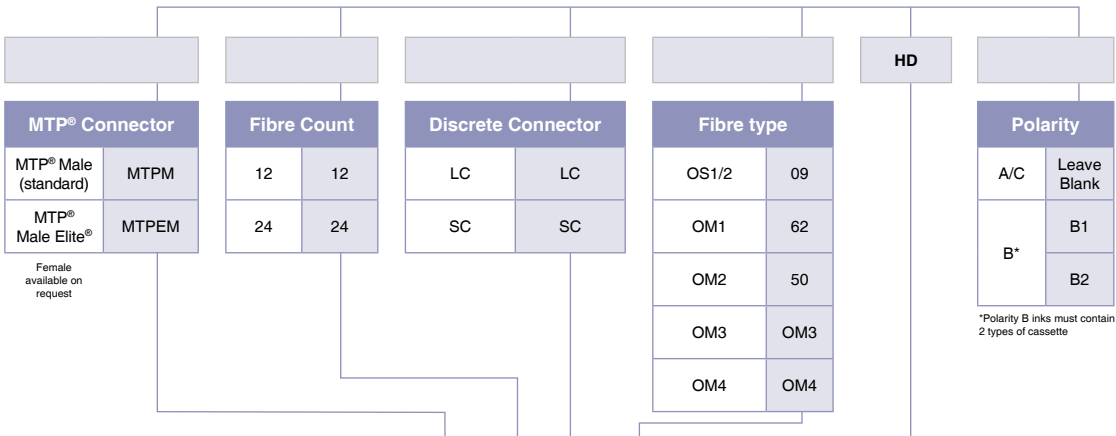


## Drawing



All dimensions in mm

## Part Number Generator



Example Part Number: **MTPM 24 LC OM4 HD**

**MTPM24LCOM4HD** will configure a 24 fibre OM4 cassette with MTP® male rear and LC front interface, polarity method A or C.

## High Density Modular Assembly



### Description

FibreFab's High Density modular system features an innovative design allowing for a plug and play pre-terminated system configuration. Cable assemblies can be directly terminated and installed in the cassettes for fast and easy installation. Direct connection to the front cassette interface

minimises the number of interconnections improving power budget and network cost. Multifibre MTP® Interface as well as discrete fibre can be applied. Different configuration options allow for combinations of modules with terminated tails.

### Features

- ▶ OS1/2, OM1, OM2, OM3, OM4 fibre grades
- ▶ Distribution - TB, micro cable, loose tube cable types available
- ▶ Factory terminated and tested
- ▶ Ruggedised 2mm or 900µm tails available
- ▶ Improved Power Budget – collapsed network infrastructure minimises the number of interconnections
- ▶ Ultra High Density- up to 12 MTP® adaptors per cassette

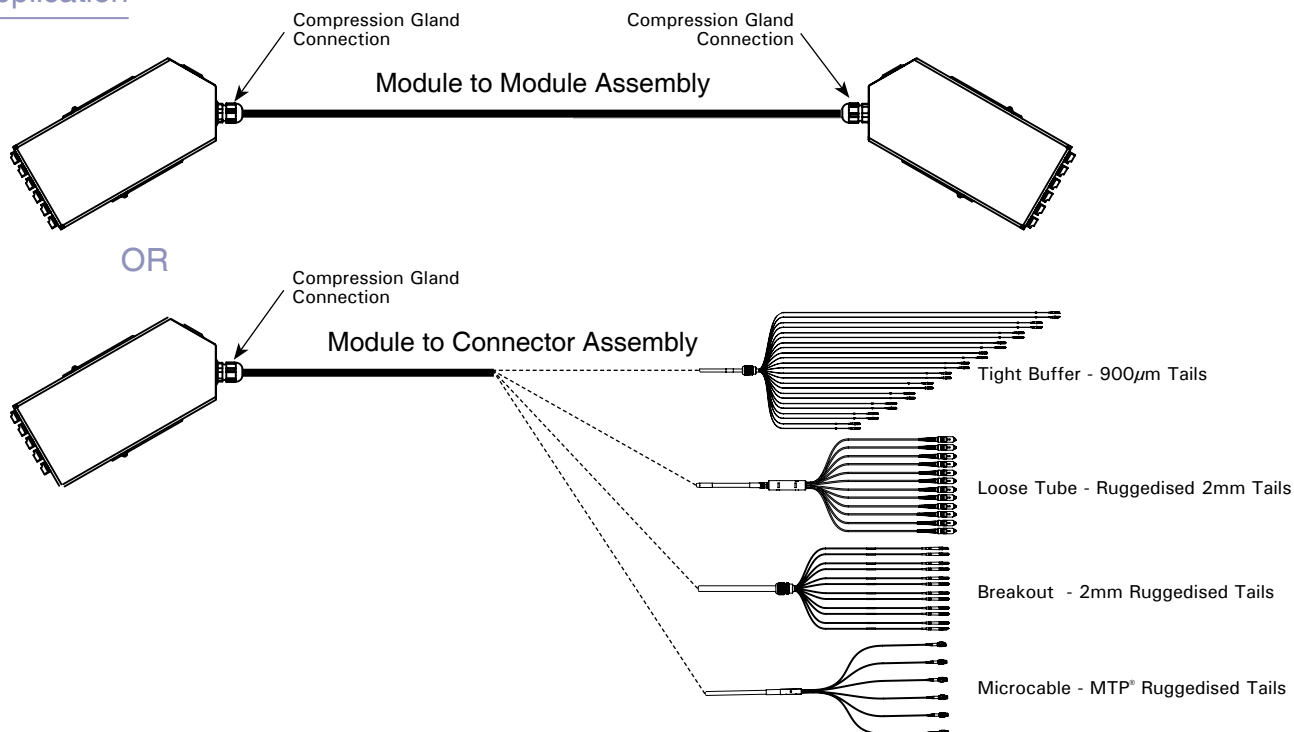
### Benefits

- ▶ MTP® Interface - MTP® US Conec brand components feature superior optical and mechanical properties.
- ▶ Optimised Performance - low loss MTP® Elite, discrete Premium connectors and OM4 fibre assures low insertion losses and power penalties in tight power budget high speed network environment.
- ▶ High Density - ruggedised Fan Out allows for direct connection between backbone and active equipment eliminating rack space usage
- ▶ Rapid Deployment- factory terminated modular system saves installation and reconfiguration time during moves, adds and changes.
- ▶ Reliability - 100% tested- combination of high quality components and FibreFab manufacturing quality control guarantees product to the highest standards.

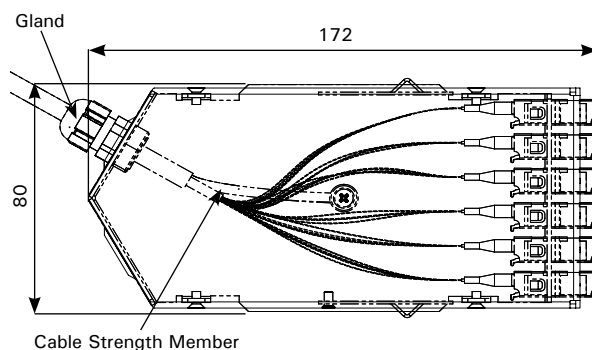
*“Reduce the number of interconnections in modular systems, improve power budget”*

# Technical Information

## Application



## Drawing

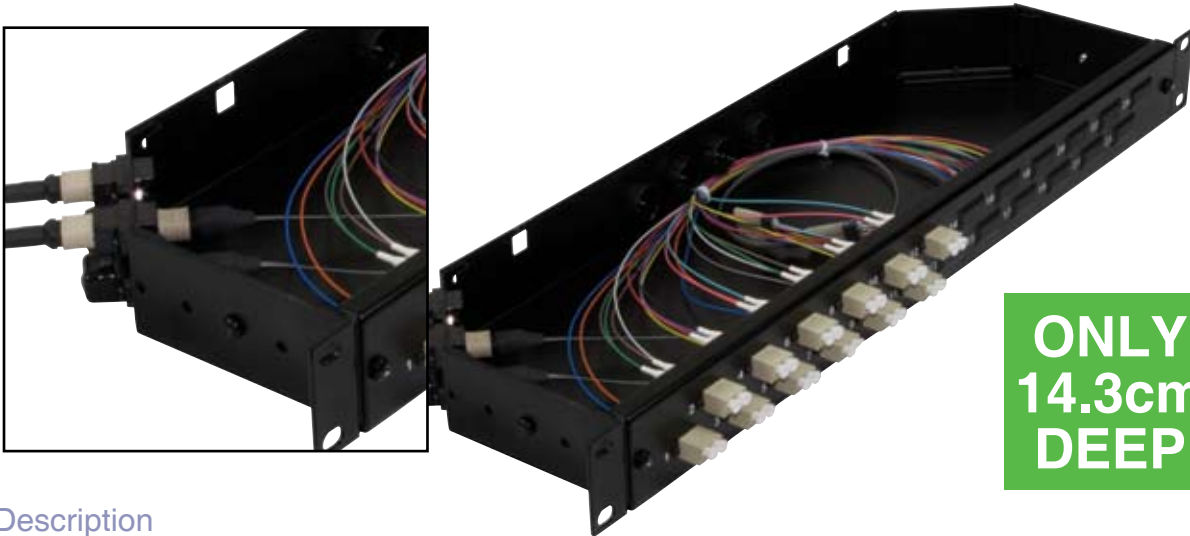


## Product Configurator

Fibre Count	End A Module Interface	END B Style	END B Interface	Fibre type	Cable Construction	Assembly length	Assembly Type
24	LC	Module	LC	OM4	Tight Buffer	1 to 200m	Standard
Up to 144 MTP	SC	900µm Tails	SC		Breakout		Premium/Elite
	MTP® Male	2mm Tails	MTP®		Micro cable		
	MTP® Female				Loose Tube		

# High Density MTP® Slimline Panel

96 fibres



**ONLY  
14.3cm  
DEEP**

## Description

FibreFab MTP® Slimline Panels provide secure transitions between MTP® and LC or SC discrete connector interfaces. They are used to interface MTP® backbones with LC or SC patching and active equipment connection. Scaling up to 96 fibres this panel is ideal for server or switch racks in the data centre. The

pre-populated panel allows rapid deployment of high density data centre infrastructure as well as improved trouble shooting and reconfiguration during moves, adds and changes. The shallow depth of the Slimline Panel also makes it suitable for copper racking systems.

MTP® Slimline Panels contain factory controlled and tested MTP®-LC Fan Outs to deliver optical performance and reliability. Low loss MTP® Elite and LC Premium versions are offered featuring improved low insertion losses for demanding low power budget high speed networks.

**High Density**

Up to 96 discrete fibres

**MTP® Interface**

Next generation networks compatible

**Small size**

STANDARD PATCH PANEL

SLIMLINE PATCH PANEL

Slimline - 14.3cm deep

**Multiple Interface Options**

ST, LC, SC, E2000

**Compact Packaging**

458mm

53mm

Easy to ship, eco friendly

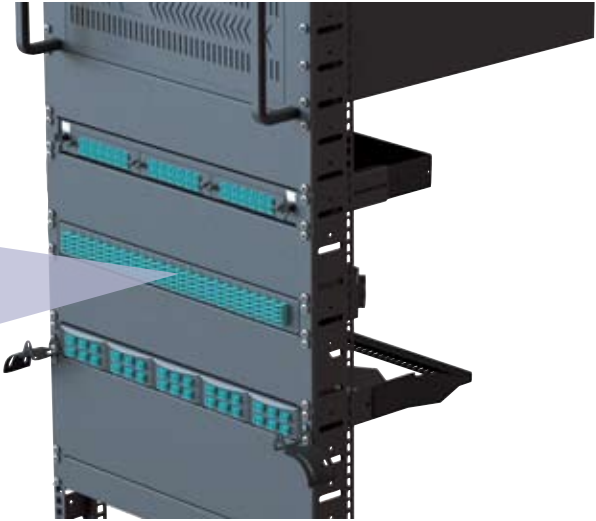
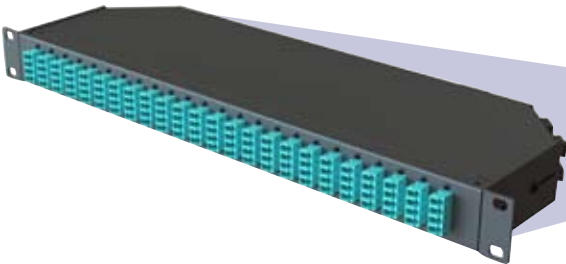
**Factory Sealed**

Improved cleanliness

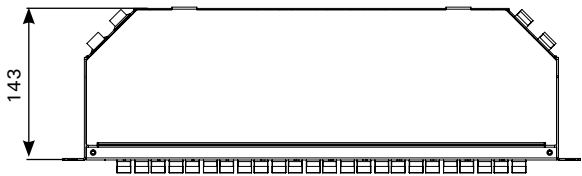
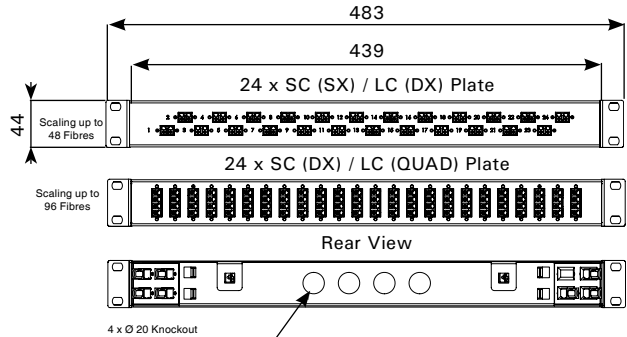


# Technical information

## Application

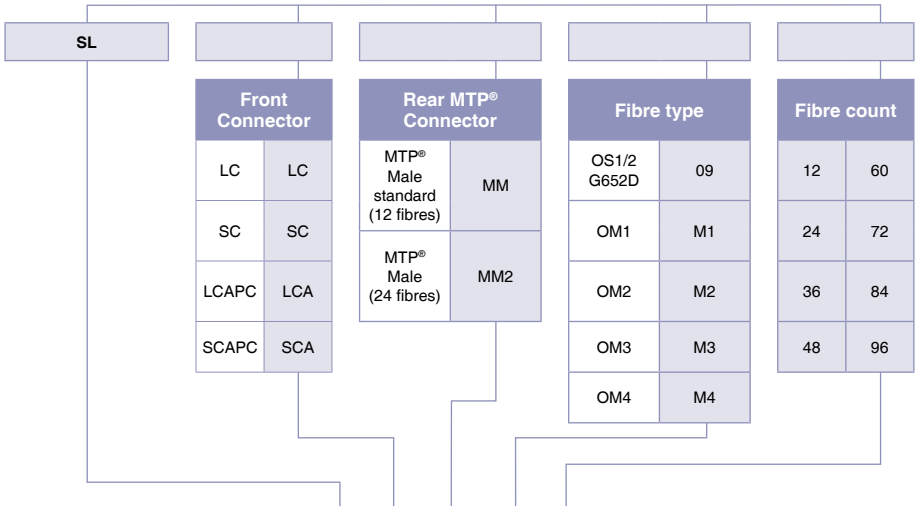


## Drawing



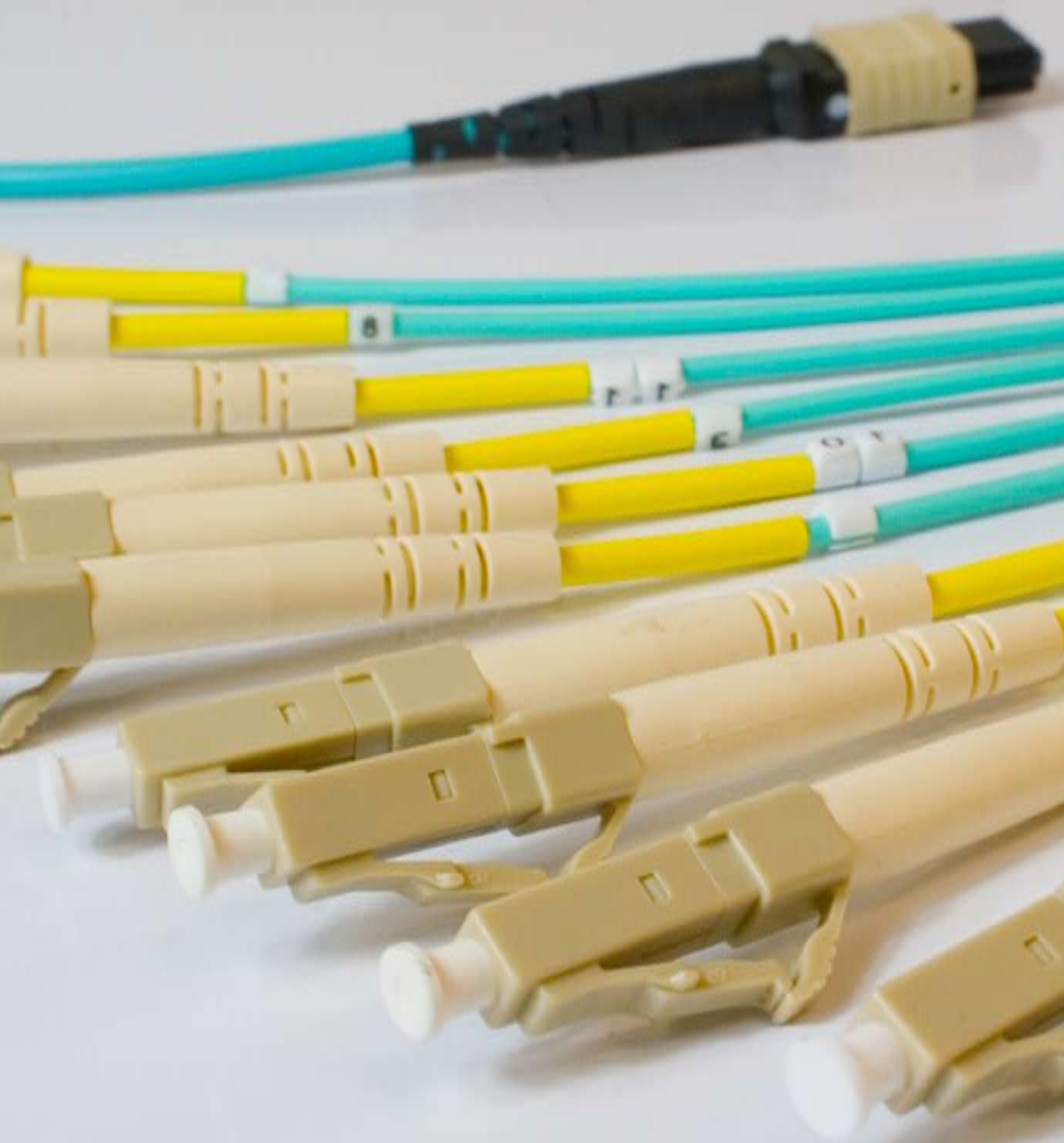
All dimensions in mm

## Part Number Generator



Example Part Number: SL LC MM M4 48

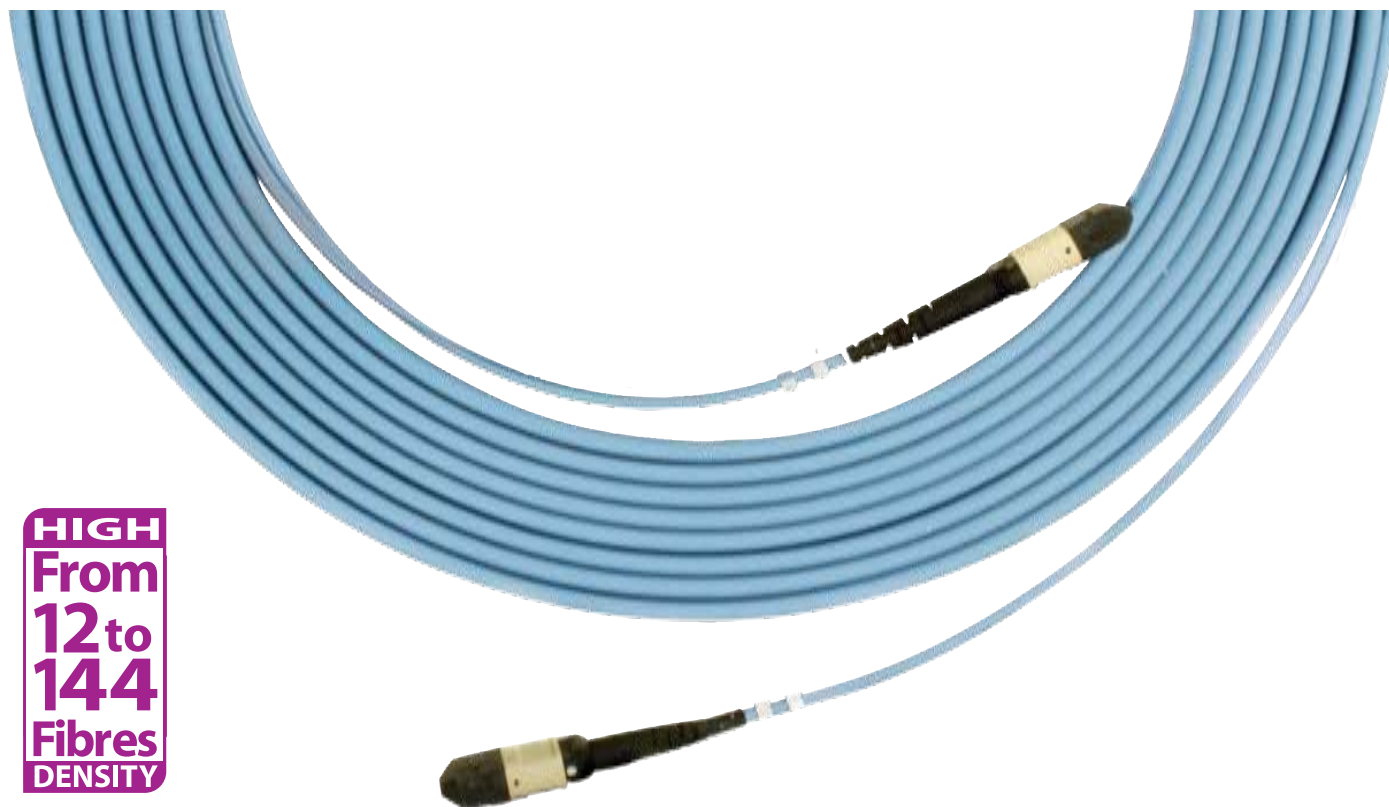
SLLCMMM448 will configure an MTP® slimline panel with 48 OM4 fibres and LC front interface. (12 fibre MTP® ferrule applied)



# Trunk Components

<i>Ultra High Density Pre-Terminated MTP® Trunk Cables</i>	<i>28</i>
<i>Ultra High Density Pre-Terminated MTP® Fan Out assembly</i>	<i>30</i>
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<i>FirstLight Nano</i>	<i>34</i>
<i>What's the difference with FirstLight Prime?</i>	<i>36</i>
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# Ultra High Density Pre-Terminated MTP® Trunk Cables



**HIGH**  
**From**  
**12 to**  
**144**  
**Fibres**  
**DENSITY**

## Description

FibreFab MTP® trunk multicore cable assemblies facilitate rapid deployment of high density backbone cabling in data centres and other high fibre environments reducing network installation or reconfiguration time and cost. They are used to interconnect cassettes, panels or ruggedised MTP® Fan Outs, spanning MDA, HDA and EDA zones.

MTP® trunk assemblies are offered in most fibre types as standard 12 to 144 core versions using a compact and rugged microcable structure. The compact cables optimise cable-way use and improve airflow.

FibreFab MTP® trunks are built with highest quality components. Standard MTP® as well low loss Elite versions are offered featuring low insertion loss for demanding high speed networks where power budgets are critical.

## Benefits

- ▶ MTP® Interface - MTP® US Conec brand components feature superior optical and mechanical properties
- ▶ Optimised Performance - low loss MTP® Elite, discrete Premium connectors and OM4 fibre assures low insertion losses and power penalties in tight power budget high speed network environment
- ▶ High Density - multifibre connector and compact dimension of ruggedised Microcable ease space in costly data centre environments
- ▶ Rapid Deployment - factory terminated modular system saves installation and reconfiguration time during moves, adds and changes
- ▶ Reliability - 100% tested- combination of high quality components and FibreFab manufacturing quality control guarantees product to the highest standards
- ▶ Next Generation Network Proof - emerging high speed protocol are going to use MTP® interface- your cabling infrastructure remains unchanged

## Features

- ▶ OS1/2, OM3, OM4 Fibre Grades (OM1 and OM2 available)
- ▶ 12, 24 and 48 Core Microcable Trunk
- ▶ LSZH, OFNP, OFNR Cable Jacket
- ▶ Female (standard) and Male MTP® connectors
- ▶ Polarity A (standard), B or C
- ▶ Factory terminated and tested

## Application

- ▶ Data Centre Infrastructure
- ▶ Storage Area Network- Fibre Channel
- ▶ Parallel Optics
- ▶ Infiniband
- ▶ Emerging 40 and 100Gbps Protocols

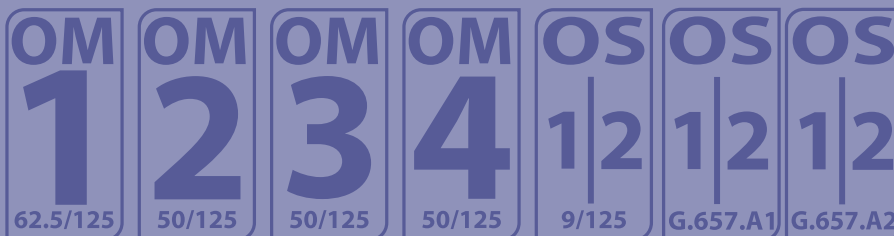
## Standards Compliance

TIA/EIA-568-C.3 and ISO/IEC 11801  
IEC-61754-7 & EIA/TIA-604-5  
NFPA 262 (OFNP) or IEC 60332 (LSZH)  
TIA/EIA 568-B.1-7  
Compliant to Directive 2002/95/  
EC (RoHS) and REACH SvHC

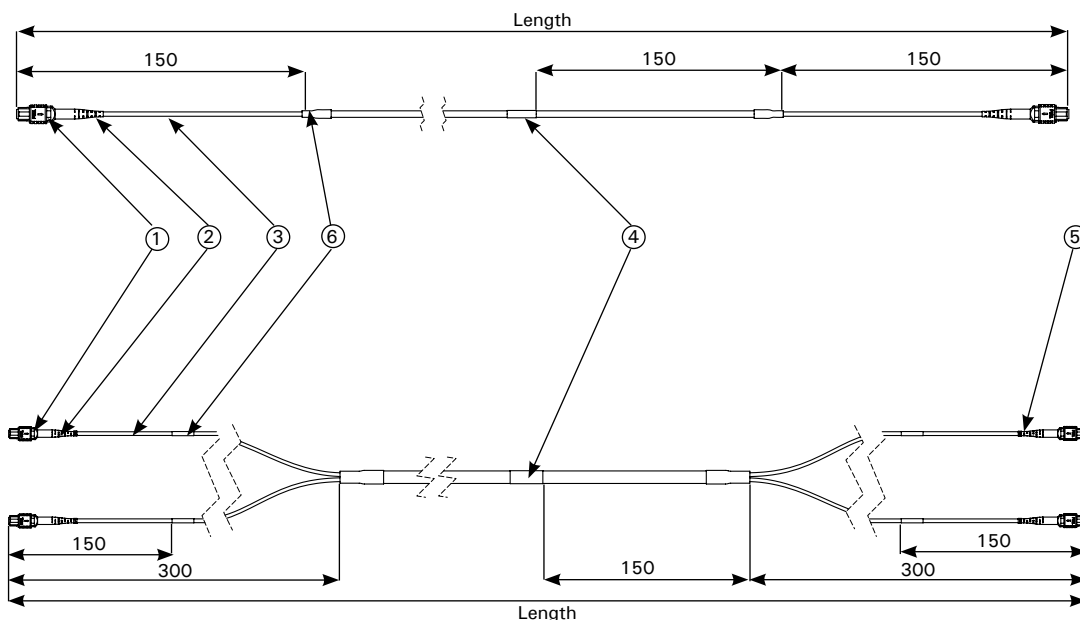


FOR MORE INFORMATION CALL **+44 (0)870 127 3330**

# Technical information



## Drawing



- 1. MTP® Connector
- 2. MTP® Connector Boot
- 3. Fibre Optic Microcable
- 4. Serial Number Label
- 5. Channel ID Clip
- 6. Heatshrink

All dimensions in mm

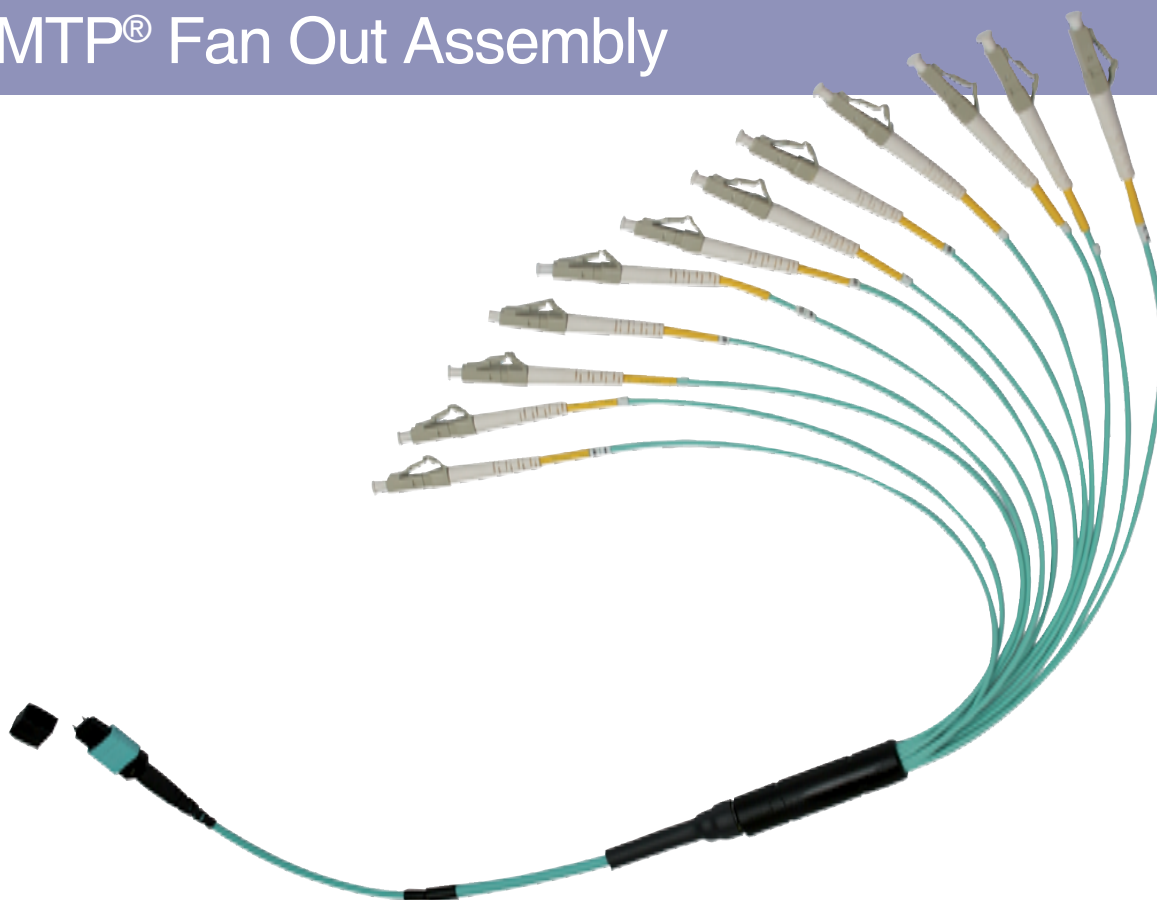
## Part Number Generator

Connector END A		Gender A		Connector END B		Gender B		Cable Type		Fibre count	Cable length (m)	Polarity	Colour		Jacket Type	
MTP® standard	MTP	Female	F	MTP® standard	MTP®	Female	F	OS1/2	09	12		A	Aqua (OM3)	AQ	LSZH standard	Leave Blank
MTP® Elite®	MTPE	Male	M	MTP® Elite®	MTPE	Male	M	OM1	62	24		B	Purple (OM3)	Blank	OFNP	PL
								OM2	50	48		C	Orange (OM1/2)	Blank	OFNR	R
								OM3	OM3				Yellow (OS1/2)	Blank		
								OM4	OM4							
								G.657.A1	A1							
								G.657.A2	A2							

Example Part Number **MTP F MTP F OM3 12 16 A AQ**

**MTPFMTPFOM31216AAQ** will configure a 16 metre, 12 Core, MTP® female to MTP® female, OM3, LSZH trunk assembly with polarity method A and an Aqua jacket.

# Ultra High Density Pre-Terminated MTP® Fan Out Assembly



## Description

FibreFab MTP® ruggedised Fan Out assemblies route multifibre MTP® connection into discrete connectors. They are used to directly interconnect MTP® cassettes, panels or backbone MTP® assemblies with the active equipment, saving costly data centre rack space and easing fibre management.

MTP® Fan Out assemblies are offered in most fibre types as standard 12 to 144 core versions using a compact and rugged microcore structure. The compact cables optimise cable-way use and improve airflow.

FibreFab MTP® Fan Out are built with highest quality components. Standard MTP® as well low loss Elite versions are offered featuring low insertion loss for demanding high speed networks where power budgets are critical.

## Benefits

- ▶ MTP® Interface - MTP® US Conec brand components feature superior optical and mechanical properties.
- ▶ Optimised Performance - low loss MTP® Elite, discrete Premium connectors and OM4 fibre assures low insertion losses and power penalties in tight power budget high speed network environment.
- ▶ High Density - ruggedised Fan Out allows for direct connection between backbone and active equipment eliminating rack space usage
- ▶ Rapid Deployment - factory terminated modular system saves installation and reconfiguration time during moves, adds and changes.
- ▶ Reliability - 100% tested-combination of high quality components and FibreFab manufacturing quality control guarantees product to the highest standards.

## Features

- ▶ OS1/2, OM3, OM4 Fibre Versions (OM1 and OM2 available)
- ▶ 12, 24 and 48 Core Microcable Trunk Assemblies
- ▶ LSZH, OFNP, OFNR Cable Jacket
- ▶ Female or Male MTP® connectors
- ▶ Factory Terminated and Tested

## Technical Specification

- ▶ Data Centre Infrastructure
- ▶ Storage Area Network
- ▶ Fibre Channel

## Standards Compliance

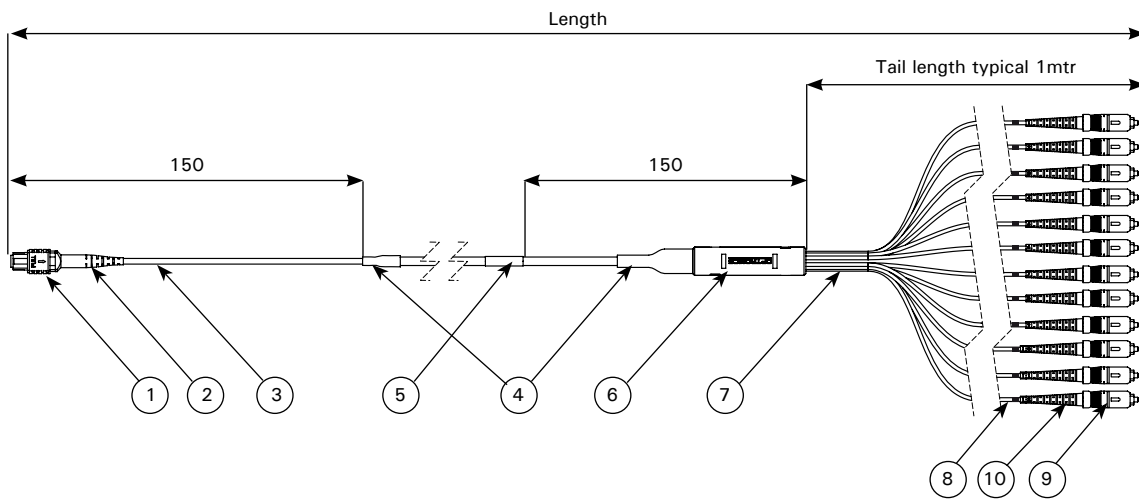
TIA/EIA-568-C.3 and ISO/IEC 11801  
IEC-61754-7 & EIA/TIA-604-5  
NFPA 262 (OFNP) or IEC 60332 (LSZH)  
TIA/EIA 568-B.1-7



# Technical information



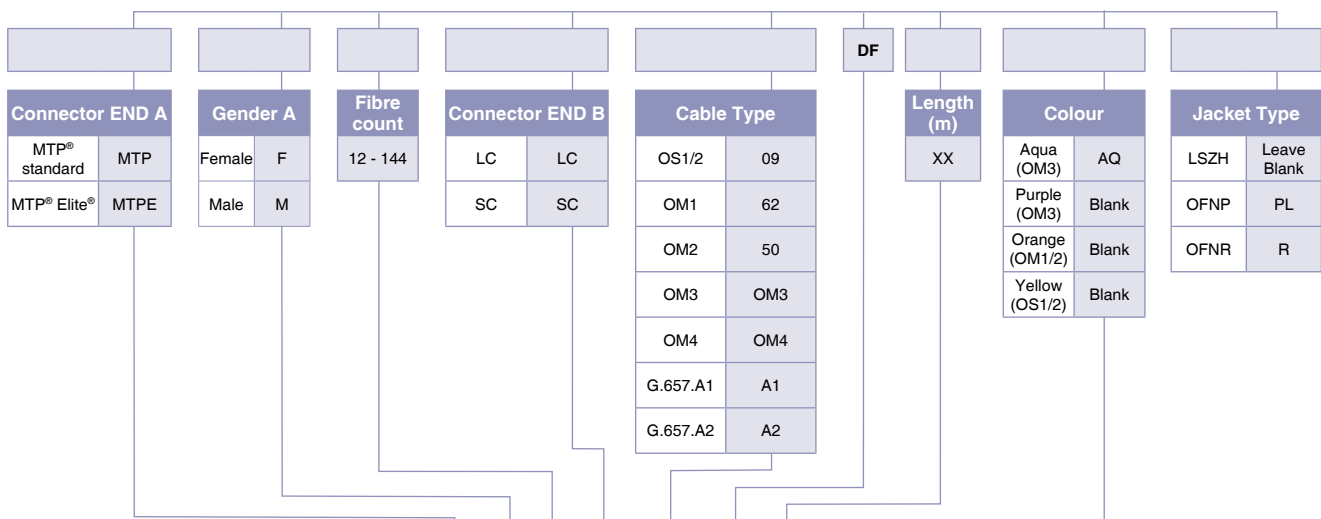
## Drawing



- 1. MTP® Connector
- 2. MTP® Connector Boot
- 3. Fibre Optic Microcable
- 4. Heatshrink
- 5. Serial Number Label
- 6. Breakout Module
- 7. 2mm Furcation Tubes
- 8. ID Clip
- 9. Discreet Connector
- 10. Discreet Connector Boot

All dimensions in mm

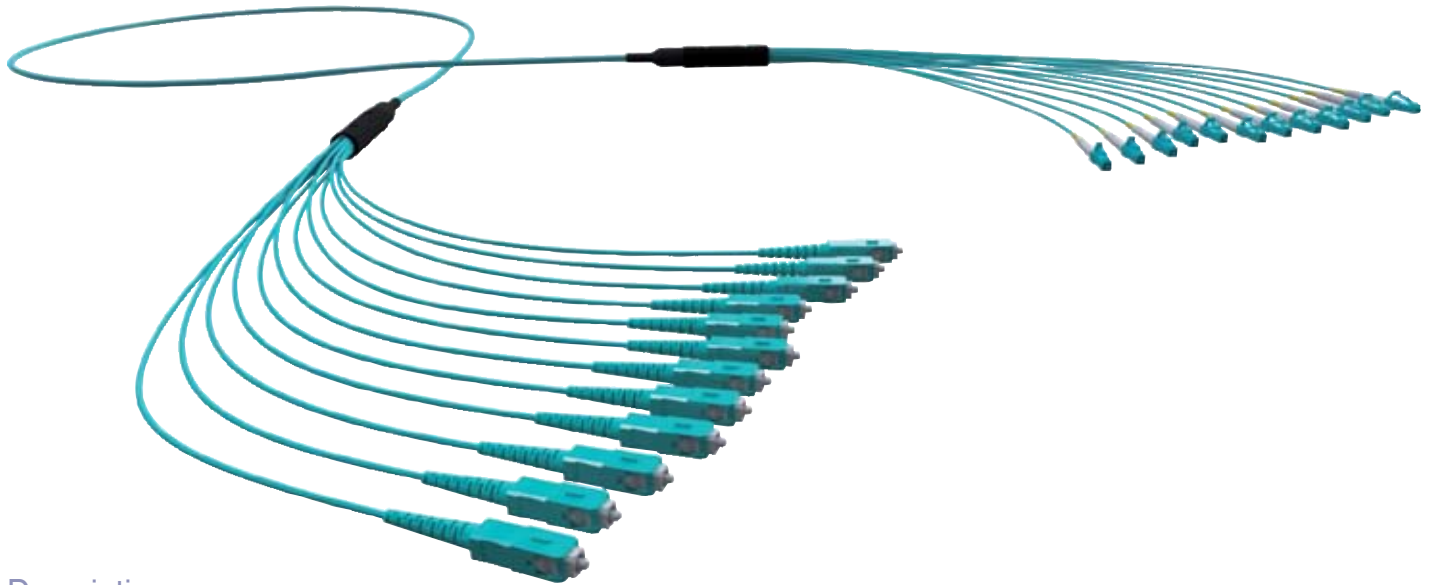
## Part Number Generator



Example Part Number: **MTP F 12 LC OM3 DF 16 AQ**

*MTPFLCOM312DF16AQLS* will configure a 16 metre, 12 core, MTP® female to LC OM3, LSZH ruggedised Fan Out with an Aqua jacket.

# FirstLight Micro

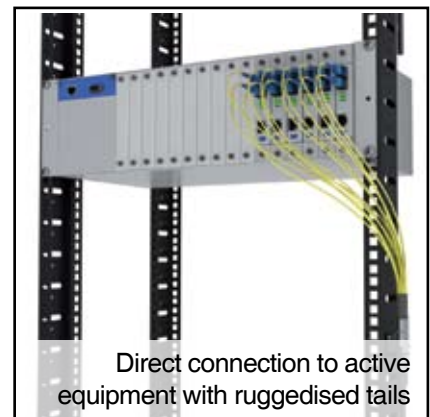
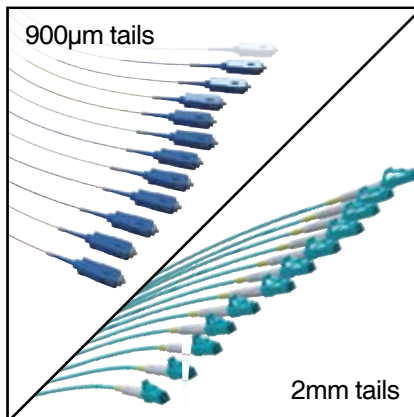
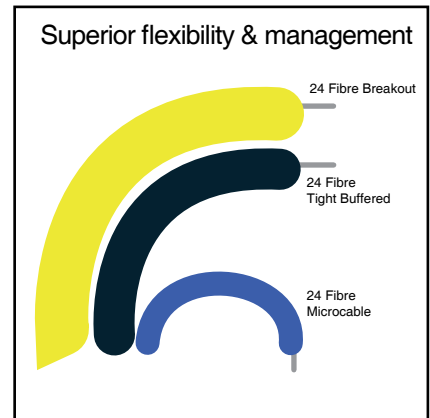
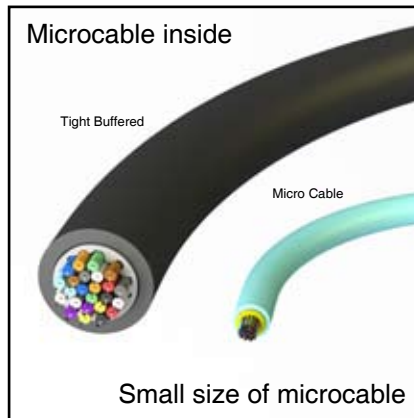
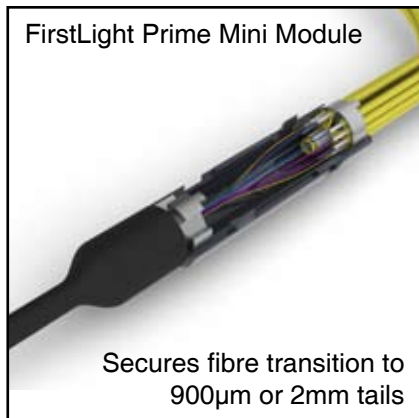


## Description

FirstLight Micro cable assembly perfectly complements traditional full breakout product offerings. It offers a smaller, more flexible and compact product providing at the same time an

improved optical performance of microcable structure. The 2mm patch lead style tails are ruggedised, to protect the optical fibre in the demanding environments outside the patch panel

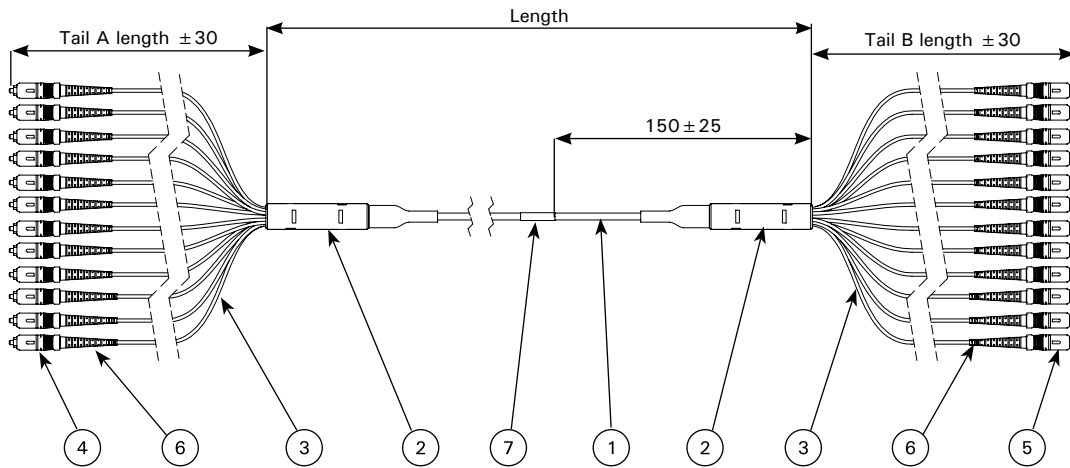
or ODF. The network topology can be reduced and simplified by direct connection; bypassing wall boxes, ODFs or fibre patch panels, the end result is greatly improved fibre management.





# Technical Information

## Drawing



- 1. 12 fibre micro cable
- 2. Ruggedised breakout module
- 3. 2mm furcation tubing
- 4. Connector assembly end 1
- 5. Connector assembly end 2
- 6. Channel identification marker (C-Clip)
- 7. Serial number label (Wrap around)

All dimensions in mm  
Length of tails typically 1 metre

## Part Number Generator

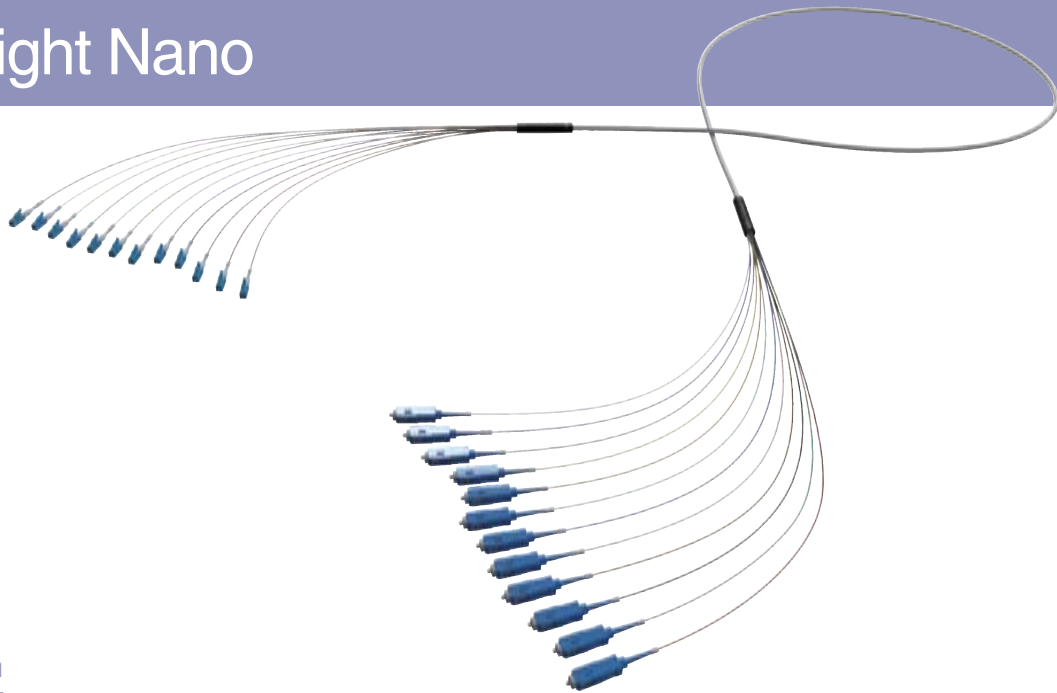
PRE	Fibre Count	Connector END A		Connector END B*		Fibre Type		Cable Construction		Cable length (Mtr)	Jacket Type	
	12	LC	LC	LC	LC	OS1/OS2	09	Microcore	MC	XX	LSZH	Leave Blank
	24	LC/APC	LCA	LC/APC	LCA	OM1	62				Plenum	OFNP
		SC	SC	SC	SC	OM2	50				Riser	OFNR
		SC/APC	SCA	SC/APC	SCA	OM3	OM3					
		ST	ST	ST	ST	OM4	OM4					
		FC	FC	FC	FC	G.657/A1	A1					
		FC/APC	FCA	FC/APC	FCA							
		E2000	E2	E2000	E2							
		E2000/APC	E2A	E2000/APC	E2A							

\* If end B differs from end A

Example Part Number: **PRE 24 LC OM3 MC 20**

**PRE24LCOM3MC20** configures a 20 metre, 24 core OM3 LC to LC Microcore multifibre cable assembly with a LSZH jacket.

# FirstLight Nano



## Description

The FirstLight Nano Cable assembly features a small, compact size of Nanocable and provides flexibility through a ruggedised product with the improved optical performance of the Nanocable structure.

- ▶ Extremely small size
- ▶ High Crushing resistance - up to 1500N
- ▶ Can be bent around tight corners
- ▶ 900um tails for installation inside fibre management - ODFs, panels.
- ▶ Ideal for FTTH application - small size of ruggedized for drop class for assemblies.
- ▶ Ideal for data centre - small size in high density environment
- ▶ Secure FirstLight Prime breakout module

**FirstLight Prime Micro Module Applied**

Secures fibre transition to 900µm tails

**Nano cable inside**

Tight Buffered

Nano Cable

Small size of cable

**High Crush Resistance**

Up to 1500N

**Bending Capability**

24 Fibre Breakout

24 Fibre Tight Buffered

24 Fibre Nano Cable

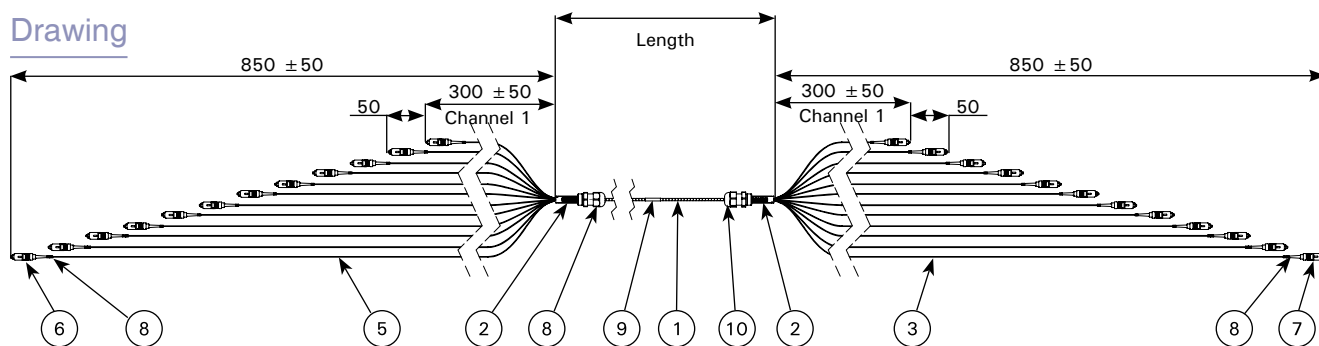
Superior flexibility & management

Improved optical performance

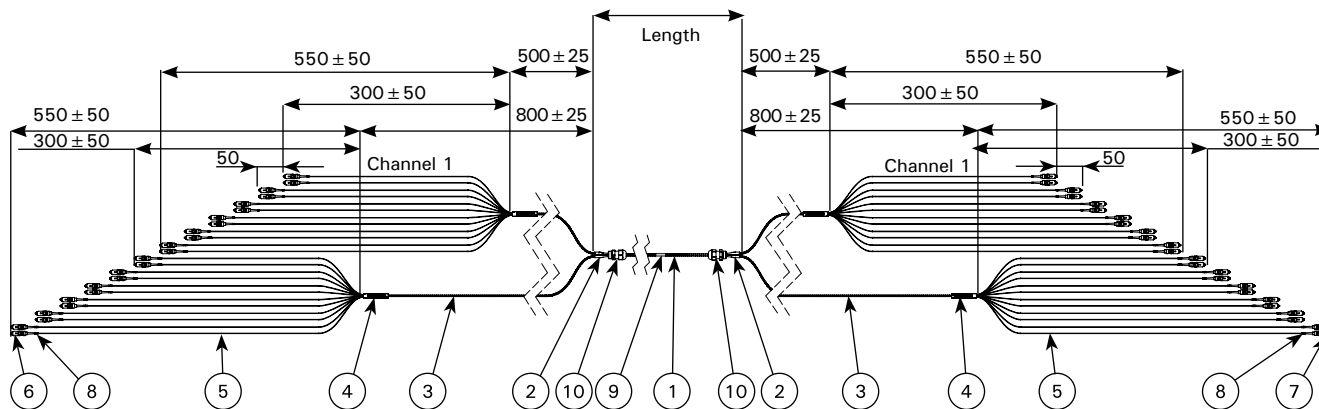
Ideal for FTTH applications

# Technical Information

## Drawing



- 1. Ø5mm Miniflex 24 Fibre LSZH Cable (Black)
- 2. Miniflex Duplexer Unit
- 3. Ø3mm Miniflex Tubing (Black)
- 4. Ø9mm Breakout Module
- 5. 900µm Solid Coloured Over sleeve Tubing
- 6. 900µm Connector Assembly - End 1
- 7. 900µm Connector Assembly - End 2
- 8. Channel Identification Marker (Slide On)
- 9. Serial Number Label (Wrap Around)
- 10. PG9 Gland



All dimensions in mm

## Part Number Generator

PRE											
<b>Fibre Count</b>	<b>Connector END A</b>		<b>Connector END B*</b>		<b>Fibre Type</b>		<b>Cable Construction</b>	<b>Cable length (Mtr)</b>	<b>Jacket Type</b>		
12	LC	LC	LC	LC	OS1/OS2	09	Nano Cable	NC	XX	LSZH	Leave Blank
24	LC/APC	LCA	LC/APC	LCA	OM1	62					
48	SC	SC	SC	SC	OM2	50					
72	SC/APC	SCA	SC/APC	SCA	OM3	OM3					
	ST	ST	ST	ST	OM4	OM4					
	FC	FC	FC	FC	G.657/A1	A1					
	FC/APC	FCA	FC/APC	FCA	* If end B differs from end A						
	E2000	E2	E2000	E2							
	E2000/APC	E2A	E2000/APC	E2A							

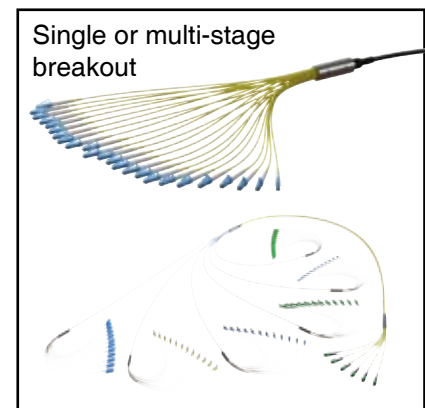
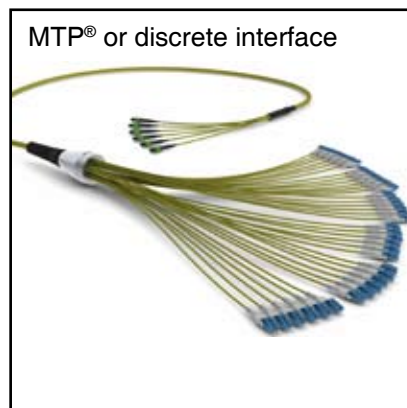
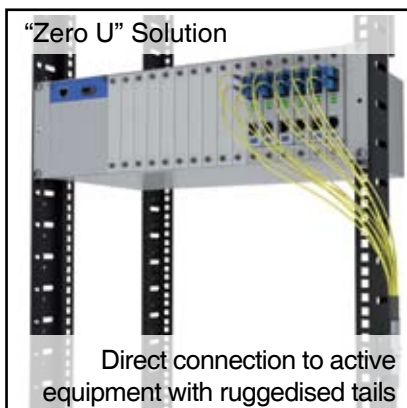
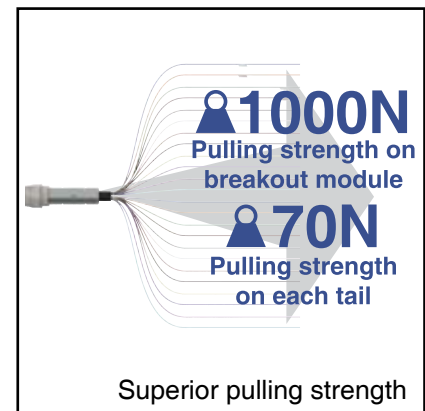
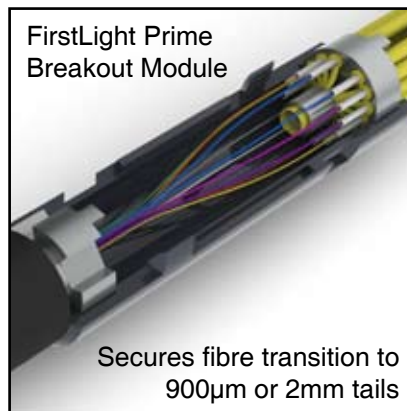
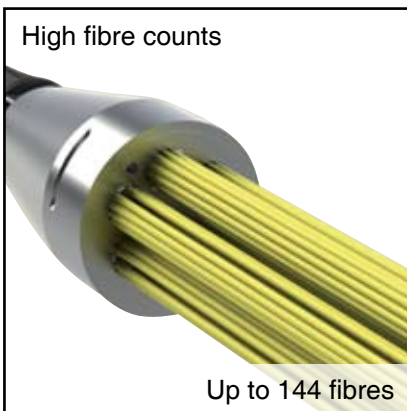
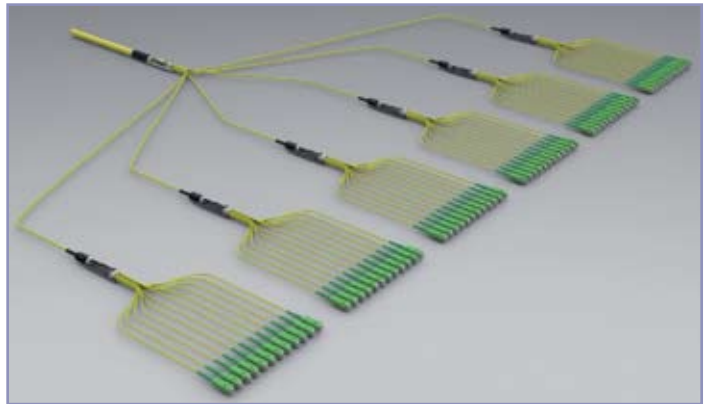
Example Part Number: **PRE 24 LC OM3 MC 20**

PRE24LCOM3MC20 configures a 20 metre, 24 core OM3 LC to LC multifibre nano cable assembly with a LSZH jacket.

# What's the difference with FirstLight Prime®?

The FibreFab FirstLight Prime is the range of premium optical fibre assemblies, utilising the patented FirstLight Prime transition module. The design can offer assemblies from 4 to 144 cores fibre cables and guarantee superior tensile strength and crush resistance (true 1000 Newton pulling strength). This technology platform is the ideal choice for long trunks requiring improved physical properties or high core count trunk assemblies. These cables can be assembled with both MTP® and discrete connectors and can also be used as trunk or ruggedised MTP® Fan Outs in data centres, providing cabinet to cabinet connections without the need of fibre jumpers. Innovative dry loose tube cable construction offers superior physical and optical performance.

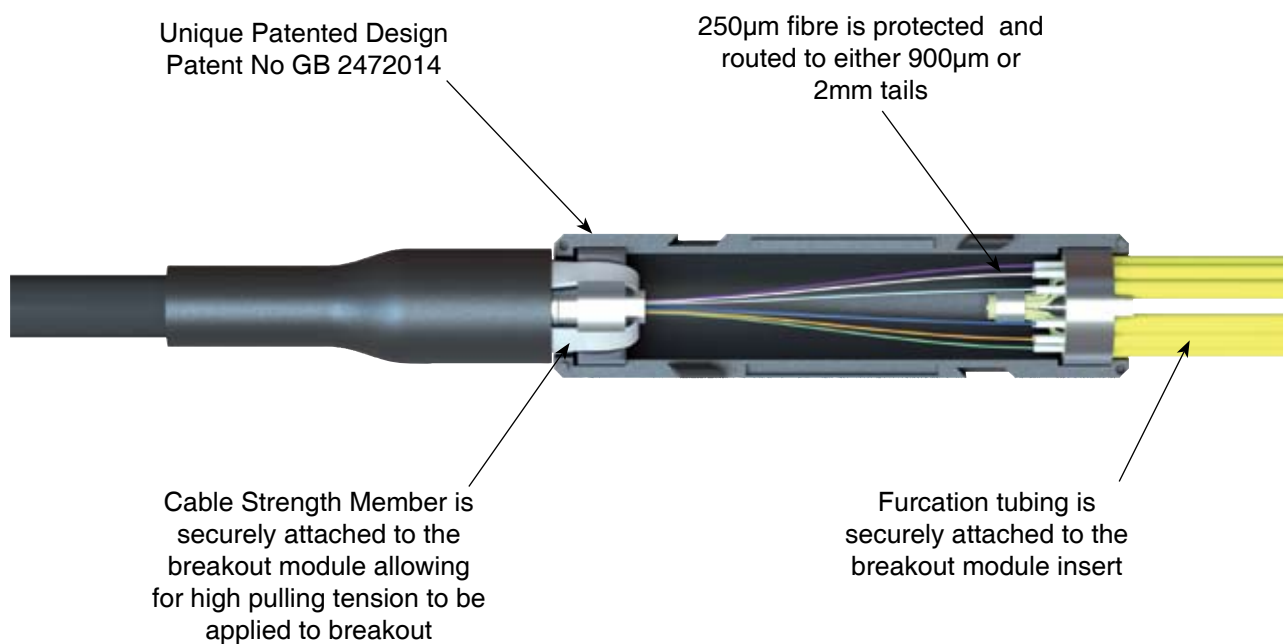
- ▶ High (4-144) fibre counts
- ▶ High tensile strength and crush resistance
- ▶ Can be secured to cabinet mounting profile for saving space
- ▶ Zero-U solutions available
- ▶ Compact cable and module dimension easing duct and rack congestions
- ▶ Reduced interconnection topology improves power budget
- ▶ Firstlight Prime module applied
- ▶ MTP® or discrete connector interface
- ▶ 900µm or 2mm tails



# FirstLight Prime<sup>®</sup>

## Breakout Module

*“Provides a secure transition and protection of fibres when breaking out to 900µm or 2mm tails”*



*“Unique construction - Patented design provides very high 1000N pulling tension”*

Patent No. GB 2472014



Micro Module  
Up to 12 tails



Mini Module  
Up to 24 tails



Maxi Module  
Up to 48 tails

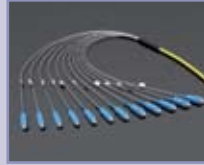


Mega Module  
Up to 144 tails

# Four Innovative building blocks for multifibre assemblies

## Micro Breakout Module

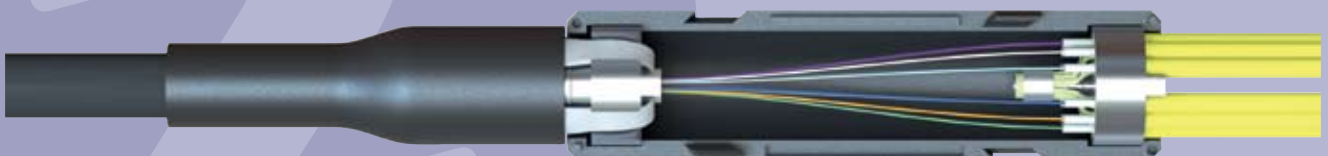
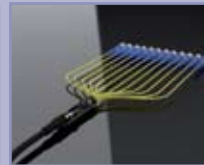
- ▶ Up to 12 x 900µm tails
- ▶ Small 9mm diameter
- ▶ Plastic bodied



Patent No. GB 2472014

## Mini Breakout Module

- ▶ Up to 24 x 900µm tails
- ▶ Up to 12 x 2mm tails
- ▶ 15mm diameter
- ▶ Plastic bodied



Patent No. GB 2472014

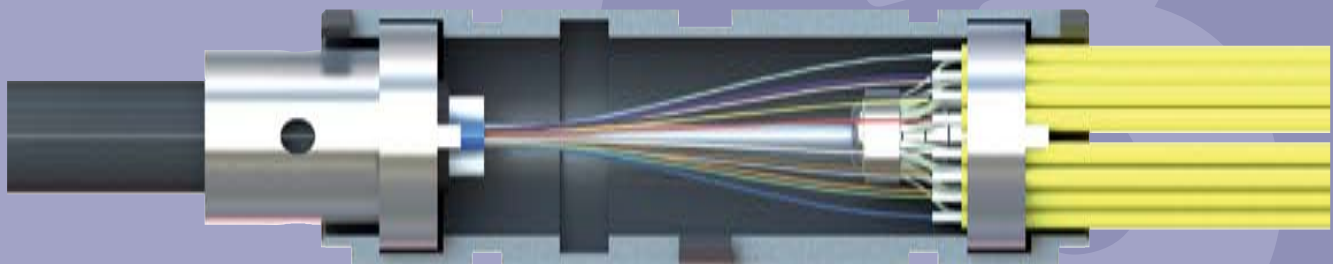
FOR MORE INFORMATION CALL **+44 (0)870 127 3330**

## Maxi Breakout Module

- ▶ Up to 48 x 900µm tails
- ▶ Up to 24 x 2mm tails
- ▶ 21mm diameter
- ▶ Rugged metal body



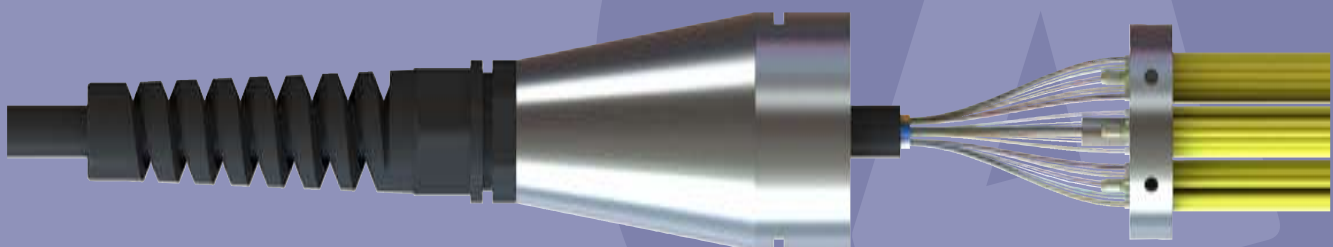
Patent Pending



Patent No. GB 2472014

## Mega Breakout Module

- ▶ Up to 144 x 900µm tails
- ▶ Up to 72 x 2mm tails
- ▶ 50mm diameter
- ▶ Rugged metal body

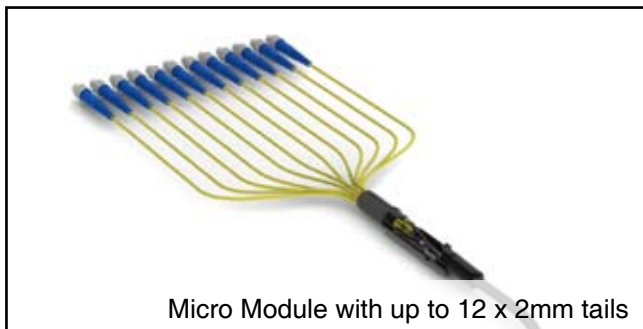


Patent No. GB 2472014

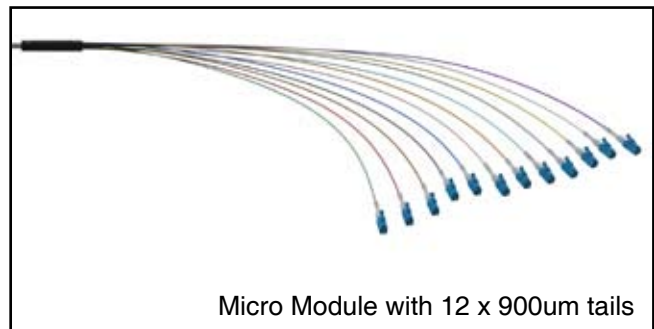
# High Density Pre-Terminated Multifibre FirstLight Prime Cable Assemblies

FirstLight Prime is a special design platform for multifibre optical cable assemblies. It utilises the patented FirstLight Prime transition module and guarantees superior tensile strength and crushing resistance. The high density design can scale from 4 up to 144 fibres and can feature both 900µm

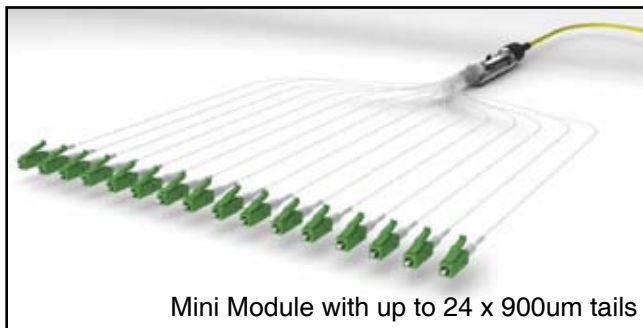
and ruggedised 2mm tail leads. Assemblies can comprise of both multifibre MTP® and discrete connectors, making the FirstLight Prime a flexible hybrid solution for diverse applications in data centres.



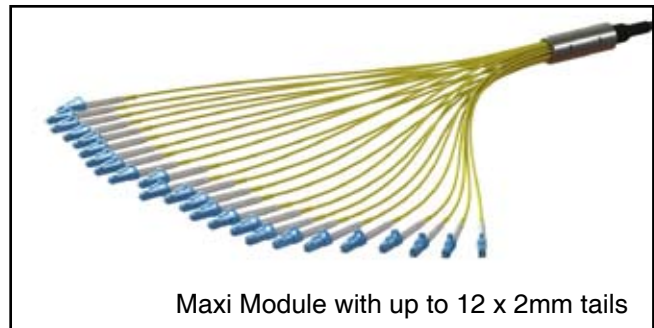
Micro Module with up to 12 x 2mm tails



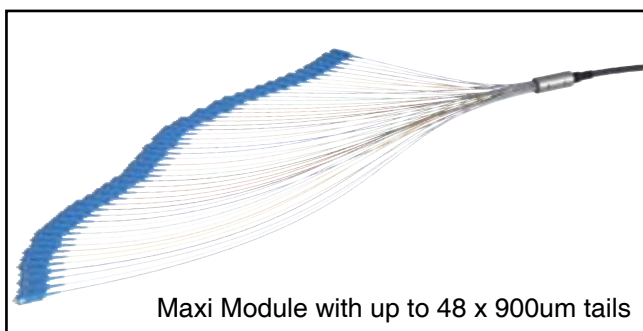
Micro Module with 12 x 900um tails



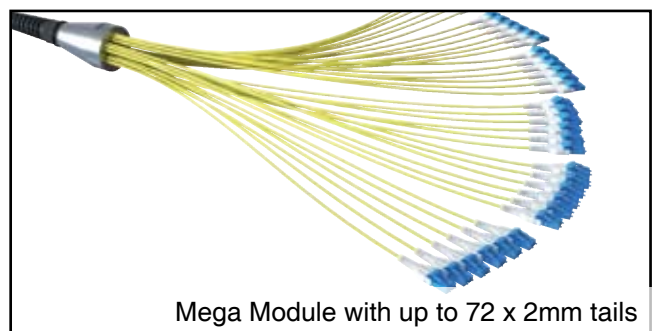
Mini Module with up to 24 x 900um tails



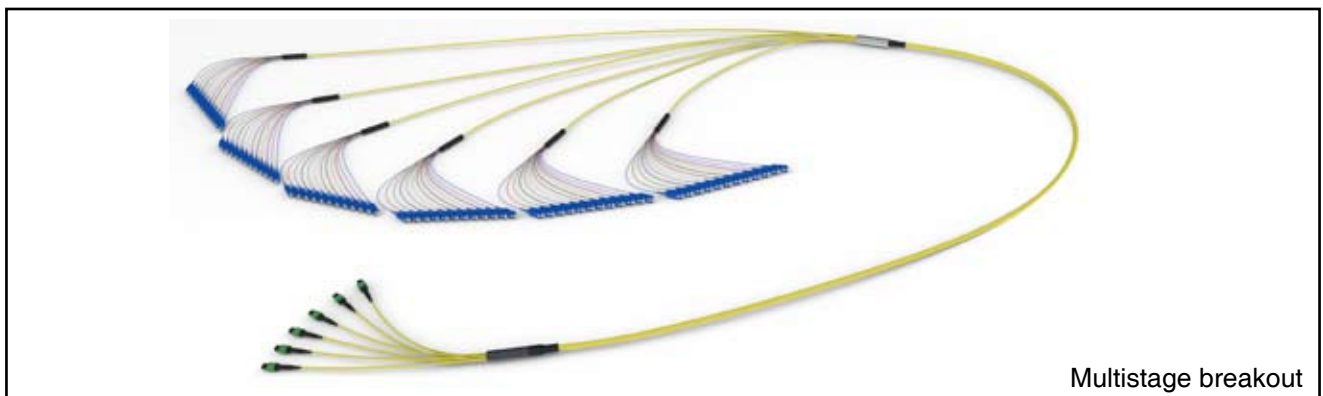
Maxi Module with up to 12 x 2mm tails



Maxi Module with up to 48 x 900um tails



Mega Module with up to 72 x 2mm tails

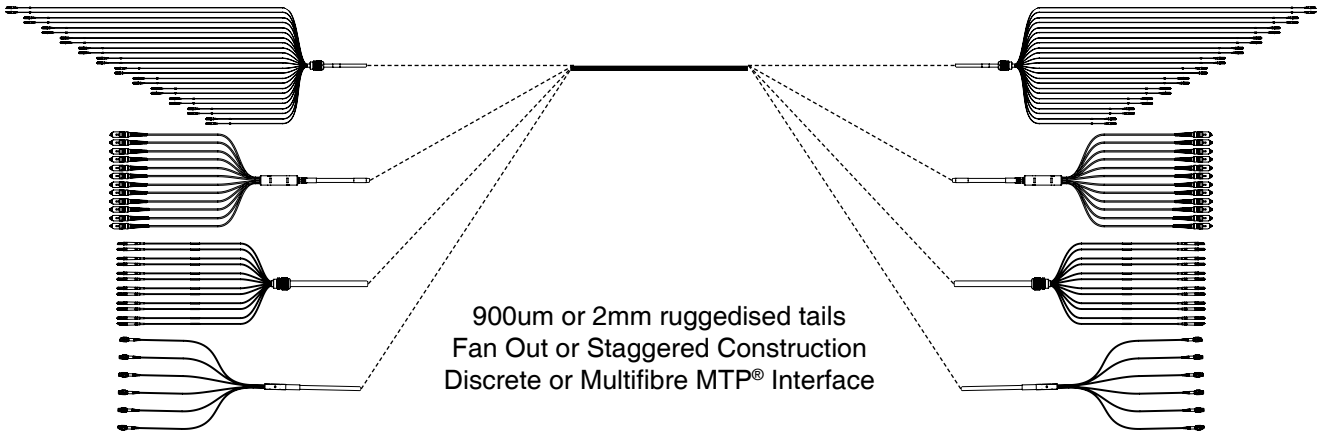


Multistage breakout



# Technical Information

Drawing



Product Configurator

PRE												
	<b>Fibre Count</b>	<b>Connector END A</b>		<b>Connector END B*</b>		<b>Fibre Type</b>		<b>Cable Construction</b>		<b>Cable length (M)</b>	<b>Jacket Type</b>	
	2	LC	LC	LC	LC	OS1/OS2	09	Dry Loose Tube 900µm	DLTP	XX	LSZH	Leave Blank
	4	LC/APC	LCA	LC/APC	LCA	OM1	62	Dry Loose Tube 2mm	DLTR		Plenum	OFNP
	6	SC	SC	SC	SC	OM2	50	Loose Tube 900µm	LTP	Riser	OFNR	
	8	SC/APC	SCA	SC/APC	SCA	OM3	OM3	Loose Tube 2mm	LTR			
	12	ST	ST	ST	ST	OM4	OM4					
	16	FC	FC	FC	FC	G.657/A1	A1					
	24	FC/APC	FCA	FC/APC	FCA							
	48	E2000	E2	E2000	E2							
		E2000/APC	E2A	E2000/APC	E2A							

# Pre-Terminated Multifibre FirstLight Cable Assemblies



## Description

The FirstLight factory made, quality controlled, fibre optic assembly can be built using distribution tight buffer cable for short internal optical links. FirstLight Loose Tube Assemblies feature improved mechanical and optical properties for use in internal / external cabling environments. The 900µm

presentation lends itself to installation within a patch panel, wall box or Optical Distribution Frame (ODF). Crush resistant protective tubing assures secure transportation and installation. The high strength pulling element allows fast, safe and effective pulling. The overall assembly and packing are light

and compact, reducing transport cost and storage space. Installation waste is also reduced. A unique FibreFab link loss certificate accompanies all FirstLight multifibre assemblies.

**Protective tubing**

High crush resistance

1000N pulling strength

Every assembly is supplied with a link loss test certificate, indicating expected optical performance when installed

Channel link loss test  
Unique to FibreFab

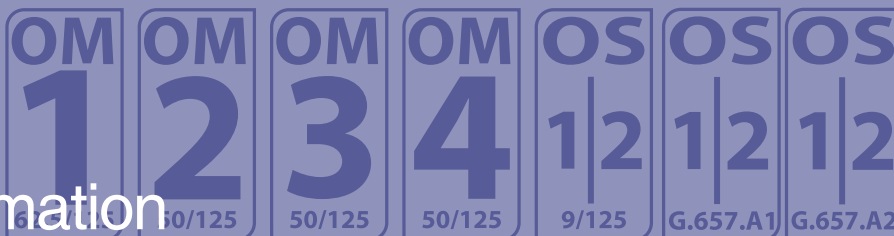
Tight Buffered

Loose Tube

Cable construction options

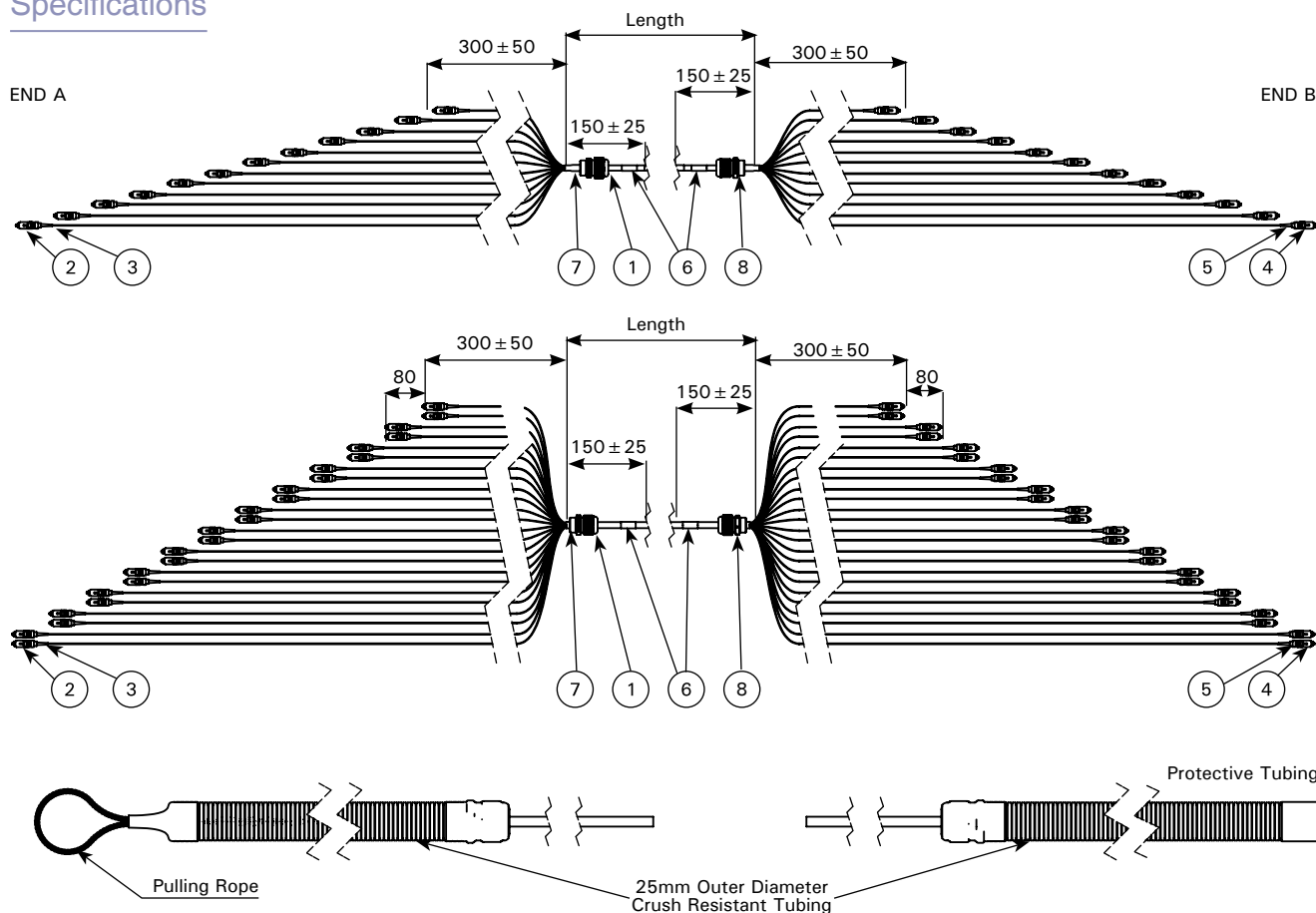
Low waste eco-friendly packaging

Factory quality



# Technical information

## Specifications



- 1. Tight Buffered / Loose Tube Cable (4 - 24 Core)
- 2. Connector - End A
- 3. Connector 900µm Boot - End A
- 4. Connector - End B
- 5. Connector 900µm Boot - End B
- 6. Serial number label
- 7. Split Retainer
- 8. Gland

All dimensions in mm

## Product Configurator

PRE						
<b>Terminated Fibre Count</b>	<b>Connector A (Pulling Eye)</b>	<b>Connector B (Apply If End A ≠ B)</b>	<b>Fibre Type</b>	<b>Cable Construction</b>	<b>Length (M)</b>	
02	SC	Open end (XX)	OM1 62	Tight Buffered TB	XX	
04	LC	SC	OM2 50	Loose Tube LT		
06	FC	LC	OM3 OM3			
08	ST	FC	OM4 OM4			
12	E2 (E2000)	ST				
16		E2 (E2000)				
24						
48						

# MTP® Ruggedised Pigtail

## Description

The FibreFab MTP® ruggedised pigtail enables rapid deployment of a high density backbone / horizontal cabling, this reduces installation time and cost.

The small footprint of the MTP® interface simplifies and reduces the amount of front patch panel adaptor space compared to traditional discrete connectors. The ruggedised 5/3mm construction allows for longer pigtail lengths enabling splice management to be located outside the patch panel racks.

These MTP® pigtail assemblies feature colour coded fibres for easy splice identification.

The MTP® interface is compatible with next generation networks and parallel optics protocols, making any network utilising this product future proof.

## Features

- ▶ Multifibre MTP® connector interface
- ▶ Fibres are colour coded as per IEC 60304 MTP® interface
- ▶ OS1/2, OM3, OM4 fibre grades (OM1 and OM2 available)
- ▶ Ruggedised 5/3mm Microcable pigtail construction with 250µm fibres in 3mm tube.
- ▶ Low smoke zero halogen LSZH, Plenum OFNP, Riser OFNR buffer
- ▶ Factory terminated and tested

## Benefits

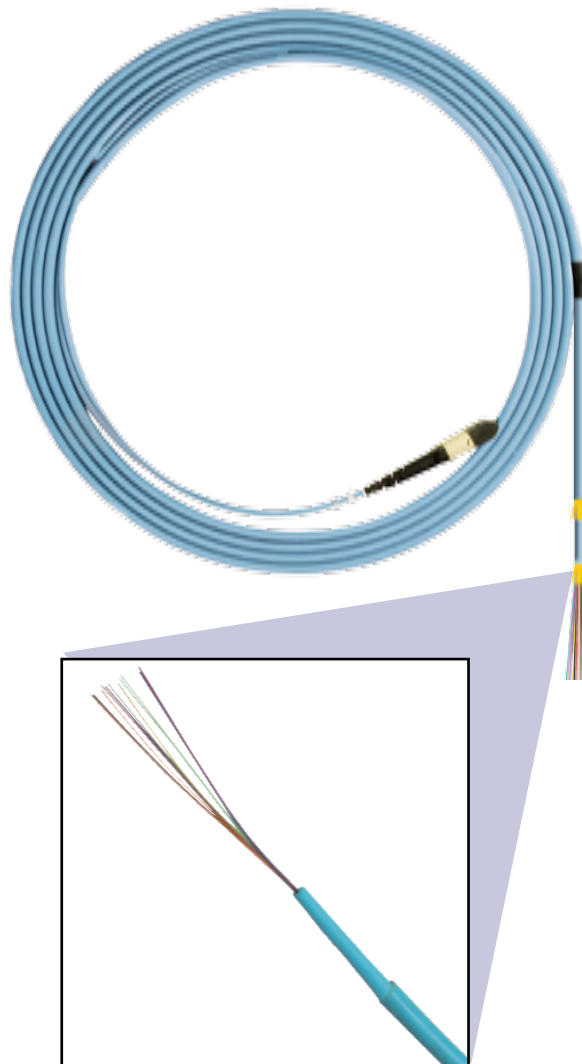
- ▶ MTP® interface reduces front panel adaptor space
- ▶ Increased speed of installation
- ▶ Ruggedised pigtails allow for splicing to be done remotely away from the equipment zone
- ▶ Next generation networks proof

## Applications

- ▶ Telecom and datacom application
- ▶ Patch panels, wall boxes, ODFs and splice cassettes
- ▶ Supports high speed multi channel video, data and voice services in metropolitan and access networks
- ▶ ATM, SONET and WDM, ETHERNET, FIBRE CHANNEL

## Standards Compliance

- ▶ TIA/EIA-568-C.3 and ISO/IEC 11801
- ▶ IEC-61754-7 & EIA/TIA-604-5
- ▶ IEC 60332
- ▶ Compliant to Directive 2002/95/EC (RoHS) and REACH SvHC
- ▶ IEC-60793

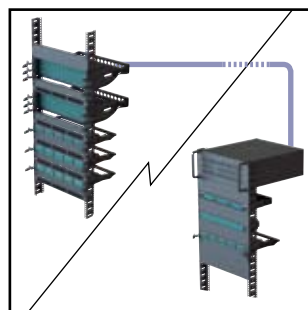


On-site MTP® splicing system



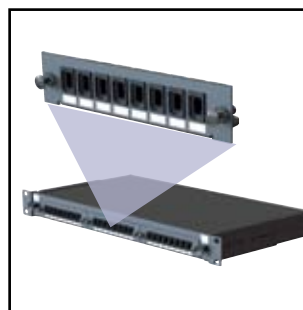
Flexible on site termination

Long ruggedised MTP® pigtail



Splice management outside equipment zone

Reduce size of patching interface



Cost effective compact system size

No dedicated site survey required

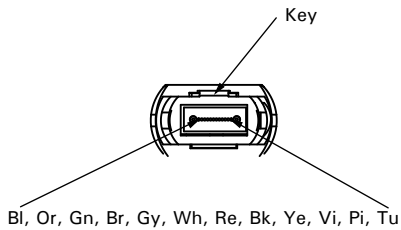
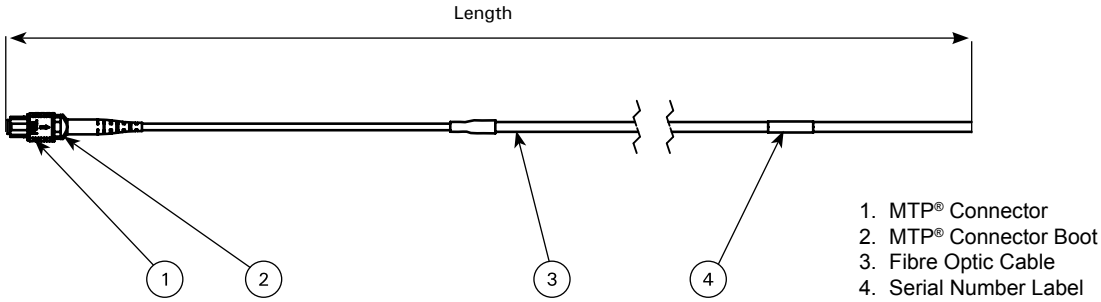


Fast, economic installation

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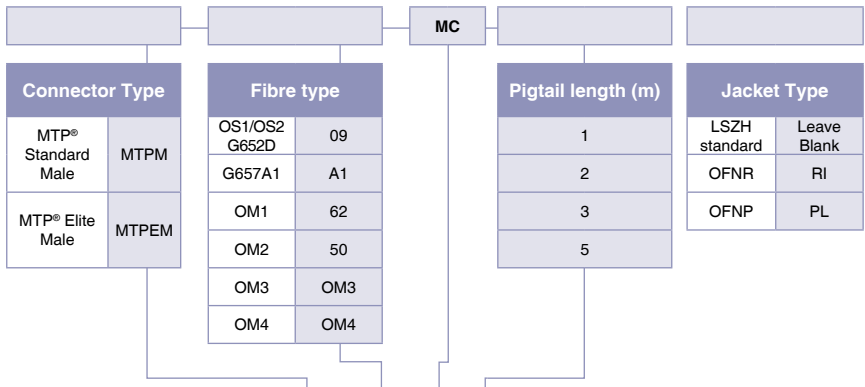
# Technical information

## Drawings



All dimensions in mm

## Part Number Generator



Example Part Number: **MTPM 09 MC 3**

This part number will configure a 3 metre singlemode OS1/2 G652D MTP® ruggedised pigtail with a standard MTP® male connector



NB: coloured splice protectors are available upon request

# Technical Information

## Cable Performance

Fibre Type (ISO/IEC 11801)	OS1/OS2	OM1	OM2	OM3	OM4
Attenuation Coefficient [dB/km]	≤ 0.38 Max (1300nm)	≤ 3.5 Max (850nm)	≤ 3.5 Max (850nm)	≤ 3.5 Max (850nm)	≤ 3.5 Max (850nm)
	≤ 0.25 Max (1300nm)	≤ 1.5 Max (1300nm)	≤ 1.5 Max (1300nm)	≤ 1.5 Max (1300nm)	≤ 1.5 Max (1300nm)
	≤ 0.34 Typ (1550nm)	≤ 2.9 Typ (850nm)	≤ 2.7 Typ (850nm)	≤ 2.7 Typ (850nm)	≤ 2.7 Typ (850nm)
	≤ 0.19 typ (1550nm)	≤ 1.2 typ (1300nm)	≤ 0.9 typ (1300nm)	≤ 0.9 typ (1300nm)	≤ 0.9 typ (1300nm)
Minimum Bandwidth: Overfilled Launch [Mhz-km]	NA	≥ 200 (850nm)	≥ 500 (850nm)	≥ 1500 (850nm)	≥ 3500 (850nm)
		≥ 500 (1300nm)	≥ 500 (1300nm)	≥ 500 (1300nm)	≥ 500 (1300nm)
Minimum Bandwidth: Laser Effective Modal Bandwidth [Mhz-km]	NA	NA	NA	≥ 2000 (850nm)	≥ 4700 (850nm)

## Connector Performance - MTP

Connector Mating	IL Average Standard	IL MAX Standard	IL Average Premium	IL MAX Premium	Return Loss	IL MAX	Return Loss
MTP® Elite (MM)	0.20 dB	0.35 dB	NA	MTP® Elite (SM)	0.18 dB	0.25 dB	>60dB
MTP® (MM)	0.35 dB	0.60 dB	NA	MTP® (SM)	0.25 dB	0.75 dB	>60dB
LC, SC (MM)	0.15dB	0.30dB	NA	LC, SC (SM)	0.18dB	0.25dB	>55/65dB*
LC, SC Premium (MM)	0.08dB	0.15dB	NA	LC, SC Premium (SM)	0.12dB	0.15dB	>55/65dB*

## Connector Performance - Traditional

Connector Type	Conformance	Singlemode	Multimode	SM Duplex	MM Duplex
SC connector	IEC 61754-4	SM PC- Blue APC-Green	MM PC- Beige	SM PC- Blue APC-Green with clips	MM PC- Beige with clips Boot -Red & Black
LC connector	IEC 61754-20	SM PC- Blue APC-Green Boot-White	MM PC- Beige Boot-White	SM PC- Blue APC-Green with clips Boot-White	MM PC- Beige with clips Boot-White
ST connector	IEC 61754-2	SM PC- Yellow boot	MM PC- Black boot	SM PC- Yellow boot	MM PC- Red & Black boot
FC connector	IEC 61754-13	SM PC- Blue boot APC-Green boot	MM PC- Black boot	SM PC- Blue boot APC-Green boot	MM PC- Black boot

IMP: Please note that the LC 2mm connectors will be heat shrunk for cable retention. C clips will be provided for channel identification of duplex FC and ST patchcords.

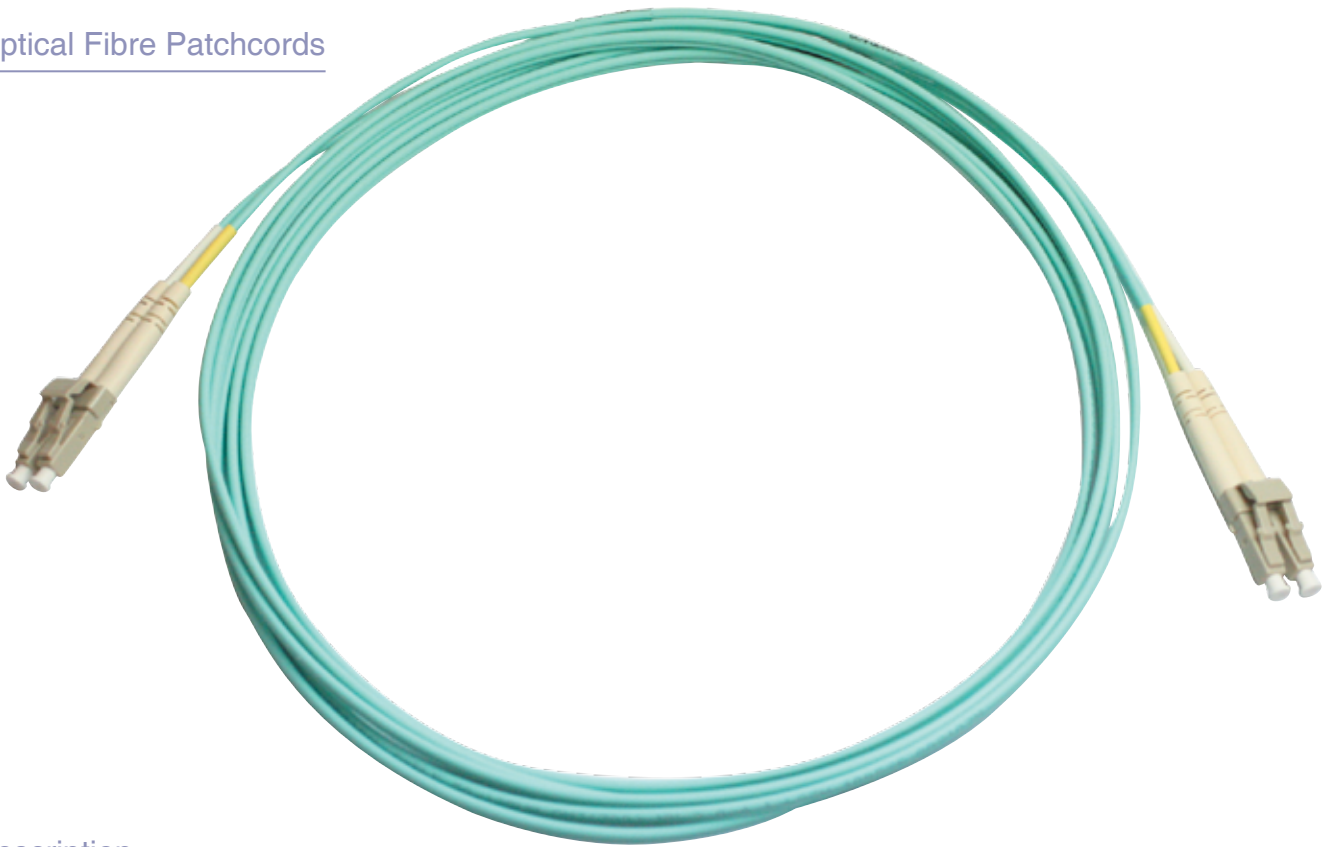
## Patchcords

<i>Standard Patchcords</i>	48
<i>Premium Patchcords</i>	50
<i>Uniboot Patchcords</i>	52
<i>Armoured Patchcords</i>	54
<i>Master Test Leads</i>	56
<i>Reduced Bend Sensitivity</i>	58

# Patchcords



## Optical Fibre Patchcords



### Description

FibreFab multimode patchcords are used to connect high speed and legacy networks like Gigabit Ethernet, Fast Ethernet and Ethernet. The multimode patchcords are manufactured using LSZH cables which conform to IEC, EIA TIA and Telecordia standards. The patchcords are terminated with standard FibreFab connector which gives optimum optical performance.

### Features

- ▶ SC, LC connectors
- ▶ Low smoke zero halogen (LSZH)
- ▶ 900µm tight buffer
- ▶ Simplex and duplex assemblies
- ▶ Duplex assemblies available with clips (SC and LC)
- ▶ Different connector performance range for specific application





# Technical information

## Connector Specification

Optical Performance Multimode	Singlemode	Multimode	Conformance
Insertion loss (Max/Acceptance)	0.30 dB	0.30 dB	IEC 61300-3-4
Insertion loss (97%)	0.40 dB	0.40 dB	IEC 61300-3-34
Ave/Master	0.18 dB	0.15 dB	IEC 61300-3-4
Ave/Random	0.18 dB	0.20 dB	IEC 61300-3-34

## Cable Specification

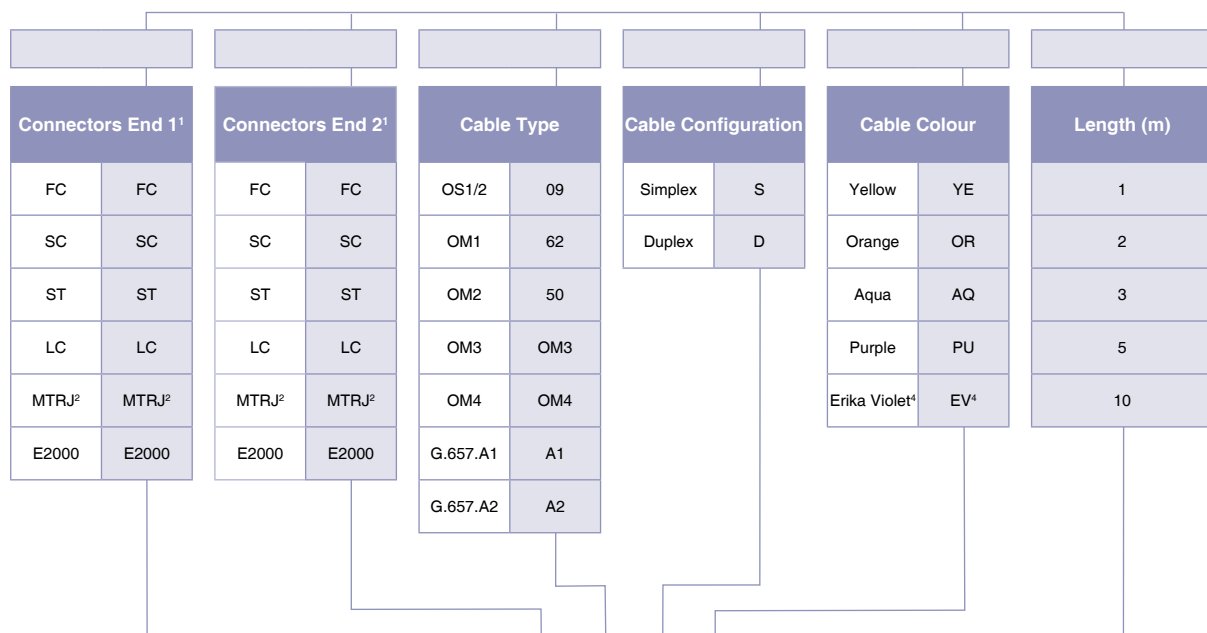
Characteristics	Simplex	Duplex
Cable Material	LSZH or PVC	LSZH or PVC
Strength Member	Aramid	Aramid
Crush (N)	1000	1000
Operating Temperature (°C)	-20 to 60	-20 to 60
Fire Specification	IEC 60332-1 / IEC 60332-3	

## Standards Compliance

TIA/EIA 568C  
TIA/EIA 492AAAP  
IEC19801



## Part Number Generator

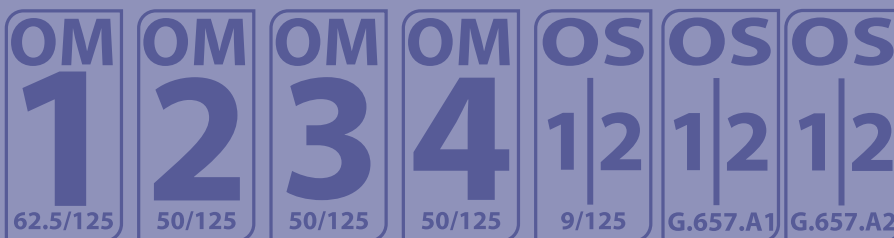


Example Part Number: **SC ST OM4 D AQ 2**

**SCSTOM4DAQ2** configures a 2 meter SC to ST  
OM4 duplex patchcord with an aqua jacket

<sup>1</sup>Other connectors available on request  
<sup>2</sup>MTRJ is only available in MiniZip  
<sup>4</sup>OM4 only

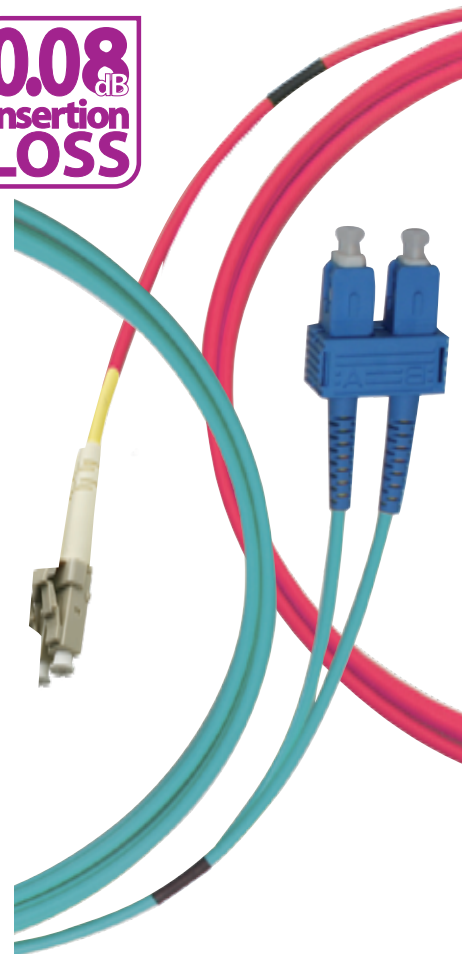
# Premium Patchcords



## Description

FibreFab Premium range patchcords are suitable for low loss telecom, datacom, data centre and some critical applications. The patchcords provide flexible interconnection to active equipment, passive optical devices and cross-connects. The patchcords are terminated with Premium range physical contact (singlemode & multimode) and angled physical contact (singlemode) zirconia ferrule connectors which are manufactured with precision factory mounting and polishing techniques which helps assure high transmission quality.

**0.08** dB  
Insertion  
LOSS



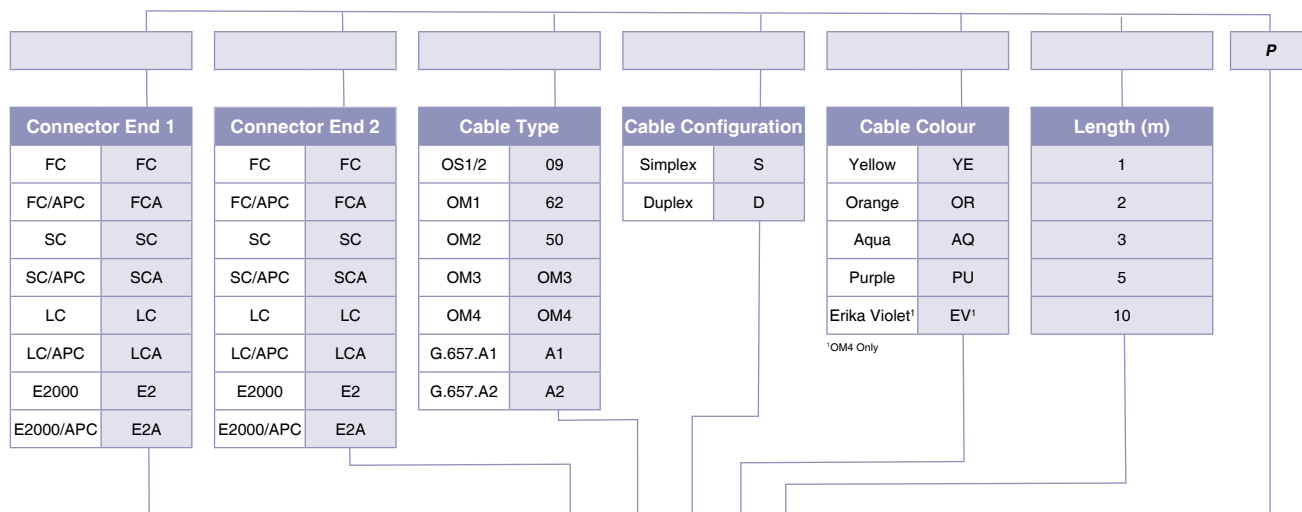
## Features / Benefits

- ▶ Conform to IEC, EIA-TIA, and Telecordia performance requirements
- ▶ Available in different fibre types
- ▶ Available with different connector types
- ▶ Available in standard and custom lengths
- ▶ RoHS, REACH & SvHC compliant

## Applications

- ▶ Data centre
- ▶ Telecommunication networks
- ▶ CATV
- ▶ LAN and WAN
- ▶ FTTX
- ▶ Broadband network

## Part Number Generator



Example Part Number: **SC ST OM4 D AQ 2 P**

SCSTOM4DAQ2P will configure a 2 metre SC to ST OM4 duplex Premium patchcord with an aqua jacket

# Technical information

## Connector Specification

Optical Performance	Singlemode	Multimode	Conformance
Insertion loss (Max/Acceptance)	0.15 dB	0.15 dB	IEC 61300-3-4
Insertion loss (97%)	0.30 dB	0.25 dB	IEC 61300-3-34
Ave/Master*	0.12 dB	0.08 dB	IEC 61300-3-4
Ave/Random*	0.12 dB	0.10 dB	IEC 61300-3-34
Return Loss	55/65 dB	-	IEC 61300-3-6
MECHANICAL PROPERTIES		CRITERIA*	CONFORMANCE
Mechanical endurance	500 matings		IEC 61300-2-2
Vibration	10-55 Hz, 0.75 amplitude		IEC 61300-2-1
Drop	Drop height 1m, 5 drops		IEC 61300-2-12
Cable retention	Magnitude 90 N		IEC 61300-2-4
Cable torsion	1.5 kg - 2.5 kg for 2mm-3mm cable diameter		IEC 61300-2-5

\* The change in attenuation for all the above listed criteria shall be a maximum of 0.20dB

## Standards Compliance

TIA/EIA 568C  
TIA/EIA 492AAAP  
IEC19801



Connector Type	Conformance	Singlemode	Multimode	SM Duplex	MM Duplex
SC connector	IEC 61754-4	SM PC- Blue APC-Green	MM PC- Beige	SM PC- Blue APC-Green with clips	MM PC- Beige with clips Boot -Red & Black
LC connector	IEC 61754-20	SM PC- Blue APC-Green Boot-White	MM PC- Beige Boot-White	SM PC- Blue APC-Green with clips Boot-White	MM PC- Beige with clips Boot-White
ST connector	IEC 61754-2	SM PC- Yellow boot	MM PC- Black boot	SM PC- Yellow boot	MM PC- Red & Black boot
FC connector	IEC 61754-13	SM PC- Blue boot APC-Green boot	MM PC- Black boot	SM PC- Blue boot APC-Green boot	MM PC- Black boot

IMP: Please note that the LC 2mm connectors will be heat shrunk for cable retention. C clips will be provided for channel identification of duplex FC and ST patchcords.

## Cable Specification

Characteristics	Units	Simplex	Duplex
Cable Material		LSZH or PVC	LSZH or PVC
Strength Member		Aramid	Aramid
Crush	N	1000	1000
Operating Temperature	°C	-20 to +60	-20 to +60
Secondary Buffer Diameter (2.0mm, 2.4mm and 3.0mm)	µm	900±50	900±50
Secondary Buffer Diameter (1.6mm and 1.8mm)	µm	600±50	600±50
Minimum Bending Radius	mm	10D (installed) 20D (loaded)	10D (installed) 20D (loaded)

IMP: The patchcords are available in standard length of 1m, 2m, 3m, 5m, and 10m. For other lengths please contact FibreFab for the actual lead times.

# Uniboot Patchcords

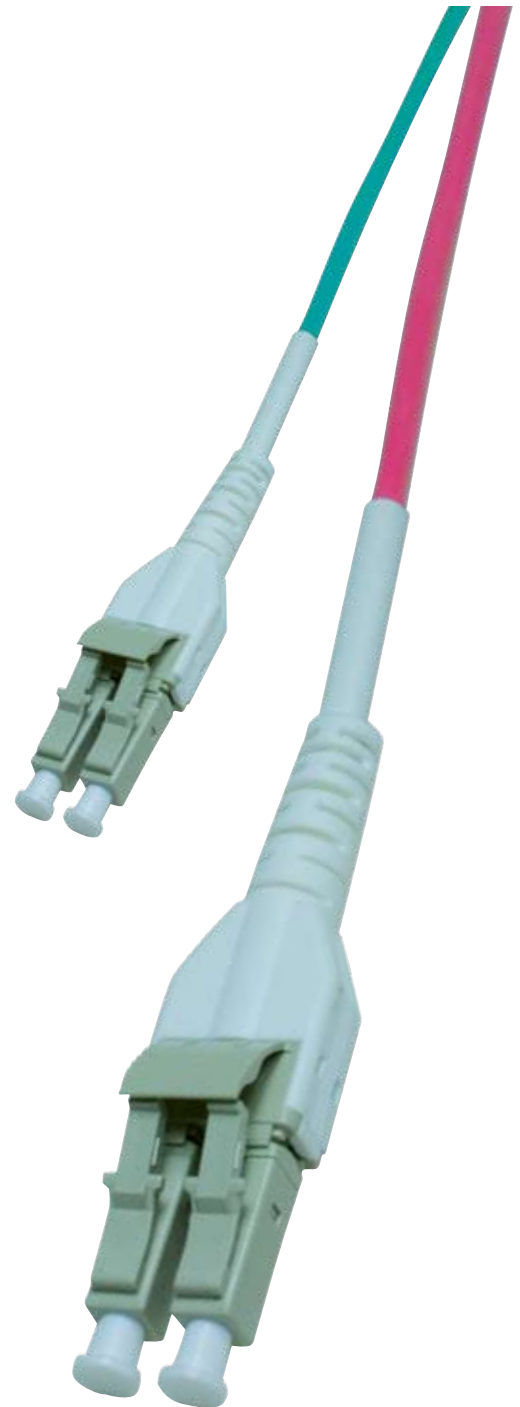
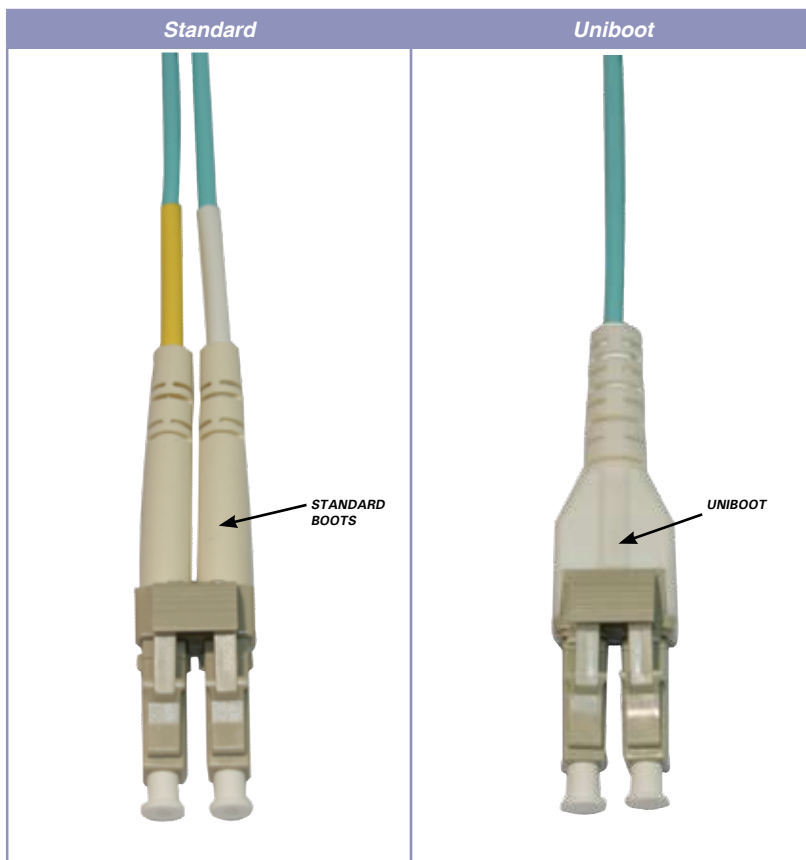
As the networking environment of today becomes increasingly dependent on high speed and high density solutions, effective cable management is a real issue. The key concern is how to manage more cable in a smaller amount of space.

The Optronics Uniboot fibre patchcord reduces cable management space by 50% compared to standard patchcords. The body of the connector also prevents users from altering the polarity of the patchcord. The patchcord utilises a special "round duplex" cable that allows duplex transmission within a single 3mm cable. As a result of these unique features the Optronics Uniboot patchcord offers improved airflow and visibility of equipment within a high density network environment.

The Optronics Uniboot patchcord is available in a wide variety of cable styles including LSZH, Plenum and Riser.

## Features & Benefits

- ▶ Full duplex in a single 3mm cable
- ▶ Available in OM1, OM2, OM3, OM4 and OS1/OS2 cabled fibre types
- ▶ Available with LSZH, Plenum and riser rated cable
- ▶ Cost effective
- ▶ Save 50% of space in cabinets and cable ways
- ▶ Protects network polarity



# Technical information

## Connector Specification

Optical Performance	Multimode	Singlemode	Multimode	Conformance
Insertion loss (Max/Acceptance)	0.30 dB	0.30 dB	0.30 dB	IEC 61300-3-4
Insertion loss (97%)	0.40 dB	0.40 dB	0.40 dB	IEC 61300-3-34
Ave/Master	0.18 dB	0.15 dB	0.15 dB	IEC 61300-3-4
Ave/Random	0.18 dB	0.20 dB	0.20 dB	IEC 61300-3-34

## Standards Compliance

TIA/EIA 568C  
TIA/EIA 492AAAP  
IEC19801

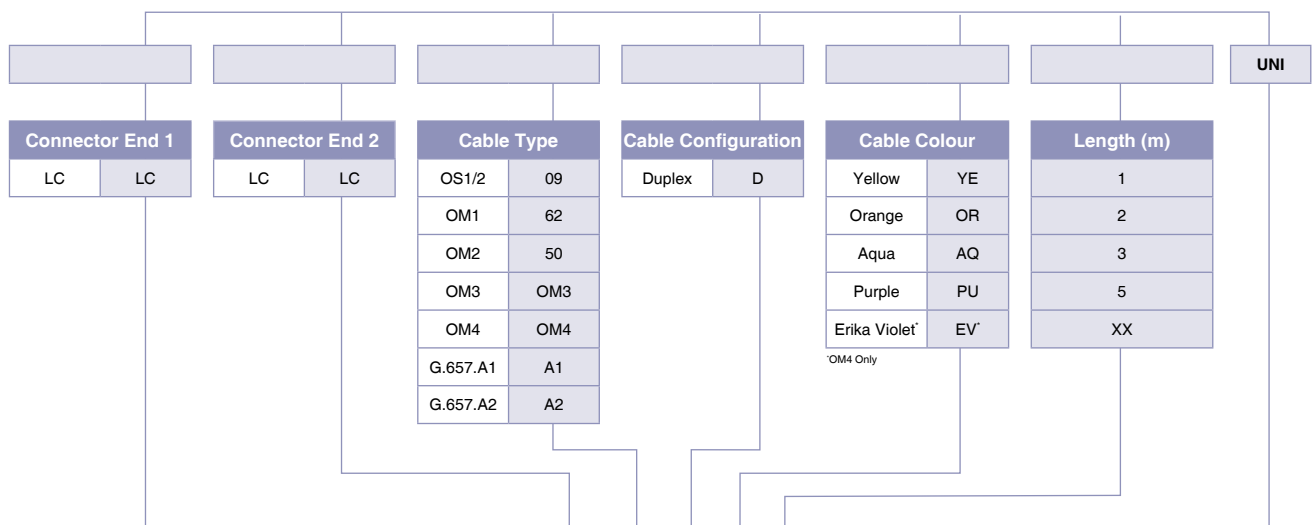


## Cable Specification

Characteristics	UNITS	Round Duplex
Cable Material		LSZH
Strength Member		Aramid
Crush	N	1000
Operating Temperature	°C	-20 to 60
Secondary Buffer Diameter	µm	900+50
Minimum Bending Radius	mm	10D (installed) 20D (loaded)



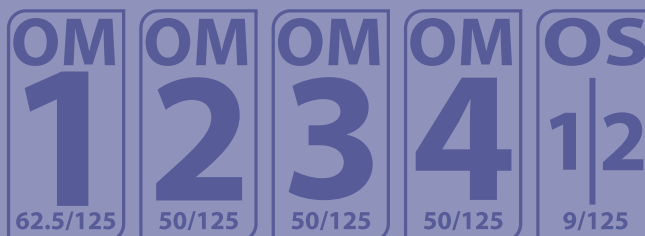
## Part Number Generator



Example Part Number: **LC LC OM4 D EV 1 UNI**

**LCLCOM4DEV1UNI** will configure a 1 meter LC to LC  
OM4 Duplex Uniboot patchcord in Erika Violet.

# Armoured Patchcords



## Description

FibreFab armoured patchcords are used in outdoor applications in customer premises, central offices and in harsh environments. The patchcords provide flexible interconnection to active equipment, passive optical devices and cross-connects. Armoured patchcords are constructed with a stainless steel tube over a standard patchcord surrounded by a stainless steel mesh with an outer jacket. FibreFab patchcords are terminated with our standard range or connectors, all quality tested to meet FibreFab and international standards.

## Features

- ▶ Conform to IEC, EIA-TIA and Telecordia performance requirements
- ▶ Easy installation
- ▶ Available in different fibre types
- ▶ Available in standard and custom lengths
- ▶ RoHS, REACH & SvHC compliant

## Applications

- ▶ Telecommunication Networks
- ▶ CATV
- ▶ LAN and WAN
- ▶ FTTX
- ▶ Broadband network
- ▶ Military application

## Technical Specification

Item	Simplex	Duplex	Description
Fibre count	1	2	
Tight buffer	OD 0.6mm ± 0.05mm	OD 0.6mm ± 0.05mm	Blue / Yellow
Kevlar	2*1110 dtex *2	2*1110 dtex *2	Yellow
Outer Jacket	OD 3.0 +0/-0.2mm	OD 3.3+ 0.1mm	Blue-singlemode / Grey-multimode PVC & LSZH

Fibre Type	Multimode	Singlemode
Operating wavelength (nm)	850 / 1300	1310 / 1550
Mode field diameter (µm)	62.5 ± 2.5	9.0 ± 0.2
Max Attenuation (dB/km)	3.0 / 1.0	0.4 / 0.3

### Mechanical and Environmental Characteristics

Operating Temp (°C)	-40 to +75 LSZH / -40 to +70 PVC	
Max Tensile load (N)	Short term	300
	Long term	200
Max Crush resistance (N/100mm)	Short term	3000
	Long term	200
Cable weight (kg/km)	17.3	

## Connector Performance

	Multimode	Singlemode
Insertion loss (Max/Acceptance)	0.30 dB	0.30 dB
Ave/Master	0.15 dB	0.15 dB
Ave/Random	0.20 dB	0.20 dB
Return loss	50dB / 60dB (Standard Grade)	

FC-UPC / SC-UPC 9/125  
Simplex patchcord Armoured



SC-PC / LC-PC 50/125  
Duplex Patchcord Armoured



FOR MORE INFORMATION CALL **+44 (0)870 127 3330**

# Technical information

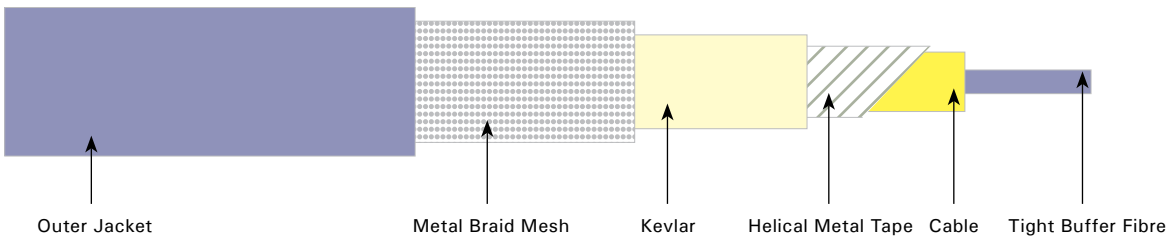
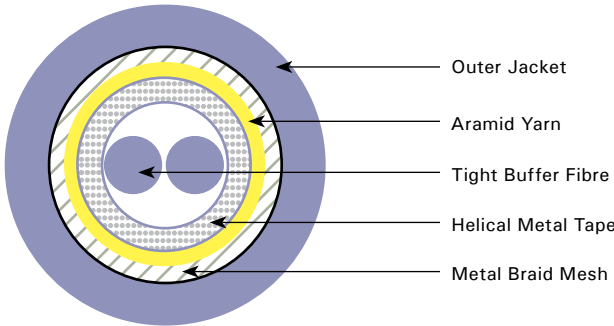
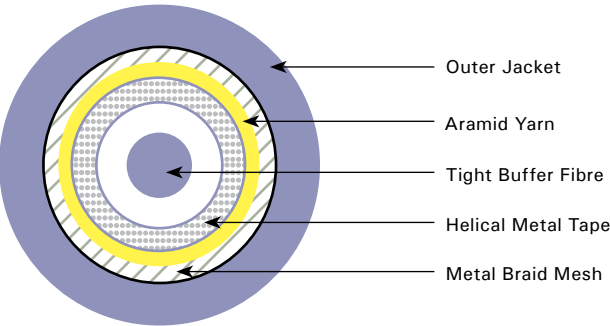
## Standards Compliance

TIA/EIA 568C  
TIA/EIA 492AAAP  
IEC19801

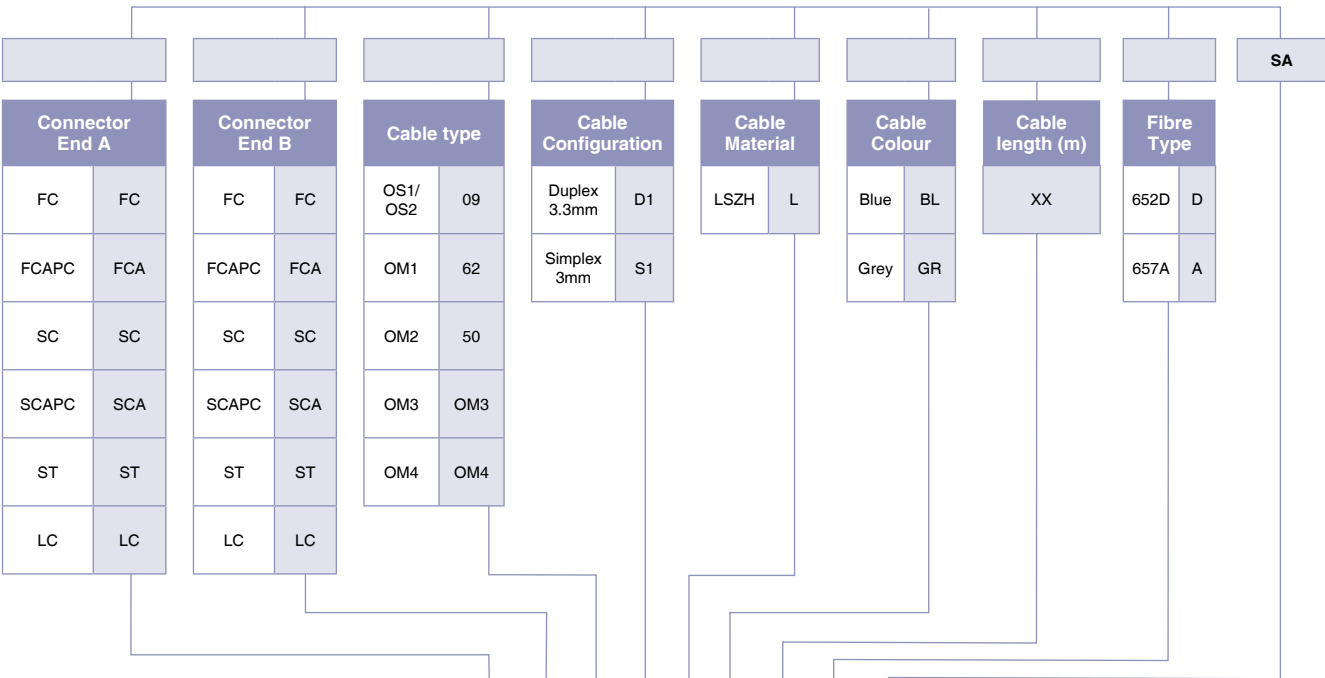


Simplex Patchcord  
Armoured

Duplex Patchcord  
Armoured



## Part Number Generator



Example Part Number: **SC ST 09 D1 L BL 10 D SA**  
*SCST09D1LBL10SA* will configure a 10 metre, SC to ST, OS1 duplex, armoured patchcord with a blue jacket.

# Master Test Leads

OM  
1  
62.5/125

OM  
2  
50/125

OM  
3  
50/125

OM  
4  
50/125

OS  
1|2  
9/125

The FibreFab range of test leads is suitable for general optical performance test applications. The test leads are terminated with Zenith range physical contact (singlemode) and angled physical contact (singlemode) zirconia ferrule connectors. The connectors are manufactured with precision factory mounting and polishing techniques which help assure high transmission quality.

0.08<sup>dB</sup>  
Insertion  
LOSS

## Features

- ▶ Conform to IEC, EIA-TIA, and Telecordia performance requirements
- ▶ Supplied with ultra tight geometry singlemode and multimode optical fibre
- ▶ Available with different connector types
- ▶ Available in standard lengths
- ▶ RoHS, REACH & SvHC compliant
- ▶ Precision glass geometry
- ▶ Concentricity, End Face Geometry, IL, RL Certificate

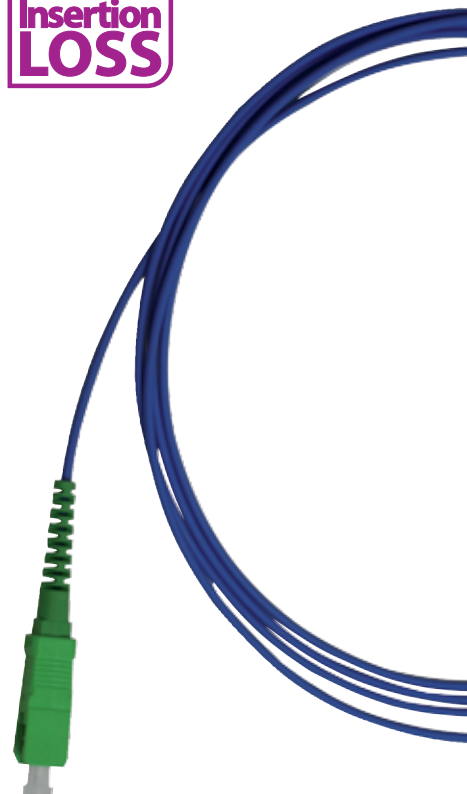
## Application

- ▶ Testing Labs
- ▶ Critical telecom and data centre application
- ▶ Instrumentation

## Connector Specification

Optical Performance	Singlemode	Multimode	Conformance
Insertion loss (Max/Acceptance)	0.10 dB	0.15 dB	IEC 61300-3-4
Insertion loss (97%)	0.20 dB	0.25 dB	IEC 61300-3-4
Ave/Master*	0.08 dB	0.08 dB	IEC 61300-3-4
Ave/Random*	0.08 dB	0.10 dB	IEC 61300-3-34
Return Loss	55/70 dB	-	IEC 61300-3-6
Mechanical Properties	Criteria*	Conformance	
Mechanical endurance	500 matings	IEC 61300-2-2	
Vibration	10-55 Hz, 0.75 amplitude	IEC 61300-2-1	
Drop	Drop height 1m, 5 drops	IEC 61300-2-12	
Cable retention	Magnitude 90 N	IEC 61300-2-4	
Cable torsion	1.5 kg - 2.5 kg for 2mm-3mm cable diameter	IEC 61300-2-5	

\* The change in attenuation for all the above listed criteria shall be a maximum of 0.10dB





# Technical information

## Cable Specification

Characteristics	Units	Simplex
Cable Material		LSZH
Strength Member		Aramid
Crush	N	1000
Operating Temperature	°C	-20 to 60
Secondary Buffer Diameter (2.0mm, 2.4mm and 3.0mm)	µm	900±50
Secondary Buffer Diameter (1.6mm and 1.8mm)	µm	600±50
Colour	µm	SM – Blue MM – Orange (OM1, OM2) MM – Aqua (OM3, OM4)

## Standards Compliance

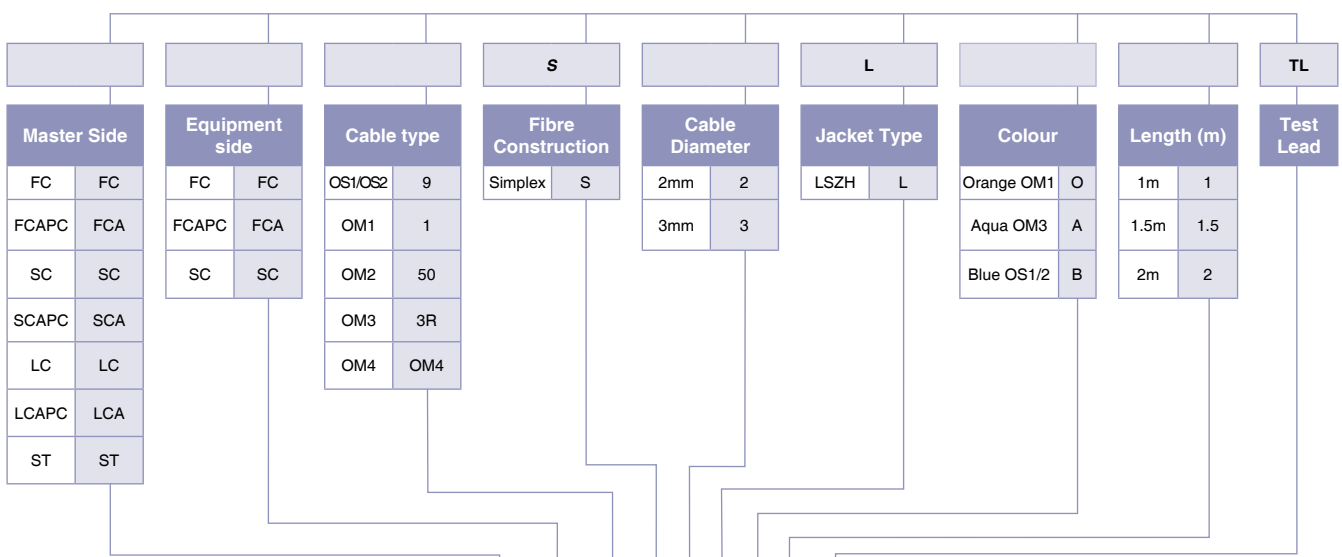
TIA/EIA 568C  
TIA/EIA 492AAAP  
IEC19801



## Fibre Specification

Characteristics	Units	Singlemode	Multimode
Cladding Diameter	µm	124±0.4	125+2
Core Diameter	µm	-	50+2.5
Core/Cladding Concentricity Error	µm	≤0.3	< 1.5
Cladding Non Circularity	%	≤0.3	< 1.0
Numerical Aperture	µm	-	0.2+0.015
Polarization Mode Dispersion (PMD)	Ps/(km) ½	≤0.05	-
Mode Field Diameter (mfd) @ 1310nm	µm	9.0±0.4	-
Mode Field Diameter (mfd) @ 1550nm	µm	10.1±0.5	-

## Part Number Generator



Example Part Number: **SC SC 3R S 3 L A 1 TL**

SCSC3RS3LA1TL will configure a 1 meter, SC to SC, OM3, 3mm test lead with an aqua jacket

# Reduced Bend Sensitivity

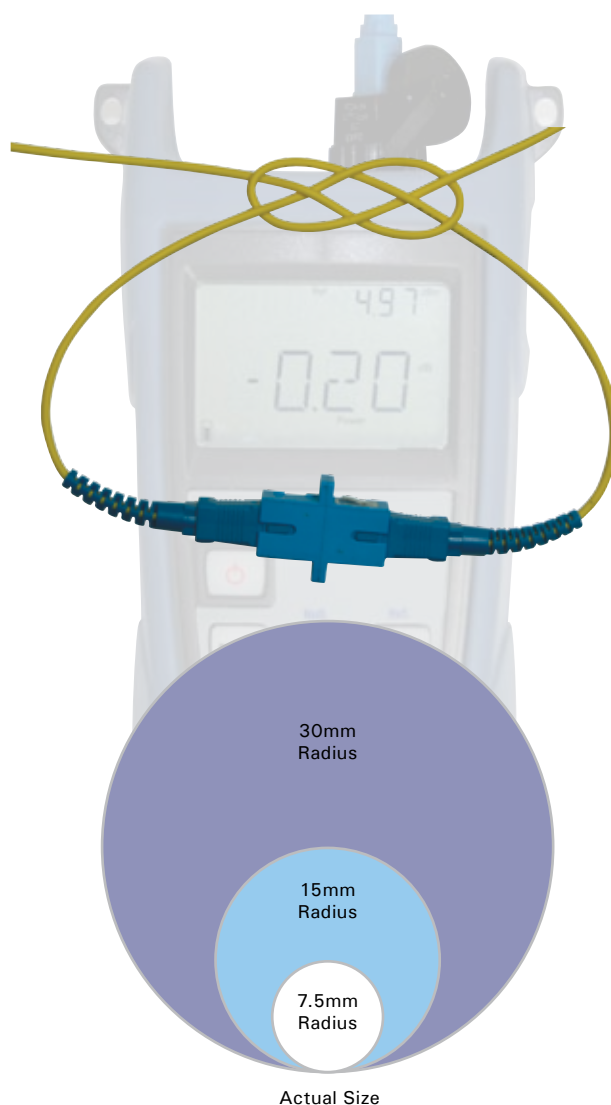
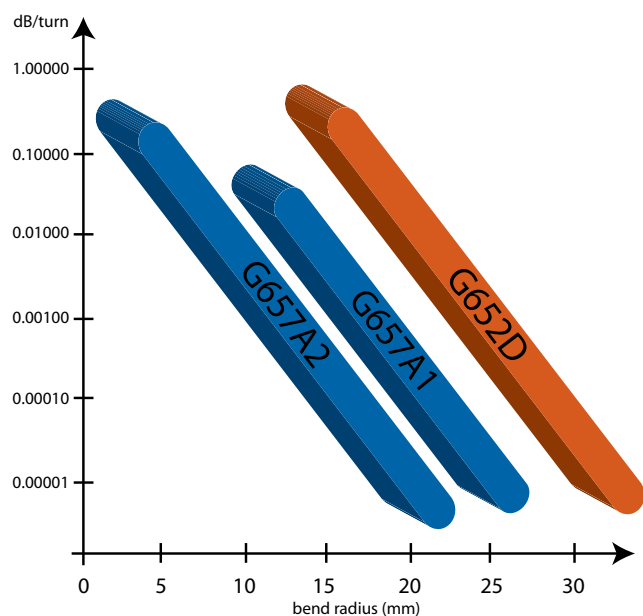
Optronics patchcords and pigtailed are available in both singlemode and multimode classes based on reduced bend sensitivity (RBS) fibre cable.

RBS patchcords exhibit much lower optical power loss under bend conditions while remaining compatible with conventional cabling.

RBS patchcords are made with solid trench assisted optical fibre that is designed to reduce optical loss when the cable is bent.

RBS patchcords provide the same high quality, mechanical features and optical performance as our standard patchcords with the added capability of maintaining optical performance when bent or flexed.

RBS patchcords are available for multimode (OM3 and OM4) and singlemode (OS2/ G.657A1 and G.657A2) networks.



## Applications

RBS patchcords and pigtailed are used in applications for which low loss in tight radius routing is important:

- ▶ When routing cable around corners and in tight spaces is required, for example in FTTH installations in existing buildings
- ▶ FTTH cabling in POPs, MDU distribution points and subscriber connections
- ▶ Data Centres where network up time is critical. For example, OM4 RBS patchcords will continue to provide data service when pinched by a cabinet door, whereas service would be lost with conventional OM4 patchcords
- ▶ Generally, when small radius installation is needed or the cabling may be subjected to occasional small radius events



Tight Radius Routing

## Termination Specification

General mechanical and optical specifications of RBS patchcords are as per corresponding standard products including IEC and TIA/EIA standards conformance.

Fibre Class	Fibre Standard	Guideline Radius	Bend Performance			
Standard Multimode and Singlemode		30mm	-			
<b>Reduced Bend Sensitivity Multimode</b>			<b>RADIUS</b>	<b>turns</b>	<b>Loss at 850 nm</b>	<b>Loss at 1300 nm</b>
OM3 RBS	OM3	10mm	15mm	2	≤ 0.1 dB	≤ 0.3 dB
OM4 RBS	OM4		7.5mm	2	≤ 0.2 dB	≤ 0.4 dB
<b>Reduced Bend Sensitivity Singlemode</b>			<b>Loss at 1550 nm</b>			
			<b>15mm Radius 10 Turns</b>	<b>10mm Radius 1 Turn</b>	<b>7.5mm Radius 1 Turn</b>	
657A1	ITU-T G.657A1 / OS1 / OS2	10mm	≤ 0.25 dB	≤ 0.75 dB	-	
657A2	ITU-T G.657A2 / OS1 / OS2	7.5mm	≤ 0.03 dB	≤ 0.1 dB	≤ 0.5 dB	



Straight fibre  
as reference



G.652.D >  
15.10dB



RBS >  
0.21dB



# Cleaning

<i>OptiPop R Cassette Cleaner</i>	62
<i>IBC™ Brand Cleaning Tools</i>	63
<i>MT Series Cleaner</i>	64

# OptiPop R Cassette Cleaner



The OPTIPOP R is a cassette style fibre optic connector cleaner system that can be refilled for reducing cleaning costs. It uses a densely woven micro-fibre cleaning fabric to remove harmful contaminants off of the ferrule end face. The OPTIPOP R cassette cleaning tool will accommodate all single fibre connections. FibreFab versions of the OPTIPOP R cassette cleaning tools are designed specially for cleaning Multifibre connector systems including the MTP® Brand Connectors, standard MPO and MTRJ connectors for both singlemode and multimode connectors. The customised OPTIPOP R cassette cleaning tool will accommodate the alignment guide pins on male MT ferrules.

The cleaning fabric is pre-washed and produces less than 70 pcs/CFM of particles > 1mm in size, making this system excellent for use in any production environment including clean rooms.

- ▶ MTP®CLEANREEL-F - For cleaning all single fibre and female MTP®/MPO ferrule connectors
- ▶ MTP®CLEANREEL-M - For cleaning male (with guide pins) MTP®/MPO connectors
- ▶ MTP®RCR - OPTIPOP Refill 6 Pack. Replacement reels for all OPTIPOP R cassettes
- ▶ Replacement reels are easy to install and reduce the cost per cleaning 400+ clean
- ▶ Eliminates electrostatic charge
- ▶ The washed, ultra clean micro-fibre cloth captures debris and other contamination
- ▶ The cloth is robust, it does not fray or leave any fibrous materials behind
- ▶ The most cost effective high-end cleaning solution available

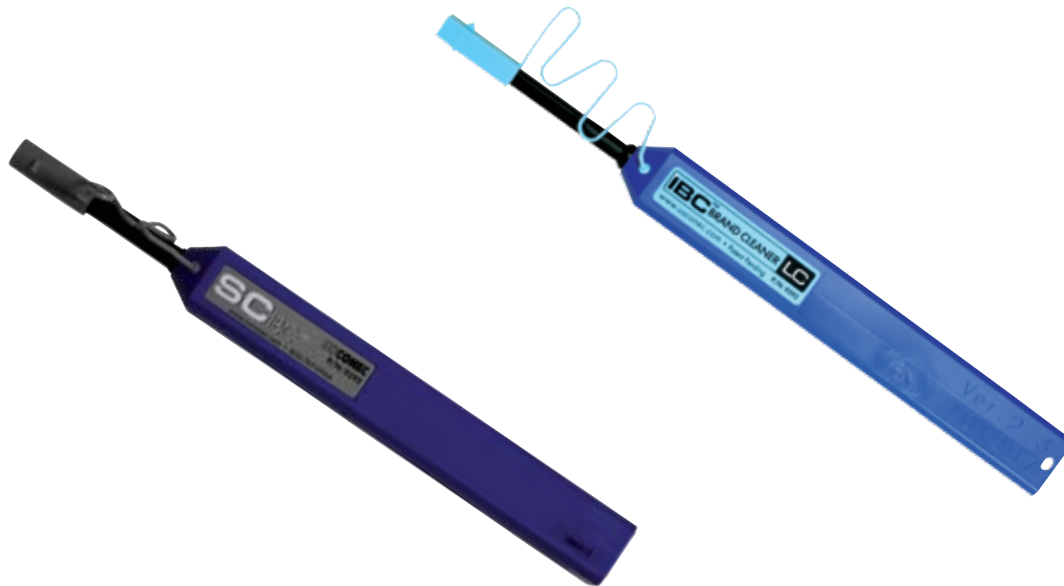


## Ordering Information

Description	Part No.
Female MTP®/MPO ferrule cleaner	MTP®CLEANREEL-F
Male MTP®/MPO ferrule cleaner	MTP®CLEANREEL-M
OPTIPOP Refill 6 Pack	MTP®RCR

FOR MORE INFORMATION CALL **+44 (0)870 127 3330**

# IBC™ Brand Cleaning Tools



The US Conec IBC™ Brand Cleaners are mechanical cleaning tools designed to clean connectors residing in an adaptor or faceplate and unmated connectors. The IBC™ Brand Cleaning tools use a novel dry cleaning strand to gently sweep and lift away dust and residues from the connector end face.

- ▶ IBC™ Brand Cleaner SC – Cleans SC, ST, FC, and E2000 connectors with a UPC
- ▶ IBC™ Brand Cleaner LC – Cleans LC and MU connectors with a UPC and APC polish

## Features/Benefits

- ▶ Simple pushing motion to engage tool
- ▶ Audible CLICK to alert the operator when tool is fully engaged
- ▶ Over 525+ engagements per unit
- ▶ Dry cleaning strand eliminates the need for solvents to be effective
- ▶ Crush resistant to over 250N
- ▶ Impact resistant to survive drops over 1.5M

## Applications

- ▶ Telecom Central Offices
- ▶ Data Centres
- ▶ Cable Television Head End
- ▶ Outside Plant and Fibre To The Home
- ▶ Fibre To The Antenna for WiMax and Cellular Networks
- ▶ Fibre Optic Broadcasting including HDTV
- ▶ Fibre Optic Military and Civilian Aviation
- ▶ Military and Civilian Maritime Optical Networks
- ▶ Fibre Optic Satellite Communication Systems

## Ordering Information

Description	Part No.
IBC™ Brand Cleaner SC – SC, ST, FC, and E2000 connectors	214-53A/2.5
IBC™ Brand Cleaner LC – LC and MU connectors	214-53A/1.25



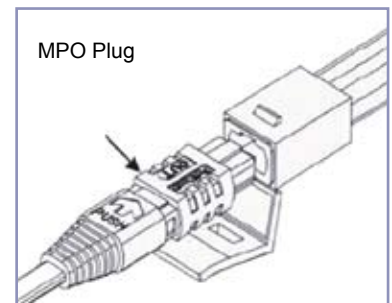
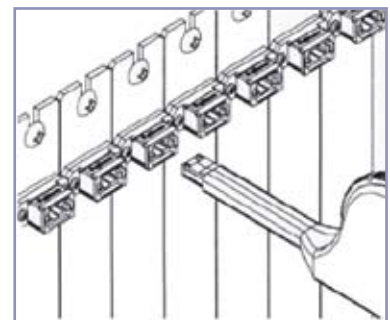
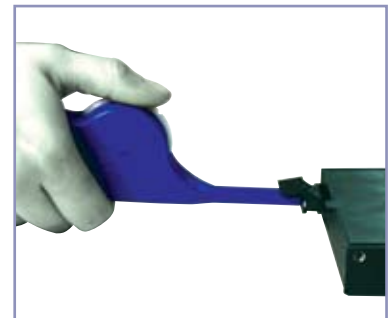
# MT Series Cleaner



The MPO cleaner is a high-performance device designed for cleaning the ferrule endfaces of MPO connectors. This tool cleans the fibre endface without the use of alcohol, cleaning all 12 fibres at once.

## Features/Benefits

- ▶ Cleans male and female MTP®/MPO ferrule
- ▶ Simple dial turn engagement is easy to operate
- ▶ Nozzle is keyed for precise alignment of the cleaning tip to the fibre array
- ▶ Alignment cap lid opens for cleaning the unmated connectors Intermateability with FOCIS-5 (MPO)
- ▶ Capable of cleaning MPO ferrules inside or outside an MPO adaptor
- ▶ Capable of cleaning ferrules with or without guide pins
- ▶ 500 cleanings



## Ordering Information

**Description**  
MPO Cleaner

**Part No.**  
MPOCLEANER1

**FOR MORE INFORMATION CALL +44 (0)870 127 3330**



# Polarity methods

## Multifibre connectivity for duplex channels

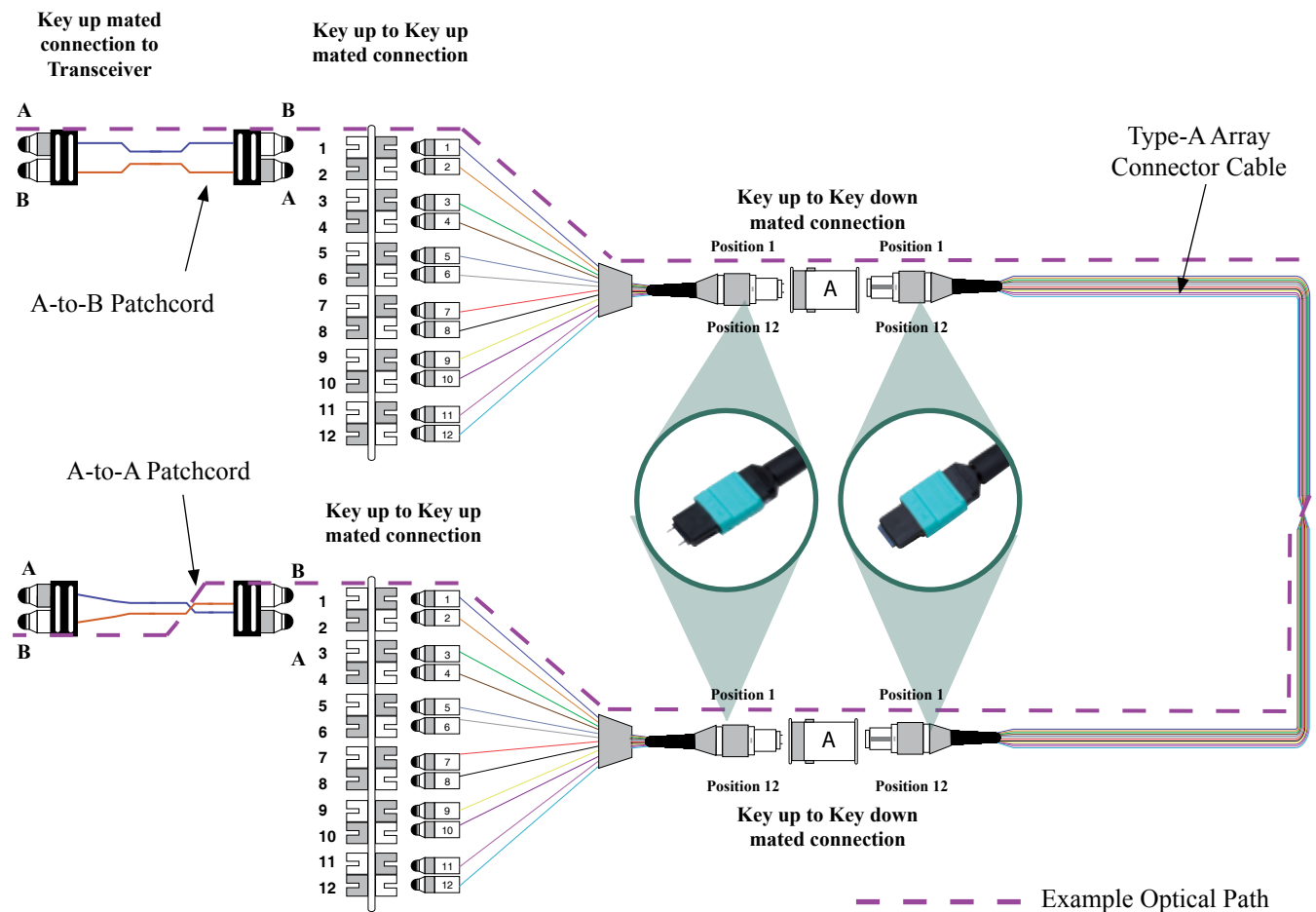
In order to successfully implement multifibre connectivity for duplex channels, it is important to maintain bi-directional transmission paths. The cabling must provide the correct signal polarity; the transmitter at one end must connect to the receiver at the other end. These methods of maintaining polarity have been standardised. See TIA/EIA 568-B.1-7 (guidelines for maintaining polarity using array connectors) for more detail. The guidelines cover typical system configurations containing the following:

- ▶ Multifibre trunks with 12 fibre MTP® connectors at either end
- ▶ Cassettes or modules where there is an MTP® to duplex connector transition
- ▶ Duplex patchcords used to connect the active equipment to the cabling system

All of the connectors and adaptors in this system are keyed to make sure the connectors mate with the correct orientation. Keying deals with MPO orientation but it does not ensure fibre pair polarity.

Optronics MTP® components are supplied to Method A as a standard. Method B and Method C components are also available. Please refer to the standards and select the correct polarity method to suit your network.

## Illustration - Connectivity method A for duplex Channels



For ease of illustration the type -A cable is shown with a twist

# Channel Link Performance

We know that every network is different. FibreFab tailor made systems guarantee best efficient and cost effective solutions.

The Implementation of high bandwidth SAN protocols yields a reduced power budget. When considering SAN network design particular attention must be paid to the number of interconnections, fibre grade and transmission protocol.

**SOLUTION:**

**The Elite® MTP® and Premium LC**

The Elite® MTP® and Premium LC grade discrete connectors with reduced insertion losses can reallocate power of interconnection losses to cover longer channel length.

**High Bandwidth Fibre - OM4**

Using high bandwidth fibre, dispersion is lowered and it is possible to reduce the ISI penalty and reallocate power to cover interconnection losses or fibre attenuation.

**Reduced Topology**

The reduction of the number of interconnections saves valuable power budget. The ruggedised MTP® - LC fan reduces the need for MTP® cassettes or MTP® adaptor plates saving valuable racking space in high density environments like director switch racking.

FibreFab's in house technical expertise and custom developed Data Centre SAN design software enables us to approach network design and examine accurately network performance to accommodate the most cost and performance effective design.

**Full Infrastructure**

	100Mtr Span			
	OM3	OM3	OM4	OM4
CONNECTOR CL:	Standard	Premium / Elite	Standard	Elite
INTERC NR	4 x MTP®, 4 x LC	4 x MTP®, 4 x LC	4 x MTP®, 4 x LC	4 x MTP®, 4 x LC
Loss Budget	5.70dB	5.70dB	5.99dB	5.99dB
Average Link Loss	2.1dB	1.4dB	2.1dB	1.4dB
Max Link Loss	3.5dB	2.2dB	3.5dB	2.2dB

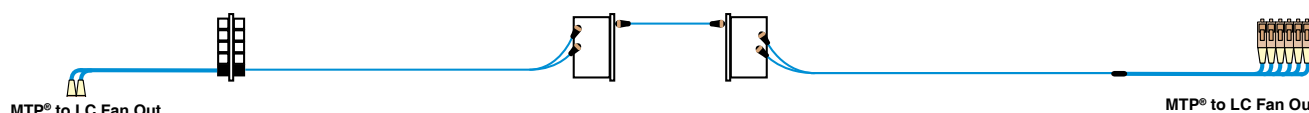
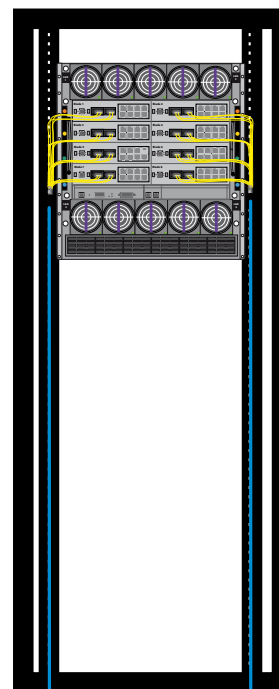
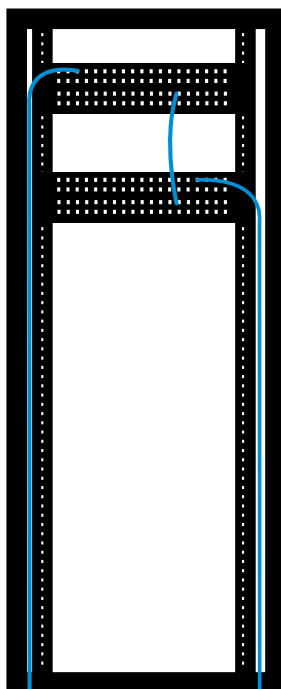
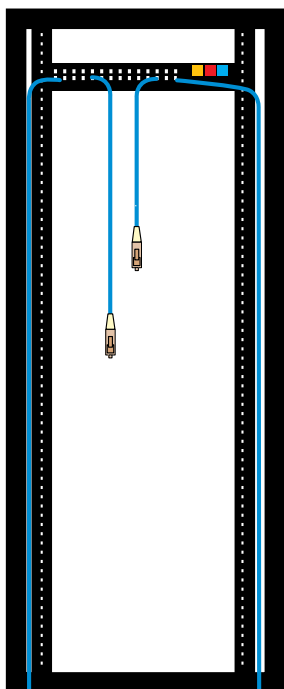
**Collapsed Infrastructure**

	100Mtr Span			
	OM3	OM3	OM4	OM4
CONNECTOR CL:	Standard	Premium / Elite	Standard	Elite
INTERC NR	3 x MTP®, 2 x LC	3 x MTP®, 2 x LC	3 x MTP®, 2 x LC	3 x MTP®, 2 x LC
Loss Budget	5.70dB	5.70dB	5.99dB	5.99dB
Average Link Loss	1.4dB	1.0dB	1.4dB	1.0dB
Max Link Loss	2.5dB	1.7dB	2.6dB	1.8dB

Equipment Cabinet (ECA)

Main Distributor (MDA)

Equipment Cabinet (ECA)



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## OM4 Cable and Connectivity Solutions

*“OM4 Laser-optimised multimode fibre is recognised as the medium of choice to support high-speed data networks”.*



## OM4 Capability Brochure

download at [www.fibrefab.com](http://www.fibrefab.com)

Other catalogues available for download at  
<http://www.fibrefab.com/downloads.php>



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