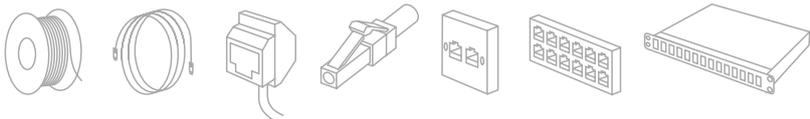


3M Telecommunications
Solutions for Networks

3M™ MPO solutions

High Density Networks

Technology built for business



Managing your network better – with 3M™

As many network and data centre managers will probably agree, one of the biggest challenges they face is managing ever-escalating volumes of voice and data traffic. Moreover, they have to do this in environments where space is often very limited or where there are power constraints. All this puts considerable pressure on the cable infrastructure supporting the network: it is not unusual for a data centre to have thousands – even tens of thousands – of network connections, typically in already constrained spaces.

This is why 3M Multifibre Push On (MPO) connectors represent such a breakthrough for today's network and data centre owners, enabling a far greater density of fibre ports to be achieved in a smaller area, with reduced installation time. So it's good news all round: for the customer, the contractor and the consultant. Many data centres are already experiencing the benefits of MPO connectors for 10 Gb/s. With 40 Gb/s and 100 Gb/s just around the corner – and most likely to be implemented using multiple multimode optical fibres – MPO connectors are fast becoming imperative, since they will be the only connector type able to support the port density required. So it makes sense to plan for the future, as well as today.

Of course, it is essential to have confidence in any major technology decision, so choosing a vendor with a reliable track record, focus on quality and standards is essential. 3M has invested considerable time and resources into developing one of the most comprehensive MPO ranges available, with high emphasis on ease-of-installation, lifetime reliability and cost-competitiveness. This is backed by a comprehensive suite of support and consultancy services, to help ensure maximum return on investment.

A track record you can trust

3M knows the network industry, with experience spanning over 40 years of network design and product innovation. Landmark buildings such as the Lloyd's building in the City of London to the National Stadium in Beijing (often referred to as the 'Bird's Nest') have 3M structured cabling at the heart of their networks. 3M has installed cabling solutions in some of the most challenging environments and for some of the world's leading organisations, encompassing both copper and fibre cabling. 3M has also always made it its mission to employ some of the best experts in the cabling industry and has long worked very closely with industry associations and international cabling standards bodies. In Europe, 3M is a key player in both fibre and copper cabling systems.

The company is renowned for its commitment to research and development, so customers and partners can always be sure that 3M is at the leading edge of innovation, as well as the assurance that 3M has a strong focus on environmental issues and adhering to relevant legislation. 3M's global market expertise is underpinned by local teams in over 80 countries.

Service and support you can depend on

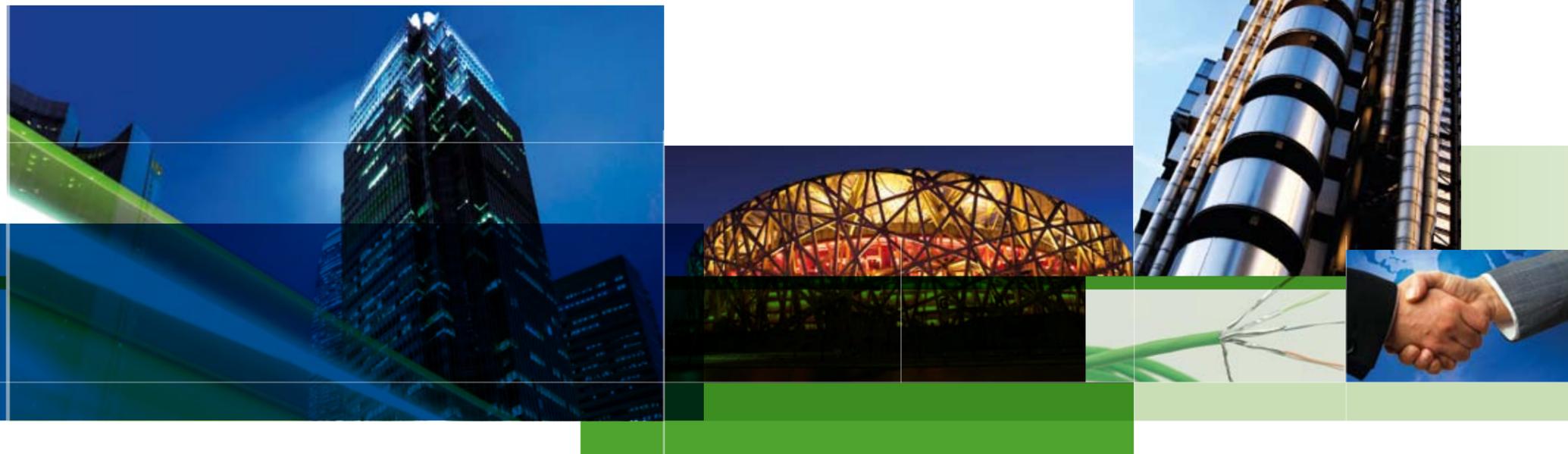
As well as technical excellence, 3M places equal emphasis on support, making the company's extensive industry expertise and experience available to end users, installers, consultants and systems integrators. Marketed under the Volition™ brand name, all 3M cabling solutions are backed by a flexible range of consultancy and project support services, including network design and project support, on-site assistance, certified installer training and advice on systems upgrades.

Every system is backed by a 25-year warranty and 3M has built a robust supply chain, with locally held stock, trusted distributors and rapid-response customer service teams.

Partnering with the best

Collaborating with some of the leading industry organisations in the communications marketplace means that we can offer our customers and partners an even greater breadth of expertise and resources. For instance, 3M is an HP Alliance One Partner and a member of the CISCO Developer Network programme. The company is also a long-established participant and supporter of industry associations such as BICSI, FIA and the IET.

Test MPO for yourself at
www.3M.co.uk/MPO
 or call
 0870 609 4639



Working in partnership to your benefit by collaborating with leading organisations.



3M™ MPO – comprehensive choice for today’s data centres

MPO connectors are fast becoming the de facto choice for modern data centres, providing a natural complement to, and in the future – a replacement to traditional LC connectors. As Data Centres move from 10 Gb/s to 40 Gb/s and 100 Gb/s transfer speeds, the demands on the cabling network to carry more data traffic will increase.

Up to 12 fibre cable terminations can be supported in any one 3M MPO connector, giving data centres unrivalled fibre density. The system can accommodate both MPO-to-LC and MPO-to-MPO connections, making it a highly versatile solution for data centres today and in the future. But there is more to the 3M MPO range than just increasing density and saving space: the system has been designed to minimise disruption to the network during installation, while ensuring rapid, consistently high-quality of cable terminations.

Highlights of the 3M range include:

- Exceptional fibre density – up to 96 per 1U rack space
- Cost-effective – reduced project times and maintenance
- Plug and play – easy installation and consistent quality
- Flexibility –upgradability and interoperability
- Single one-stop solution – wide range of options and standards supported
- Support – comprehensive consultancy services available.

Reliability and performance

MPO connectors represent a whole new approach to cable connections. Since MPO connectors can be pre-terminated in the factory, the onus is shifted more towards the manufacturer to ensure reliability and performance. Although the links still need to be tested when installed, this ‘plug and play’ approach to termination means less remedial work and so projects can theoretically be completed more swiftly, with less room for installation error. These benefits do, however, depend on the quality of the pre-terminated connections, which is why it is economic sense to choose a system from a reliable brand with a proven market track record in cabling.

Economical sense

Customers expect cabling systems to last for years, so it is important to look at the total cost-of-ownership when making such a significant investment, one that the network or data centre will rely on for a long time. The 3M range provides optimum solutions in MPO connector design, with return on investment in mind:

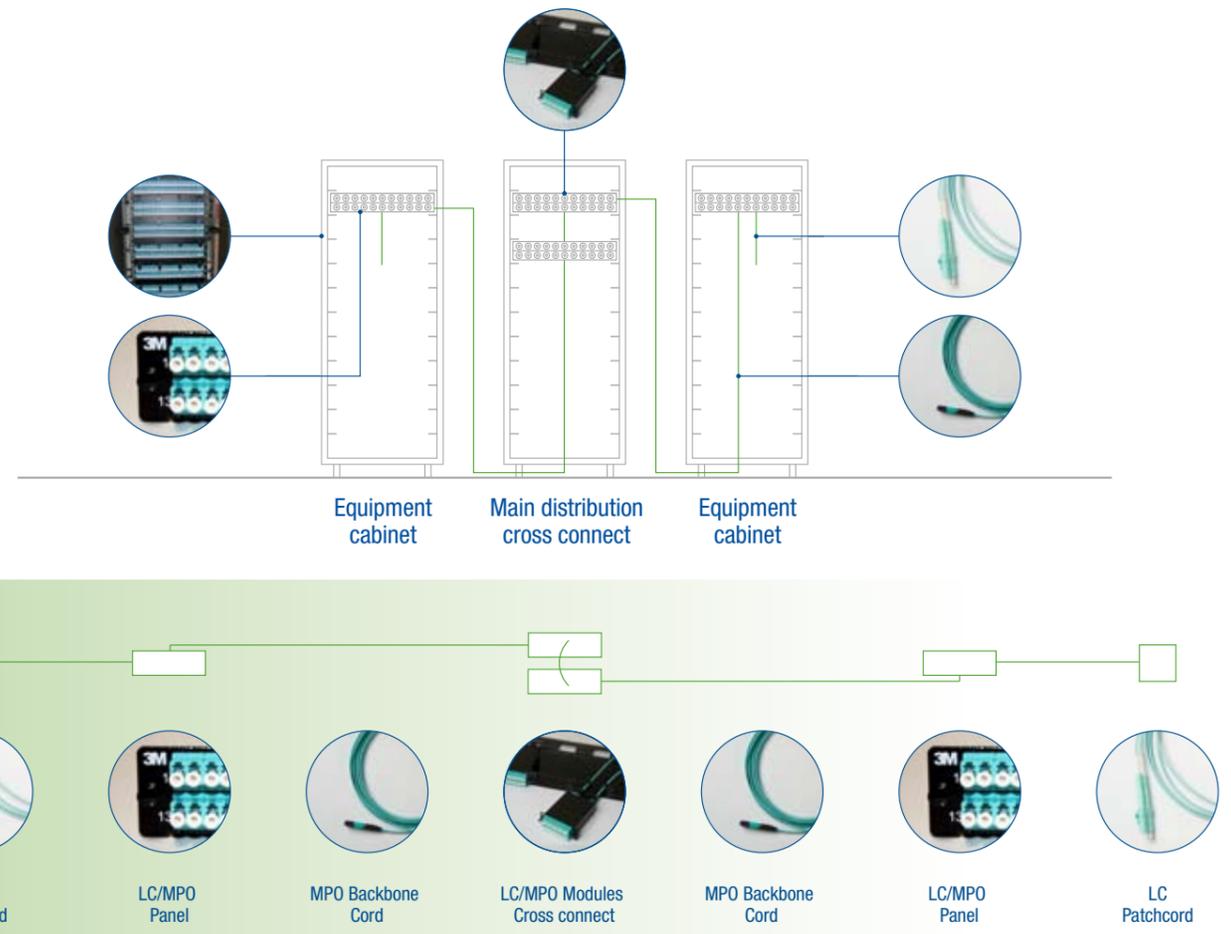
- More connections in less space – 3M offers an exceptional 96 fibre connector density in one 1U subrack
- Reduced project times and costs – connections can be carried out with a fraction of the effort that traditional splicing techniques involve. This means less installer time on site, including reduced remedial work
- Minimised maintenance – the design of the 3M MPO patch panel enables moves, adds and changes to be made without any need to cut or pull fibres. Again, this can help reduce future costs.

Ultimate flexibility

The 3M range also provides the perfect solution for customers who want to use LC today, but may wish to move completely to MPO connectors in the future. The 3M patch panel is designed to support both MPO-to-MPO and LC-to-MPO connectors (one format on the front, the other on the back). This approach gives the highest port density of fibre connector solution available today, as well as a flexible solution for now and the future. There is a lot of debate among vendors about which of the connectivity formats are approved by the EIA and TIA.

The situation can be very confusing, but a simple explanation is that in a duplex link, the transmit-and-receive fibre has to be crossed somewhere in the link and there are different ways of achieving this.

3M has chosen Modified Method B*, which is based on identical pair flipping inside the MPO to LC module. We’ve chosen this route because we believe that this will give our customers the best potential for upgradability and flexibility. Modified Method B provides the best interoperability across different connector brands and supports migration to single-mode fibre if required.



* For 3M Method B wiring map please refer to the 3M MPO data sheet.



Introducing our high-specification cables

Exceptional port density

At the core of the MPO solution is a 19-inch network subrack patch panel, which can accommodate up to four pre-connected modules, each offering 24 LC-standard connectors on the front of the panel. On the rear of the module are two 12 fibre MPO ribbon backplane fibre connectors.

Breadth of choice

3M has designed the MPO solution to support a broad range of options to suit a wide variety of requirements and installation preferences. As well as the OM3 fibre standard already prevalent in data centres, 3M is also introducing OM4 and OS2 fibre standards. This means that most potential network permutations can be supported – all from just one product range. And like any other 3M cabling network product set, the MPO range is backed by 3M's comprehensive set of support, consultancy, training and design services.

Like all 3M cabling solutions, the new MPO range is compatible with industry-wide standards, specifically ISO/IEC 24764 and EN 61753-5.

Easy, consistent-quality installation

The range has been designed to suit all levels of installation skills, including 'plug and play' options that reduce the level of expertise and time involved. Connections are available in different options, including pre-terminated 12-port MPO/LC duplex connectors or as 12-port LC/LC duplex straight-through versions. Standard flat fibre jacketed ribbon cable is available in 2mm, 4mm and 5mm widths, with either pre-assembled MPO connectors on both ends, or MPO on one end and 12 LC connector fan-out design at the other. Standard cable lengths offered are 5, 10, 20, 30 and 40 metres, though other lengths are available on request.

Minimal disruption and maintenance

When carrying out MACs (moves, adds and changes), the MPO connectors can simply be unclipped from the back of the patch panel, which can then be slid out of place. Unlike LC connectors, there is no need to cut the fibres or pull them out of the panel, meaning that in the future, upgrades to a network cabling system can be performed more quickly and smoothly.

This is how it works: the strain relief of the MPO backplane cable can be fixed with cable ties directly on the backplane of the modules. This allows full front access without the need to remove the 19" subrack, nor requires a two-part sliding construction of the subrack. The connection between two panels is done by either MPO/MPO or MPO/LC pre-terminated backplane 12 fibre ribbon cables. The same fibre is used in the modules.

Minimal signal loss

Signal loss is always a concern in any network, but particularly when high volumes of traffic are being carried across a dense cabling infrastructure. This is why the MPO range from 3M is designed to support minimised low signal loss, for example as little as 0.35dB for OM3.

Technical Characteristics for MPO/MPO and MPO/LC cables

Jacket Colour	Aqua
Jacket material	LSZH
Connector interface, MPO	IEC-61754-7-1
Connector interface, LC	IEC.61754-20
Operating temperature	-20°C to +70°C
Cable dimensions (mm, HxW)	2,4 x 5
Nominal weight (kg/km)	17
Max. tension (N) short term	600
Max. tension (N) long term	200
Min. bending radius (mm) during installation	85
Min. bending radius (mm) static	60
Max crush resistance (N/100mm ²)	500
Insertion loss MPO, typical (dB)	0,35
Insertion loss MPO, max. (dB)	0,75 (0,35 for Low Loss)
Insertion loss LC, typical (dB)	0,15
Insertion loss LC, max. (dB)	0,40 (0,15 for Low Loss)

Product list, part numbers

Short-Id	Description
M-P4	Empty 19" Subrack, black for 4 MPO modules
M-MS-OM3	MPO 12 Module, 12 ports LC duplex B, MM 50/125 OM3
M-FLC-OM3	LC-Faceplate with 12 LC duplex couplings OM3
M-BC	Blind Cover for MPO module ports
M-12-5-OM3-B	MPO 12/MPO 12 Patchcord, 5m, OM3, Type B
M-12-10-OM3-B	MPO 12/MPO 12 Patchcord, 10m, OM3, Type B
M-12-20-OM3-B	MPO 12/MPO 12 Patchcord, 20m, OM3, Type B
M-12-30-OM3-B	MPO 12/MPO 12 Patchcord, 30m, OM3, Type B
M-12-40-OM3-B	MPO 12/MPO 12 Patchcord, 40m, OM3, Type B
M-LC-12-5-OM3-B	LC/MPO 12 Patchcord, 5m, OM3, Type B
M-LC-12-10-OM3-B	LC/MPO 12 Patchcord, 10m, OM3, Type B
M-LC-12-20-OM3-B	LC/MPO 12 Patchcord, 20m, OM3, Type B
M-LC-12-30-OM3-B	LC/MPO 12 Patchcord, 30m, OM3, Type B
M-LC-12-40-OM3-B	LC/MPO 12 Patchcord, 40m, OM3, Type B

Short-Id	Description
M-P4	Empty 19" Subrack, black for 4 MPO modules
M-MS-OM4	MPO 12 Module, 12 ports LC duplex B, MM 50/125 OM4
M-FLC-OM4	LC-Faceplate with 12 LC duplex couplings OM4
M-BC	Blind Cover for MPO module ports
M-12-5-OM4-B	MPO 12/MPO 12 Patchcord, 5m, OM4, Type B
M-12-10-OM4-B	MPO 12/MPO 12 Patchcord, 10m, OM4, Type B
M-12-20-OM4-B	MPO 12/MPO 12 Patchcord, 20m, OM4, Type B
M-12-30-OM4-B	MPO 12/MPO 12 Patchcord, 30m, OM4, Type B
M-12-40-OM4-B	MPO 12/MPO 12 Patchcord, 40m, OM4, Type B
M-LC-12-5-OM4-B	LC/MPO 12 Patchcord, 5m, OM4, Type B
M-LC-12-10-OM4-B	LC/MPO 12 Patchcord, 10m, OM4, Type B
M-LC-12-20-OM4-B	LC/MPO 12 Patchcord, 20m, OM4, Type B
M-LC-12-30-OM4-B	LC/MPO 12 Patchcord, 30m, OM, Type B
M-LC-12-40-OM4-B	LC/MPO 12 Patchcord, 40m, OM4, Type B

Short-Id	Description
M-P4	Empty 19" Subrack, black for 4 MPO modules
M-MS-OS2	MPO 12 Module, 12 ports LC duplex B, MM 50/125 OS2
M-FLC-OS2	LC-Faceplate with 12 LC duplex couplings OS2
M-BC	Blind Cover for MPO module ports
M-12-5-OS2-B	MPO 12/MPO 12 Patchcord, 5m, OS2, Type B
M-12-10-OS2-B	MPO 12/MPO 12 Patchcord, 10m, OS2, Type B
M-12-20-OS2-B	MPO 12/MPO 12 Patchcord, 20m, OS2, Type B
M-12-30-OS2-B	MPO 12/MPO 12 Patchcord, 30m, OS2, Type B
M-12-40-OS2-B	MPO 12/MPO 12 Patchcord, 40m, OS2, Type B
M-LC-12-5-OS2-B	LC/MPO 12 Patchcord, 5m, OS2, Type B
M-LC-12-10-OS2-B	LC/MPO 12 Patchcord, 10m, OS2, Type B
M-LC-12-20-OS2-B	LC/MPO 12 Patchcord, 20m, OS2, Type B
M-LC-12-30-OS2-B	LC/MPO 12 Patchcord, 30m, OS2, Type B
M-LC-12-40-OS2-B	LC/MPO 12 Patchcord, 40m, OS2, Type B





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