Optical Fiber Cable

Multimode fiber cables

About this catalog

Smiths Interconnect carries a wide selection of multimode optical fiber cables and ribbons; only a small selection of which are presented here. Multimode fiber (50µm/125µm) is used and can be terminated in multiple styles (MT, MPO, etc.).

For any questions or custom type optical fiber cable orders please contact your Smiths Interconnect representative or Smiths Interconnect Sales department.

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Optical fiber cables product table

Part number	Description	Connector type	Length (m)	Number of fibers	Spring (tension)	Key/ window orientation
500-00002	MT F 1×12 to MT F 1×12	MT to MT	1.2	1×12		Up-down
500-00003	MPO F 1×12 to 12× FC/PC fan-out	MPO to FCPC fanout	2.0	1×12		n.a.
500-00007	MPO F 1×12 to MT F 1×12	MT to MPO	1.8	1×12		Up-down
500-00017	MT F 1×12 to 12× FC/PC fan-out	MPO to FCPC fanout	2.0	1×12		n.a.
500-00020	MPO F 1×12 loopback	MPO loopback	0.17	1×12		Up
500-00021	MPO F 1×12 to MPO F 1×12	MPO to MPO	10.0	1×12		Up-up
500-00022	MPO F 1×12 to MPO F 1×12	MPO to MPO	15.0	1×12		Up-up
500-00043	MPO F 2×12 to MPO F 2×12	MPO to MPO	2.0	2×12		Up-down
500-00080	MT 2×12 to 2×MT 1×12	MT to MT Y-cable	0.29	2×12		Up-down
500-00085	MT F 2×12 to 2×MPO F 1×12	MT to MPO Y-cable	0.29	2×12		Up-up
500-00091	MT F 1×12 to MT F 1×12	MT to MT	1.2	1×12	√ (10 N)	Up-up
500-00205	MT F 1×12 to MPO F 1×12 (with screw-in connector)	MT to MPO	1.8	1×12		Up-up
500-00207	MPO F 1×12 to 4×duplex LC	MPO to LC fanout	3.0	1×12		n.a.
500-00215	MT F 1×12 to MPO F 1×12	MT to MPO	1.8	1×12	√ (10 N)	Up-up
500-00219	MT F 1×12 to MT F 1×12	MT to MT	2.0	1×12	√ (10 N)	Up-up
500-00250	MT F 1×12 to MPO M 1×12	MT to MPO	1.8	1×12		Up-down
500-00251	MT F 2×12 to 2×MT F 1×12	MT to MT Y-cable	0.29	2×12	√ (20 N)	Up-down
500-00257	MT F 2×12 to MT F 2×12	MT to MT	0.15	2×12	√ (20 N)	Up-up
500-00258	MT F 1×12 to MT F 1×12	MT to MT	0.15	1×12	√ (10 N)	Up-up
500-00265	MT F 2×12 to MT F 2×12	MT to MT	0.3	2×12	√ (20 N)	Up-up
500-00266	MT M 2×12 to MPO F 2×12	MT to MPO	0.15	2×12	√ (20 N)	Up-up
500-00268	MT F 2×12 to MT F 2×12	MT to MT	0.15	2×12	√ (20 N)	Up-up
500-00271	MT M 1×12 to MT F 1×12	MT to MT	0.14	1×12	√ (10 N spring at each end)	Up-up
500-00274	MT M 1×12 to MT F 1×12	MT to MT	0.14	1×12	√ (10 N)	Up-up
500-00276	MT M 1×12 to MPO F 1×12	MT to MPO	5.0	1×12	√ (10 N)	Up-up
500-00277	MPO F 1×12 to MT F 1×12	MPO to MPO	5.0	1×12		Up-up
500-00279	MT F 1×12 to MT F 1×12	MT to MT	5.0	1×12		Up-up
500-00283	MT M 1×12 to MPO F 1×12	MT to MPO	0.15	1×12	√ (9.8 N)	Up-up
500-00284	MPO F 1×12 to MT F 1×12	MT to MPO	0.25	1×12		Up-down

Note: All optical cables in this catalog are 50 μm/125 μm multimode OM3 fiber cables.

General fiber optic information

- All fibers are Corning, laser-optimized multimode fibers, type OM3 50/125 μm
- Capable of over 100 m transmission at speeds up to 10 Gbps per fiber
- Max attenuation ≤ 2.3 dB/km (for 850 nm)
- Core diameter 50.0 ± 2.5 μm
- Cladding diameter 125.0 ± 1.0 μm
- Operation range temp 0 °C to 70 °C

Applications

- Module-to-module connections
- Chassis-to-chassis connections
- Dense interconnect for data communication and telecommunication systems
- Data processing center
- LAN's (local area networks)

Color coding for multimode ribbon fibers

Position		Color	Position		Color
1		Blue	7		Red
2		Orange	8		Black
3		Green	9		Yellow
4		Brown	10		Purple
5		Gray (slate)	11		Pink (rose)
6		White	12		Aqua (light blue)

Fiber types

Fiber ribbon	Fiber cables	Single MM fiber
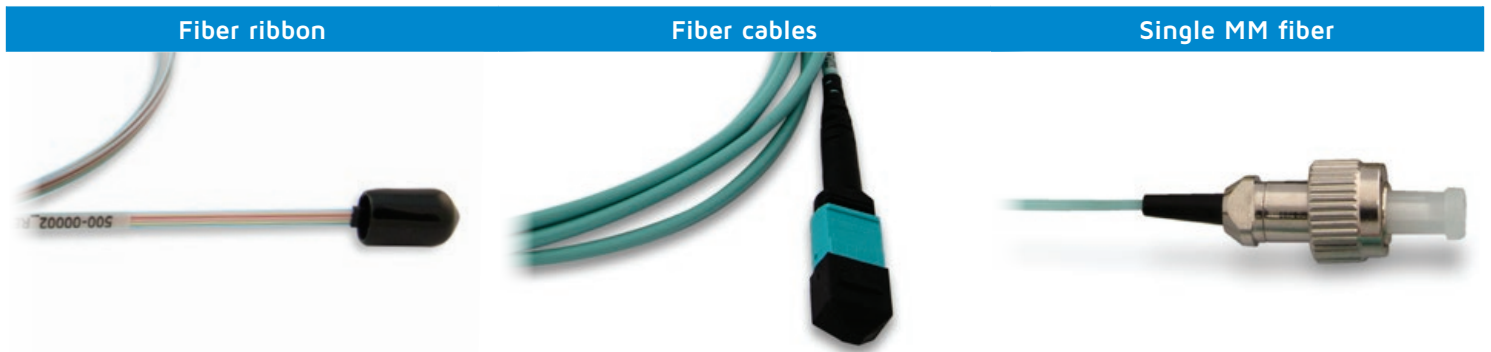
About fibers

Fiber optics is used to send signals down hair-thin strands of glass or plastic fiber. The light is «guided» down the center of the fiber called the «core». This core is surrounded by a optical material called the «cladding» that traps the light in the core. The core and cladding are usually made of ultra-pure glass, although some fibers are all plastic or a glass core and plastic cladding. Protection is provided by the «cable» which has the fibers and strength members inside an outer covering called a «jacket». Fiber cables are often described by the relative size of this core and cladding. For example, 62.5/125 fiber has a 62.5 μm core and a 125 μm cladding.

Jackets are color-coded based on a common standard. For 62.5/125 μm (OM1) and 50/125 μm (OM2), orange jackets are recommended, while aqua is recommended for 50/125 μm "laser optimized" OM3 and OM4 fiber. OM5 is officially colored lime green.

Multimode fibers

Multimode fiber has light traveling in the core in many rays, called modes. It has a bigger core than singlemode, and is used with lasers at 850 nm and 1310 nm for applications running at gigabits per second or more.

- **Note**: This catalog only presents multimode OM3 fiber cables.

Fiber size

Multimode fibers originally came in several sizes, optimized for various networks and sources, but had been standardized on 62.5 μm core fiber in the mid-80s.
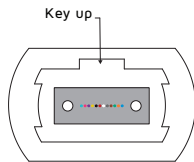
As gigabit and 10 gigabit networks have become widely used, the OM3 laser optimized 50/125 μm fiber became the new norm. It offers higher bandwidth with the laser sources used in the gigabit LANs and can go longer distances.

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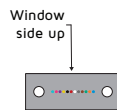
Connector types

MPO type	MT type	FC type

Key up   Key up
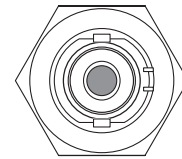
Window side up
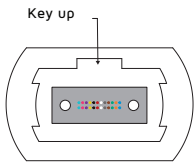
MPO (2×12) connector   **MPO (1×12) connector**   **MT (1×12) connector**   **FC connector**

About connectors

The MPO (multiple-fiber push-on connector) can contain anywhere from 8 to 72 fibers, with 8- or 12-fiber arrays being the most common for today's multifiber applications.

- MTP connector, designed by US Conec Ltd., is a high-performance MPO connector engineered for better mechanical and optical performance. MPO connectors are fully compatible with MTP installations.
- MT stands for mechanical transfer. An MPO connector uses an MT ferrule inside.
- The FC (ferrule connector) is a round threaded connector that uses a stainless-steel housing around the ceramic ferrule. The FC uses an alignment key and is tightened firmly using a screw-like motion, which makes it popular for high vibration environments.

Male and female connector

Unlike single-fiber connectors, which are all male, MPO connectors can be male (with pins) or female (with corresponding guiding holes) to ensure alignment of the fiber end faces during mating.

Male connector, key down.   **Female connector, key up.**

Connector key

In order for the transmit fibers to match up to the appropriate receive fiber at the other end the MPO connectors include a key on the top of the connector and a white dot on the side to indicate the location of fiber position 1.

When the connector key faces up (referred to as "key up"), the positions of the fibers within the connector run in a sequence from left to right from position 1 (P1) to position 12 (P12). For MPO connectors with multiple rows, numbers also follow from top to bottom, i.e. P1 to P12 on the first row and P13 to P24 on the second row.

Besides helping to determine the fiber positions, the key also ensures that the connector can be inserted only one way into an MPO adapter or transceiver port.

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Fiber cleaning

As a good engineering practice, optical fibers should be cleaned each time the connector is re-inserted into a receptacle. There are many ways of cleaning optical fibers as well as many cleaning tools. These cleaners are designed to gently sweep and remove harmful contaminants from the connector without damaging the connector end face. These tools are particularly effective at removing contaminants during fiber optic installation.

Some examples are shown below.

MPO cleaning

These cleaner are designed to clean male or female MPO fiber (using plastic adapter, see picture) as well as female MPO while in faceplate, bulkhead or adapter. It is a dry cloth type cleaner. Its application includes parallel optics transceivers.
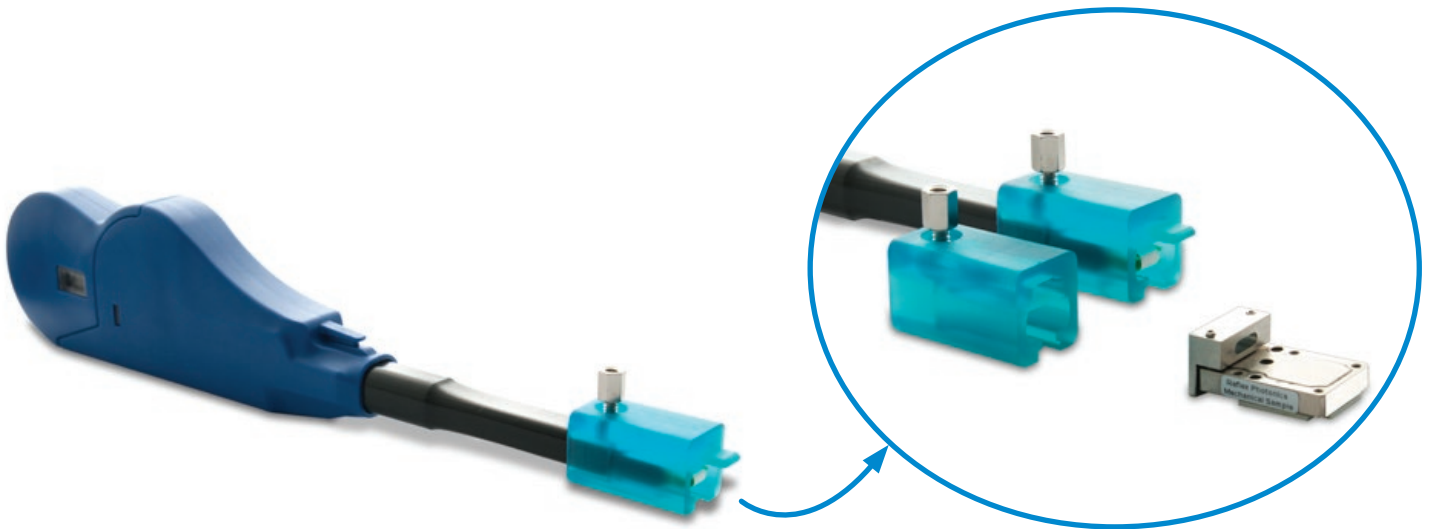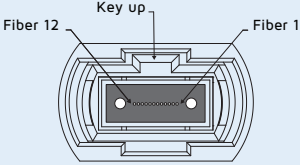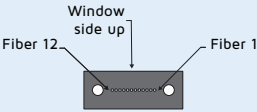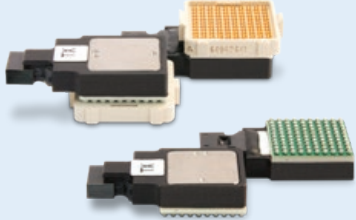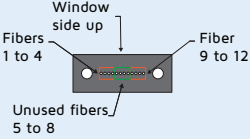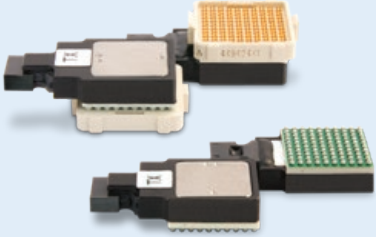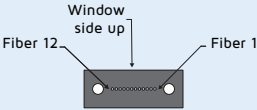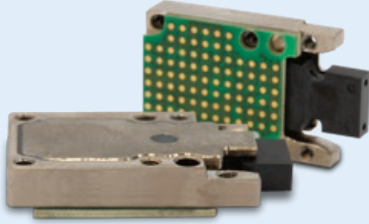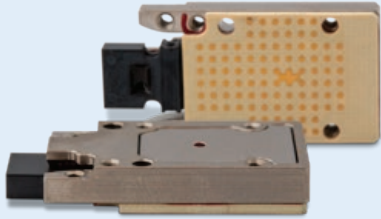
MPO, MT, and FC cleaning

Reel cleaner is a dry cloth cassette type. Good for cleaning MPO, FC and MT types of fibers.

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Application examples

Optical interface connectors	Product picture

SNAP12 (12TX or 12RX)

Key up
Fiber 12 — Fiber 1

MPO (1×12)

*Light*ABLE 10G LM and LL Series, *Space*ABLE 10G SM and SL Series (12TX or 12RX)

Window side up
Fiber 12 — Fiber 1

MT (1×12)

*Light*ABLE 10G LM and LL Series, *Space*ABLE 10G SM and SL Series, (4TRX)

Window side up
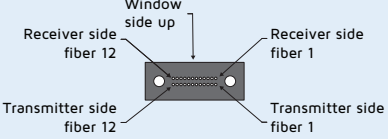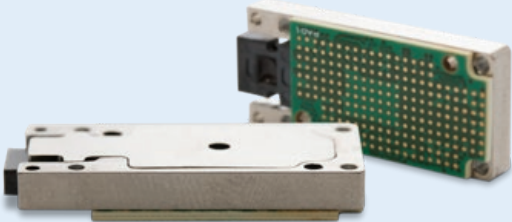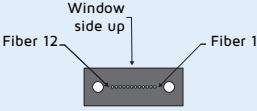Fibers 1 to 4 — Fiber 9 to 12
Unused fibers 5 to 8

MT (1×12)

*Light*ABLE 10G LL Series or *Space*ABLE 10G SL Series (12TX or 12RX)

Window side up
Fiber 12 — Fiber 1

MT (1×12)

*Light*ABLE 10G LL Series and *Space*ABLE 10G SL Series (12TRX)

Window side up
Receiver side fiber 12 — Receiver side fiber 1
Transmitter side fiber 12 — Transmitter side fiber 1

MT (2×12)

*Light*ABLE 28G LL Series or *Space*ABLE 28G SL Series (12TX or 12RX)

Window side up
Fiber 12 — Fiber 1

MT (1×12)

Standard optical cables

Part number	Description	Connector type	Length (m)	Number of fibers	Spring (tension)	Key/ window orientation
500-00002	MT F 1×12 to MT F 1×12	MT to MT	1.2	1×12		Up-down
500-00007	MPO F 1×12 to MT F 1×12	MT to MPO	1.8	1×12		Up-down
500-00021	MPO F 1×12 to MPO F 1×12	MPO to MPO	10.0	1×12		Up-up
500-00022	MPO F 1×12 to MPO F 1×12	MPO to MPO	15.0	1×12		Up-up
500-00043	MPO F 2×12 to MPO F 2×12	MPO to MPO	2.0	2×12		Up-down
500-00091	MT F 1×12 to MT F 1×12	MT to MT	1.2	1×12	√ (10 N)	Up-up
500-00205	MT F 1×12 to MPO F 1×12 (with screw-in connector)	MT to MPO	1.8	1×12		Up-up
500-00207	MPO F 1×12 to 4×duplex LC	MPO to LC fanout	3.0	1×12		n.a.
500-00215	MT F 1×12 to MPO F 1×12	MT to MPO	1.8	1×12	√ (10 N)	Up-up
500-00219	MT F 1×12 to MT F 1×12	MT to MT	2.0	1×12	√ (10 N)	Up-up
500-00250	MT F 1×12 to MPO M 1×12	MT to MPO	1.8	1×12		Up-down
500-00251	MT F 2×12 to 2×MT F 1×12	MT to MT Y-cable	0.29	2×12	√ (20 N)	Up-down
500-00257	MT F 2×12 to MT F 2×12	MT to MT	0.15	2×12	√ (20 N)	Up-up
500-00258	MT F 1×12 to MT F 1×12	MT to MT	0.15	1×12	√ (10 N)	Up-up
500-00265	MT F 2×12 to MT F 2×12	MT to MT	0.3	2×12	√ (20 N)	Up-up
500-00266	MT M 2×12 to MPO F 2×12	MT to MPO	0.15	2×12	√ (20 N)	Up-up
500-00268	MT F 2×12 to MT F 2×12	MT to MT	0.15	2×12	√ (20 N)	Up-up
500-00271	MT M 1×12 to MT F 1×12	MT to MT	0.14	1×12	√ (10 N spring at each end)	Up-up
500-00274	MT M 1×12 to MT F 1×12	MT to MT	0.14	1×12	√ (10 N)	Up-up
500-00276	MT M 1×12 to MPO F 1×12	MT to MPO	5.0	1×12	√ (10 N)	Up-up
500-00277	MPO F 1×12 to MT F 1×12	MPO to MPO	5.0	1×12		Up-up
500-00279	MT F 1×12 to MT F 1×12	MT to MT	5.0	1×12		Up-up
500-00283	MT M 1×12 to MPO F 1×12	MT to MPO	0.15	1×12	√ (9.8 N)	Up-up
500-00284	MPO F 1×12 to MT F 1×12	MT to MPO	0.25	1×12		Up-down

Note: All optical cables in this catalog are 50 µm/125 µm multimode OM3 fiber cables.
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Optical fanout cables

Part number	Description	Connector type	Length (m)	Number of fibers	Key/window orientation
500-00003	MPO F 1×12 to 12× FC/PC fan-out	MPO to FCPC fanout	2.0	1×12	n.a.
500-00017	MT F 1×12 to 12× FC/PC fan-out	MPO to FCPC fanout	2.0	1×12	n.a.
500-00207	MPO F 1×12 to 4×duplex LC	MPO to LC fanout	3.0	1×12	n.a.

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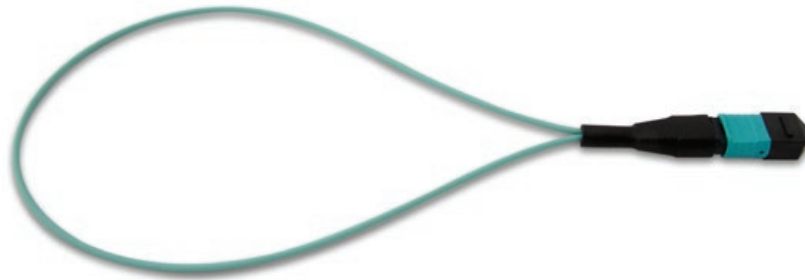
Optical loopback cables

Part number	Description	Connector type	Length (m)	Number of fibers	Key/window orientation
500-00020	MPO F 1×12 loopback	MPO loopback	0.17	1×12	Up

Note: All optical cables in this catalog are 50 µm/125 µm multimode OM3 fiber cables.
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Optical Y-cables

Part number	Description	Connector type	Length (m)	Number of fibers	Spring (tension)	Key/ window orientation
500-00080	MT 2×12 to 2×MT 1×12	MT to MT Y-cable	0.29	2×12		Up-down
500-00085	MT F 2×12 to 2×MPO F 1×12	MT to MPO Y-cable	0.29	2×12		Up-up
500-00251	MT F 2×12 to 2×MT F 1×12	MT to MT Y-cable	0.29	2×12	√ (20 N)	Up-down

Note: All optical cables in this catalog are 50 μm/125 μm multimode OM3 fiber cables.
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Disclaimer

All of the information included in this catalogue is believed to be accurate at the time of printing. It is recommended, however, that users should independently evaluate the suitability of each product for their intended application and be sure that each product is properly installed, used and maintained to achieve desired results.

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