

Solve the puzzle of
high density 10 Gig
applications using

**FAS-NET MTP
Solution**

FAS-NET MPO Solution

Stable and Reliable Data Communication Solutions from Infinique

Infinique provides high quality end-to-end solutions for communication infrastructure that bring great value to its customers. We have achieved this through our core principle of delivering maximum performance through design excellence. Our business has been built on continued product innovation and quality added with great customer service to answer today's dynamic and demanding applications.

Infinique's FAS-NET MPO Fiber Optic Solution is a high performance, pre-terminated, modular system designed for high density Gigabit Ethernet Applications. It is a Plug and Play Solution that offers excellent performance and speedy installation.

FAS-NET MPO Solution can support 10 Gb/s for link lengths up to 300 meters using laser optimized OM3 fiber, and up to 550 meters using laser optimized OM4 fiber, with a low insertion loss of 0.5dB. Infinique's FAS-NET MPO Module employ high performance MTP adapters from US CONEC.

Benefits of FAS-NET MPO Fiber Optic Solution:

- Speedier installation: multiple fiber links using pre-terminated cables with 12 or 24 fibers per MPO connector
- Space saver: micro-core cables saves space in pathways and racks, results in roomier rack space for better air circulation
- Scalable and Modular: easier, faster modifications, maintenance to the infrastructure
- Assured Performance: factory terminations assures end-to-end consistent link performance throughout the installation

Infinique's FAS-NET MPO end-to-end solution includes:

- MPO Cassette, 12 or 24 SC, LC Ports
- MPO Fan-out Hydra Cable with LC or SC Connectors
- MPO to MPO Trunk Cable
- MPO Adapters
- MPO Adapter Plates
- MPO Blanking Plates (for expansion ports)
- MPO Chassis, 14 Vertical Slots, 3U, with 336 fiber terminations
- Modular Patch Panel, 3 Slots, 1U, with 72 fiber terminations



FAS-NET MPO Solution

FAS-NET MPO Technology

The FAS-NET MPO Ferrule is the key component of the MPO Solution is a 12 fibre MPO (multi fibre push on) connector with a housing footprint size of a SC Simplex connector in a single floating ferrule. Infinique's FAS-NET MPO Solution uses US Conec MTP® connector, who are the market leaders. These connectors are made of precision moulded thermoplastic with metal guide pins, precise housing with asymmetrical face that allow only one orientation into the adapter, to ensure polarity is maintained along the channel.

High Density Fiber Optics

The micro-core cables used in the FAS-NET MPO cable assemblies gives about 65% reduction in the physical size of the cable per fiber when compared to traditional fiber cables.

FAS-NET MPO Solution with 12 core LC quad adapters offers 72 LC terminations in 1U rack space using modular patch panels, and 336 LC terminations in 3U rack space using 3U Chassis. MPO Adapter Panel with 12 Core MPO connectors offers very high connectivity of 288 fibers and with 24 core MPO connectors it doubles to 576 fiber terminations in 1U rack space.

Modular Solution

Infinique's FAS-NET MPO Solution is scalable as well as modular. One unit of 24 fiber links between 2 cassettes and 2 x 12 FAS-NET MPO Trunk cables, offers 24 fiber connectivity of LC or SC.

Units of 24 fiber links can be added gradually as the data communication requirement of the installation grows. Thereby making the installation both scalable and modular in approach.

Applications and Standards

FAS-NET MPO Solutions adheres to the strictest standards and are designed and manufactured to comply with the following standards:

- Meets IEC Standard 61754-7
- Meets TIA/EIA 604-5 Type MPO
- Structured cabling per TIA-568-C
- 10G Fiber Channel Compliant
- 40G and 100G IEEE 802.3
- Optical Internetworking Forum (OIF) Compliant
- Infiniband Compliant

Fibre Type Performance	Wavelength (nm)	Maximum Attenuation (dB/km)	Typical Cable Attenuation (dB/km)
Multimode OM3 50/125	850	3.5	2.6
	1300	1.5	0.6
Multimode OM4 50/125	850	3.5	2.6
	1300	1.5	0.6
Singlemode OS1	1310	0.5	0.3
	1550	0.4	0.2
	1310	0.5	0.3
Singlemode OS2	1550	0.4	0.2

Connector Type		Insertion Loss (dB)		Return Loss (dB)	
		Typical	Maximum	Typical	Maximum
Multimode	MPO (2)	0.35	0.75	25	20
	LC or SC	0.20	0.40	25	20
Singlemode	MPO (1) & (2)	0.35	0.50	65	55
	LC or SC (1)	0.20	0.30	65	55

Typical Applications		OM3	OM4	OS2
Gigabit Ethernet	1000BASE-SX	550 m	550 m	
	1000BASE-LX			5000 m
10 Gigabit Ethernet	10GBASE-SR/SW	300 m	300 m	
	10GBASE-LX4 & LR/LW			10000 m
	10GBASE-ER/EW			22250 m
40 Gigabit Ethernet	40GBASE-SR4	100 m	150 m	
100 Gigabit Ethernet	100GBASE-SR10	100 m	150 m	
	100GBASE-LR4			10000 m
	100GBASE-ER4			40000 m

FAS-NET MPO Solution

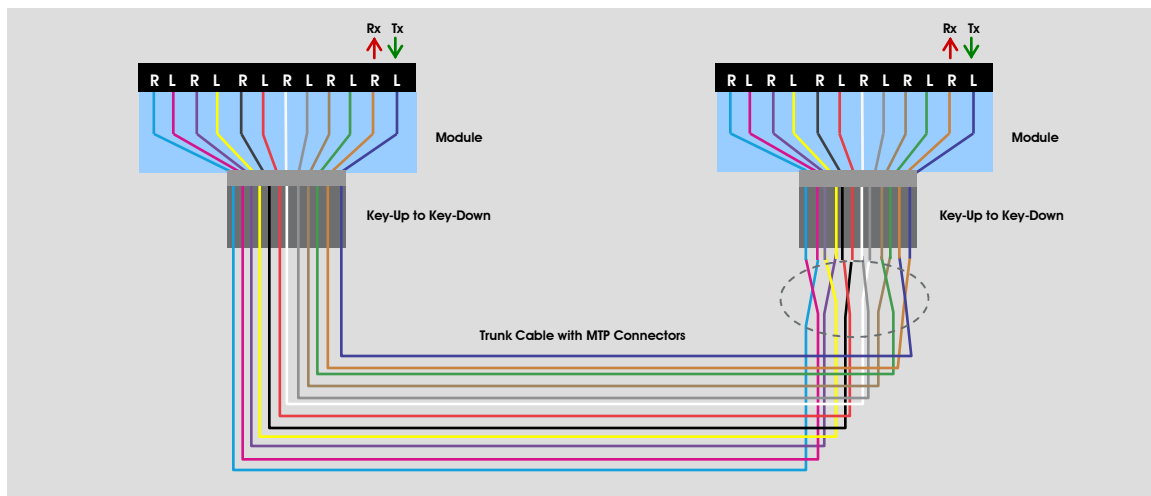
Understanding Polarity

The TIA-568-C.0 standard provides serial transmission fiber polarity guidance for systems using MTP optical connectivity. The TIA-568-C.0 standard includes guidance on three sample methods identified as Method A, Method B and Method C.

Infinique FAS-NET MPO Solution standardizes its products on Method 'C' for both the multimode and singlemode fiber systems. This is the simplest and user friendly polarity method for the end user. Infinique's FAS-NET MPO Solution is simple to install, operate and maintain.

Method C

Method C uses a pair-wise fiber flip in the trunk cable to correct for polarity. This enables the use of the same module type on both ends of the channel and standard patch cords. Because polarity is managed in the trunk, extending the links requires planning of the number of trunks in order to maintain polarity. The TIA standard does not include text regarding the ability to migrate to parallel optics for Method C, but parallel optic capability can easily be achieved with a special patch cord to reverse the pair-wise fiber flips in the trunk.



Fiber Core	1	2	3	4	5	6	7	8	9	10	11	12
Color	Blue	Orange	Green	Brown	Grey	White	Red	Black	Yellow	Violet	Pink	Aqua

The fiber coding scheme within the trunk cables, and in the hydra cable fan-out assemblies, is also as per the standard. FAS-NET MPO Solution is based on open standards and is compatible and interoperable with other standards compliant MPO connectivity products which use TIA-568-C.0 polarity method C.

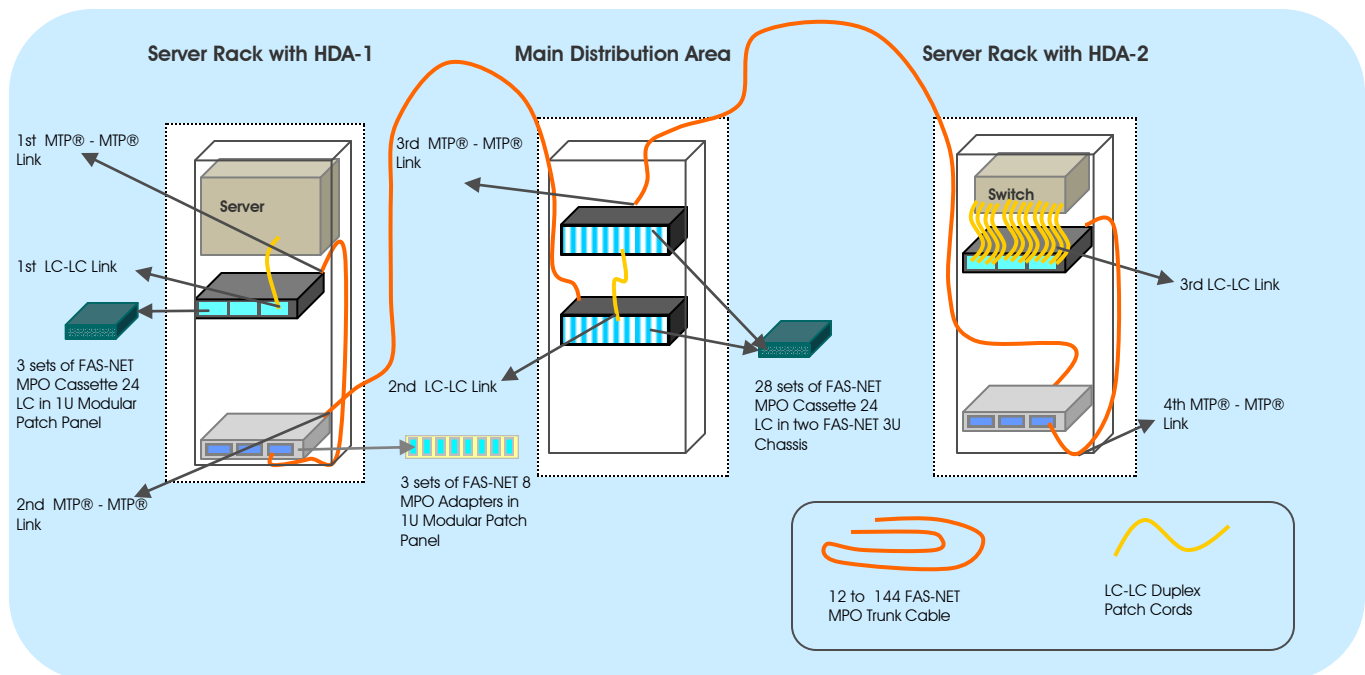
FAS-NET MPO Solution

Common Topologies

One of the common topologies used in FAS-NET MPO Solution is shown below:

AE - Active Equipment → HDA - Horizontal Distribution Area → MDA - Main Distribution Area → HDA - Horizontal Distribution Area → AE - Active Equipment

This type of configuration is typically used where flexibility for change is high priority as there is flexibility at all points within the channel but as a result a high number of matings - requires 6 MTP® - MTP® matings and 4 LC-LC matings. For the configuration shown, FAS-NET MPO Solution can be used to stay within the allowable loss budget. Channel Link Length for OM3 is < 140m and OM4 is < 170m.



HDA-1 to MDA	1st LC-LC Link	1st MTP® - MTP® Link	2nd MTP® - MTP® Link
Start	HDA-1: Active Equipment (Server)	HDA-1: FAS-NET MPO-LC Cassette in Modular Patch Panel, MTP® Male Adapter at rear	HDA-1: FAS-NET MPO-MPO Cassette in Modular Patch Panel, MTP® Adapter at rear
End	HDA-1: FAS-NET MPO-LC Cassette in Modular Patch Panel	HDA-1: FAS-NET MPO-MPO Cassette in Modular Patch Panel, MTP® Adapter at front	MDA: FAS-NET MPO-LC Cassette in lower FAS-NET 3U Chassis, MTP® male Adapter at rear
Connectivity Through	LC-LC Patch Cord	FAS-NET MPO Trunk Cable Female - Male	FAS-NET MPO Trunk Cable Female - Female
MDA Cross Connect - 2nd LC-LC Link	MDA: FAS-NET MPO-LC Cassette in lower FAS-NET 3U Chassis, LC Adapter in front	MDA: FAS-NET MPO-LC Cassette in upper FAS-NET 3U Chassis, LC Adapter in front	LC - LC Patch Cord
MDA to HDA-2	3rd MTP® - MTP® Link	4th MTP® - MTP® Link	3rd LC-LC Link
Start	MDA: FAS-NET MPO-LC Cassette in upper FAS-NET 3U Chassis, MTP® male Adapter at rear	HDA-2: FAS-NET MPO-MPO Cassette in Modular Patch Panel, MTP® Adapter at front	HDA-2: FAS-NET MPO-LC Cassette in Modular Patch Panel
End	HDA-2: FAS-NET MPO-MPO Cassette in Modular Patch Panel, MTP® Adapter at rear	HDA-2: FAS-NET MPO-LC Cassette in Modular Patch Panel MTP® Male Adapter at rear	HDA-2: Active Equipment (Switch)
Connectivity Through	FAS-NET MPO Trunk Cable Female - Female	FAS-NET MPO Trunk Cable Male - Female	LC - LC Patch Cord

FAS-NET MPO Solution

Installation Considerations

Installation of the FAS-NET MPO Solution is simple and quick and includes the following steps:

- 1) Backbone cables to be laid
- 2) Install the fiber patch panels in the server racks
- 3) Plug the cables into the FAS-NET MPO Cassettes
- 4) Plug FAS-NET MPO Cassettes into the fiber patch panels

Installation time for a FAS-NET MPO Solution is very less compared to the time taken to install conventional optical fiber systems. Plugging in pre-terminated 12 fibers assembly is much more time efficient than splicing 12 pigtailed to each end of an installed cable and dressing the spliced fibers into the fiber patch panel.

Upgrades and maintenance to the system is also simpler due to the scalable and modular design of the FAS-NET MPO Solution.

Physical Considerations

FAS-NET MPO Cassettes have MTP® male internal rear connectors and will require an MTP® female connector for a correct mating.

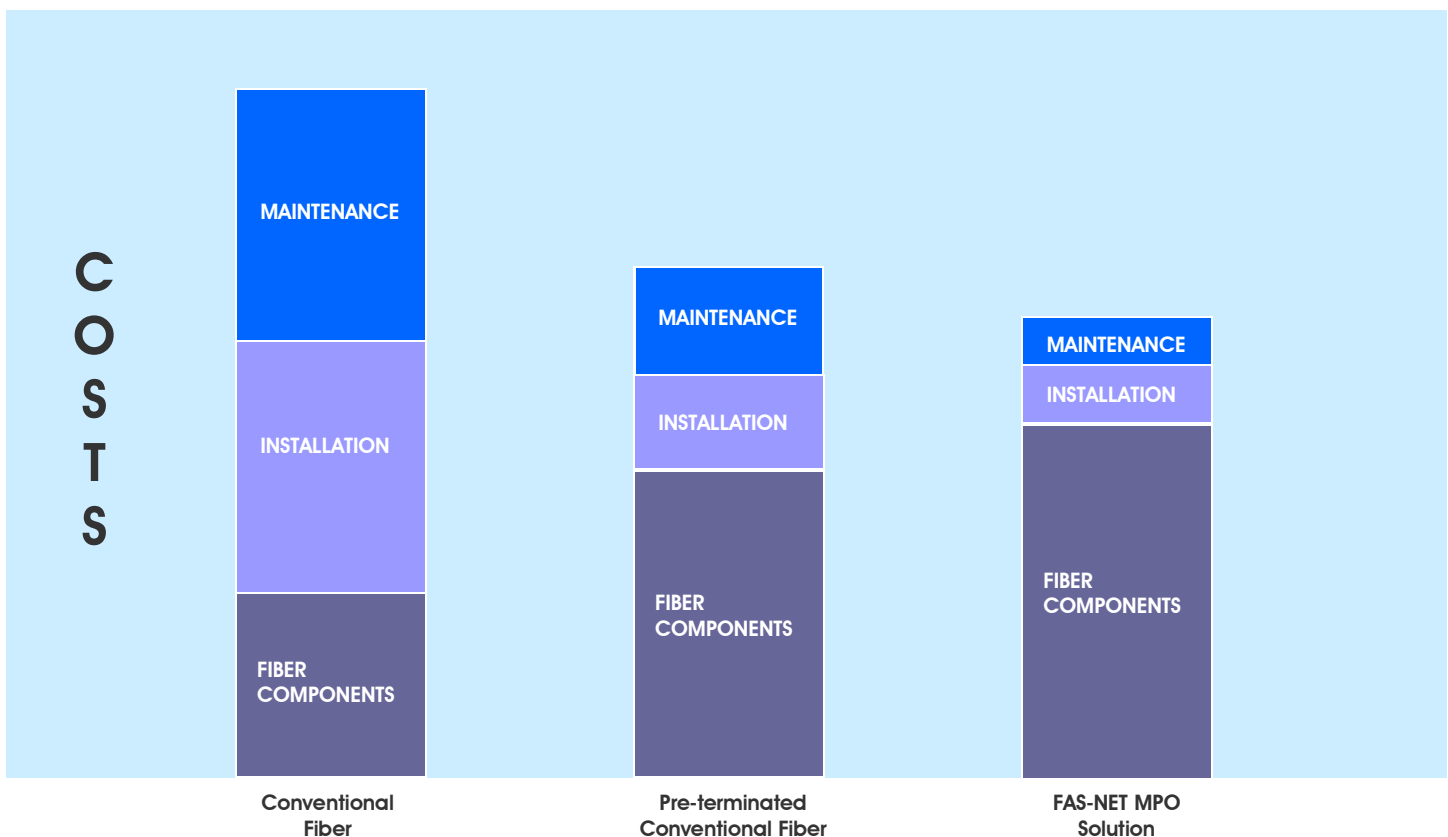
All FAS-NET MPO Products are manufactured to be used with only MTP® adaptors that are Key Up – Key Down ensuring continuity of fiber at each adaptor

Ensure the connector to connector distances required for Trunk Cables and Hydra Fan-Out Cable assemblies.

MTP® – MTP® cross connects can be used instead of LC-LC cross connects. MTP® cross connects are male to male.

Instead of 12 fiber MTP® connector, 24 fiber MTP® connector can be used to double the density of fiber within MTP® adaptor plates.

Polarity C is achieved through using 1 polarity C trunk cable within the link and maintaining A-B patch cords through out channel.

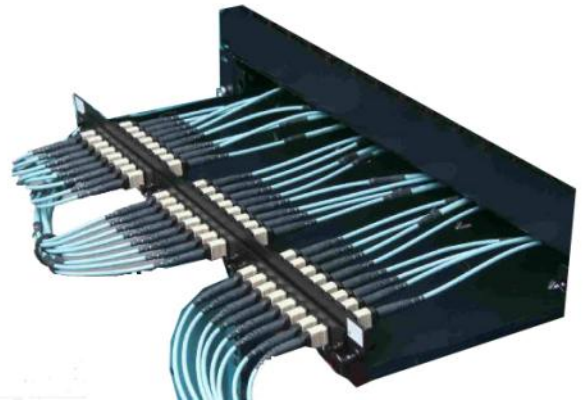


FAS-NET MPO Solution

FAS-NET MPO Panels



FAS-NET MPO Chassis, 14 Vertical Slots, 3U



FAS-NET MPO Sliding Panel with MTP Adapter Plates



FAS-NET MPO Modular Sliding Patch Panel 1U



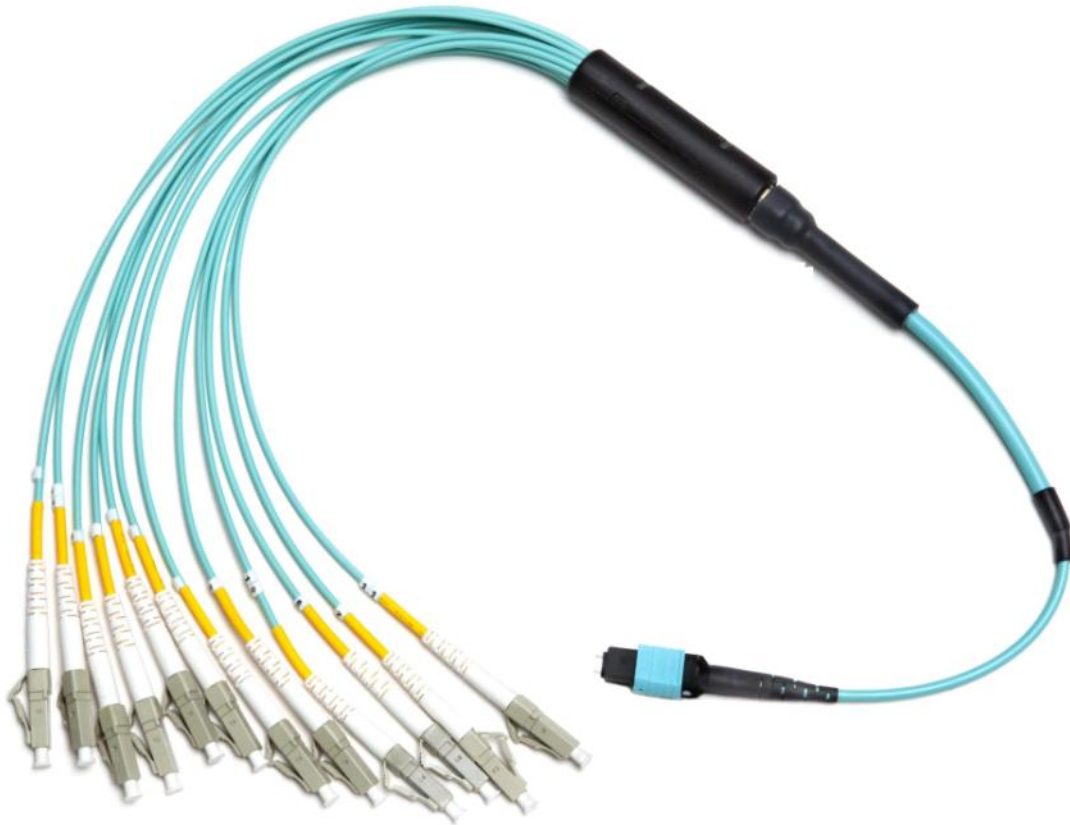
FAS-NET MPO Cassette 24 LC Simplex

Infinique's FAS-Net MPO Panels are scalable and modular and are designed for high density Gigabit Ethernet Applications. They are used to terminate backbone cables at the HDA and MDA. FAS-NET MPO Panels are available in 1U and 3U heights and fits into standard 19" racks.

FAS-NET MPO 1U Panel is a sliding tray that can accommodate up to three FAS-NET MPO Cassettes, giving a high connectivity of 72 LC fiber terminations in 1U. FAS-NET MPO Panels can also be used FAS-NET MPO Adapter Plates resulting in 288 connections with 12 Fiber in 1U. FAS-NET MPO Chassis 3U can accommodate up to 14 FAS-NET MPO Cassettes, resulting in a maximum of 336 LC terminations in 3U.

FAS-NET MPO Solution

FAS-NET MPO Fan-Out Hydra Cable



FAS-NET MPO LC Fan-Out Hydra Cable

Infinique's FAS-NET MPO Fan-Out Hydra Cable Assemblies are designed for high density applications with require high performance and speedy installation without onsite termination. FAS-NET MPO Fan-Out Hydra Cable Assembly is made up of 12 LSOH jacketed cable terminated at one end in MPO connectors, through a bifurcation unit, to SC or LC connectors terminated on 2mm OD simplex cables. These are used to connect equipment in racks to MPO terminated backbone cables. MPO fan-out cables are numbered for full traceability.

Available in 12 core configuration, these space saving assemblies comes with either MTP Male or MTP Female Connectors on one end and LC or SC Connectors on the other end. They are available OM3, OM4 or OS1 fiber in lengths of 5, 10, 25 meters, custom lengths are available on request.

FAS-NET MPO Solution

FAS-NET MPO Trunk Cable



Infinique's FAS-NET MPO Trunk Cable Assemblies are made up of 12, 24, 48 fiber LSOH jacketed micro cables terminated at both ends with MTP® Connectors (without pins). These are used as backbone or horizontal cable interconnections between HDAs and MDAs. These plug 'n' play solutions with micro core cable maximize bend radius and minimize cable weight and size. FAS-NET MPO Trunk Cable are factory pre-terminated, tested and packed along with the test reports.

The assemblies are available in OM3, OM4 and OS1 fiber. Standard lengths of 5, 10, 25 meters are available. Custom lengths are also available on request. The FAS-NET MPO Trunk cables are packed as coils in lengths up to 50m long and on reels in lengths over 50m. OM3 and OM4 cables are available in aqua and OS1 cables are in yellow color.

FAS-NET MPO Solution

FAS-NET MPO Solution Product Part Number

FAS-NET MPO Patch Panel Component	Part Number
FAS-NET MPO Modular Sliding Patch Panel 1U	MP031U
FAS-NET MPO Chassis, 14 Vertical Slots, 3U	MP143U
FAS-NET MPO Blank Patch	MP14BP
FAS-NET MPO Cassette Singlemode OS1, 24 LC Simplex	MCSMLC24
FAS-NET MPO Cassette Singlemode OS1, 12 SC Simplex	MCSMSC12
FAS-NET MPO Cassette Multimode OM3, 24 LC Simplex	MCM3LC24
FAS-NET MPO Cassette Multimode OM3, 12 SC Simplex	MCM3SC12
FAS-NET MPO Adapter with SC Footprint	MP14MPA
FAS-NET MPO Adapter Plate	MP14MPL

FAS-NET MPO Trunk Cable	Part Number
FAS-NET MPO-MPO Trunk Cable LSOH, 12 Core Single Mode (female/female) 1m	MTCSM12FFL01
FAS-NET MPO-MPO Trunk Cable LSOH, 24 Core Single Mode (female/female) 1m	MTCSM24FFL01
FAS-NET MPO-MPO Trunk Cable LSOH, 48 Core Single Mode (female/female) 1m	MTCSM48FFL01
FAS-NET MPO-MPO Trunk Cable LSOH, 12 Cores MM OM3 (female/female) 1m	MTCM312FFL01
FAS-NET MPO-MPO Trunk Cable LSOH, 24 Cores MM OM3 (female/female) 1m	MTCM324FFL01
FAS-NET MPO-MPO Trunk Cable LSOH, 48 Cores MM OM3 (female/female) 1m	MTCM348FFL01
FAS-NET MPO-MPO Trunk Cable LSOH, 12 Cores MM OM4 (female/female) 1m	MTCM412FFL01
Custom Lengths are available on request	

FAS-NET MPO Hydra Cable	Part Number
FAS-NET MPO-LC Hydra Cable SM 12 Core (female/female) 1m	MHCSMFLC12L
FAS-NET MPO-SC Hydra Cable SM 12 Core (female/female) 1m	MHCSMFSC12L
FAS-NET MPO-LC Hydra Cable OM3 12 Core (female/female) 1m	MHCM3FLC12L
FAS-NET MPO-SC Hydra Cable OM3 12 Core (female/female) 1m	MHCM3FSC12L
Custom Lengths are available on request	



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Email us at info@infinique.com with your inquiries. We are actively looking into expanding into other markets, please contact us if you are interested in promoting our products.

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Document Reference: FOFPP/CA/v1/10/11