Mode Conditioning Cable

Overview

Mode conditioning patch cords are essential when installing 1000BASE-LX Gigabit routers or switches into existing multimode fiber networks. They prevent Differential Mode Delay (DMD), which can occur when long-wavelength transceivers transmit over multimode fiber. These cords modify the signal launch from a singlemode transceiver to mimic a standard multimode launch, ensuring reliable performance.

The conditioned channel of the patch cord features a yellow singlemode fiber fusion-spliced to an orange multimode fiber with an intentional offset, ensuring precise core alignment and launch angle. This design creates the mode conditioning effect by directing light into the multimode fiber at a specific angle. The second leg is standard multimode fiber.

The conditioned singlemode/multimode end connects to the transceiver (yellow leg to transmit), while the multimode duplex end connects to the cable plant. Available with any combination of LC, SC, ST, or MTRJ connectors, these cords are compatible with 850nm or 1300nm VCSEL sources and comply with IEEE 802.3z standards.

Key Features

- Custom-built with any combination of LC, SC, ST, or MTRJ connectors
- Fusion-spliced offset between singlemode and multimode fibers
- Optimized for 850nm or 1300nm VCSEL laser sources
- Supports long-wavelength Gigabit Ethernet over multimode fiber
- Compliant with IEEE802.3z standards
- Color-coded jacket (yellow for singlemode, orange for multimode)

Typical Applications

- Gigabit Ethernet 1000BASE-LX over legacy multimode infrastructure
- Preventing DMD in multimode fiber networks
- Data centers, enterprise networks, and telecom applications using longwave transceivers
- Upgrading existing multimode cable plants without replacing fiber

Technical Specifications

Connector Type	Maximum Insertion Loss (dB)	Multimode Direction Insertion Loss (dB)	Singlemode Direction Insertion Loss (dB)	Ferrule Material	Housing Material
LC	<0.5	<1.0	>2.0; <22.0	Ceramic	Composite
MTRJ	<0.5	<1.0	>2.0; <22.0	Thermoplastic	Composite
SC	<0.5	<1.0	>2.0; <22.0	Ceramic	Composite
ST	<0.5	<1.0	>2.0; <22.0	Ceramic	Metal

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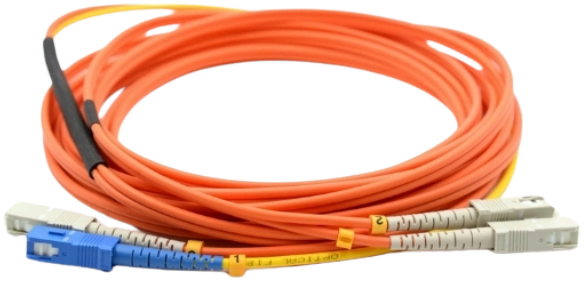
Cable Dimensions & Construction

Optical Fiber Fiber Count	2
Strength Member Material	Aramid Yarn
Outer Jacket Material	PVC/OFNR
Outer Jacket Color	Orange/Yellow
Outer Jacket Diameter	3.0mm/1.6mm zip cord 3.0mm 2-fiber ribbon (MTRJ only)



Mechanical & Environment Characteristics

Tensile Resistance	Short-term: 300N Long-term: 160N
Crush Resistance	Short-term: 1000N/100mm Long-term: 200N/100mm
Min Bend Radius	Dyanmic: 60mm Static: 30mm
Operating Temperature	-20℃ - +60℃
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