

DATA CENTER SOLUTION







DATA CENTERS, THE BACKBONE OF OUR CONNECTED SOCIETY

In a world that is increasingly connected, where the volume of data exchanged is constantly increasing, where data is seen as the next industrial revolution and in which new uses will appear with the arrival of 5G, data centers are becoming essential to the digital chain in storing and processing data.



To deal with this growing increase in data, it's essential to build new data centers, whether they involve colocation or private companies, or are edge data centers – local centres dedicated to the nearby processing of data with the aim of reducing lag (response) times.

In addition to the increase in the number of data centers, the increased need for speed (10G, 40G, 100G, 200G, 400G and tomorrow, 1.6T) is becoming a major challenge. To respond to this challenge, cabling infrastructure is continuing to evolve through the use of fibre optics that meet these technical requirements.

Your sales contact

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With over 30 years' experience in Data and Telecoms networks, FOLAN supports its clients in choosing infrastructure solutions across the Data Center value chain, from the Meet-Me Room to server connection and the permanent cabling of IT rooms, etc. FOLAN supports you in choosing high-performance, modular and scalable solutions.

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FOLAN, THE FRENCH SPECIALIST IN DATA & TELECOMS INFRASTRUCTURE HAS BEEN AT YOUR SERVICE FOR OVER 30 YEARS!

FOLAN, founded in 1988 under the name ICTL, initially specialised in assembling optical connection technology. Our company is now the essential French designer and manufacturer of passive solutions and equipment for fibre-optic networks: core networks, data centers and industries.

At the cutting edge of innovation, FOLAN designs and produces Data & Telecoms network interconnection solutions that meet operators, local authorities and companies' needs.

Involved alongside the France Superfast Broadband plan and local authorities to accelerate the deployment of optical fibre in France, FOLAN has also invested internationally by marketing its products in Europe, the Middle East, Africa and Asia.

Our strength?

Flexible and responsive teams who listen to our clients!

- A design office that designs and tests all our equipment in collaboration with a qualification and product testing laboratory
- A sales team of roaming salespeople by your side and office-based salespeople available at any time
- Production teams who are responsive and proactive in France, Romania and Asia
- Quality teams who inspect all manufacture











4 PRODUCTION SITES WORLDWIDE, TO MEET ALL OUR CLIENTS' NEEDS:

- **LYON** FRANCE:
 - For small or medium production runs, customisation and short lead times
 - Integration of components (patch panels, racks, etc.) with a dedicated and customisable assembly chain and the possibility of mixed assembly
 - Single or two-level preconnectorised risers
 - Custom preconnectorised cords and cables
 - Standard and specific connectors
- **SOUTHEND-ON-SEA** UNITED KINGDOM:
 - For small and medium production runs
- **HUNEDOARA** ROMANIA:
 - For medium and large production runs, adaptation of standard products
 - With a French-speaking department that facilitates discussion
- **WUHAN** CHINA:
 - For very large production runs and standard offers
 - With French-speaking employees to supervise production and perform quality control

LOYAL CLIENTS WHO TRUST US:

OPERATORS

























DATA CENTERS











EQUIPMENT MANUFACTURERS











INSTALLERS























PUBLIC INSTITUTIONS













TRANSPORT & ENERGY







FOLAN IS A MEMBER OF SEVERAL PROFESSIONAL BODIES





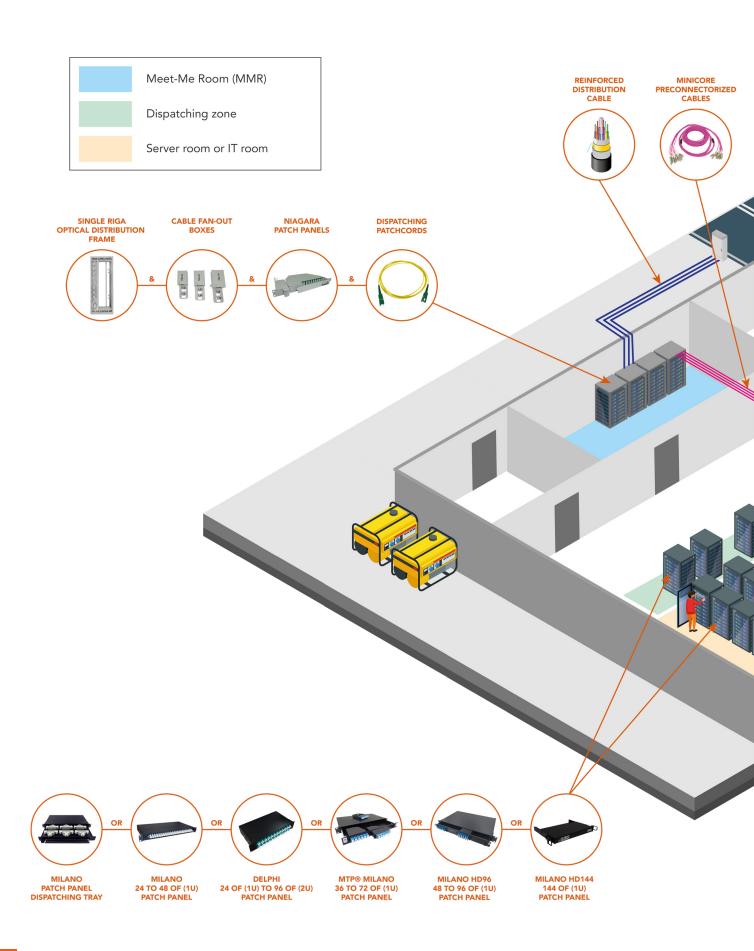


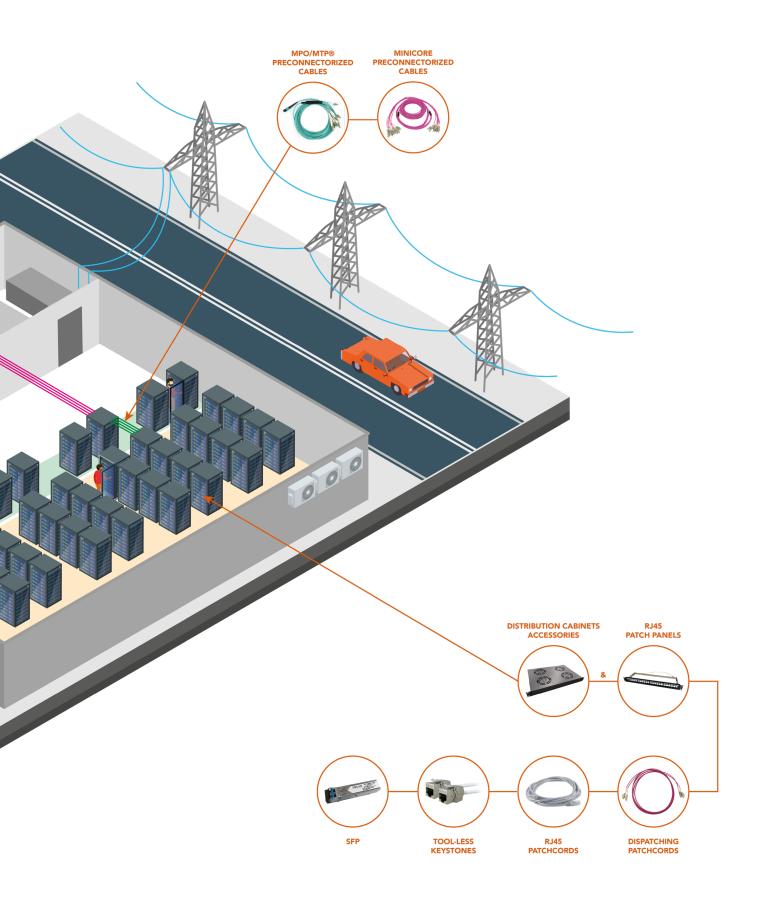


INTERNATIONALLY

- FTTH COUNCIL EUROPE: Development of FTTH in Europe
- FTTH COUNCIL MENA: Development of FTTH in the Middle East and North Africa









TYPES OF FIBRE AND PERFORMANCE

MONOMODE FIBRE

Created to respond to growing Telecoms bandwidth needs, the range of monomode optical fibres meets users' expectations. The standard monomode optical fibre is the G652 optical fibre, as this standard has been upgraded into several variants.

G.652.D MONOMODE FIBRE

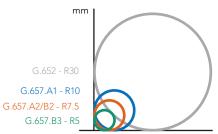
The most powerful fibre and the most common in this product line.

(standard IEC 60793-2-50/B-652.D)

G.657.A2 MONOMODE FIBRE

Fibre with a low bending radius facilitating cabling in particular inside buildings.

(standard IEC 60793-2-50/B-657.A2 and B-657.B2)



BENDING RADIUS

MULTIMODE BARE FIBRE

With a boosted silica core whose refraction index rises gradually as you approach the centre, there are two main multimode optical fibre families: $50/125 \, \mu m$ and $62,5/125 \, \mu m$.

GRADIENT INDEX FIBRE

Available in 62.5/125 µm (OM1) or 50/125 µm (OM2, OM3, OM4, OM5). It is mainly used on LAN networks.

 $50/125\,\mu m$ fibres (OM3 and OM4) are mainly used for local broadband networks, in particular 10 Gb/s applications. (standards IEC 60793-2-10 (ITU-G651) and TIA/EIA-492 AAAC/492 AAAD).

PERFORMANCE

	APPLICATIONS	OPTICAL FIBRE PERFORMANCE*				
Wave length		9/125 μm	62.5/125 μm	50/125 μm		
		G652D or G657A2	OM1	OM2	OM3	OM4
850 nm	1 Giga	-	275 m	550 m	550 m	550 m
650 1111	10 Gigas	-	33 m	82 m	300 m	400 m
1300	1 Giga	5,000 m	550 m	550 m	550 m	550 m
1300 nm	10 Gigas	10,000 m	82 m	82 m	82 m	82 m

All our bare optical fibres are available on coils of 500, 1,000, 2,000, 3,000 and 4,000 m. (*): according to IEC 11801 standard

JACKET COLOURS



YELLOW MONOMODE G652D OR G657A2 9/125 µm



ORANGE MULTIMODE OM1 62.5/125 µm



GREY MULTIMODE OM2 50/125 μm



AQUA MULTIMODE OM3 AND OM4 50/125 µm



MAGENTA MULTIMODE OM4 50/125 µm



LIME GREEN MULTIMODE OM5 50/125 µm

CONNECTORS AND PERFORMANCE

FOLAN sells several types of connector each with different advantages to meet all your needs. Summary of their performance below:

TYPE OF CONNECTOR



PERFORMANCE GRADES

FOLAN offers a product line based on grades to help manufacturers, operators and installers choose the most suitable component for the application concerned. The best connector will only have excellent performance if it is coupled with a permanent adaptor.

TECTO	REQUIREMENTS				
TESTS	MONOMODE		MULTIMODE		
	Classes/Grades	Weakening at 1,310, 1,550 and 1,625 nm	Classes/Grades	Weakening at 850 nm	
	Class A	Not currently specified	Class A _m	Not currently specified	
Insertion loss IL	Class B	\leq 0.12 dB on average \leq 0.25 dB max. for \geq 97 % of connections	Class B _m	≤ 0.3 dB on average ≤ 0.6 dB max. for ≥ 97 % of connections	
(IEC 61300-3-34)	Class C	≤ 0.25 dB on average ≤ 0.50 dB max. for ≥ 97 % of connections	Class D	\leq 0.5 dB on average \leq 1.0 dB max. for \geq 97 % of connections	
	Class D	≤ 0.50 dB on average ≤ 1 dB max. for ≥ 97 % of connections		Not currently specified	
	Class 1	\geq 60 dB (coupled) et \geq 55 dB (uncoupled)	Class 1	Nick commands are sife of	
Return loss RL (IEC 61300-3-6)	Class 2	≥ 45 dB	Class 1 _m	Not currently specified	
(IEC 0 1300-3-0)	Class 3	≥ 35 dB	Class 2 _m	≥ 20 dB (coupled)	
	Class 4	≥ 26 dB	Class Z _m		

FOLAN has the capacity to manufacture all standardised grades but has chosen to standardise the following values in its production to optimise the quality/cost ratio:

	Insertion loss (IEC 61300-3-4 Method B)	IL MAX
MONOMODE	Grade B FOLAN	IL ≤ 0.25 dB
MULTIMODE	Grade M FOLAN	IL ≤ 0.50 dB

In terms of the return loss (RL), FOLAN does not define performance with Grades 1 to 4 as specified in the standard above. The values are directly expressed specifying the type of polishing, which is more restrictive than said standard: PC, UPC, APC. 'Tuned' or adjusted connectors made by FOLAN are certified with an $IL \le 0.25$ dB.

	Return loss (IEC 61300-3-6)	RL value
MONOMODE	Grade B FOLAN	APC type: RL ≥ 60 dB UPC type: RL≥ 50 dB
MULTIMODE	Grade M FOLAN	PC type: RL≥ 35 dB



DISTRIBUTION CABLES

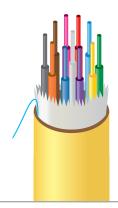
The highly-regulated Data Center environment requires specific cable characteristics. Due to their structure, Distribution cables are compatible both with **direct connectorisation** (Plug & Play) and **splicing**. They have a coloured LSZH-FR jacket so the type of fibre can be quickly identified and they can be deployed in cable conduits.

Advantages: compactness, flexibility and fire resistance

Type of fibre: Monomode G652D or Multimode OM3 and OM4

Strands: 900 µm

Capacity: 2 to 24 optical fibres





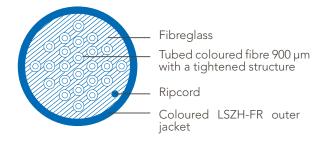
RPC LEVEL CCA AND B2CA





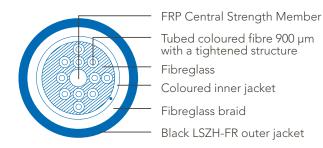
DISTRIBUTION CABLE - GCD

Applications: Flexible and small in size, the Distribution cable has fibreglass to protect the 900 μm strands against rodents. It is especially suitable for making inside optical links between two passive items of equipment.



REINFORCED DISTRIBUTION CABLE - GCDR

Applications: GCDR reinforced cable is more robust than GCD cable. Its double jacket and fibreglass braid give it increased protection against rodents. Its LSZH-FR anti-UV reinforced outer jacket means it can be deployed outside in Data Centers.



MINICORE PRECONNECTORISED CABLES

Minicore preconnectorised cables, also referred to as 'Mini Breakout' are the value-added solution for environments where space is limited. They are therefore ideal for Data Centers, in cable conduits or racks and can be connected both on the front (2 mm cladding) and back (900 μ m cladding) of patch panels. They can connect different network peripheral devices to optical splitters through datacenter cabinets.

Advantages: easy to install, compact and configurable according to your

Type of fibre: Monomode G657A2 or Multimode OM3 and OM4 **Capacity:** 12 to 24 optical fibres



CABLES & PRECONNECTORISED CABLES



According to the cable's capacity and the desired retubing diameter, FOLAN offers 4 types of fan out, making this solution adaptable to all types of installation. Fan outs are mechanical devices enabling the fan-out of a cable by recladding the optical fibres in 2 mm or 900 µm tubes to enable the assembly of connectors.



MTP® PRECONNECTORISED CABLES

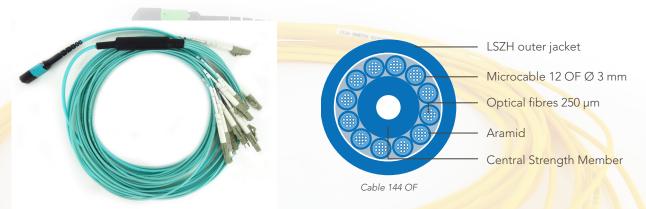
To handle higher and higher bandwidth needs and the increase in connection density, FOLAN offers high-density preconnectorised cable solutions with the latest MTP® connector: the MTP® Pro from US CONEC® version. This connector offers first-class performance while offering flexibility to users by enabling the reconfiguration of the polarity and pins in the field. This possibility therefore saves precious time and eliminates costly errors.

These 'harnesses' enable a link between cassettes or plates and active equipment. They are suited to market requirements and perfectly meet the demands of high-density networks and the different Data Center applications.

Advantages: high-density, quick and reliable deployment

Type of fibre: Monomode G657A2 and G652D or Multimode OM3 and OM4

Capacity: 12 to 144 optical fibres



MTP® is a practical and powerful multi-fibre connector that has two precision guide pins that align the fibres. Unlike other connectors that are available in fibre optics, its comes in a male and female version and two 12 and 24 OF ferrules:



Male connector



Female connector



Ferrule 12 OF



Ferrule 24 OF



SLIDING PATCH PANELS

The Data Center market has a multitude of players, with different needs in terms of density, infrastructure and cabling and interconnection speed. FOLAN has therefore developed a range of sliding patch panels from 24 fibres to 144 fibres on 1U (in LC) and up to 864 fibres (in MTP®24).

As the management of these fibre quantities is different, FOLAN has attached great importance to the ease and flexibility of use. Finally, our solutions are scalable in an aim to meet current and future needs.

Advantages: compactness, flexibility and fire resistance

Capacity: 24 to 144 OF on 1U

Material: metal Colour: black

MILANO PATCH PANEL PATCHCORD MANAGEMENT TRAY

To optimise dispatching management in the racks and secure the connections and work, FOLAN has also developed an independent patchcord management system.

The inner sliding tray enables easy access to patchcord overlengths, which may be organised around built-in coiling areas.



MILANO PATCH PANEL 1U

The MILANO patch panel is a sliding patch panel developed to meet the needs of connection by direct connectorisation on 48 fibres on 1U.

Configurable and economical, it is also available with adaptors, pigtails and cassettes for connection by pigtailisation of up to 36 fibre optics on 1U.



24 TO 48 OF ON 1U

DELPHI PATCH PANEL 1U OR 2U

The DELPHI patch panel is a sliding patch panel developed to meet the needs of connection by pigtailisation (splicing on pigtails).

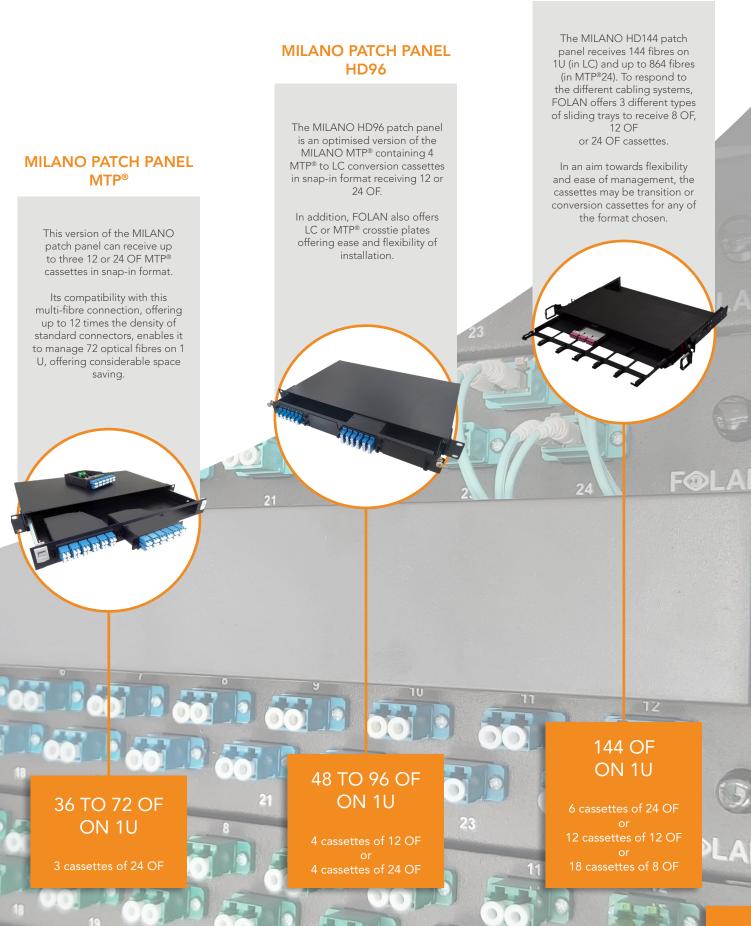
It is installed on Data Centers' 19" server racks and enables an interconnection between different fibre optic cables in these architectures.



48 TO 96 OF ON 2U

24 TO 48 OF ON 1U

MILANO PATCH PANEL HD144





RIGA INSIDE OPTICAL SPLITTER

The Meet-Me Room (MMR) is a key location for Data Centers where all the optical fibres from servers come in to connect each one to the different service providers. To equip the Meet-Me Room, FOLAN offers its RIGA optical splitter solution providing flexibility, modularity and ideal cable density while meeting the technical constraints on network equipment imposed by Data Centers.

Designed to manage a large number of connectors, optical splitters enable simple, intuitive, orderly and rapid cabling. They can be installed via wall mount or directly on the ground, back-to-back or side-by-side, to meet each need.

- One 19" area
- Capacity 19": 41 U
- Dimensions (W x H x D): 800 x 2200 x 300 mm
- Resorbers: left-hand verticals for dispatching patchcords inside the splitter allowing their output at the top or bottom

It is possible to add a back panel, side panels and a front door with a lock as an option.

F**\$LAN**

OPTICAL COMPONENTS



MINICORE PRECONNECTORISED CABLES

- Available in 2 versions: 12 OF or 24 OF in G657A2
- Very compact cables: Ø 4.6 mm for the 24 OF
- Retubing diameter: 900 μm, 1.6 mm or 2 mm
- Preconnectorisation with a choice of length and connection

PATCHCORDS

- Wide choice of lengths, types of optical fibre, patchcord colours and connectors
- Simplex or zipcord patchcords
- High optical performance

NIAGARA PATCH PANELS



NIAGARA patch panels are low-depth, high-density pivoting patch panels. They fit in perfectly in 19" equipment such as RIGA inside optical splitters, in the Meet-me-Room (MMR), to make the connection between the service providers' backbone networks and Data Center servers.



- Fixed tab for fastening cables and input protection tubes/jackets
- Pivoting tray for the dispatching interface and splice cassettes
- High density: 48 optical fibres on 1 U, up to 144 optical fibres on 3 U

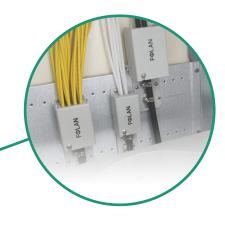


PATCHCORD MANAGEMENT TRAY

The NIAGARA patch panel storage patchcord management tray manages micromodule overlengths, retubing jackets (access through the back of the panel) or patchcords (access from the front).

Capacity: Up to 9 jackets Ø 4.3 mm, 6 jackets Ø 5 mm (maintenance in two points with a comb), 200 m of patchcords Ø 1.6 mm and 130 m of patchcords Ø 2 mm.

CABLE FAN-OUT BOXES (CFO)











CFO 2: 96 fibres

CFO 3: 288 fibres

CFO 4: 1,728 fibres

Mainly used in Meet-Me Rooms, Cable Fan-out Boxes (CFO) are installed in optical splitters and provide an excellent hold on the input cable as well as the fan-out of fibres in total security with a simple and and robust mount.

- Securable steel boxes
- Excellent hold on the input cable with two-point fastening
- They are universal and adapt to all types of splitter
- Robust fastening enabling the fan-out of fibres in total safety
- Stress take-up system using the cable reinforcement components
- Protection jackets (Ø 4.3 mm or 10 mm) held with a comb
- Capacities:
 - = CFO2: 96 FO − cables Ø 8 to 13 mm − 8 jackets Ø 4.3 mm
 - = CFO3: 288 FO cables \varnothing 8 to 13 mm 24 jackets \varnothing 4.3 mm
 - = CFO4: 1728 FO cables Ø 14 to 22 mm 12 jackets Ø 10 mm



MTP® PATCHCORDS

MTP® (Us Conec) optical patchcords enable us to make a permanent link in a linking chain connecting 2 cassettes or 2 patch panels. This multi-fibre connection, available in a male or female version, offers up to 12 times the density of standard connectors, enabling very considerable space savings which are necessary on the Data Center market.



These patchcords can be cabled according to 3 methods/polarities (ANSI/TIA-568-C.3):

Polarity A – Straight Cabling Side A: Key up/Side B: Key down **Polarity B** – Cross Cabling Side A: Key up/Side B: Key up **Polarity C** – Cross Cabling in pairs Side A: Key up/Side B: Key down

UNIBOOT PATCHCORD

More compact than traditional zipcord patchcords, FOLAN polarity-change uniboot LC patchcords are patchcords that respond to Data Centers' space limitations.

The connectors are mounted on a 2 mm diameter cable containing 2 fibres and can be handled without using a tool or damaging the fibres.



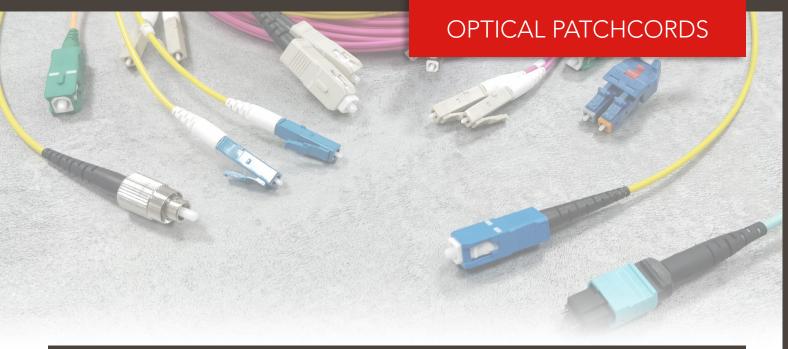
There are two types of cable for these patchcords: as standard, FOLAN patchcords have cross cabling (A to B) but it is possible to switch to straight cabling (A to A) by reversing the polarity on one side.



POLARITY CHANGE

IN ONLY 30 SECONDS! WATCH THE VIDEO





PATCHCORDS

Essential components in a Data Center's infrastructure, patchcords are found in IT rooms or server rooms. They enable a link between servers and other active equipment and patch panels and also enable a direct interconnection between active hardware. These patchcords are also found in the Meet-Me Room to connect operator farms to distribution farms.

To meet the standards imposed by Data Centers, in particular in terms of size and speed, they are available with several connections, diameters and types of optical fibre.

CONNECTIONS



ARCHITECTURE



TYPE OF FIBRE



LENGTH

FOLAN patchcords are packaged in individual bags. The standard lengths are from 0.5 to 20 m and other lengths are available on request.



RACK ACCESSORIES

FOLAN's offering comprises cable guide strips, brush strips and plastic cable guides enabling optimised cable management, fitting accessories such as sliding trays, storage patch panels and power strips (PDU rackable multi-socket) that meet the rack upgrade needs.

Advantages: optimal compatibility, ease of cabling and upgrades



FIXED TRAYS

To incorporate non-compatible equipment in 19" format

Format: 19"/1 U

Depth: 300, 500 or 700 mm Maximum load: 60 kg



MODEM TRAYS

Enables the installation of active hardware in a rack

Format: 19"/2 U

Depth: 300 mm or 350 mm Maximum load: 25 kg



SLIDING TRAYS

To incorporate non-compatible equipment in 19" format

Format: 19"/1 U

Depth: 300, 500 or 700 mm Maximum load: 40 kg



PATCHCORD MANAGEMENT TRAYS

For fastening at the back and managing overlengths

Format: 19"/1 U Depth: 265 mm Maximum load: 20 kg





CABLE GUIDE STRIP WITH PROTECTION

Format: 19"/1 U

Removable pivoting plastic cover

24 plastic rings

CABLE GUIDE STRIPS 5 RINGS

Format: 19"/1 or 2 U Equipped with metal rings



BRUSH STRIP

Format: 19"/1 U Metal strip Thick nylon wires



STORAGE PATCH PANEL

Storage in a lockable compartment

Format: 19"/2 U Depth: 300 mm Maximum load: 40 kg



FULL STRIPS

Format: 19"/1 to 4 U Metal strips



VENTILATORS WITH THERMOSTAT

Format: 19"/1 U

Integration of a thermostat to regulate ventilation according $% \left(1\right) =\left(1\right) \left(1\right$

to temperature.



CABLE GUIDE HOOK

Clippable on 19" posts Dimensions: 35 x 44 mm

2 possible positions: horizontal or vertical



CABLE GUIDE RING

Fastening on 19" posts Compatible with patch panel fastening tab

2 diameters: 25 mm or 38 mm



9-SOCKET POWER STRIPS

Format: 19"/1 U With or without a switch Sockets + Ground NF 16 A/250 V

Cable length: 2.3 m



6-SOCKET POWER STRIPS

Format: 19"/1 U

2 versions: - with switch, circuit breaker and 3 light indicators –

with differential circuit breaker 30 mA Sockets + Ground NF 16 A/250 V



Do you have a **project** to implement? Contact us to find the solution that will suit **YOU**.

CONTACT US!





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