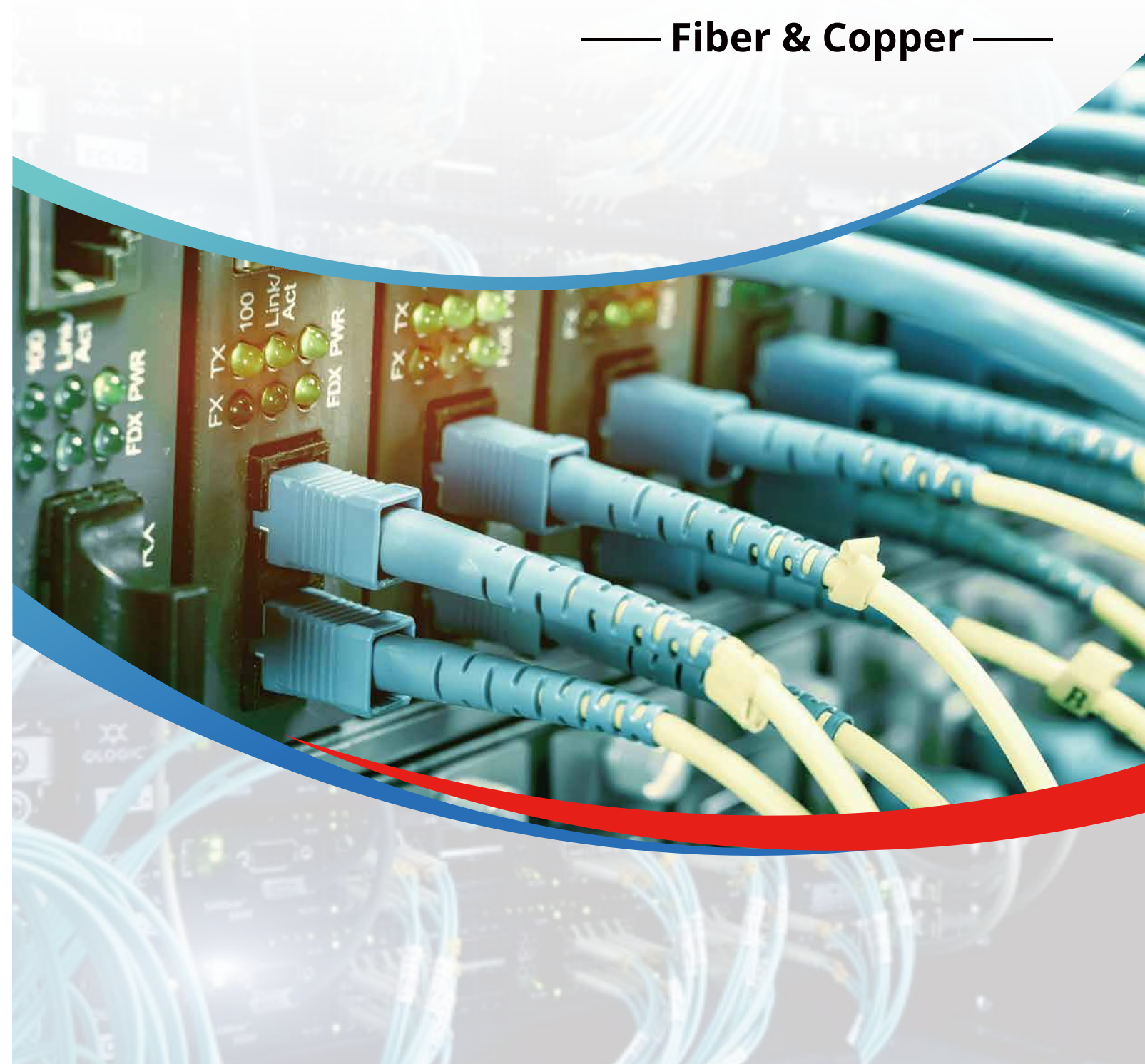# Gigalight

Data Center Cabling Brochure

—— Fiber & Copper ——

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Customer Service: rma@gigalight.com

Company Profile

Open Optical Network Device Explorer

Who We Are

Founded in 2006, GIGALIGHT is an enterprise with outstanding brand influence in the field of global optical communications, positioned as a technology innovator and market explorer in the field of open optical networks.

GIGALIGHT's business focuses on developing decoupled optical network modules and subsystems to reduce CAPEX and OPEX for data centers and telecom operators. Since its establishment, the company has actively cooperated with global operators to realize the interconnection of optical networks, and has been widely recognized as a veritable advocate and leader of open optical interconnection middleware.

What We Do

In recent years, the company has continued to develop silicon photonics technology and silicon-based coherent communication technology, aiming to further promote the optical layer opening and interface compatibility of open optical networks through these new technologies, and has made good progress. (Note: GIGALIGHT is a member of the OpenZR+ MSA team.)

Aiming to become a one-stop device integration solution provider in the field of open optical networks, GIGALIGHT has launched many active and passive products to meet the needs of various types of interconnections and interfaces in open optical networks (especially open data centers)—optical transceivers, active optical cables (AOC), direct-attached copper cables (DAC), silicon photonics optical transceivers, liquid-cooling optical transceivers, high-definition video optical modules, coherent optical modules and coherent transmission subsystems, active/passive WDMs, passive optical access devices and high-density cablings, etc.

Our Goal

The development of GIGALIGHT benefits from more than 300 small and medium-sized customers around the world, who promote the growth of the company and the progress of employees. In order to give back to customers, GIGALIGHT takes the continuous development of new technologies and the creation of ultra-compatible optical network middleware and subsystems for the open optical network as the company's unswerving goal.

To achieve this goal, GIGALIGHT has built a series of technology platforms, including software and hardware design and high-speed signal integrity platform, COB hybrid packaging technology platform, silicon-based optoelectronic chip design and packaging platform, and COM-based computing and management of multi-channel DAC manufacturing platform, as well as a coherent optical communication technology platform with self-developed algorithms, etc. The company has a world-class compatibility testing laboratory in the field of optoelectronics.

Office Locations

- ★ corporate HQ
- ● R&D Center
- ● Sales & Support
- ● Sales & Support (in preparation)

EU
Moscow
Beijing
Wuhan
Shanghai
Taiwan
Shenzhen
Bangalore
Singapore

Headquarters & Marketing Center

R&D, Operations and Sales center

Wuhan Technology Center

Shenzhen Headquarters (Finance & Marketing): 17th Floor, Zhongtai Tiancheng Building
Shenzhen R&D Center: Changfeng Industrial Park
Wuhan R&D Center: Optics Valley New Power Industrial Park
Shenzhen Factory: Changfeng Industrial Park
Global Sales Office: Shenzhen, Beijing, Shanghai, Russia, Singapore

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Data Center Cabling Architecture

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3. Transition Cassettes

Patch Cables
1. LC Duplex Patch Cables
2. MDC/SN VSFF Duplex Patch Cables
3. Cat6A Patch Cables
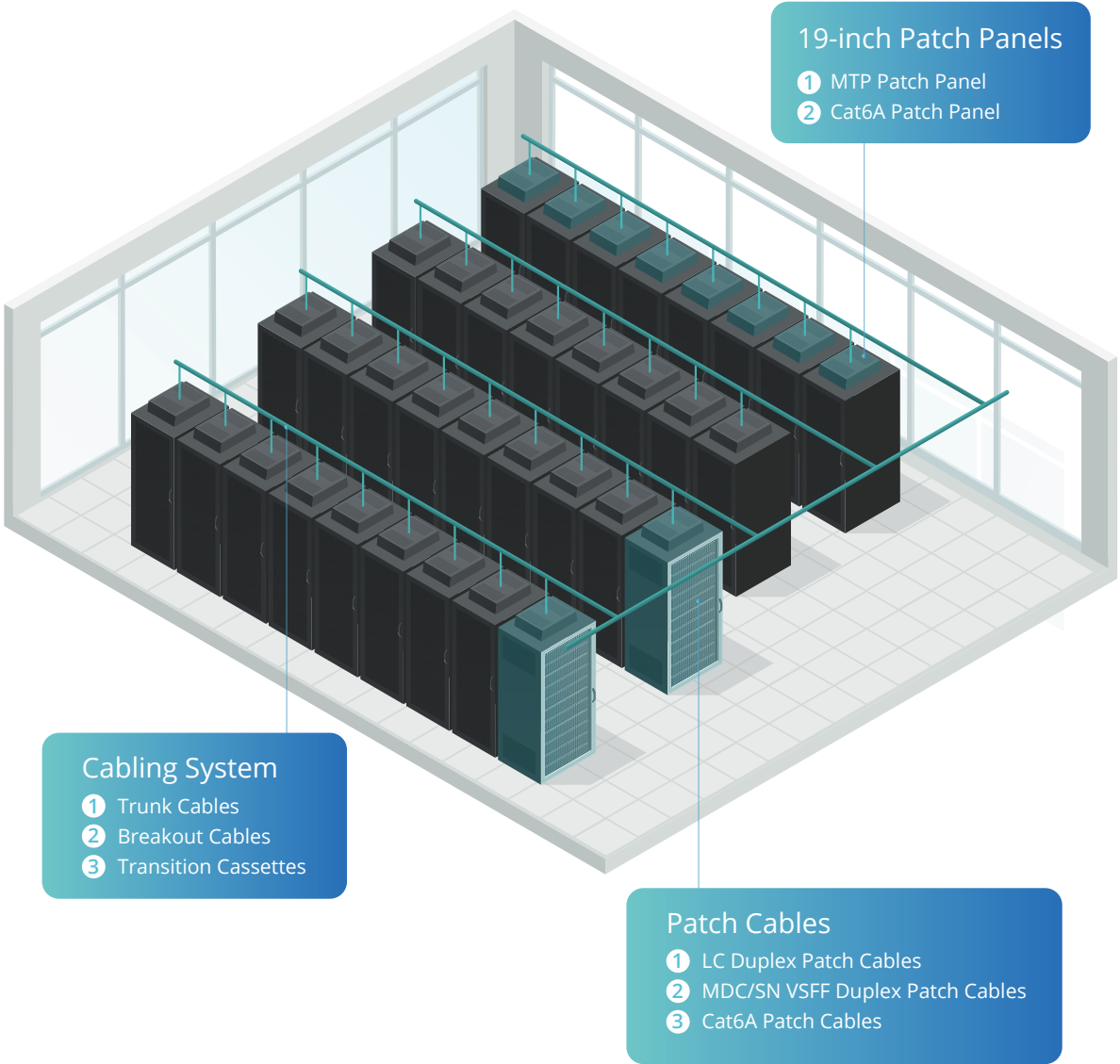
Typical Data Center Links

- **A** Optical Transceivers on switch side
- **B** Optical Transceivers on server side
- **1** Patch cable on switch side
- **2** MTP transition cassette on switch side
- **3** MTP trunk cable between switch and server
- **4** MTP transition cassette on server side
- **5** Patch cable on server side
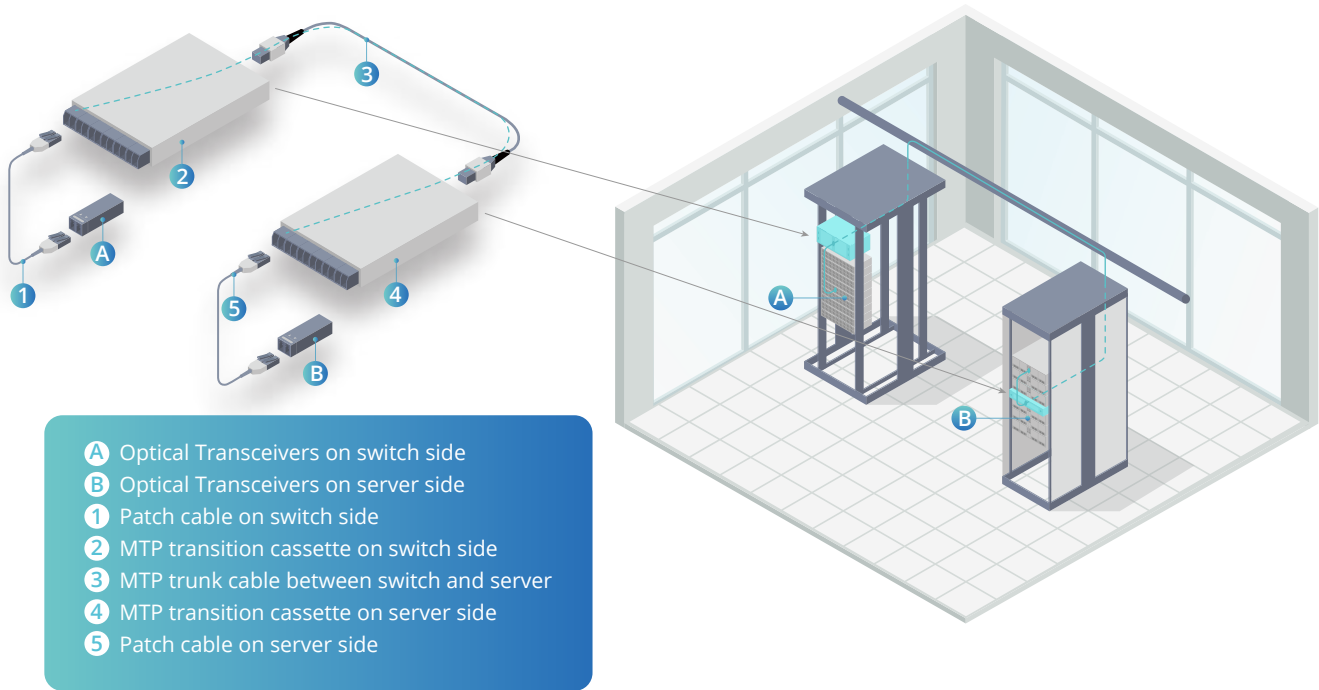
Upgrade Path and Conversion

As the demand for bandwidth increases, the optical modules used for the connection between the switch and the server will be gradually upgraded from duplex LC to MPO.

- **1** Duplex transceivers on both ends
- **2** Switch transceiver upgraded from duplex to MPO
- **3** Server transceiver upgraded from duplex to MPO
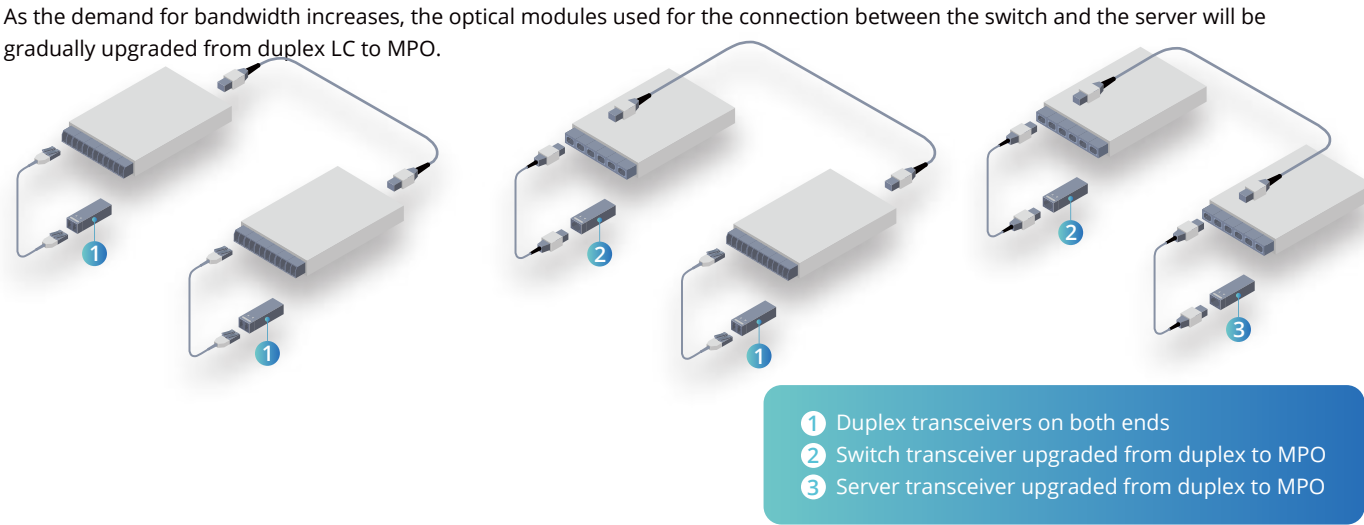
Conversion methods required when the MTP trunk is not matching the MPO transceiver.

- **1** MTP Base-24 trunk cable
- **2** 4-channel MPO transceiver
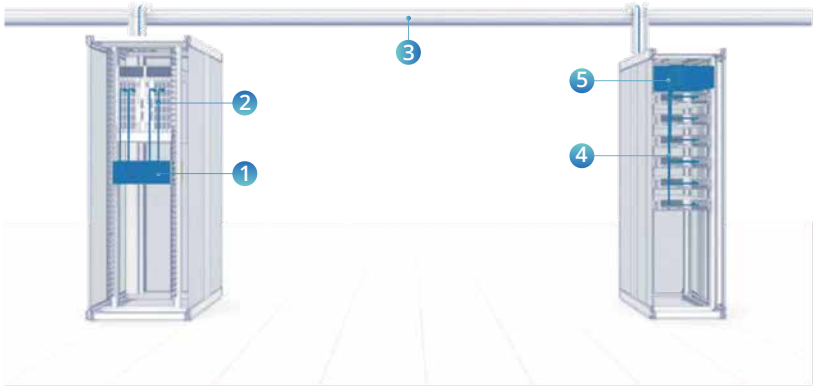- **3** MTP Base-8 patch cable
- **4** MTP transition cassette
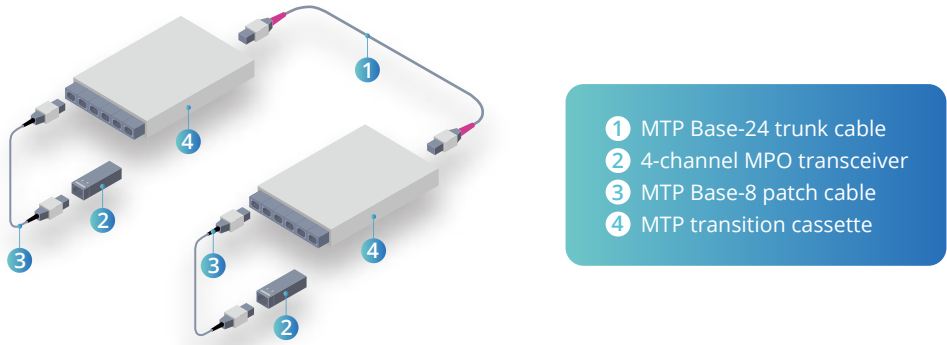
Rack Connection Methods

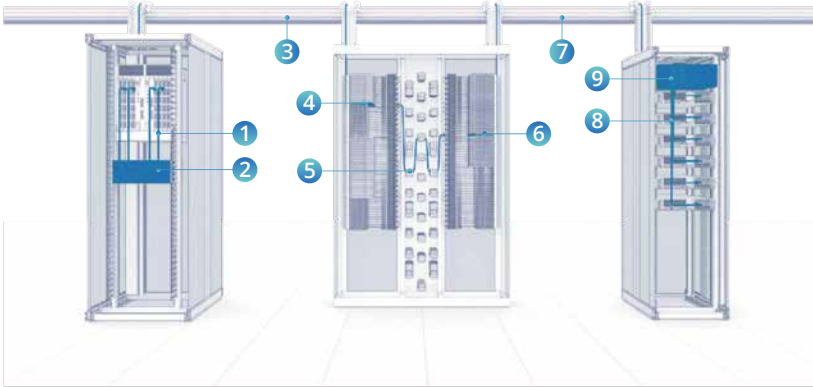### Direct-connect


① Switch
② Server
③ Patch Cable

Inter-connect

① Patch cable on switch side
② Transceiver on switch side
③ Trunk cable
④ Transceiver on server side
⑤ Patch cable on server side

Cross-connect

① Patch cable on switch side
② Transceiver on switch side
③ Trunk cable on switch side
④ Transceiver in ODF for switch replication
⑤ Cross-connect patch cable
⑥ Transceiver in ODF for server replication
⑦ Trunk cable on server side
⑧ Transceiver on server side
⑨ Patch cable on server side

LC/VSFF/MTP Patch Cables
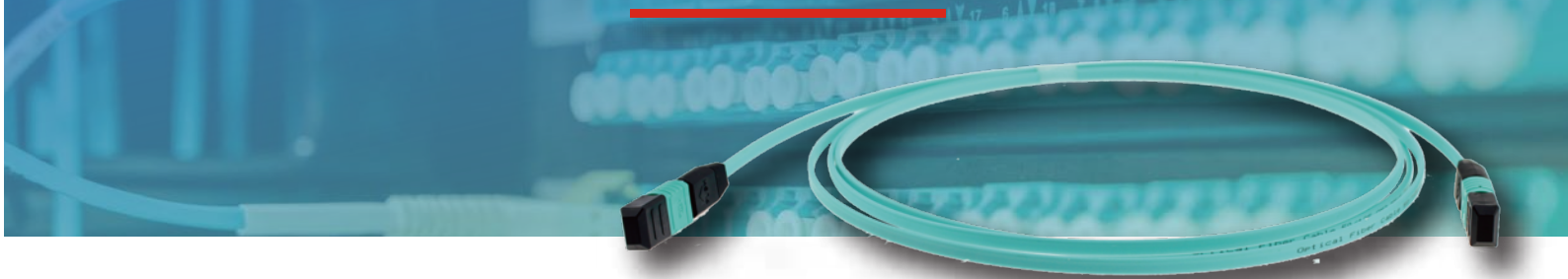
LC Duplex Patch Cables

GIGALIGHT provides a series of LC duplex patch cables with A-B/B-A or A-A/B-B polarity types, supporting the following three interconnection application scenarios.

LC → LC

LC/UPC-LC/UPC SM

LC/APC-LC/APC SM

LC/UPC-LC/UPC MM

LC/UPC-LC/APC SM

① Direct-connect duplex transceivers with A-B/B-A duplex patch cable (light goes from Tx to Rx)
② Interconnect duplex adapters with A-B/B-A duplex patch cable (light goes from A to B)
③ Interconnect duplex adapters with A-A/B-B duplex patch cable (light goes from A to A)

Ordering

P/N: GP-LCU-MM4-DX-LS-001

Product	Connector Type	Fiber	Core	Jacket	Length
GP=Patch Cables	LCU=LC/UPC LCA=LC/APC	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	DX=Duplex	PV=PVC LS=LSZH OP=OFNP OR=OFNR	001=1m 002=2m ...... 999=999m

VSFF Duplex Patch Cables

In 2023, GIGALIGHT has launched a new series of duplex patch cables with very small form factor (VSFF) fiber optic connectors, supporting optical transceivers with MDC/SN interfaces. The following are examples of application scenarios.

❶ Single transceiver operating over 4 parallel lanes with VSFF connector interface
❷ Discrete duplex patch cables connecting 4 parallel transceivers
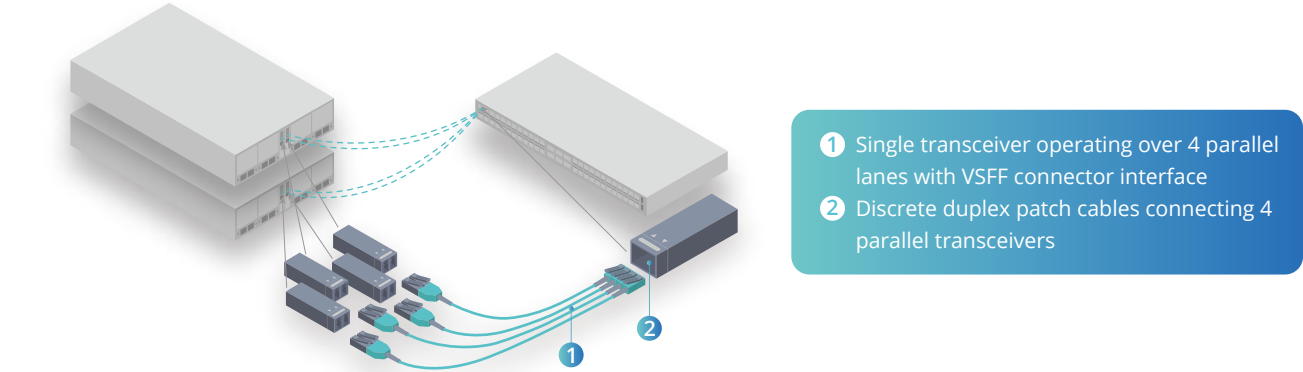
LC → MDC

LC/UPC-MDC/UPC SM

LC/APC-MDC/APC SM

LC/UPC-MDC/UPC MM

MDC → MDC

MDC/UPC-MDC/UPC SM

MDC/APC-MDC/APC SM

MDC/UPC-MDC/UPC MM

LC → SN

LC/UPC-SN/UPC SM

LC/APC-SN/APC SM

LC/UPC-SN/UPC MM

SN → SN

SN/UPC-SN/UPC SM

SN/APC-SN/APC SM

SN/UPC-SN/UPC MM

Ordering

P/N: GP-SNU-LCU-MM4-DX-LS-001

Product	A-end Connectors Type	B-end Connectors Type	Fiber	Core	Jacket	Length
GP=Patch Cables	SNU=SN/UPC SNA=SN/APC MDU=MDC/UPC MDA=MDC/APC	SNU=SN/UPC SNA=SN/APC MDU=MDC/UPC MDA=MDC/APC	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	DX=Duplex	PV=PVC LS=LSZH OP=OFNP OR=OFNR	001=1m 002=2m ...... 999=999m

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MTP Patch Cables

GIGALIGHT provides Base-8 (8-fiber), Base-12 (8-fiber) and Base-24 (16-fiber, 20-fiber or 24-fiber) MTP patch cables, which can support all 4-, 8-, 10- and 12-channel parallel transceivers. The following are application examples:
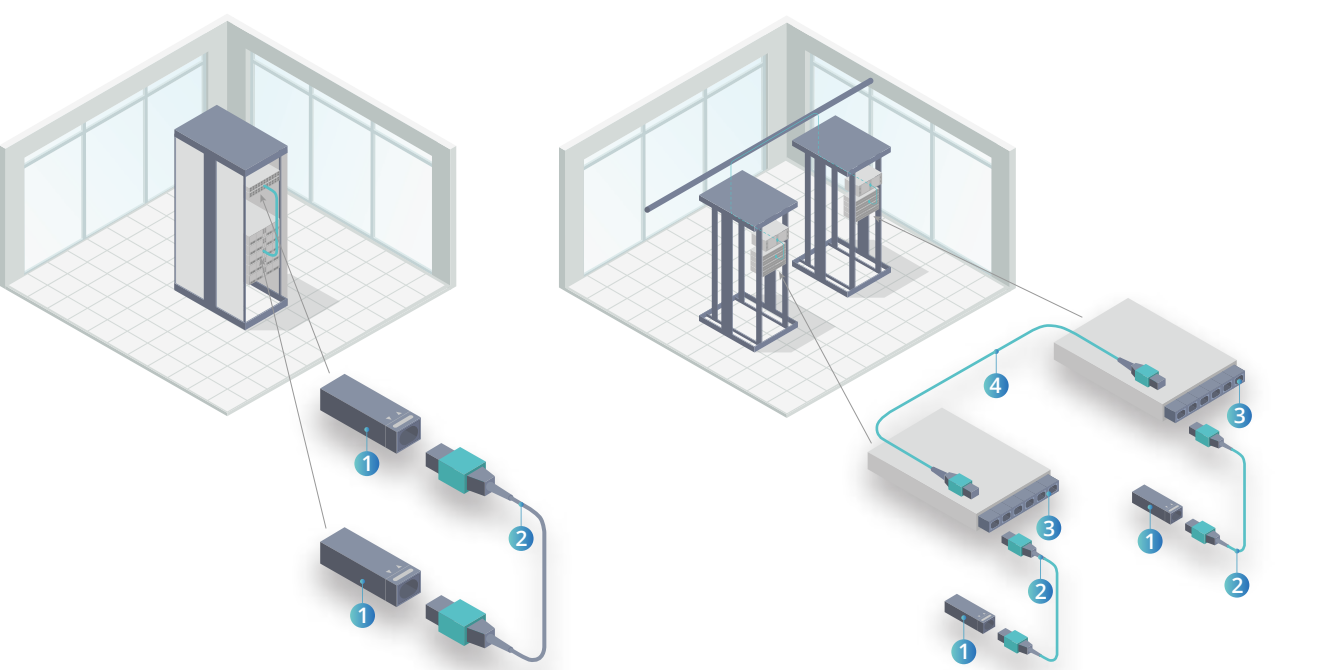
Direct-connect MPO 8-fiber transceivers
e.g., QSFP SR4/PSM4/DR4 series

❶ MPO 8-fiber transceiver on switch side
❷ Female to female MTP patch cable (Base-8 or Base-12)
❸ MTP 8 adapder panel
❹ 8-fiber MTP trunk cable (or patch cable)

Direct-connect MPO 16-fiber transceivers
e.g., QSFP-DD SR8/PSM8/DR8 series

❶ MPO 16-fiber transceiver on switch side
❷ Female to female MTP patch cable (Base-24)
❸ MTP 16 adapder panel
❹ 16-fiber MTP trunk cable (or patch cable)

Direct-connect MPO 20-fiber transceivers
e.g., 100G CFP/CFP2 SR10

❶ MPO 20-fiber transceiver on switch side
❷ Female to female MTP patch cable (Base-24)
❸ MTP 20 adapder panel
❹ 20-fiber MTP trunk cable (or patch cable)

Direct-connect MPO 24-fiber transceivers
e.g., 120G CXP SR12 & 300G CXP2 SR12

❶ MPO 24-fiber transceiver on switch side
❷ Female to female MTP patch cable (Base-24)
❸ MTP 24 adapder panel
❹ 24-fiber MTP trunk cable (or patch cable)

Ordering

P/N: GMP-C-1-08-F-MM4-LS-MTP-001

Product	Polarity Method	IL Type	Core	PIN	Fiber	Jacket	MPO Type	Length
GMP=MPO/MTP Patch Cables	A=Straight B=Reversed C=Pairs Flipped R=Corning	0=Standard 1=Elite	04=4 08=8 12=12 16=16 20=20 24=24	M=M to M F=D to D H=M to D	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	PV=PVC LS=LSZH OP=OFNP OR=OFNR	MTP=MTP/PC MTA=MTP/APC MPP=MPO/PC MPA=MPO/PC	001=1m 002=2m ...... 999=999m

MTP Breakout Cables

GIGALIGHT provides a variety of MTP breakout cables, including MTP-LC series and MTP-MTP series, which support the connection between one high-speed and multiple low-speed optical transceivers, as well as MTP conversion applications. The following are several application examples.

MTP-LC Breakout Cable

### Parallel Transceivers to Duplex Transceivers
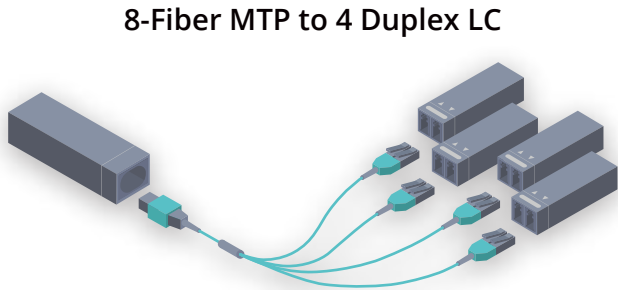
8-Fiber MTP to 4 Duplex LC

▪ Connections

MMF series
- 40G QSFP+ SR4/CSR4 to 4×10G SFP+ SR
- 100G QSFP28 SR4/eSR4 to 4×25G SFP28 SR/eSR4
- 200G QSFP56 SR4 to 4×50G SFP56 SR
- 400G OSFP/QSFP-DD/QSFP112 SR4 to 4×100G QSFP28 SR1

SMF series
- 40G QSFP+ PLR4 to 4×10G SFP+ LR
- 100G QSFP28 PLR4 to 4×25G SFP28 LR
- 200G QSFP56 DR4 to 4×50G SFP56 DR
- 200G QSFP56 PLR4 to 4×50G SFP56 LR
- 400G OSFP/QSFP-DD/QSFP112 DR4 to 4×100G QSFP28 DR1
- 400G OSFP/QSFP-DD/QSFP112 DR4+ to 4×100G QSFP28 FR1
- 400G OSFP/QSFP-DD/QSFP112 DR4+/XDR4 to 4×100G QSFP28 FR1
- 400G OSFP/QSFP-DD/QSFP112 PLR4 to 4×100G QSFP28 LR1
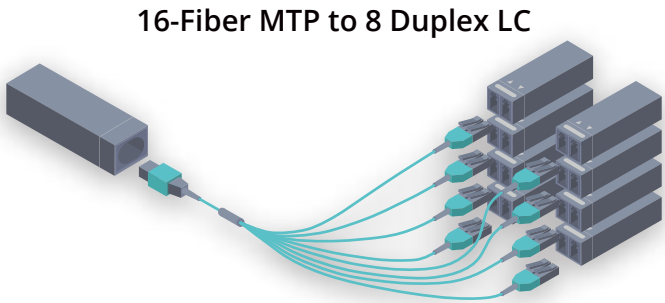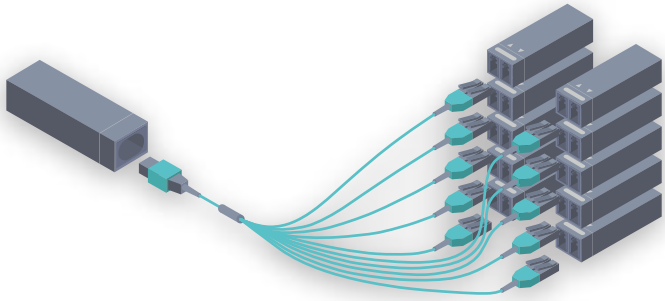
16-Fiber MTP to 8 Duplex LC

▪ Connections

MMF series
- 200G OSFP/QSFP-DD SR8 to 8×25G SFP28 SR
- 400G OSFP/QSFP-DD SR8 to 8×50G SFP56 SR
- 800G OSFP/QSFP-DD SR8 to 8×100G QSFP28 SR1

SMF series
- 200G OSFP/QSFP-DD PSM8 10km to 8×25G SFP28 LR
- 400G OSFP/QSFP-DD PSM8 2km to 8×50G SFP56 FR
- 400G OSFP/QSFP-DD PSM8 10km to 8×50G SFP56 LR
- 800G OSFP/QSFP-DD DR8 to 8×100G QSFP28 DR1
- 800G OSFP/QSFP-DD DR8+/XDR8 to 8×100G QSFP28 FR1
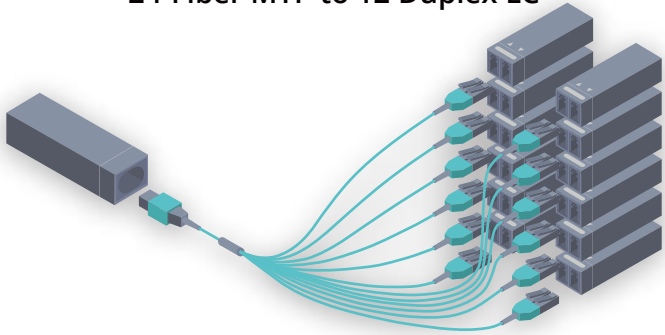- 800G OSFP/QSFP-DD PLR8 to 8×100G QSFP28 LR1

20-Fiber MTP to 10 Duplex LC

▪ Connections

MMF series
- 100G CFP SR10/CSR10 to 10×10G SFP+ SR
- 100G CFP2 SR10/CSR10 to 10×10G SFP+ SR

24-Fiber MTP to 12 Duplex LC

▪ Connections

MMF series
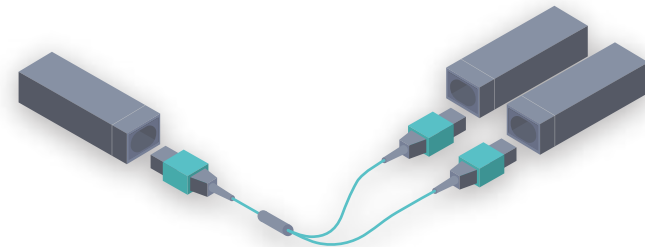- 120G CXP SR12 to 12×10G SFP+ SR
- 300G CXP2 SR12 to 12×25G SFP28 SR

Ordering

P/N: GMF-1-08-F-MM4-LS-1000-MTP-LC/UPC-010

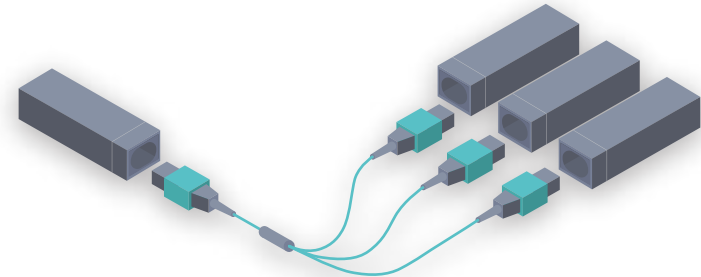| Product	IL Type	Core	PIN	Fiber	Jacket	Breakout Length	A-end Connectors Type	B-end Connectors Type	Length
GMF=MPO/MTP Breakout Cables	0=Standard 1=Elite	08=8 12=12 16=16 20=20 24=24	M=Male F=Demale	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	PV=PVC LS=LSZH OP=OFNP OR=OFNR	0500=500mm 1000=1000mm	MTP=MTP/PC MTA=MTP/APC MPP=MPO/PC MPA=MPO/PC	LCU=LC/UPC LCA=LC/APC	001=1m 002=2m ...... 999=999m

MTP-MTP Breakout Cable

High-Speed Parallel Transceivers to Low-Speed Ones

16-Fiber MTP to 2x 8-Fiber MTP

■ Connections

MMF series
- 200G OSFP/QSFP-DD SR8 to 2×100G QSFP28 SR4
- 400G OSFP/QSFP-DD SR8 to 2×200G QSFP56 SR4
- 800G OSFP/QSFP-DD SR8 to 2×400G QSFP112 SR4

SMF series
- 200G OSFP/QSFP-DD PSM8 10km to 2×100G QSFP28 PSM4 10km
- 400G OSFP/QSFP-DD PSM8 2km to 2×200G QSFP56 XDR4
- 400G OSFP/QSFP-DD PSM8 10km to 2×200G QSFP56 PLR4
- 800G OSFP/QSFP-DD DR8 to 2×400G QSFP112 DR4
- 800G OSFP/QSFP-DD DR8+/XDR8 to 2×400G QSFP112 DR4+/XDR4
- 800G OSFP/QSFP-DD PLR8 to 2×400G QSFP112 PLR4

24-Fiber MTP to 3x 8-Fiber MTP

■ Connections

MMF series
- 120G CXP SR12 to 3×40G QSFP+ SR4
- 300G CXP2 SR12 to 3×100G QSFP28 SR4

Ordering

P/N: GMF-1-24-F-MM4-LS-1000-3MTP-010

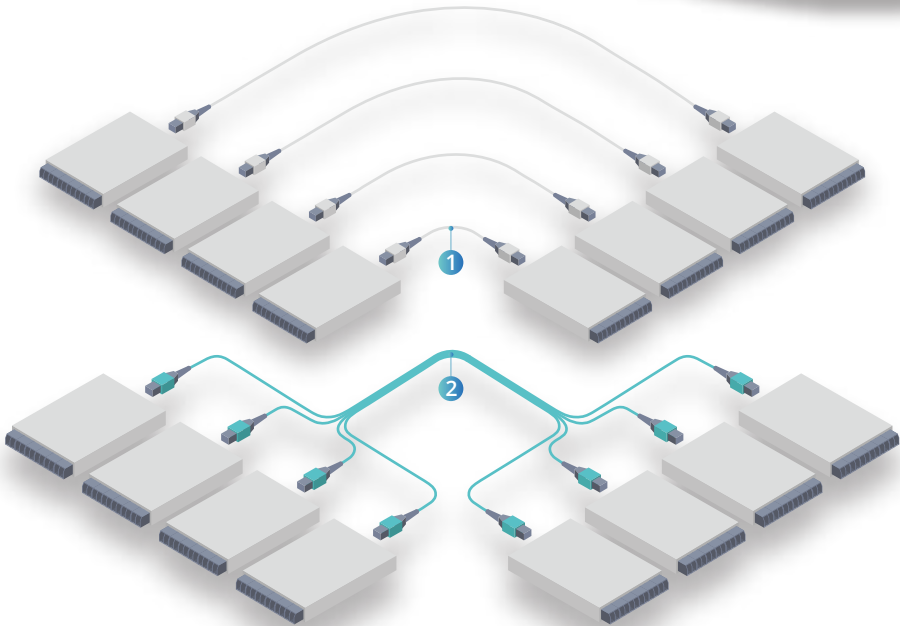| Product	IL Type	Core	PIN	Fiber	Jacket	Breakout Length	B-end Connectors	MPO Type	Length
GMF=MPO/MTP Breakout Cables	0=Standard 1=Elite	16=16 24=24	M=Male F=Demale	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	PV=PVC LS=LSZH OP=OFNP OR=OFNR	0500=500mm 1000=1000mm	2=2 3=3	MTP=MTP/PC MTA=MTP/APC MPP=MPO/PC MPA=MPO/PC	001=1m 002=2m ...... 999=999m

2×MTP12 to 3×MTP8

P/N: GMF-1-24-F-MM4-LS-1000-1000-2X3MTP-010

Product	IL Type	Core	PIN	Fiber	Jacket	A-end Length	B-end Length	A/B-end Connectors	MPO Type	Length
GMF=MPO/MTP Breakout Cables	0=Standard 1=Elite	24=24	M=Male F=Demale	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	PV=PVC LS=LSZH OP=OFNP OR=OFNR	0500=500mm 1000=1000mm	0500=500mm 1000=1000mm	2X3=2×3	MTP=MTP/PC MTA=MTP/APC MPP=MPO/PC MPA=MPO/PC	001=1m 002=2m ...... 999=999m

MTP Trunk Cables

GIGALIGHT provides Base-8, Base-12 and Base-24 MTP trunk cables, including discrete series (8/12/24 fibers) and integrated series (16 to 288 fibers).

① Discrete MTP trunk cable (equivalent to a single MTP patch cable)
② Integrated MTP trunk cable (integrated by more than two MTP patch cables)

Ordering

P/N: GMT-C-1-96-F-MM4-LS-0500-0500-MTP-050

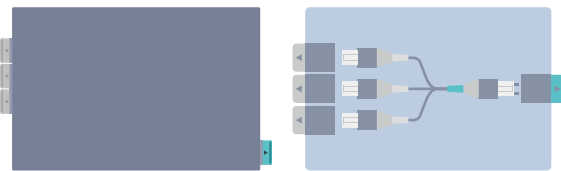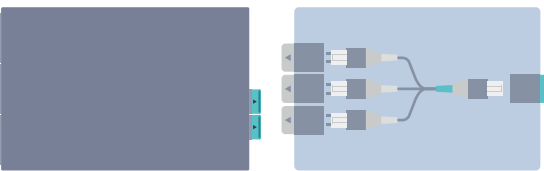| Product	Polarity Method	IL Type	Core	PIN	Fiber	Jacket	A-end Length	B-end Length	MPO Type	Length
GMT=MPO/MTP Trunk Cables	A=Straight B=Reversed C=Pairs Flipped R=Corning	0=Standard 1=Elite	08=8 12=12 16=16 24=24 36=36 48=48 64=64 72=72 96=96 144=144 192=192 288=288	M=M to M F=D to D H=M to D	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	PV=PVC LS=LSZH OP=OFNP OR=OFNR	0500=500mm 1000=1000mm	0500=500mm 1000=1000mm	MTP=MTP/PC MTA=MTP/APC MPP=MPO/PC MPA=MPO/PC	001=1m 002=2m ...... 999=999m

MTP Transition Cassette

MTP-MTP Transition Cassettes

GIGALIGHT provides a series of MTP-MTP transition cassettes that support the conversion between Base-8, Base-12 and Base-24.
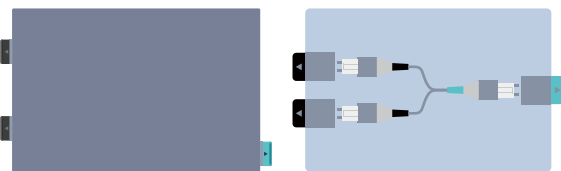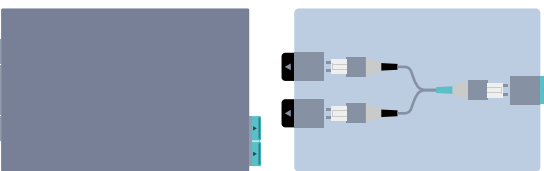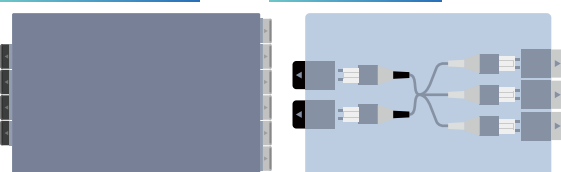
3×MTP8 → MTP24

2×MTP24 → 6×MTP8

2×MTP12 → MTP24

4×MTP12 → 2×MTP24

4×MTP12 → 6×MTP8

Ordering

P/N: GMC-C-1-12-M-MM4-LS-MTP

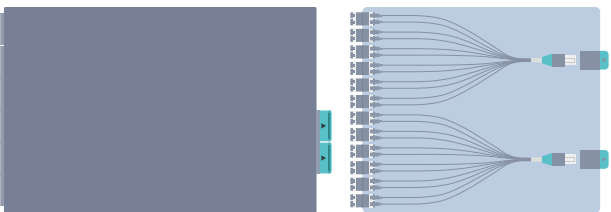| Product	Polarity Method	IL Type	Core	PIN	Fiber	Jacket	MPO Type
GMC=MPO/MTP Transition Cassette	A=Straight B=Reversed C=Pairs Flipped R=Corning	0=Standard 1=Elite	08=8 12=12 24=24 48=48	M=M to M F=D to D	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	PV=PVC LS=LSZH OP=OFNP OR=OFNR	MTP=MTP/PC MTA=MTP/APC MPP=MPO/PC MPA=MPO/PC

MTP-LC Transition Cassettes

GIGALIGHT provides a series of MTP-LC transition cassettes that can connect the LC patch cables to MTP cabling system flexibly.
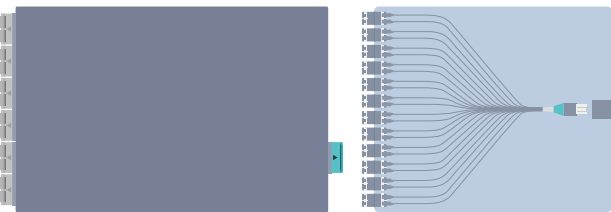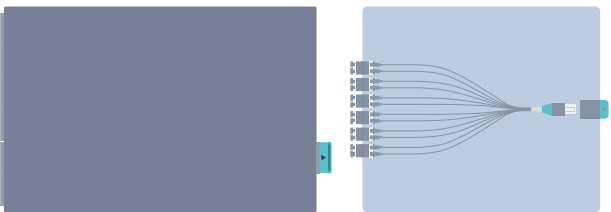
3×MTP8 → 12×Duplex LC
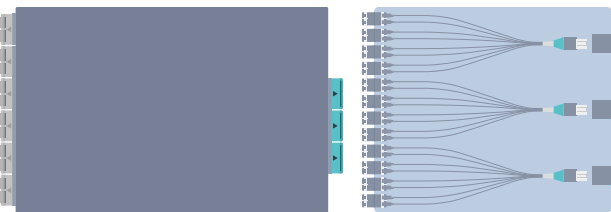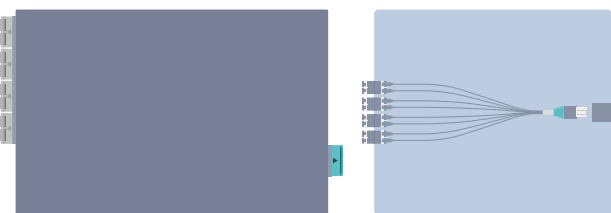

2×MTP12 → 12×Duplex LC

MTP24 → 12×Duplex LC

MTP12 → 6×Duplex LC

MTP8 → 4×Duplex LC

Ordering

P/N: GMC-C-1-12-M-MM4-LS-MTP-LCU

Product	Polarity Method	IL Type	Core	PIN	Fiber	Jacket	Back Adapter Type	Front Adapter Type
GMC=MPO/MTP Transition Cassette	A=Straight B=Reversed C=Pairs Flipped R=Corning	0=Standard 1=Elite	08=8 12=12 24=24 48=48	M=Male F=Demale	SM1=G.652.D SM2=G.657.A1 SM3=G.657.A2 MM1=OM1 MM2=OM2 MM3=OM3 MM4=OM4 MM5=OM5	PV=PVC LS=LSZH OP=OFNP OR=OFNR	MTP=MTP/PC MTA=MTP/APC MPP=MPO/PC MPA=MPO/PC	LCU=LC/UPC LCA=LC/APC

MTP Patch Panels

GIGALIGHT's MTP patch panels are paired with MTP transition cassettes for high-density cabling management, supporting up to 576 fibers (4U).
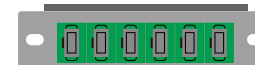
Ordering

P/N: GM-1U-3

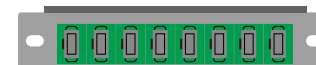| Product	Height	Number of Slots
GM=MPO/MTP Patch Panels	1U=1U 2U=2U 3U=3U 4U=4U	3=3 4=4 6=6 8=8 12=12

MTP Adapter Panels

GIGALIGHT provides a series of MTP adapter panels for MTP transition cassettes or MTP patch panels. A single MTP adapter panel supports up to 18 MTP ports.
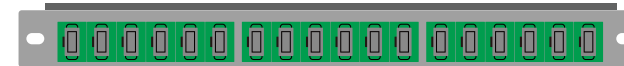
6×MTP Adapter Panels

8×MTP Adapter Panels

12×MTP Adapter Panels
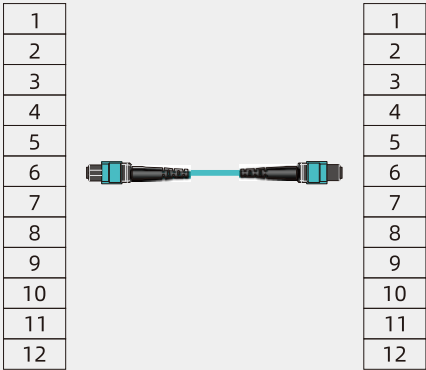
18×MTP Adapter Panels
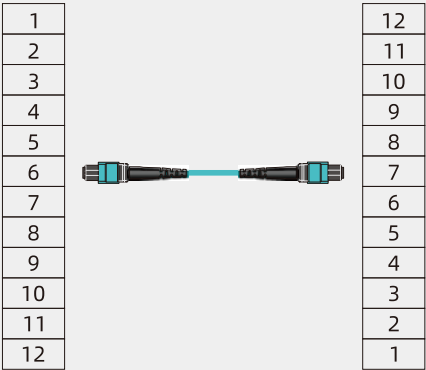
MTP Cabling Polarity

GIGALIGHT's MTP polarity checker is used to detect the polarity and connection status of multimode MTP cables (4/8/12-fiber), and the maximum detection length is 450m. In the short-distance inspection mode, the single detection time is less than 1 second, while in the long-distance inspection mode, the single detection time is less than 4 seconds.
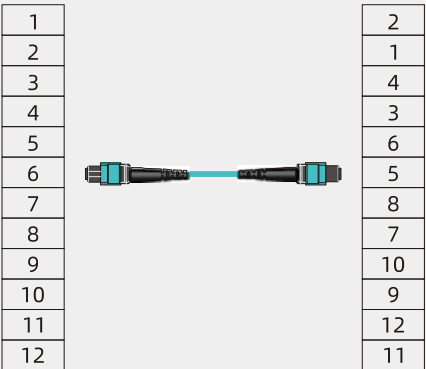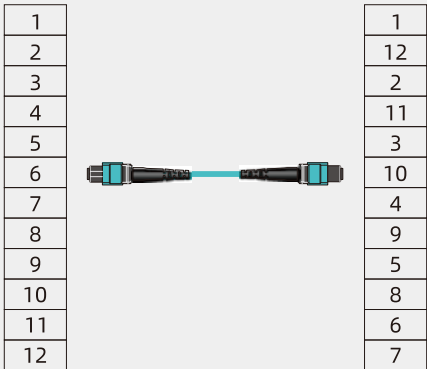
Straight

1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12

Reversed

1	12
2	11
3	10
4	9
5	8
6	7
7	6
8	5
9	4
10	3
11	2
12	1

Pairs Flipped

1	2
2	1
3	4
4	3
5	6
6	5
7	8
8	7
9	10
10	9
11	12
12	11

Corning

1	1
2	12
3	2
4	11
5	3
6	10
7	4
8	9
9	5
10	8
11	6
12	7

Cat6A Cabling System

Cat6A Patch Cables

GIGALIGHT provides a series of shielded twisted pair (STP) Cat6A patch cables for network adapters, hubs, switches, routers, HDBaseT applications, etc., which are ideal for use with 10GBASE-T ports and devices to ensure a 10G high-speed network connection that is immune to noise and electromagnetic interference for fast data transfer and optimal performance.

Featuring an accessible connector design for high-density environments and protected RJ-45 connector locking, the GIGALIGHT Cat6A patch cables are constructed of high-quality cables and plugs to minimize near-end crosstalk levels, and are available in a variety of colors and lengths (up to 100m), allowing for easy color coding of network installations. There are individual length labels on each cable for easy access.

Cat6A RJ-45 Plugs

GIGALIGHT's Cat6A RJ-45 plugs can be used to terminate Cat6A patch cables, and their rugged die-cast metal shells provide excellent shielding and mitigate alien crosstalk, with Cat6A performance for 10GBASE-T channel-compatible networks and are backward compatible with Cat6 and Cat5e cables.

Complete termination solution includes load bar, modular plug and strain relief sleeve superior construction of the STP wire connector combines a metal shell with a strain relief boot and gold-plated contacts to suppress alien crosstalk and provide a secure connection. Crimp style plugs terminate solid or stranded cables with three-point staggered contacts to provide a secure connection.

24-Port Cat6A Patch Panel

GIGALIGHT's 24-port Cat6A shielded 1U patch panel is designed for use with Cat6A STP cables. It is complies with ANSI/EIA/TIA 568-B.2-1 and ISO/IEC 11801 specifications, and is compatible with Cat5e, Cat6 and Cat6A cabling, ideal for GE and 10GE copper cabling networking.

This patch panel eliminates EMI and crosstalk, ensuring optimal performance and data integrity.