FibreFab ™
Fibre Optic & Networking Products

Thermal Management Products
Brochure

Contents

FibreFab UK

FiberFab Inc USA

Optronics FZ LLC
Dubai

FibreFab Hong Kong

Thermal Environmental Control

Today's IT managers face many challenges in running an efficient data network, whether it is maintaining current installations or planning for future applications, they must protect the productivity of their network, end-to-end and research the latest technologies as networking requirements evolve. To ensure the proper IT systems environment, it is essential to consider thermal, management in today's server cabinets, cableways, OSP cabinets, telecoms exchanges and POPs.

Whilst increasing emphasis is placed on protecting communications equipment from potential outside threats, increasing thermal densities and poor cable management may be compromising system operations or destroying the equipment from the inside.

As equipment heats up, performance slows and productivity drops. It can happen at any time and can be directly attributed to heat build-up in and around electronic equipment.

Excessive heat shortens the life of electronic equipment and can even shut it down permanently. Heat may be invisible, but its effects are devastating and costly.

According to industry leading research, for every 18 degrees Fahrenheit (10 degrees Celsius) that internal cabinet temperatures rise above normal room temperature, the life expectancy of the enclosed electronics drops by 50 percent.

For example, blade servers are the latest in high-density network equipment. They use a common chassis and provide slots for "blades" to be installed. These new levels of power density dramatically increase thermal loads. A single blade server with all slots filled and running at capacity can produce more than 3 kilowatts of heat. Theoretically, a data cabinet filled with blade servers (seven or eight chassis) can produce 21 to 24 kilowatts of heat.

This computer- generated image illustrates heat build up in the upper portions of this data cabinet.

This represents significant challenges to thermal and power management. "How am I going to get that much power to my servers, and how will I get rid of all the heat?" is a common sentiment expressed by most data centre managers. Many organisations believe the answer is simple: Cool the ambient air to lower the inside cabinet temperature. While this approach seems logical, it is problematic. Issues still present are:

► Continued hot spots and overheating.
► Massive increases in energy costs.
► Recirculation air flows are not addressed.
► Using very cold air flows can cause condensation, leading to corrosion, equipment failure, poor or intermittent contacts, thermal expansion or contraction failures, etc.

The key to keeping equipment cool is channelling or ducting cool air into the equipment and providing a path for the heated air to escape.
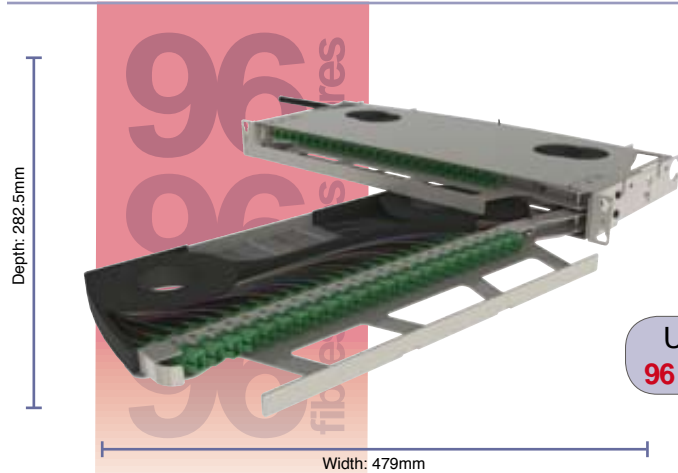
FibreFab offers passive solutions using innovative design and technology to help combat thermal inefficiency in the cabinet, cableway, OSP cabinet, telecoms exchange and POP.
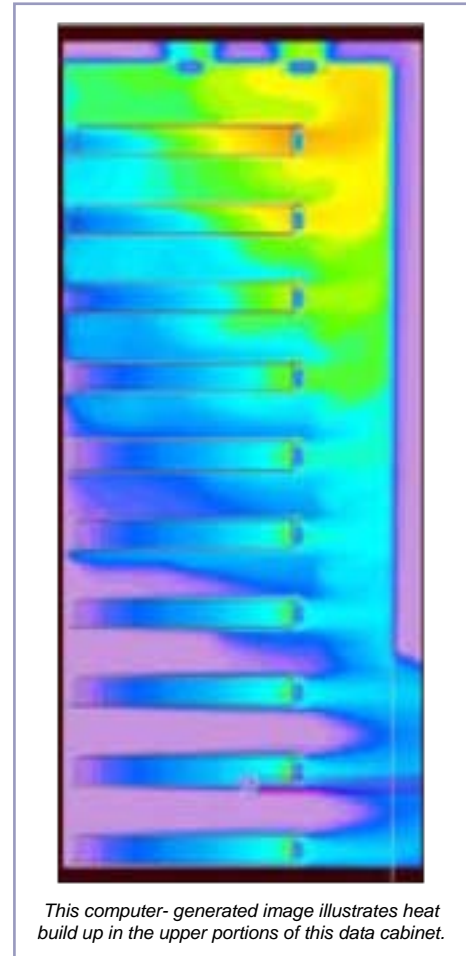
Panel Overview
Depth and Fibre Configurations

1U High Density Pivot Panel with maximum "Cooling Airflow" capability

1U

Depth: 282.5mm

Width: 479mm

Up to **96** fibres

See Page: 6

Depth: 282.5mm

Supports up to **96** fibres

Typically
48 SC Simplex or LC Duplex

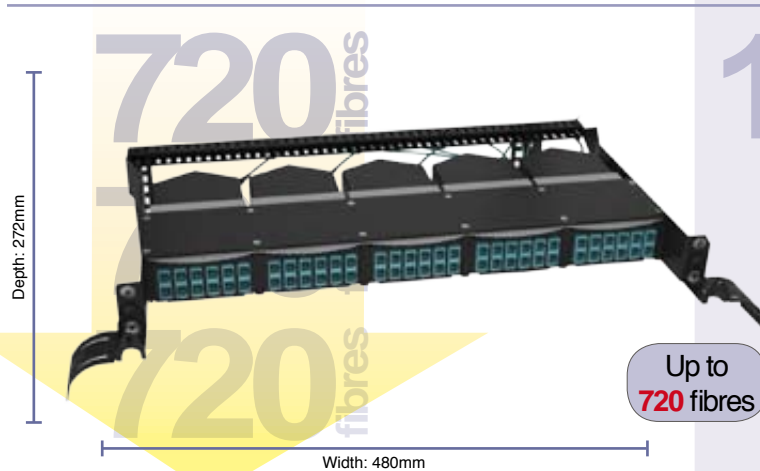## 2U High Density Pivot Panel with maximum "Cooling Airflow" capability

2U

Depth: 286.5mm

Width: 479mm

Up to **192** fibres

See Page: 8

Depth: 286.5mm

Supports up to **192** fibres

Typically
96 SC Simplex or LC Duplex

1U High Density Modular Panel

1U

Depth: 272mm

Width: 480mm

Up to **720** fibres

See Page: 10

Depth: 272mm

Supports up to **720** fibres

Typically
12 LC Duplex or MTP®
per module

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

Panel Overview
Depth and Fibre Configurations

1U

24 fibres
24 fibres

Depth: 205mm

See Page: 14

Depth: 205mm

Supports up to **24** fibres

Typically
12 LC Duplex
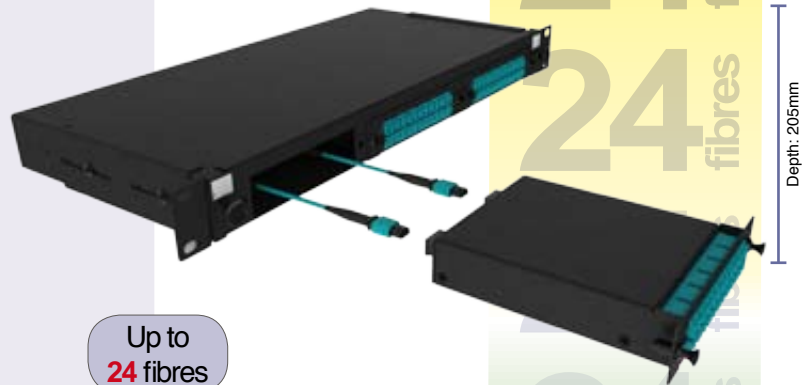
Up to
24 fibres

24 fibres

Width: 482mm

1U

96 fibres
96 fibres

See Page: 16

Depth: 117mm

Depth: 117mm

Supports up to **96** fibres

Typically
24 LC Duplex or LC Quad

96 fibres

Up to
96 fibres

96 fibres

Width: 482mm
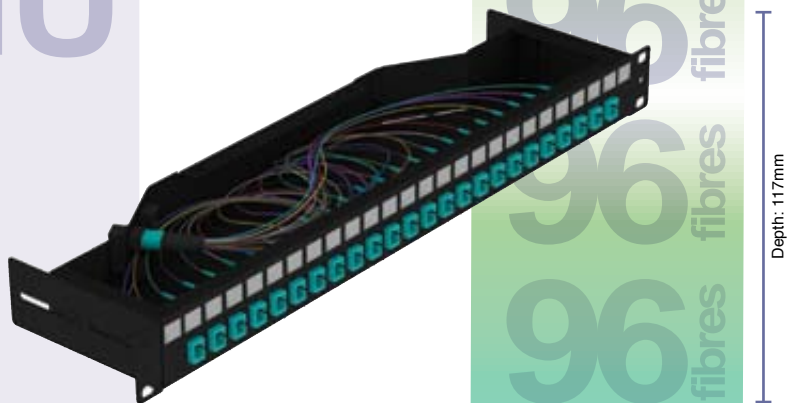
VISIT US ONLINE NOW WWW.FIBREFAB.COM

1U High Density Pivot Panel
with maximum "Cooling Airflow" capability

Up to 96 fibres

STANDARD PANEL

Limited Airflow

Depth: 205mm

S13 Sliding Patch Panel

ENHANCED PANEL

Increased Airflow

1U Pivot Panel

Depth: 282.5mm
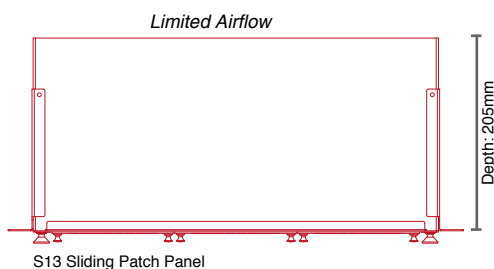
High Density 1U Pivot Panel
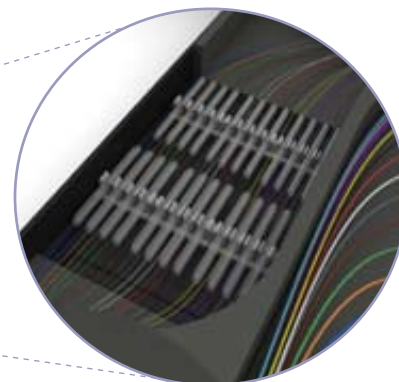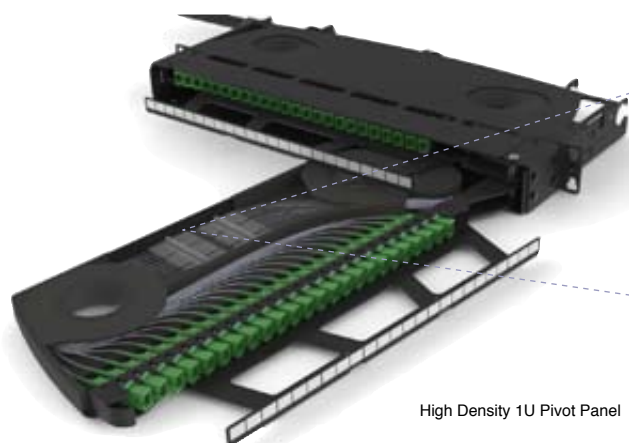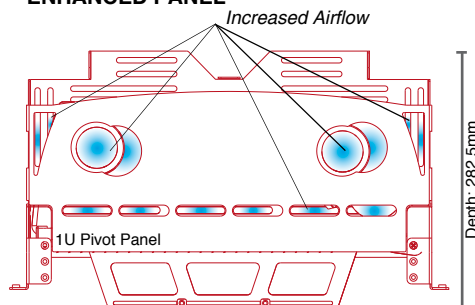
Interleaved single layer
fibre management solution

FibreFab offers an innovative, high density pivot panel designed to accept 24 SC simplex footprint adaptors within each of two ½ U trays. Each tray fully manages the incoming fibres, pigtails and splices. The panel can pivot by up to 116° to allow easy access during installation or re-work with no disturbance of the existing cable or fibres. Angled adaptors route exiting patchcords directly into the cabinet side management. An optional bracket maintains the minimum bend radius in any direction. The panel can be assembled to pivot in either direction, facilitating cable entry from either side. Ventilation tracts allow free flow of air through the panel, providing highly efficient cooling for active equipment.

Features / Benefits

▶ 48 SC simplex or LC duplex connections

▶ Angled adaptors for reduced bend losses

▶ Fully integrated fibre management

▶ 1U overall with ½ U individual trays

▶ High flow ventilation with side cable entry

▶ 30mm bend radius maintained throughout

▶ Single layer interleaved splicing area with individually labelled ports

▶ Accepts both loose tube and distribution cable

▶ Available in standard colours and standard packaging

▶ Adjustable position with respect to frame

▶ Individual cable tie and strength member tie points in each tray

▶ Individual PG13.5 gland entry point for each tray

▶ Cable entry from both sides dependant upon direction of pivot

Applications

▶ Telecom outside plant and ODF

▶ Telecom CPE

▶ Ethernet, Fibre Channel, ATM, LAN, MAN and WAN

▶ Data communication ODF and distribution

▶ Indoor and outdoor applications

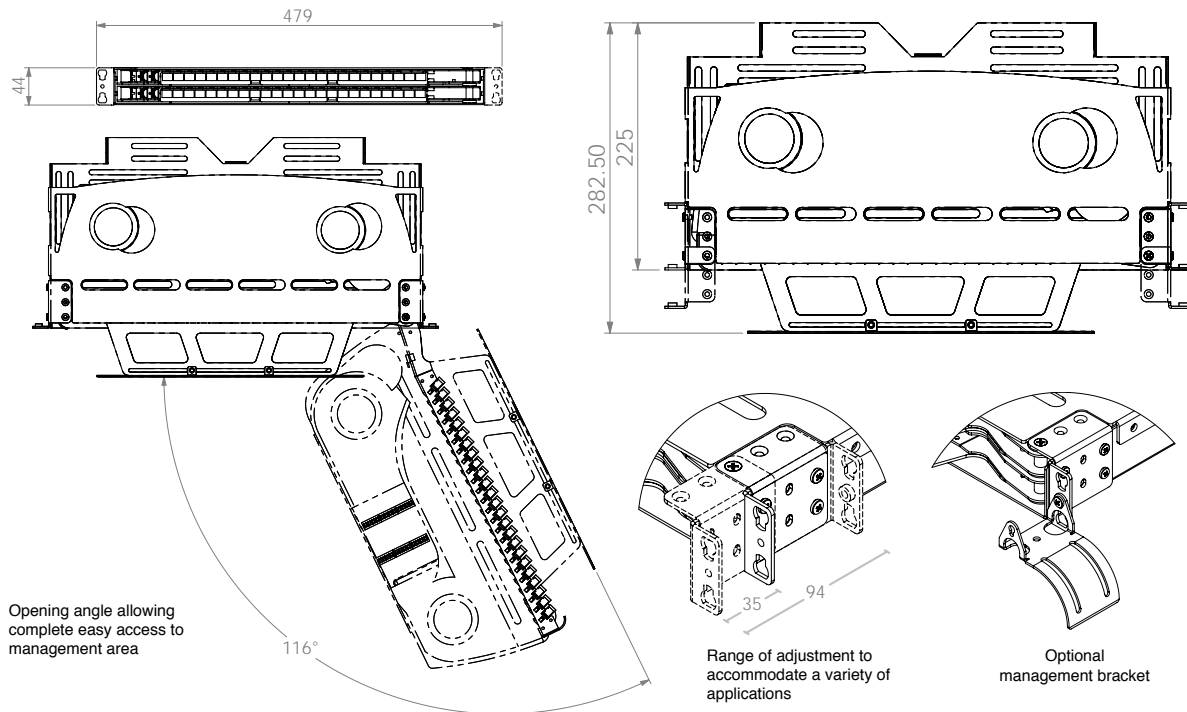▶ Fits standard 19" or ETSI rack with adjustable positioning
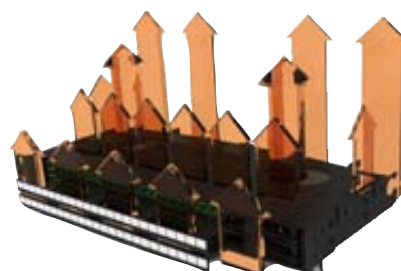
Free flow cooling characteristics

1U High Density Pivot Panel with maximum "Cooling Airflow" capability

1U

Up to 96 fibres

Technical Drawing

479

44

282.50

225

Opening angle allowing complete easy access to management area

116°

35   94

Range of adjustment to accommodate a variety of applications

Optional management bracket

Technical Specification

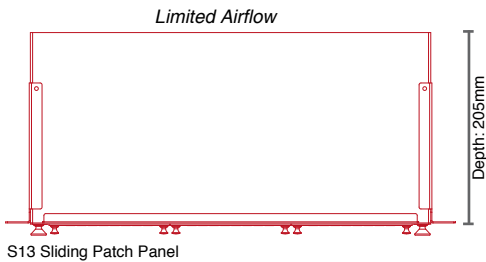| Parameter	Measurement	Conformance
Dimensions (Nominal)	479 x 282.5 x 44 mm	
Weight	3.0 kg	
Operating Temperature	-25 to +70 °C, 12 cycles	IEC 61300-2-22

Ordering Information

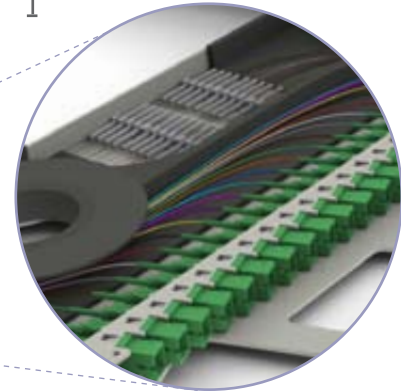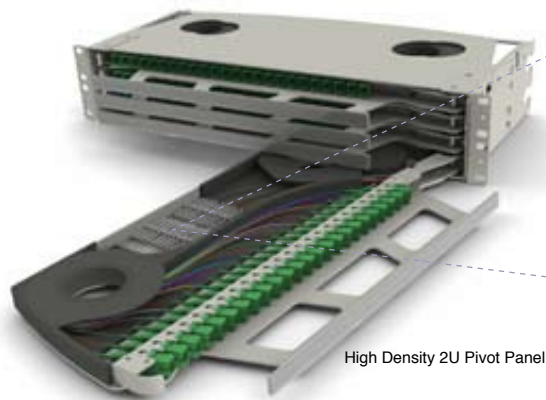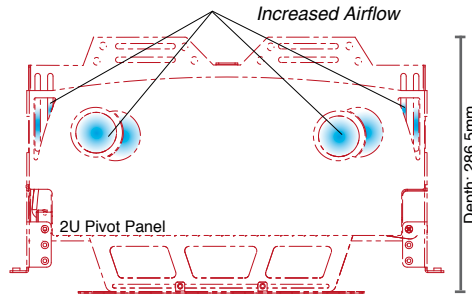| DESCRIPTION	PART NO.
1U Pivoting Panel - Loaded with 48 x SC/APC Simplex Adaptors - Right Hand Pivot Assembly	P05SCA48RH/Z
1U Pivoting Panel - Loaded with 48 x SC/APC Simplex Adaptors - Left Hand Pivot Assembly	P05SCA48LH/Z
1U Pivoting Panel - Loaded with 24 x LC Duplex Singlemode Adaptors - Left Hand Pivot Assembly	P05LCS24LH/Z
1U Pivoting Panel - Loaded with 24 x LC Duplex Singlemode Adaptors – Right Hand Pivot Assembly	P05LCS24RH/Z
1U Pivoting Panel - Available Loaded with Pigtails	CALL SALES FOR DETAILS
Optional cable management bracket	CMBRACKET/Z

2U High Density Pivot Panel with maximum "Cooling Airflow" capability

Up to 192 fibres

STANDARD PANEL

Limited Airflow

Depth: 205mm

S13 Sliding Patch Panel

ENHANCED PANEL

Increased Airflow

2U Pivot Panel

Depth: 286.5mm

High Density 2U Pivot Panel

Interleaved single layer fibre management solution

Description

Optronics offers an innovative, high density pivot panel designed to accept 24 SC simplex footprint adaptors within each of four ½ U trays (96 total). Each tray fully manages the incoming fibres, pigtails and splices. The panel can pivot by up to 120° to allow easy access during installation or re-work with no disturbance of the existing cable or fibres. Angled adaptors route exiting patchcords directly into the cabinet side management. An optional bracket maintains the minimum bend radius in any direction. The panel can be assembled to pivot in either direction, facilitating cable entry from either side. Ventilation tracts allow free flow of air through the panel, providing highly efficient cooling for active equipment.

Features / Benefits

▶ 96 SC simplex or LC duplex connections

▶ Angled adaptors for reduced bend losses

▶ Fully integrated fibre management

▶ 2U overall with ½ U individual trays

▶ High flow ventilation with side cable entry

▶ 30mm bend radius maintained throughout

▶ Single layer interleaved splicing area with individually labelled ports

▶ Accepts both loose tube and distribution cable

▶ Available in standard colours and standard packaging

▶ Rear mounting position available

▶ Adjustable position with respect to frame

▶ Individual cable tie and strength member tie points in each tray

▶ Individual PG13.5 gland entry point for each tray

▶ Cable entry from both sides dependant upon direction of pivot

Applications

▶ Telecom outside plant and ODF

▶ Telecom CPE

▶ Ethernet, Fibre Channel, ATM, LAN, MAN and WAN

▶ Data communication ODF and distribution

▶ Indoor and outdoor applications

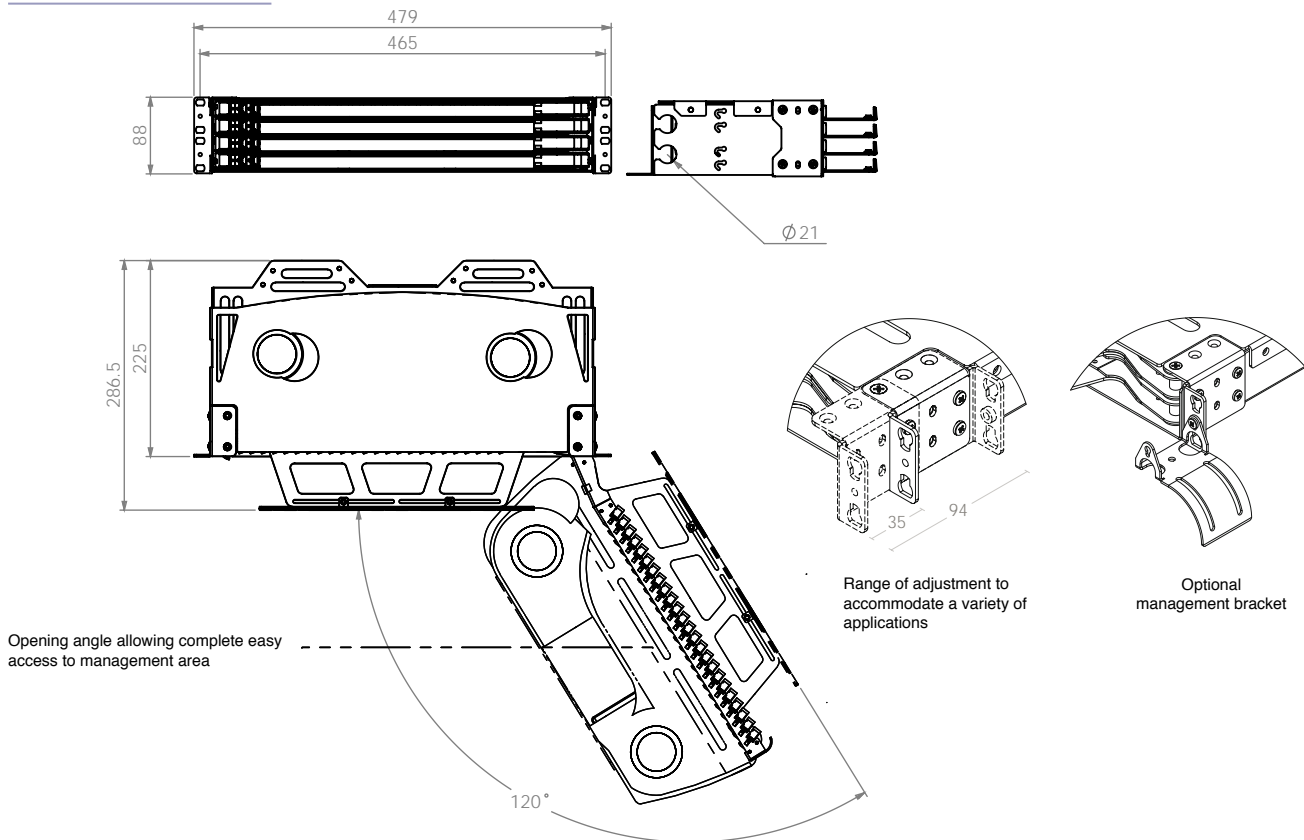▶ Fits standard 19" or ETSI rack with adjustable positioning

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

2U High Density Pivot Panel with maximum "Cooling Airflow" capability

Up to 192 fibres

Technical Drawing

Opening angle allowing complete easy access to management area

Range of adjustment to accommodate a variety of applications

Optional management bracket

Technical Specification

| Parameter	Measurement	Conformance
Dimensions (Nominal)	479 x 286.5 x 88 mm	
Weight	6.0 kg	
Operating Temperature	-25 to +70 °C, 12 cycles	IEC 61300-2-22

Ordering Information

| DESCRIPTION	PART NO.
2U Pivoting Panel - Loaded with 96 x SC/APC Simplex Adaptors - Right Hand Pivot Assembly	P06SCA96RH
2U Pivoting Panel - Loaded with 98 x SC/APC Simplex Adaptors - Left Hand Pivot Assembly	P06SCA96LH
2U Pivoting Panel - Loaded with 48 x LC Duplex Singlemode Adaptors - Left Hand Pivot Assembly	P06LCS48LH
2U Pivoting Panel - Loaded with 48 x LC Duplex Singlemode Adaptors – Right Hand Pivot Assembly	P06LCS48RH
2U Pivoting Panel - Available Loaded with Pigtails	CALL SALES FOR DETAILS
Optional cable management bracket	CMBRACKET

1U High Density Modular Panel

Up to **720** fibres

STANDARD PANEL

Limited Airflow

Depth: 205mm

ENHANCED PANEL

Increased Airflow

Depth: 272mm
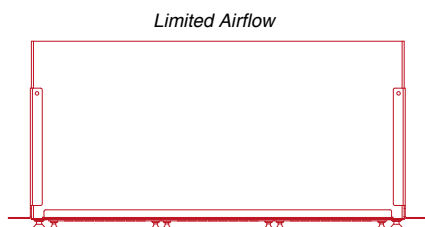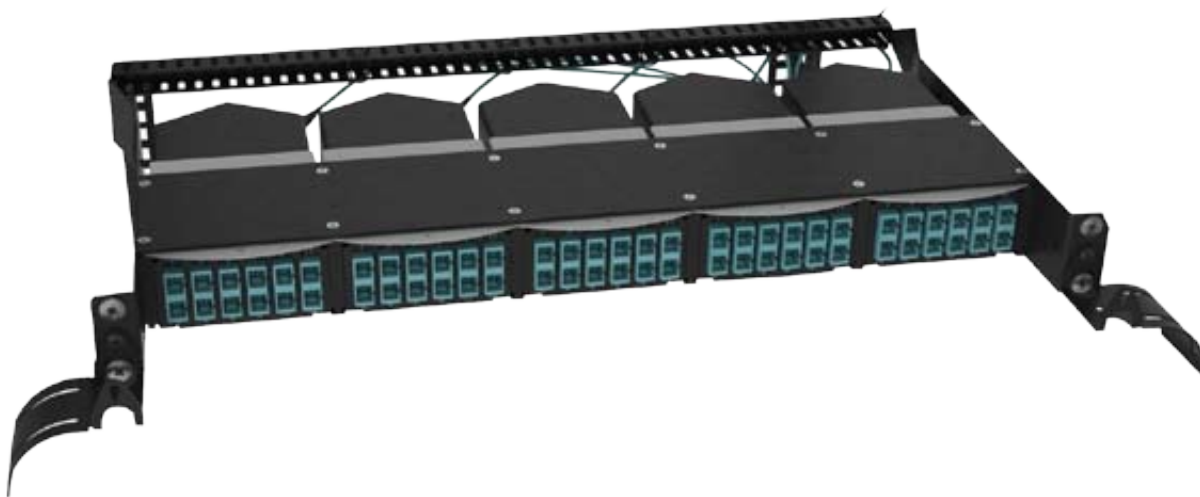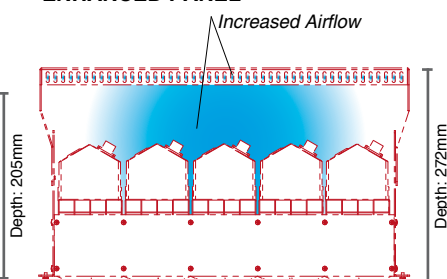
Description

FibreFab offers an innovative, high density patch panel. Designed to accommodate up to 120 connections within a 1U panel. These are split between 5 individual modules with up to 24 fibres within each.

Each module accepts incoming fibre from either MTP trunk cables or via pre-terminated assemblies. Pre-terminated cables are available as either ruggedised breakout cable or distribution cable. Another alternative for cable entry is the patented Optronics FirstLight Prime breakout, capable of being pulled over long distances and connecting directly to equipment.

Incoming cable can also be supplied un-terminated for splicing within a standard patch panel.

Modules can enter the panel from the front or the rear. Each 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.

Also available is a 3U system incorporating all of the above but with the addition of a removable door allowing complete access to all relevant components.

Second to this FibreFab is pleased to offer a 0U solution designed to accommodate sufficient MTP connectivity to support an individual blade per module. This is managed via a 96 fibre trunk cable directly terminated to 8 MTP connectors within the module and the choice of MTP or discrete connectors at the opposing end.

Applications

▶ Data centres, premise installations, telecommunication networks

▶ Ethernet, Fibre Channel, ATM, LAN, MAN and WAN

▶ Data communication networks

▶ Indoor applications

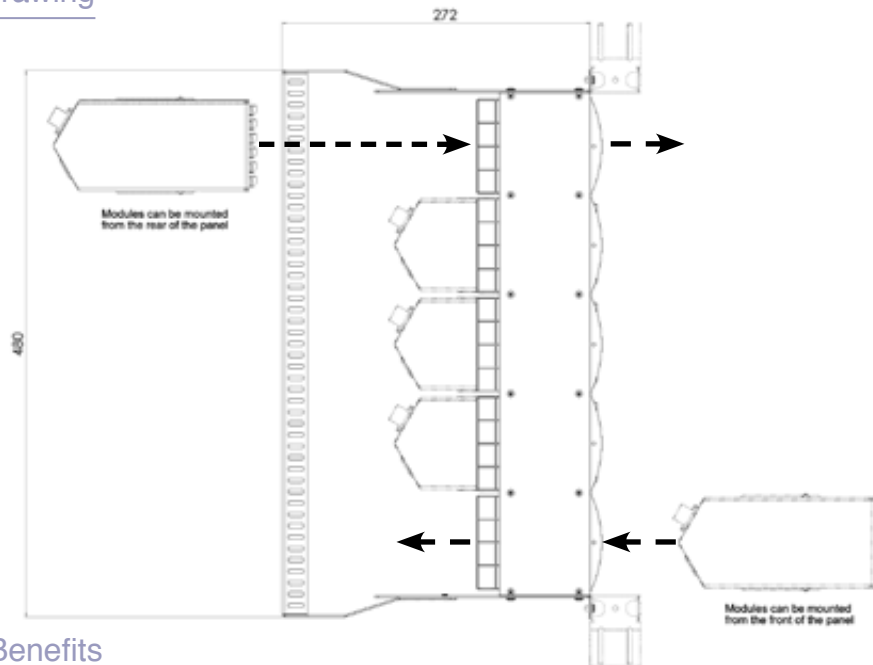## Technical Specifications

Parameter	Measurement	Conformance
Dimensions (Nominal)	482 x 311 x 44 mm (recessed)	
Weight	3.0 kg	
Operating Temperature	-25 to +70 °C, 12 cycles	IEC 61300-2-22

1U High Density Modular Panel

Up to **720** fibres

Technical Drawing

272

480

Modules can be mounted
from the rear of the panel

Modules can be mounted
from the front of the panel

Features / Benefits

▶ Modular Connection System

▶ High Density- scaling up to 120 discreet connectors and up to 720 fibres within MTP interface

▶ Up to 24 discrete or 144 (MTP) fibres connections a single module

▶ Cable entry via either MTP connection or pre-terminated assemblies

▶ Pre-loaded in the factory to guarantee performance

▶ Can be supplied with pre-terminated pigtails for splicing on the opposite end

▶ Can be supplied with a module at one end and ruggedised tails for direct connection to equipment at the opposing end

▶ Can be supplied with a module at one end and 900μm tails for connection within a standard patch panel at the opposing end

▶ 5 individual modules per panel

▶ Module entry from front or rear

▶ Rear cable management

▶ Retrofit patchcord exit management

▶ Separate labelling cards

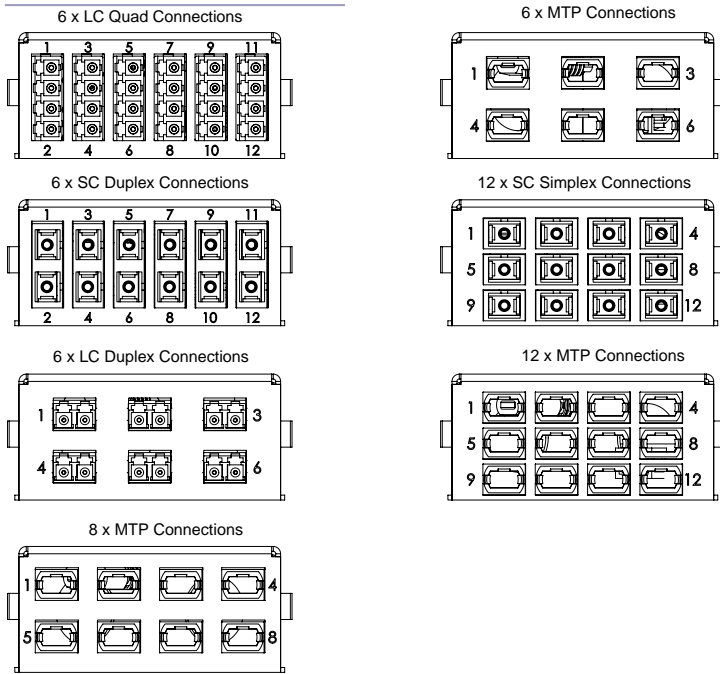▶ RoHS, REACH SvHC and UL rated

▶ Fits standard 19" or ETSI rack

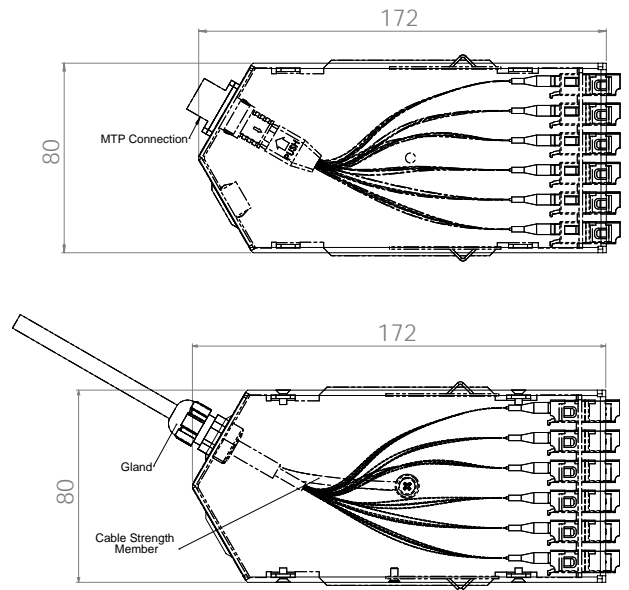**NB:** Please turn to P12-13 for modules to use in this panel

Ordering Information

DESCRIPTION	PART NO.
High Density Modular Panel (unloaded)	HD1UCHASSIS

High Density MTP® Plugable Modules

Plugable Module Options

6 x LC Quad Connections

6 x SC Duplex Connections

6 x LC Duplex Connections

8 x MTP Connections

6 x MTP Connections

12 x SC Simplex Connections

12 x MTP Connections

Preterminated Plugable Modules

172

80

MTP Connection

172

80

Gland

Cable Strength Member

Part Number Generator

HD | | | | | | CASS |

Rear Connector		Fibre Count	Front Connector		Front Adaptor Type		Fibre type			Polarity
MTP Male (standard)	MTPM	12	LC	LC	Simplex	SX	OS1/OS2	09		A
MTP Male Elite®	MTPEM	24	LC/APC	LCA	Duplex	DX	OM1	62		B1
N/A	XX	Upto 144 (MTP)	SC	SC	Quad	Q	OM2	50		B2
			SC/APC	SCA			OM3	OM3		C
Female available on request			MTP	MTP			OM4	OM4		

Example Part Number

HDMTPM24LCDXOM3CASSA

This part number has created High Density MTP Cassette with 24 OM3 fibres, Duplex LC front interface, polarity method A.
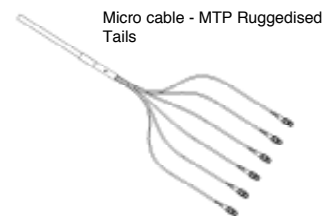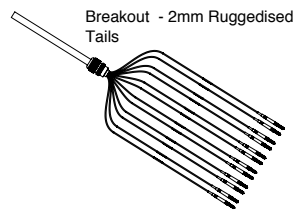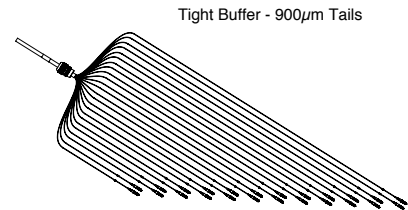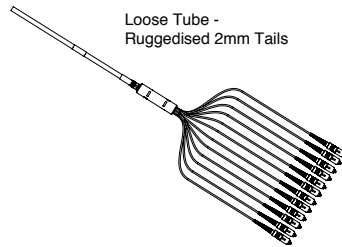
High Density Modular Multifibre Assembly

Module to Module

Compression Gland Connection

Compression Gland Connection

Module to Fanout

Loose Tube - Ruggedised 2mm Tails

Tight Buffer - 900µm Tails

Breakout - 2mm Ruggedised Tails

Micro cable - MTP Ruggedised Tails
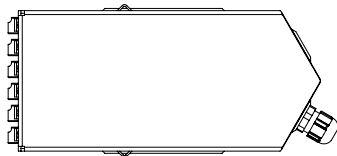
Part Number Generator

HDMA

Fibre Count	End A Interface				END B Interface						Fibre type		Cable Construction		Assembly length (mtr)
2	M (Module)	LC	LC	Simplex	SX	Module	M	LC	LC	Simplex	SX	OS1/OS2	09	Tight Buffer	TB	
4		LC/APC	LCA	Duplex	DX	900µm	09	LC/APC	LCA	Duplex	DX	OM1	62	Breakout	BO	
6		SC	SC	Quad	Q	2mm	2	SC	SC	Quad	Q	OM2	50	Micro cable	MC	1
8		SC/APC	SCA					SC/APC	SCA			OM3	OM3	Loose Tube	LT	to
12		MTP	MTP					MTP	MTP			OM4	OM4			200m
16								ST	ST							
24								FC	FC							

1U High Density MTP® Ultra Slim Panel

Up to 96 fibres

STANDARD PANEL

Limited Airflow

Depth: 205mm

S13 Sliding Patch Panel

ENHANCED PANEL

Increased Airflow

Smaller Panel Footprint

High Density MTP® Ultra Slim Panel

Depth: 117mm

443

Top View

117

482

464

Front View

44

Rear View
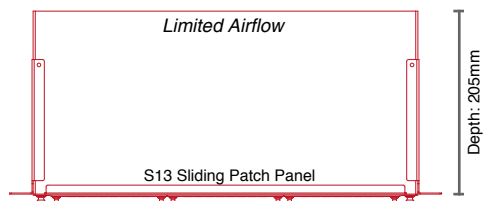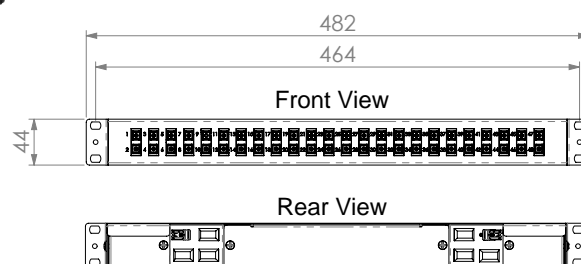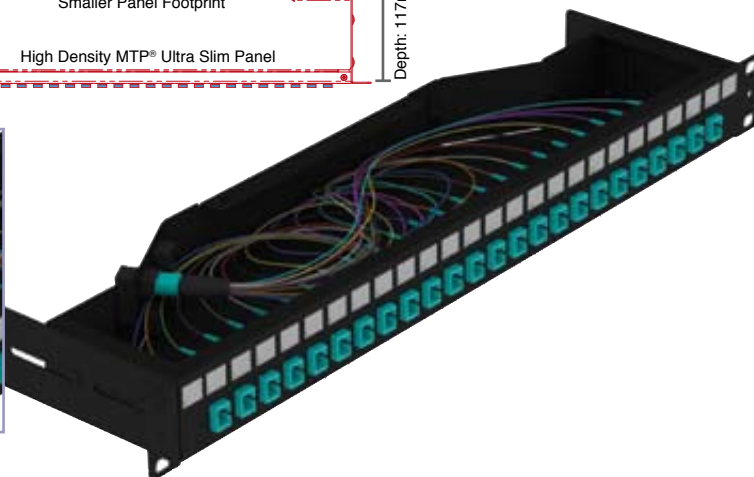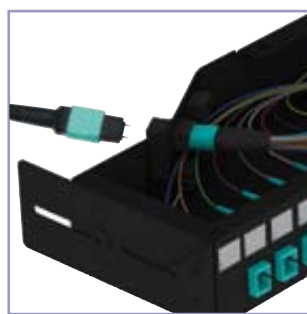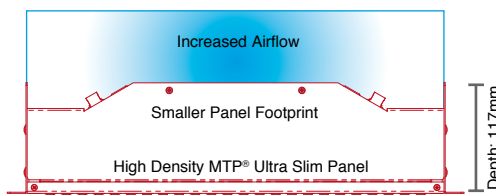
Description

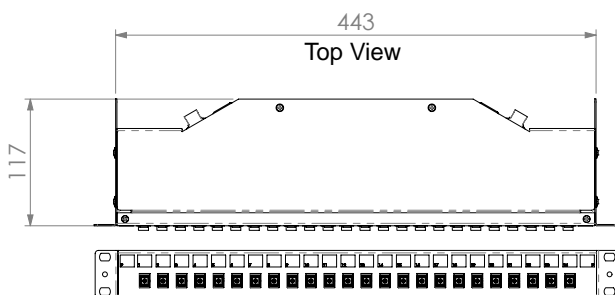FibreFab MTP® Ultra Slim Panels provide secure transitions between MTP® and LC or SC discreet connector interfaces. They are used to interface MTP® backbones with LC or SC patching and active equipment connection.

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 makes it suitable for copper racking systems. Scaling up to a 96 fibre panel is available for server racks in a data centre environment.

MTP® Ultra Slim 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.

Benefits

▶ Rapid Deployment- factory terminated modular system saves installation and reconfiguration time during moves, adds and changes.
▶ Easy Installation- open rear entry MTP® ports guarantee easy cabling access and facilitate connection to MTP® backbone trunks system.
▶ Compact 1U Size- short depth make panel compatible with low dimension copper racking system.
▶ 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- 1U panel can scale up to 96 discreet LC connectors and up to 8 MTP® rear interfaces
▶ Reliability- 100% Tested- combination of high quality components and FibreFab manufacturing quality control guarantees product to the highest standards.

Features

Available in OS1/2, OM1, OM2, OM3 and OM4 fibre grades.
Up to 8 MTP® (US Conec) brand MPO standard compliant multifibre connector rear entry ports
Front LC (SFF Data Centre standard), SC discreet interface
Up to 48 (LC DX) or 96 (LC Quad) fibres panel capacity
Factory terminated and tested

Applications

▶ Data communication applications
▶ Data Centre Infrastructure
▶ Storage Area Network- Fibre Channel
▶ Emerging 40 and 100Gbps Protocols

Standards Compliance

TIA/EIA-568-C.3 and ISO/IEC 11801
IEC-61754-7 & EIA/TIA-604-5,
IEC-61754-20 & IEC-61754-14
IEC-60793. Compliant to
Directive 2002/95/EC (RoHS)
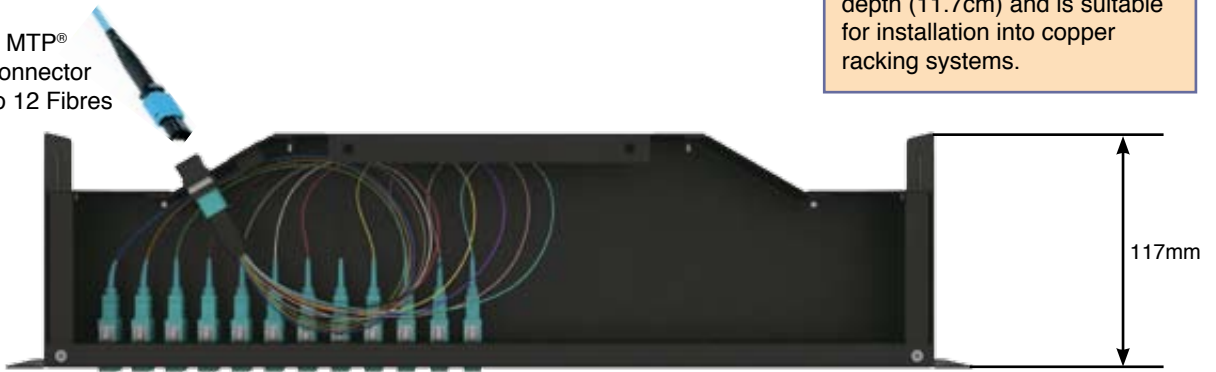and REACH SvHC

✓

1U

Up to 96 ores

Ultra Slim Panel
Configuration Options

1 MTP® connector to 12 Fibres

117mm

1 MTP® connector to 24 Fibres

117mm

2 MTP® connectors to 24 Fibres

117mm

2 MTP® connectors to 24 Fibres

117mm
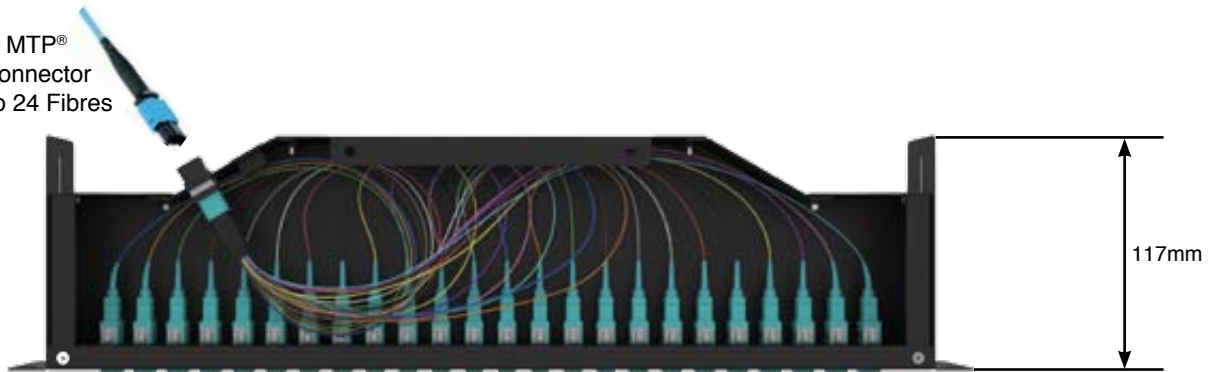
Ultra Slim Panel Options

OM 1 62.5/125	OM 2 50/125	OM 3 50/125	OM 4 50/125	OS 1|2 G652D	OS 1|2 G.657.A1	OS 1|2 G.657.A2

LC Duplex

1 x MTP® to 12 Fibres (LC) • (1 x 12 Fibre Trunk)*

1xMTP

2 x MTP® to 24 Fibres (LC) • (2 x 12 Fibre Trunk)*

2xMTP

1 x MTP® to 24 Fibres (LC) • (1 x 24 Fibre Trunk)*

1xMTP

2 x MTP® to 48 Fibres (LC) • (2 x 24 Fibre Trunk)*

2xMTP

4 x MTP® to 48 Fibres (LC) • (4 x 12 Fibre Trunk)*

4xMTP

LC Quad

4 x MTP® to 96 Fibres (LC) • (4 x 24 Fibre Trunk)*

4xMTP

SC Simplex

SC Simplex

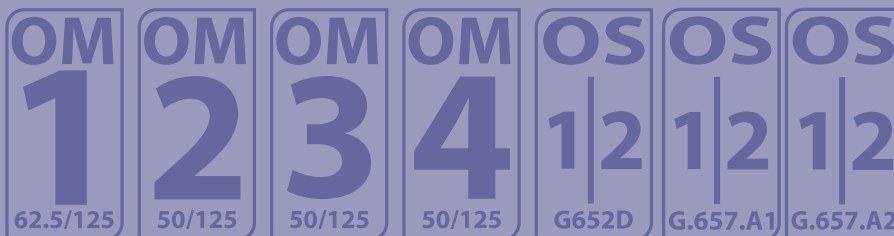**1 x MTP® to 12 Fibres (SC) • (1 x 12 Fibre Trunk)***

1xMTP

2 x MTP® to 24 Fibres (SC) • (2 x 12 Fibre Trunk)*

2xMTP

1 x MTP® to 24 Fibres (SC) • (1 x 24 Fibre Trunk)*

1xMTP

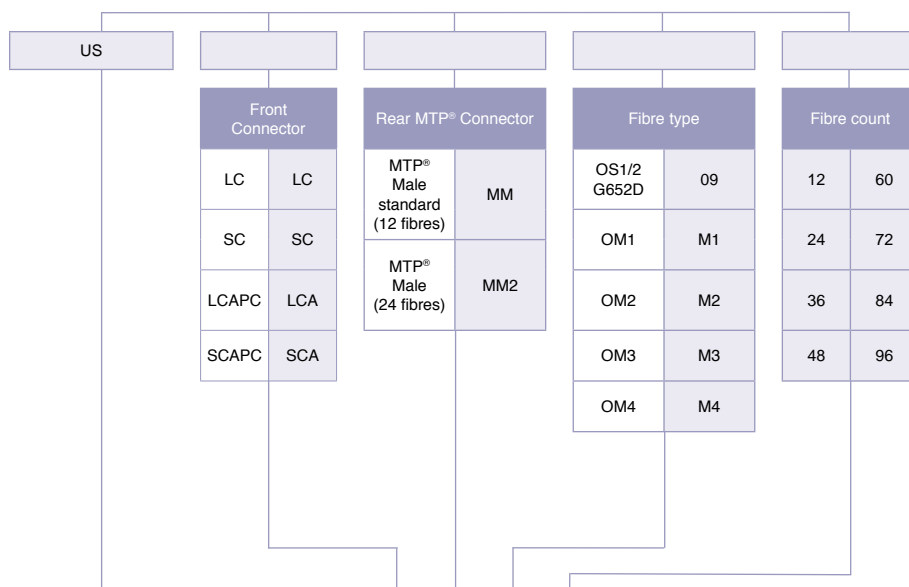*Select panel to suit fibre count and number of trunk cables required

Technical Information

| OM 1 62.5/125 | OM 2 50/125 | OM 3 50/125 | OM 4 50/125 | OS 1 2 G652D | OS 1 2 G.657.A1 | OS 1 2 G.657.A2 |

Connector Performance

CONNECTOR MATING	IL AVERAGE	IL MAX	RETURN LOSS	CONNECTOR MATING	IL AVERAGE	IL MAX	RETURN LOSS
MTP® (MM)	0.20dB	0.60dB	NA	MTP® (SM)	0.25dB	0.75dB	>60dB
LC, SC (MM)	0.15dB	0.30dB	NA	LC, SC (SM)	0.18dB	0.30dB	>50/60dB*

Technical Specification

Element	Characteristic
Fibre	OS1/OS2, OM1, OM2, OM3, OM4 (ISO/IEC 60793)
Adaptors	MTP® US Conec (IEC-61754-7 & EIA/TIA-604-5) Body Colour: Black Polarity: Key-way up, Key-way down LC Duplex, LC Quad (IEC 61754-20), SC (IEC-617514-4) Body Colour: Beige (OM1, OM2), Aqua (OM3), Blue (OS1, OS2) UPC, Green (OS1, OS2) APC, Erika Violet or Aqua (OM4)
Connectors	MTP® US Conec (IEC-61754-7 & EIA/TIA-604-5) LC (IEC 61754-20), SC (IEC-61754-14)
Operating Temperature	-20 to ~ +60°C
Storage Temperature	-40 to ~ +70°C

Part Number Generator For Slimline Panel

US

Front Connector	
LC	LC
SC	SC
LCAPC	LCA
SCAPC	SCA

Rear MTP® Connector	
MTP® Male standard (12 fibres)	MM
MTP® Male (24 fibres)	MM2

Fibre type	
OS1/2 G652D	09
OM1	M1
OM2	M2
OM3	M3
OM4	M4

Fibre count	
12	60
24	72
36	84
48	96

Example Part Number: US LC MM M4 48

USLCMTPM12OM448 has created a MTP® Ultra Slim panel with 48 OM4 fibres and LC front interface. (12 fibre MTP® ferrule applied)
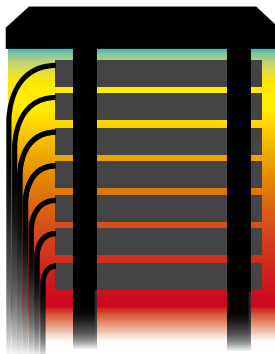
Comparing Micro Cable and Tight Buffered Fibre Optic Cable

What are the benefits of using a 24 fibre micro cable instead of a 24 fibre Distribution cable in a LAN environment?

▶ Small and light construction allows for more cost effective transportation

▶ Smaller bend diameter (30mm verses nearly 90mm) and flexible construction and allows for trouble free installation and handling

▶ Environmentally friendly - uses 4 time less materials and energy to manufacture

▶ Highly space efficient, higher fibre density enables your storage system handle a greater capacity

24 fibre internal distribution cable with 900μm tight buffered fibres

Thick heavy cable make for a congested cable management area reducing the thermal through put

1. Low smoke zero halogen jacket
2. E-glass non metallic strength members
3. 900μm tight buffered fibre

Outer Diameter:
7.5mm ± 0.3mm

2 to 24 fibre single jacket internal micro cable

Narrow micro cable allows the heat to rise faster and more efficiently, reducing the need for greater heat management facilities
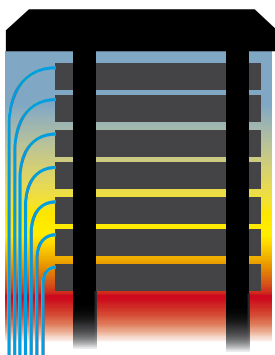
1. Low smoke zero halogen jacket
2. Aramid strength members
3. 250μm optical fibre

NEW

Outer Diameter:
4.5mm ± 0.3mm

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Pre-Terminated MTP®
Trunk / Backbone Micro Cables

Up to **24** fibres

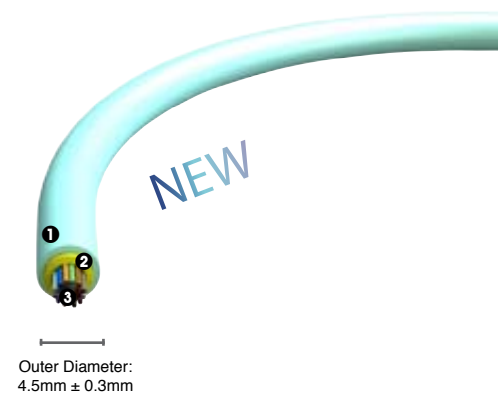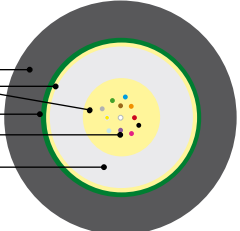**12 or 24 Fibres**

LSZH Outer Jacket
Aramid Strength Members
Ripcord
250µm Optical Fibre
LSZH Inner Jacket

Description

2 to 24 fibre 250µm cables with aramid strength members and double LSZH (Low Smoke Zero Halogen) jackets. The cable consists of 2 to 24 250µm OM1, OM2, OM3, OM4 multimode or OS1/OS2 (ITU-T G.652D), ITU-T G.657A1 singlemode optical fibres in a 2.95mm LSZH inner jacket with aramid strength members. Aramid non metallic strength member and a final 4.5mm LSZH jacket enhances cable strength.

OM4 MTP® trunk assemblies are offered in fibre types in standard 12 to 24 core versions using a compact and rugged micro cable structure. The compact cables optimise cable-way use and improve airflow.

FibreFab MTP® trunks are built with highest quality components. Standard MTP® as well as 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®, discreet 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 micro cable 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.
▶ Please refer to the fibre specification datasheets for OM1, OM2, OM3, OM4, OS1/2 (ITU-T G.652) and ITU-T G.657A1.

Features

▶ Individually coloured optical fibres
▶ Compact 250µm high fibre density construction
▶ All dielectric construction with aramid yarn for physical protection and mechanical strength
▶ Double LSZH jackets for internal use
▶ Only 4.5mm outer diameter for 12 fibres

Application

▶ Ideal for internal inter-connect using MPO or MTP® connectivity
▶ Specialist cable for high density connectivity including Data Centres

Standards Compliance

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

MTP® Cable Options

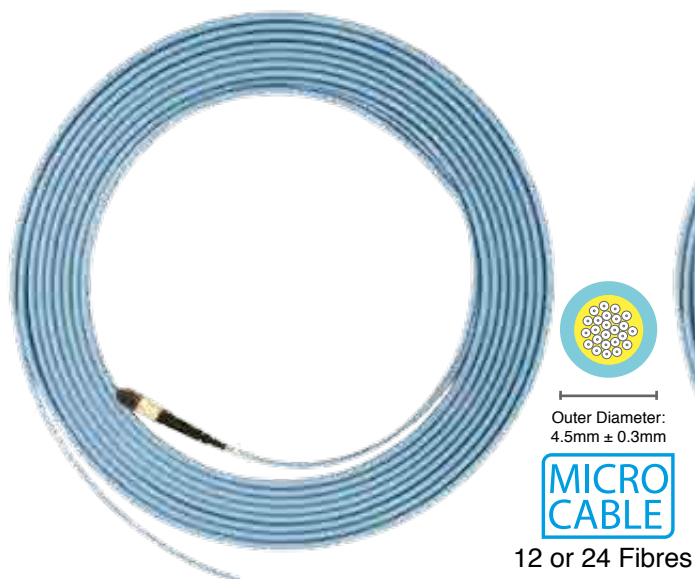| OM 1 62.5/125 | OM 2 50/125 | OM 3 50/125 | OM 4 50/125 | OS 1\|2 G652D | OS 1\|2 G.657.A1 | OS 1\|2 G.657.A2 |

MTP® to Open End

Pre-terminated with a MTP® connector on end A the MTP® to Open End B provides the installer with the convenience of a high performance MTP® connector pre-terminated on one end, tested and polished, ready for installation.

Outer Diameter:
4.5mm ± 0.3mm

MICRO CABLE

12 or 24 Fibres

MTP® to Fan-Out

Pre-terminated with an MTP® connector on one end and a extensive range of connector styles on end B, the MTP® to Fan Out offers true versatility to connect to passive and active equipment.

Outer Diameter:
4.5mm ± 0.3mm

MICRO CABLE

12 or 24 Fibres

MTP® to MTP®

Pre-terminated with a MTP® connectors at both ends the MTP® to MTP® trunk cable offers a true plug and connect installation. Quick, simple and ideal for fast turn moves, adds and changes (MAC).

Outer Diameter:
4.5mm ± 0.3mm

MICRO CABLE

12 or 24 Fibres
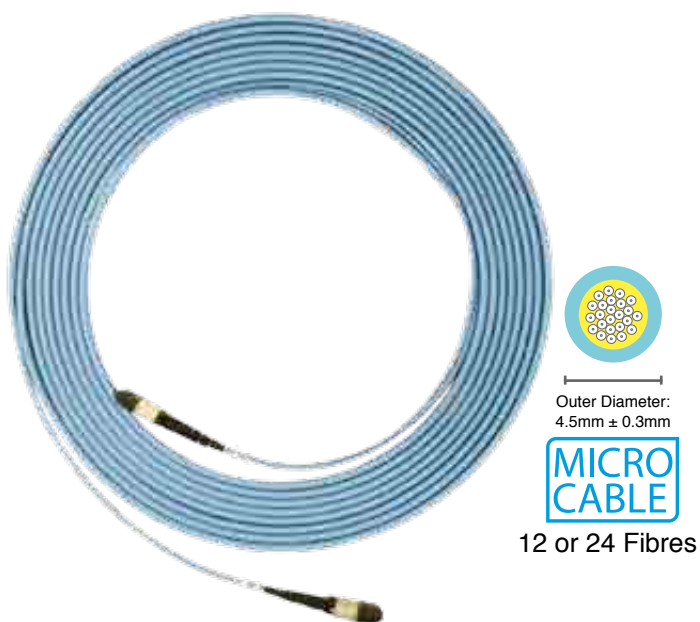
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Technical Information

Connector Performance

Connector Mating	IL Average	IL Max	Return Loss
MTP® (MM)	0.20dB	0.60dB	NA
MTP® (SM)	0.25dB	0.75dB	>60dB

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)

Technical Specification

Element	Characteristic
Fibre	OS1/OS2, OM1, OM2, OM3, OM4 (ISO/IEC 60793)
Cable	Micro cable- 12, 24 cores (ISO/IEC 60794), Max OD 12/24 cores 4.5 ± 0.3mm / Max OD 24/48 cores 4.5 x 7.4 ± 0.3mm, Jacket material: LSZH (IEC 60332-1), OFNP (NFPA 262) Jacket colour: Yellow (OS1/OS2), Orange (OM1, OM2), Purple (OM3), Aqua (OM3, OM4), Erika Violet (OM4),
Connectors	MTP® US Conec (IEC-61754-7 & EIA/TIA-604-5) Boot Colour: Black Body Sleeve Colour: MM (Beige), MM Elite® (Aqua), SM (Green), SM Elite® (Yellow)
Packaging	Length< 100m– PE bag / Length> 100m– Drum
Operating Temperature	-20 to ~ +60°C
Storage Temperature	-40 to ~ +70°C

Part Number Generator For Trunk Cables

Connector END A		Connector END B		Fibre Type		Fibre count	Cable length (m)		Colour		Jacket Type	
Female MTP® (Standard 12)	MF	Female MTP® (Standard 12)	MF	OS1/2 G652D	09	12	XXX		Yellow (OS1/2)	Y	LSZH is standard for Plenum specify as below	
Female MTP® (24 Fibres)	MF2	Female MTP® (24 Fibres)	MF2	OM1	M1	24			Orange (OM1/2)	O	OFNP	PL
Male MTP® (Standard 12)	MM	Male MTP® (Standard 12)	MM	OM2	M2				Purple (OM3)	P		
Male MTP® (Standard 24	MM2	Male MTP® (Standard 24	MM2	OM3	M3				Aqua (OM3/4)	A		
		Open End	XX	OM4	M4				Erika Violet (OM4)	E		
		LC	LC									
		SC	SC									
		ST	ST									
		FC	FC									
		LC/APC	LA									
		SC/APC	SA									
		FC/APC	FA									

Example Part Number   MF   MF   M4   12   16   C   A

MFMFM41216CA has created a 16 metre 12 Core MTP® female to MTP® female OM4, Jacket colour Aqua LSZH trunk assembly.

Note: Select the trunk cable total fibre count and quantity to suit the panel selected

Trunk Cables

Description

Trunks terminated with MTP connectors combine space saving features in a high density application, offering rapid deployment with high optical performance. The MTP interface guarantees next generation network compatibility and easy transition to parallel optics systems. Trunk assemblies are available with 12 and 24 core micro cable. High fibre count configurations (up to 144 cores) are available within the innovative FirstLight Prime solution. Trunks are available with standard as well as premium family Elite® for most demanding application.

Features and Benefits

▶ OM1, OM2, OM3, OM4 and OS1/2
▶ LSZH and OFNP available
▶ Standard and Elite® premium connectors

▶ Round micro cable for ease of cable rooting
▶ Factory terminated and tested
▶ Easy upgrade to parallel optics

MTP Trunk Cables Part Number Generator

Please select a code from each coloured section displayed below to create your specific MTP trunk cable. Place all of the codes together in order to generate your part number.

Connector END A		Connector END B		Fibre type		Fibre count	Cable length	Polarity method	Jacket type
Female standard	MTPF	Female standard	MTPF	OS1/2	09	8		A	LSZH
Female Elite®	MTPEF	Female Elite®	MTPEF	OM1	62	12		B	OFNP
				OM2	50	24		C	
				OM3	OM3	48	From 1m to 300m		
				OM4	OM4	72			
						96			
						144			

Example Part Number **MTPFMTPFOM3121ALSZH**

| MTPF	MTPF	OM3	12	1	A	LSZH

This part number has created a female standard to female standard, OM3, 12 Core, 1 metre, polarity method A, LSZH MTP trunk cable.

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Fan Out Assembly

Description

The MTP to LC fan out or trunk assembly combines an MTP connector on 1 end and discreet connectors on the other. It is quick to install and provides a cost effective option for creating direct connections to active equipment when cassettes cannot be installed in close proximity to the equipment, when a high density connection is required or where power budgets impose a lower number of interconnections. MTP to LC fan outs, usually 12 and 24 core are typically used within the same cabinet. The FirstLight Prime fan outs provide a platform for high fibre count or long length MTP to LC trunks assemblies where long intercabinet connections are required.
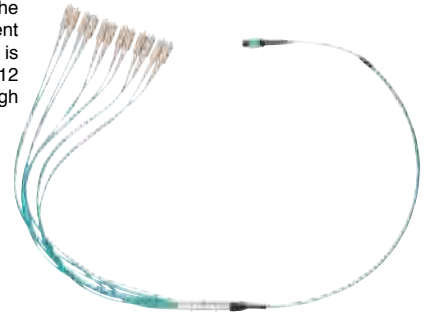
Features and Benefits

► Application specific design - up to 144 fibre in FirstLight Prime Trunk Fan out

► Multiple fibre types - OM1, OM2, OM3, OM4, OS1/OS2

► Factory terminated and 100% tested

► Minimise server/SAN director cabinet patchcord congestion
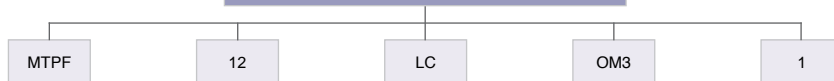
► Reduced topology improves power budget

MTP MPO Fan Out Assemblies Part Number Generator

Please select a code from each coloured section displayed below, to create your specific MTP MPO Fan out cable. Place all of the codes together in order to generate your part number.

Connector END A		Fibre count		Connector END B		Fibre type		Cable length	
Female standard	MTPF		12		LC	OS1/2	09		
Female Elite®	MTPEF		24		FC	OM1	62		From 1m to 300m
Male standard	MTPM				ST	OM2	50		
Male Elite®	MTPEM				SC	OM3	OM3		
						OM4	OM4		

Example Part Number: MTPF12LCOM31

MTPF	12	LC	OM3	1

This part number has created a female standard MTP to LC, 12 core, OM3, 1 metre, MTP fan out assembly.

Unibody Patchcords

Description

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 Unibody 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 Unibody patchcord offers improved airflow and visibility of equipment within a high density network environment.

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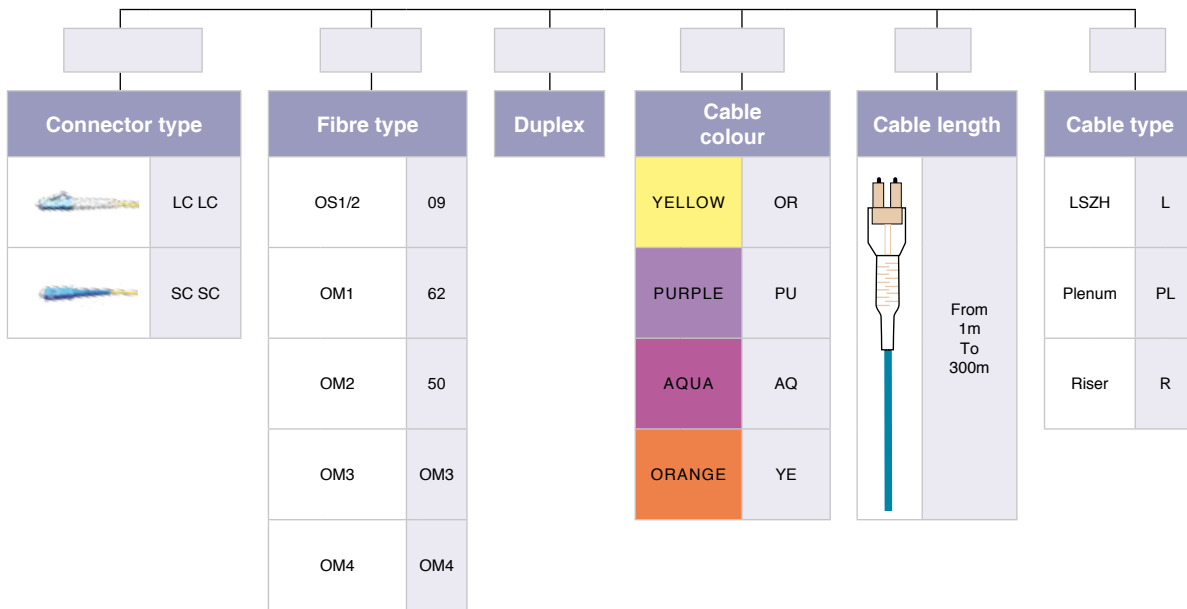
Features and Benefits

► Improves airflow
► Reduces patchcord congestion
► LC or SC connectors available
► 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

Standards

► IEC-61754-20
► IEC-11801
► RoHS / REACH SvHC

Unibody Patchcord Part Number Generator

Please select a code from each coloured section displayed below, to create your specific Unibody patchcord. Place all of the codes together in order to generate your part number.

Connector type		Fibre type		Duplex	Cable colour		Cable length		Cable type	
	LC LC	OS1/2	09		YELLOW	OR			LSZH	L
	SC SC	OM1	62		PURPLE	PU	From 1m To 300m		Plenum	PL
		OM2	50		AQUA	AQ			Riser	R
		OM3	OM3		ORANGE	YE				
		OM4	OM4							

Example Part Number LCLCOM3DAQ1UNIL

LCLC	OM3	D	AQ	1	L

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Slimline Patch Panel

Up to 48 fibres

Description

The slimline patch panel is a 1U fixed panel specifically designed for MTP connection to discreet LC ports. Due to its unique design, it will hold up to 96 LC connectors on the front and 8 MTP connectors on the rear of the panel. The depth of the panel is only 145mm to allow enough room to mount further panels or equipment in the rear profiles of the cabinet. The slimline patch panel is a complementary cost effective solution to the high density modular panels and chassis for MTP-LC cassettes.
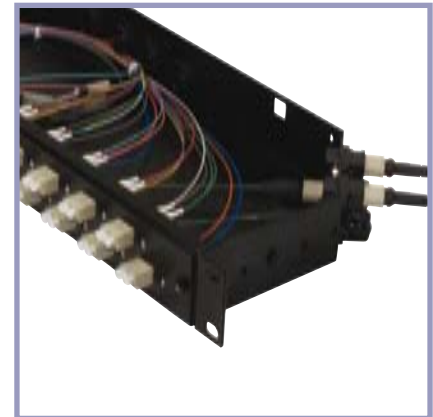
Features and Benefits

► Up to 96 front LC and 8 rear MTP ports
► Small and compact dimensions for easier rack management
► Easy to install one piece MTP to LC panel
► Easy accessible rear entries

## MTP Slimline patch panel Part Number Generator

Please select a code from each coloured section displayed below, to create your specific MTP MPO slimline patch panel. Place all of the codes together in order to generate your part number.

Fibre Count Supports up to 48 fibres

1U19BK				

Adaptor END A		Adaptor END B		Fibre Type		Fibre Count
	LC	Male Standard	MTPM	OS1/2	09	12
	FC	Male Elite®	MTPEM	OM1	62	24
	ST			OM2	50	48
	SC			OM3	OM3	72
				OM4	OM4	96

Example Part Number   1U19BKLCMTPMOM348

1U19BK	LC	MTPM	OM3	48
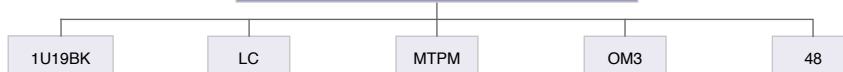
The FirstLight Pre-Terminated Splitter

FirstLight with Splitter

Splitter 1 x 16

Traditional method

HISTORICALLY
Implementing a fibre splitting solution required many separate components with inefficient use of space, it was resource intensive and required considerable allocation of time and know how by a highly trained specialist to install.

NO MORE

NEW
The FirstLight Pre-Terminated Splitter

With the Firstlight Splitter solution the splitter is housed in the pre-terminated packaging.
This is a much more efficient use of space and also environmentally friendly, as fewer manufacturing components and less time is used to produce the product.

► Space saving

► Fewer components

► Environmentally friendly

► Quick and easy to install

Zero U Mounting Bracket

0U rack mounted FirstLight pre-terminated splitter

Wall mounted FirstLight pre-terminated splitter

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We also stock a wide array of Standard Cable Management products

For more information and to download the latest Cable Management catalogue visit our website at *www.fibrefab.com*

Cable Management

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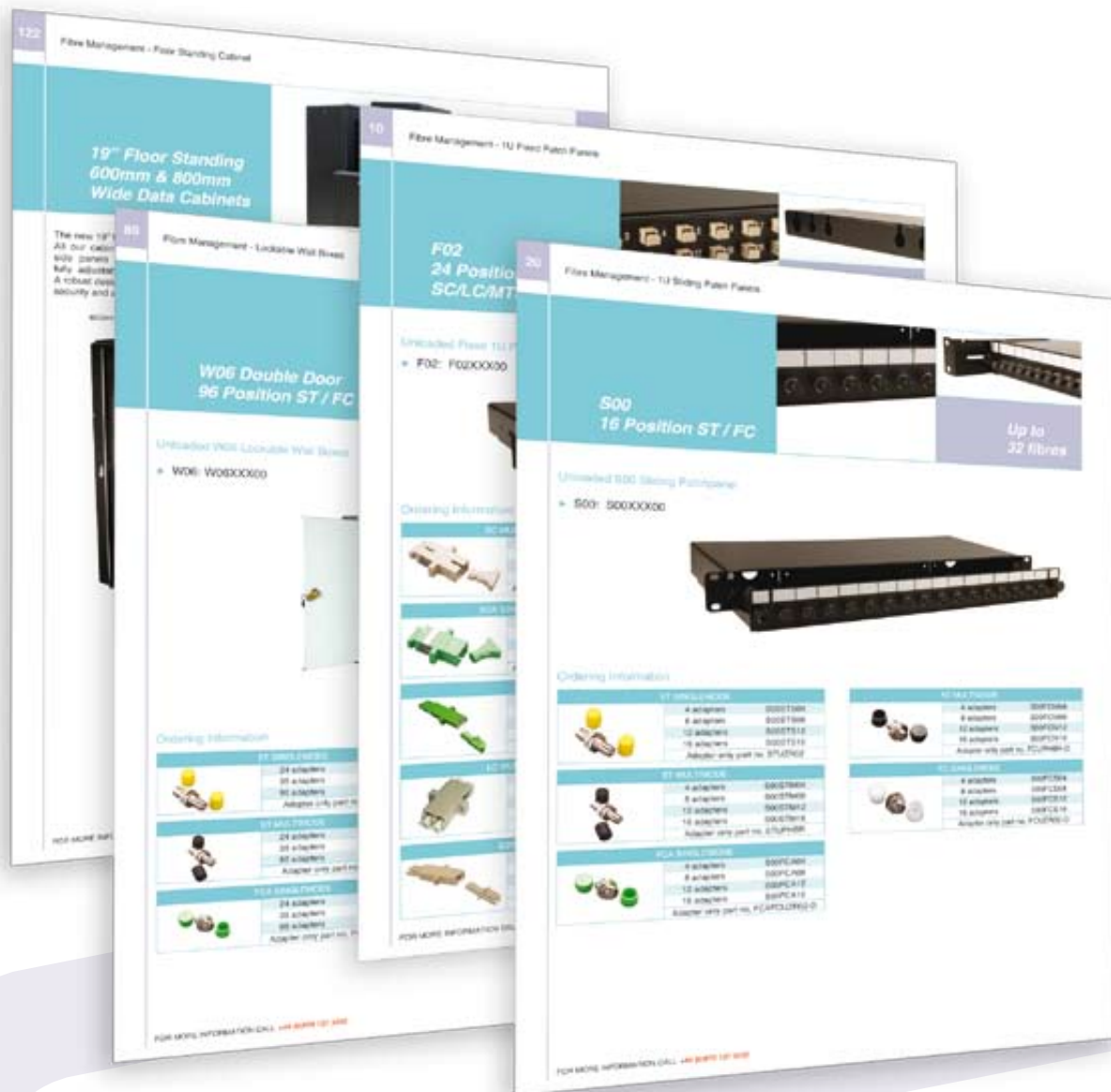
Other catalogues available for download at
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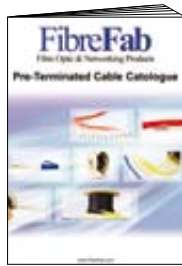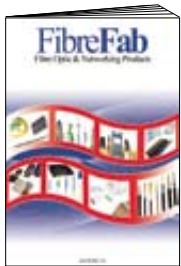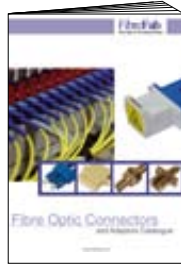
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