

NETWORKING SOLUTIONS

Passive components and active devices for networking

FRACARRO

NETWORKING SOLUTIONS

With a dedicated internal **business unit, Fracarro is the ideal partner** for the implementation of broadband telecommunication networks in business, hospitality, and residential facilities.

Our **networking portfolio** includes all the necessary devices for building fibre optic systems, from **passive components** in copper and fibre to **active devices**, with a particular specialization in GPON (Gigabit Passive Optical Network) technology solutions..

FRACARRO NETWORKING SERVICES

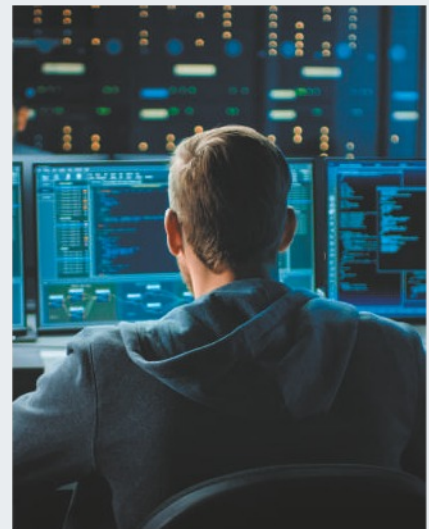
Thanks to a network of dedicated professionals, Fracarro is able to remotely support designers and installers in the implementation of special systems.

For Network Designers

- Network Design support
- Network logical diagram
- Bill of Materials (BOM)
- Product technical data sheets
- Budget estimation
- Consulting services

For Network Installers

- Remotely support
- IP plan definition
- Declaration of conformity
- Assistance
- Training



COPPER PASSIVE COMPONENTS

ETHERNET CABLES

Fracarro Ethernet cables provide a high-quality and reliable solution for the electrical sector, featuring construction characteristics that ensure **excellent performance**. Ideal for both complex environments such as data centers and residential installations, the cables are available in **305m reels for indoor** use and **500m reels for outdoor** applications.



VERSATILITY

The 0.5 mm thickness (**AWG 24**) ensures great flexibility, making the cable ideal for all types of installations.

HIGH QUALITY

The conductors are made of **100% flexible red copper**, ensuring minimal signal loss and optimal performance, especially for **PoE applications**.

FIRE RESISTANCE

In the specified models, the **CPR Cca** certification ensures safety in fire-risk environments and high-density areas.

INDOOR

	Sheath	Item	Code
CAT 5E	PVC	CAT5E PVC	287527
	LSZH	CAT5E LSZH	287528
CAT 6	PVC	CAT6 PVC	287529
	LSZH	CAT6 LSZH	287530
	CCA	CAT6 CCA	287782
CAT 6A	CCA	CAT6A CCA	287783

OUTDOOR

	Sheath	Item	Code
CAT 5E	PVC+PE	CAT5E PVC+PE	287532
CAT 6	PVC+PE	CAT6 PVC+PE	287533



COPPER PASSIVE COMPONENTS

RJ45 UTP PLUGS

CAT5E/6/6A UTP plug for high-density installations, compatible with both solid and stranded cables. Made of high-quality plastics with gold-plated terminals. Also available in a pass-through version.



Category	Crimping	Item	Code
CAT 5E	Terminal	CAT5E PLUG UTP	287710
	Pass-through	CAT5E PLUG PASS	287708
CAT 6	Terminal	CAT6 PLUG UTP	287711
	Pass-through	CAT6 PLUG PASS	287709
CAT 6A	Terminal	CAT6A PLUG UTP	287712

MECHANICAL QUALITY

They offer wear resistance for at least **750 in/out cycles**.

DUAL VERSION

Available in both terminal and pass-through versions, with the latter facilitating correct cable crimping.

POE READY

They ensure a current flow of up to 1.5 A, making them suitable for PoE applications.



RJ45 CRIMPING TOOLS

Crimping tools for RJ45 plugs, available in both terminal and pass-through versions. Designed to ensure precise and reliable crimping, featuring a rubber grip for enhanced comfort and control.



Crimping	Item	Code
Pass-through	RJ45 PASS TOOL	287726
Terminal	RJ45 UTP TOOL	287725



COPPER PASSIVE COMPONENTS

RJ45 KEYSTONE JACKS

RJ45 UTP Keystone jacks, ideal for **high-density installation solutions** and suitable for data networks with performance up to **10 Gbps**. Tool-free for both installation and connection, ensuring significant time savings during assembly.



TOOL-FREE INSTALLATION

Designed for easy installation without the need for additional tools.

WIDE COMPATIBILITY

Compatible with cables ranging from 0.40 mm to 0.65 mm in diameter, both solid and stranded.

HIGH DURABILITY

Made from high-quality plastics to ensure long-lasting performance.

	Item	Code	Color
CAT 5E	CAT5E KEYSTONE	287705	white
	CAT5E KEY NERO	287809	black
CAT 6	CAT6 KEYSTONE	287706	white
	CAT6 KEY NERO	287810	black
CAT 6A	CAT6A KEYSTONE	287707	white
	CAT6A KEY NERO	287811	black



COPPER PASSIVE COMPONENTS

KEYSTONE BOX

Wall-mounted distribution box for 2x RJ45 Keystone jacks, ideal for terminating Ethernet cables near cameras, access points, and other devices. In GPON solutions, it is installed in the false ceiling to distribute cabling to 503 outlets.



	Item	Code
Box CAT 5E/6/6A	RJB2IP	287785

PATCH PANEL

Patch panel with **up to 24x RJ45 Keystone UTP/FTP ports**, ideal for terminating CAT 5e, CAT 6, and CAT 6A cables in 19" racks. It features a stainless steel rear panel and a fixed bar for neat cable management.



EFFICIENT MANAGEMENT

Supports up to 24 RJ45 Keystone connections in a single panel.

DURABILITY

Made of stainless steel for enhanced longevity and stability.

STRUCTURED INSTALLATION

Designed with a rear bar to ensure organized cable management.

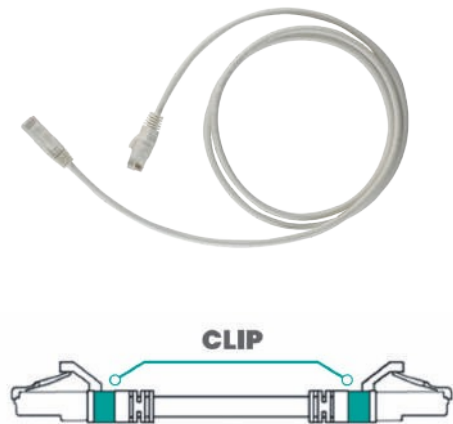
	Item	Code
Patch panel 1U	RJB24IR	287784



COPPER PASSIVE COMPONENTS

RJ45 PATCH CORD

Fracarro's range of patch cords ensures connections up to 10 Gbps. Made with **LSZH** (Low Smoke Zero Halogen) sheath for fire resistance, they offer high quality and performance in various environments. For easy cable identification, **interchangeable color clips** are available in packs of 100 pieces with mixed colors.



SIMPLIFIED MANAGEMENT

Interchangeable color clips can be applied to simplify cable identification during installation, eliminating the need to map each individual connection.

TANGLE-FREE DESIGN

Engineered to prevent tangling, these cables are more durable, reducing the need for future replacements.

GUARANTEED QUALITY

The conductors are made of **100% flexible red copper**, ensuring minimal signal loss and optimal performance, especially for PoE applications.

PATCH CORD

	Item	Code	Lunghezza m
CAT 5E	CAT5E UTP 1/4M	287820	0.25
	CAT5E UTP 1/2M	287713	0.50
	CAT5E UTP 1M	287714	1
	CAT5E UTP 2M	287715	2
	CAT5E UTP 3M	287823	3
	CAT5E UTP 5M	287716	5
CAT 6	CAT6 UTP 1/4M	287822	0.25
	CAT6 UTP 1/2M	287717	0.50
	CAT6 UTP 1M	287718	1
	CAT6 UTP 2M	287719	2
	CAT6 UTP 3M	287824	3
	CAT6 UTP 5M	287720	5
CAT 6A	CAT6A UTP 1/4M	287825	0.25
	CAT6A UTP 1/2M	287721	0.50
	CAT6A UTP 1M	287722	1
	CAT6A UTP 2M	287723	2
	CAT6A UTP 3M	287821	3
	CAT6A UTP 5M	287724	5

COLORED CLIPS

Description	Item	Code
Box of 100 clips, mixed colors	CLIPBOX100P	287829



THE HEART OF THE SYSTEM



Designing a network infrastructure using **networking switches of different levels** (Layer 2, 2+, and 3) allows for the creation of a **scalable, high-performance, and segmented system**.

Depending on their functionalities, switches are placed at different points within the network.

Layer 3 Switches (e.g., Fracarro Series 9)

Layer 3 switches serve as the **network's central hub**, responsible for:

- Routing traffic between subnets and VLANs using advanced routing services and dynamic routing protocols such as OSPF and BGP.
- Ensuring security and Quality of Service (QoS) by applying Access Control List (ACL) rules and prioritizing critical traffic.
- Enhancing network security and scalability through stacking connections and support for protocols like STP and VRRP.
- Maintaining network operation even in case of failures by implementing redundancy and failsafe solutions.
- Managing multicast traffic via IGMP and multicast routing through the PIM protocol.

Layer 2+ Switches (e.g., Fracarro Series 8)

Layer 2+ switches handle VLAN traffic and provide proper segmentation by:

- Supporting static routing and VLAN creation, allowing network segmentation into logical groups.
- Routing traffic between VLANs, reducing the load on Layer 3 switches and optimizing resources.
- Minimizing latency through MAC address-based switching.

Layer 2 switches connect endpoints to the network and are used in environments where bandwidth demand between switches is limited.

ACTIVE DEVICES

SERIES 9 - LAYER 3 SWITCH

The Series 9 switch is the **heart of the network infrastructure**. Designed for use as a Layer 3 switch, it is commonly deployed as the central hub to manage server, controller, and central system connections. It features 6 SFP+ ports for interconnection with other parts of the system via fibre optics.



Description	Item	Code
48-Port Ethernet Switch	FSW-948C-6SFP+	287764

CONSTANT HEARTBEAT

Ensures 100% uptime with hot-swappable power supplies that can be replaced without interruptions

EXTENSIVE NETWORK COVERAGE

48 Ethernet ports and 6 SFP+ ports with data transfer speeds of up to 10 Gbps.

EFFICIENT DATA TRANSPORT

215 Gbps backplane to ensure instantaneous internal data exchange between switch ports.

SFP & SFP+

SFP modules for fibre optic interconnections between switches, whether within the same rack or across different environments. They provide data transfer speeds of 1 Gbps or 10 Gbps RX/TX, depending on the model, with coverage up to 20 km.



SFP 10G LC SM



SFP 1G LC SM

Description	item	Code
SFP+ 10GE Module for Uplink or Trunk Switch	SFP 10G LC SM	287761
SFP 1GE Module for Uplink or Trunk Switch	SFP 1G LC SM	287555



ACTIVE DEVICES

SERIES 8 - LAYER 2+ SWITCH

Layer 2+ switch for **medium and large-scale networks**, available in versions with 24 or 48 10/100/1000 GE ports, 4 or 6 SFP+ 10GE slots, and a backplane of up to 216 Gbps. Stackable and equipped with IGMP snooping support, they are ideal for common areas, offices, and large-scale networks.



Description	SFP ports	Item	Code
24-Port Ethernet Switch	4	FSW-824-4SFP+	287765
24-Port Ethernet PoE Switch	4	FSW-824P-4SFP+	287767
48-Port Ethernet Switch	4	FSW-848-4SFP+	287766
48-Port Ethernet PoE Switch	6	FSW-848P-6SFP+	287768

SERIES 7 - LAYER 2 SWITCH

Layer 2 switch for **small-scale networks**, available in versions with 8 or 24 10/100/1000 GE ports, 2 or 4 SFP 1GE slots, and a backplane of up to 56 Gbps. They support IGMP snooping, and two of the three available variants are equipped with PoE functionality.



Description	SFP ports	Item	Code
8-Port Ethernet PoE Switch	2	FSW-708P-2SFP	287771
24-Port Ethernet PoE Switch	4	FSW-724P-4SFP	287770
24-Port Ethernet Switch	4	FSW-724-4SFP	287769



ACTIVE DEVICES

ACCESS POINT

Indoor access points for **high-density connections**, equipped with omnidirectional antennas to ensure maximum coverage and high bandwidth. They can manage up to 128 connected devices per access point.



INDOOR

Description	Item	Code
2 Ports WiFi 6 up to 1.8 Gbps	WAP6-2GE-CM-HD	287773

OUTDOOR

Description	Item	Code
1 Port WiFi 6 up to 3 Gbps	WAP6-1GE-EXT-HD	287786

CONTROLLERS

Professional controllers for configuring and managing WiFi connectivity.



Description	Additional Ports	Item	Code
8 Ports 1 Gbps, supports up to 128 APs	1 SFP 1GE port	WCTRL-128-SFP	287774
8 Ports 10 Gbps, supports up to 2048 AP users	3 SFP+ 10GE ports	WCTRL-256-SFP+	287775



RACK

CABINETS & ACCESSORIES

The **19" floor-standing and wall-mounted rack** cabinets are ideal for telecommunications, IT, and audio/video installations. The floor-standing models offer high load capacity and modular structures, while the wall-mounted versions are compact and easy to install. Both come pre-assembled and ready for use.

The range also includes a **selection of accessories** for managing copper and fibre cables, as well as supports for equipment not designed for 19" rack mounting.



FLOOR-STANDING RACKS

Unit	Dimensions (mm)	Mounting Rails	Front Door	Item	Code
42U	800x1000x2000	4	Mesh	RK42U810S	287676
	800x800x2000	4	Mesh	RK42U88S	287677
	600x800x2000	4	Tempered Glass	RK42U68P	287683
36U	600x800x1735	2	Tempered Glass	RK36U68P	287678
	600x600x1735	2	Tempered Glass	RK36U66P	287679
24U	600x800x1200	2	Tempered Glass	RK24U68P	287681
	600x600x1200	2	Tempered Glass	RK24U66P	287680

WALL-MOUNTED RACKS

Unit	Dimensions (mm)	Mounting Rails	Front Door	Item	Code
12U	600x450x615	Fixed	Tempered Glass	RK12U64PW	287682
9U	600x450x485	Fixed	Tempered Glass	RK9U64PW	287684

RACK ACCESSORIES

Type	Description	Item	Code
Vertical Rail	Vertical rails for 42U cabinets	RKA CCV 842U	287659
Cable Management Panels	1U slotted horizontal cable management panel	RKA PPO19A	287665
	1U solid horizontal cable management panel	RKA PPO19C	287685
	1U horizontal cable management panel with brush	RKA PS1U	287662
Shelves	Adjustable shelf, depth up to 1000 mm	RKA RR1000	287669
	Adjustable shelf, depth up to 800 mm	RKA RR800	287672
	Adjustable and sliding shelf, depth up to 800 mm	RKA RE800	287670
	Fixed shelf, depth 350 mm	RKA RF350	287671



FIBRE OPTICS

The use of **fibre optics** in network infrastructures **enhances system efficiency**, thanks to its technical characteristics, enabling the transmission of high-quality signals even over long distances.

Advantages of Fibre Optics

- **Efficiency:** High bandwidth availability.
- **Signal Quality:** Extremely low attenuation (0.2 to 0.5 dB/Km) and complete immunity to electromagnetic interference.
- **Durability and Resistance:** Fibre optics are not subject to oxidation.
- **Ease of Installation:** Lightweight and compact dimensions.

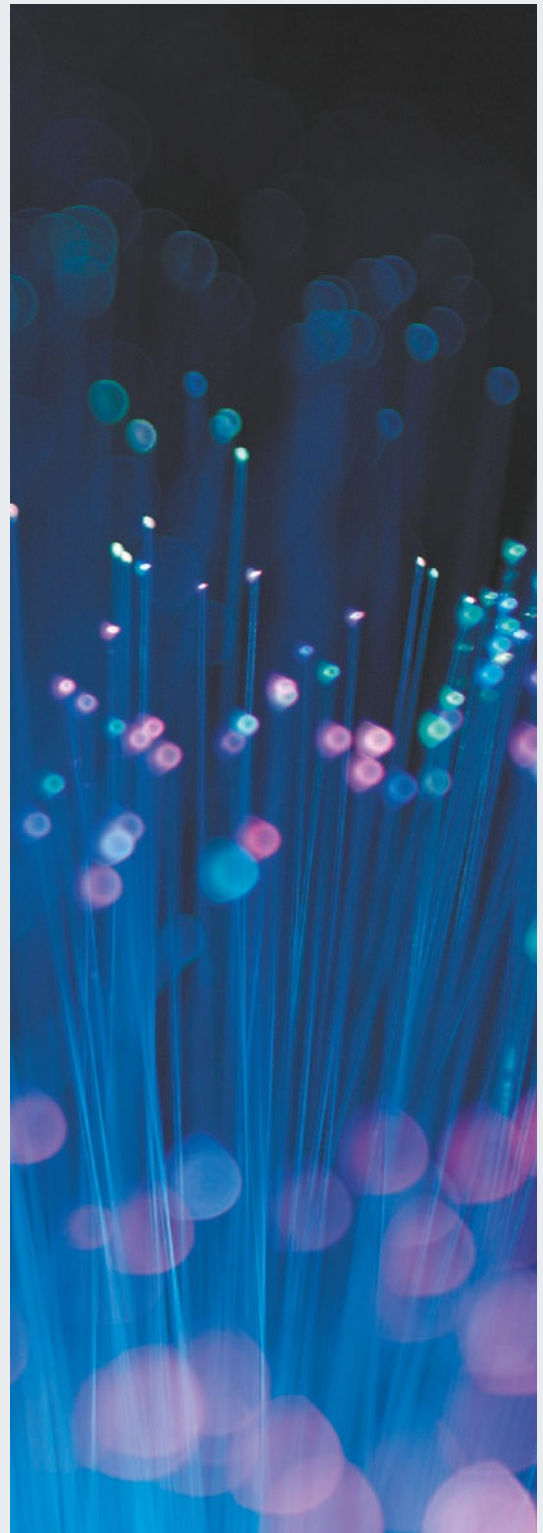
Hybrid Fibre Optic + Copper Networks

Fibre optics can also be used in combination with **copper cabling**.

In **hybrid networks**, fibre optics serve as the main backbone to transmit data between core devices, while copper can be used for local terminations.

This configuration offers the following advantages:

- **Greater Efficiency and Coverage:** Fibre optics as a backbone reduces cable bulk and ensures more stable and faster connections, while copper covers final connections where shorter distances are involved.
- **Compatibility with Existing Infrastructure:** Hybrid networks allow the reuse of existing copper infrastructure, reducing the cost of a full fibre upgrade.
- **Future Expandability:** A fibre backbone ensures that the network is ready for future expansion or speed upgrades up to 100 Gbps or beyond, minimising the need for new installations.



PASSIVE FIBRE COMPONENTS

MULTIFIBRE CABLES

Single-mode multifibre cables for indoor use and **armored cables** for outdoor use. The loose tube structure provides enhanced protection against moisture and mechanical stress, while the 9/125 single-mode fibres ensure high performance and reduced signal loss.



OPC4IN_CCA



OPC24MULTI457



OPC8ARM457

INDOOR CABLES						
No. Fibres	Class	Item	Code	Diameter (mm)	Sheath	Length (m)
4	CCA	OPC4IN_CCA	287736	3	Single	250
8	CCA	OPC8IN457CCA	287795	3	Single	457
4	B2CA	OPC4IN_DG_B2CA	287840	4	Double	250
8	B2CA	OPC8IN_DG_B2CA	287841	4	Double	457
24	B2CA	OPC24MULTI457	287819	8.5	Single	457



NEW

NEW

OUTDOOR CABLES						
No. Fibres	Class	Item	Code	Diameter (mm)	Sheath	Length (m)
4	FCA	OPC4ARM457	287814	6	Single	457
8	FCA	OPC8ARM457	287815	6	Single	457



PRE-TERMINATED MULTIFIBRE CABLES

Pre-terminated 4-fibre cables with SC/APC connectors and a PULL traction system. They offer increased robustness in critical situations thanks to the dual sheath design of the cable.



No. Fibres	Class	Item	Code	Diameter (mm)	Sheath	Length (m)
4	B2CA	BR4B30-AA-PS	287846	4	Double	30
4	B2CA	BR4B40-AA-PS	287847	4	Double	40
4	B2CA	BR4B50-AA-PS	287848	4	Double	50
4	B2CA	BR4B70-AA-PS	287849	4	Double	70
4	B2CA	BR4B100-AA-PS	287850	4	Double	100



NEW

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PASSIVE FIBRE COMPONENTS

OPTICAL PATCH CORDS

Single-mode fibre optic patch cords with a semi-loose tube configuration and **single-fibre G657 A1 type**. Also available with a **PULL traction system** for additional support during installation.



Connectors		Length (m)	item	Code	PULL
SC/APC - SC/APC		1	PIG TAIL	287426	-
SC/APC - SC/APC		0,5	BR1/2-AA	287832	-
		1	BR1-AA	287522	-
		2	BR2-AA	289360	-
		4	BR4-AA	289362	-
		5	BR5-AA	287690	-
		10	BR10-AA-PS	287689	YES
		20	BR20-AA-PS	287645	YES
SC/APC - SC/UPC		1	BR1-PA	287828	-
		2	BR2-PA	289359	-
		4	BR4-PA	289361	-
		5	BR5-PA	287688	-
		10	BR10-PA-PS	287687	YES
		20	BR20-PA-PS	287686	YES
SC/APC - FC/APC		1	FC-SC/APC PATCH	280011	-
		2	BR2SCAPC-FCAPC	287427	-
SC/APC - FC/PC		2	BR2FC/PC-SC/AP	287521	-
SC/UPC - SC/UPC		1	BR1-PP	287691	-
SC/APC - LC/UPC		1	BR1E-SA-LU-D	287695	-
		2	BR2E-SA-LU-D	287694	-
LC/UPC - LC/UPC		1	BR1E-LU-LU-D	287693	-
		2	BR2E-LU-LU-D	287692	-



PASSIVE FIBRE COMPONENTS



OPTICAL ADAPTORS

Optical bushings for the flexible connection of optical pigtails, suitable for mounting on patch panels and Keystone adapters. Also available in a flangeless version.



BFO-SC-APC



BFO-SC-APC FL



BFO-SC-APC KEY



MIN/MIN

Adapters	Flangless	Item	Code
SC/APC on Patch Panel	-	BFO-SC-APC	289349
	Yes	BFO-SC-APC FL	287593
SC/APC on Keystone	Yes	BFO-SC-APC KEY	287595
Mini-Mini on Patch Panel	-	MIN/MIN	287225



OPTICAL ATTENUATORS

Inline attenuators with SC/APC connector, available with attenuation levels ranging from 3 dB to 14 dB.



OPTATT3DB



OPTATT7DB



OPTATT14DB

Attenuation	Item	Code
3 dB	OPTATT3DB	287239
7 dB	OPTATT7DB	287238
14 dB	OPTATT14DB	287237



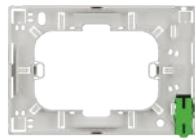
PASSIVE FIBRE COMPONENTS

ADAPTERS

Keystone adapters, frame with safety lock, and fibre spool holder.



ADP-SC-KEY



FTTH-EXT-FRAME



OPO-503

Description	Item	Code
SC/APC Bushing Adapter for Keystone Supports	ADP-SC-KEY	287594
Frame with SC/APC Adapter	FTTH-EXT-FRAME	287597
Fibre Spool Holder for 503 Box	OPO-503	287596



SPLICE BOXES AND ORGANISERS

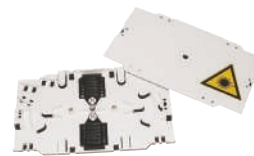
Optical drawers and organizers for fibre interconnection.



OPB18I



OPB24IR



OP012P

Description	Item	Code
8-Port SC/APC Splice Box	OPB8I	289405
18-Port SC/APC Splice Box	OPB18I	289403
Fibre Organizer for 12 Splices	OP012P	289402
Optical Drawer 24 SC/APC Ports with Splice Tray	OPB24IR	289404
Optical Drawer 48 SC/APC Ports with Splice Tray	OPB48IR	287757



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