

MMC CABLE ASSEMBLIES AND ADAPTERS

MMC Cable Assemblies and Adapters support higher-density, low-loss optical connectivity by leveraging a miniaturized very small form factor (VSFF) design to consolidate more fibers into a smaller footprint.

NPI INNOVATION

DECEMBER 2024



MMC Cable Assemblies and Adapters

Helping data centers optimize space and density to meet AI-driven demands for increased capacity and performance, the Molex MMC system leverages a very small form factor (VSFF) design to achieve higher density within the same footprint. MMC Cable Assemblies and Adapters are available with 16 or 24 fibers, providing higher cabling port density and low-loss performance in a compact design to support high-bandwidth applications.

Key Product Information

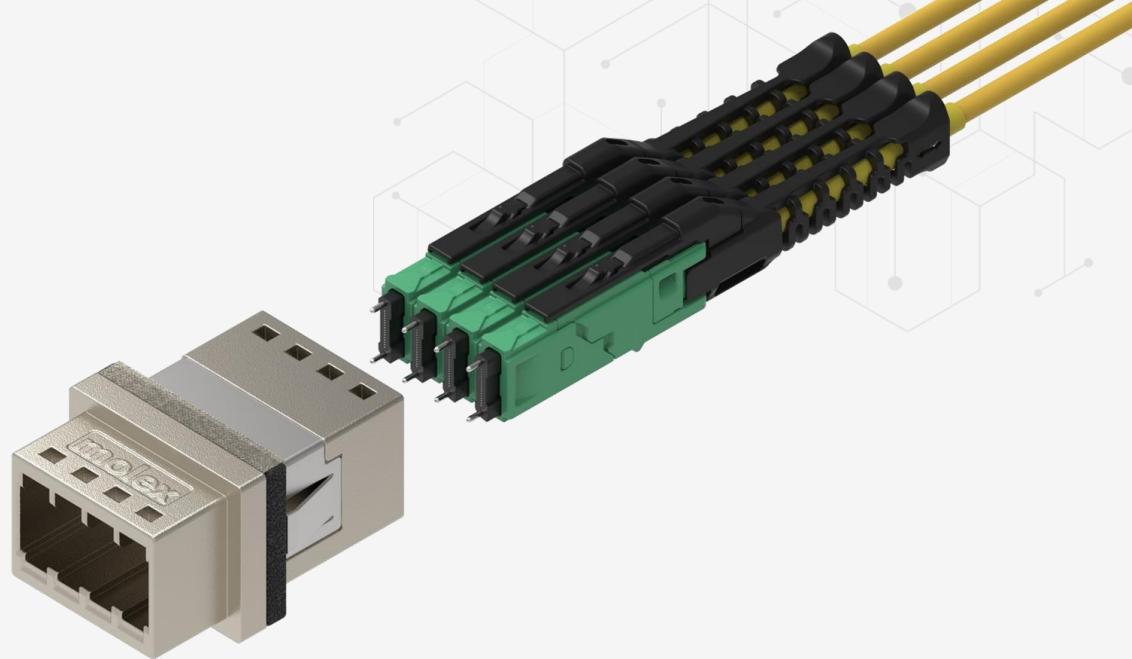
Category: Fiber Optic Connectors and Adapters

Insertion Loss (max.): 0.35 dB

Return Loss (max.): -55 dB

Cable Outside Diameter: 2.00 to 2.50mm

Cable Lengths: 1.0 to 20.0m; longer cables up to 100.0m available as custom solutions



[View Product Landing Page](#)

[Download Datasheet](#)

Series

106114 [MMC Adapters](#)

106292 [MMC Cable Assemblies](#)

Vital Product Information

MMC Cable Assemblies and Adapters

What makes this product different from the competition?

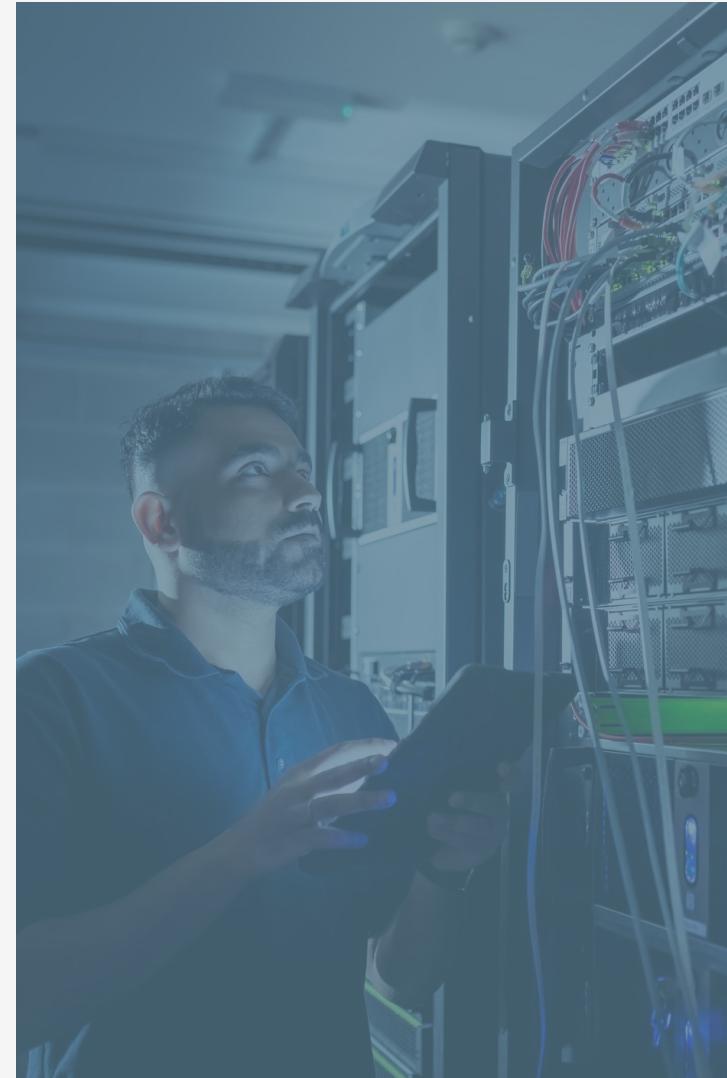
The MMC system is a new VSFF connector design that supports up to three times the density of standard MPO/MTP solutions. This higher density allows space savings that enable higher fiber density counts in the same one-rack-unit (1RU) space. MMC connectors also simplify polarity management by using rail features on the connector to indicate the correct orientation. Molex was the first supplier to offer electromagnetic interference (EMI) shielding adapters for the MMC system, supporting clean and reliable data transmission in electronically noisy applications.

How does this product create value for our customers?

MMC Cable Assemblies and Adapters create value for customers by delivering reliable, versatile and space-efficient connectivity solutions. They facilitate easy integration, support customization and help expand capacity within existing footprints, all of which contribute to enhanced performance and reduced costs.

What is the Molex advantage?

Global manufacturing capability, robust engineering support and a full suite of innovative optical solutions designed to support next-generation data centers make Molex a unique resource in finding capability solutions.

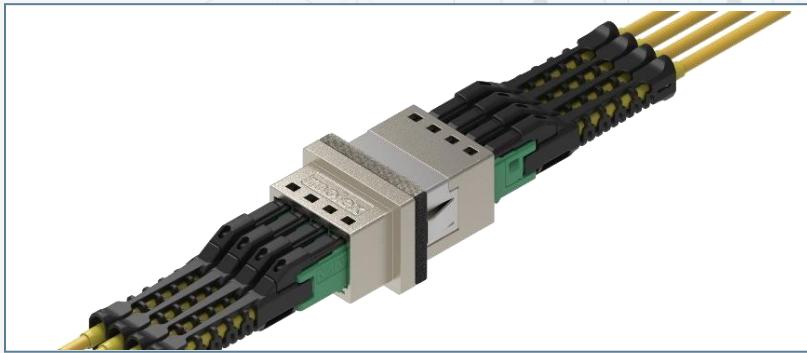


Product Overview

MMC Cable Assemblies and Adapters

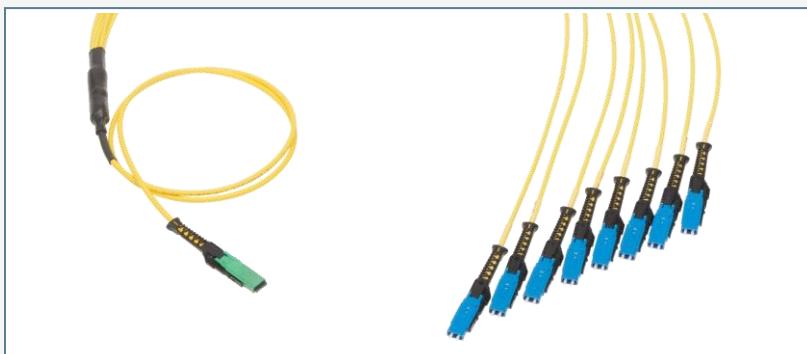
Enhanced Space Utilization

The compact VSFF design of the MMC connector supports up to three times the fiber density of standard MPO/MTP solutions, enabling higher fiber counts in the same 1RU space to support growing demands for capacity driven by 5G, AI and the Internet of Things.



Exceptional Versatility and Simplified Installation

The MMC system offers hybrid cable assemblies to MPO, LC duplex and MDC connectors, offering flexibility in data center installation and design, while the push-pull boot and guiderail features make installation easier and reduce the potential for assembly errors.



Superior EMI Protection

A line of EMI shielding adapters for the MMC system helps ensure a clean signal, improving signal integrity (SI) and reducing the risk of failure in challenging environments subject to electronic noise.

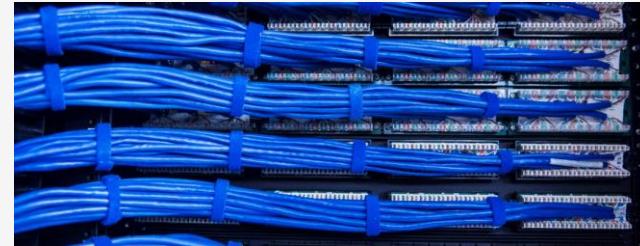


Markets and Applications

MMC Cable Assemblies and Adapters



Signal Aggregation Devices



High-Density Patch Panels



High-Bandwidth Transceivers

SERVERS AND STORAGE

- 16- and 24-fiber applications
- AI systems
- High-density patch panels
- OptoConnect aggregation enclosures

NETWORKING

- 16- and 24-fiber applications
- High-density patch panels
- QSFP-DD applications
- Signal aggregation devices

TELECOMMUNICATIONS

- Front panel I/O connections
- High-bandwidth transceivers

Frequently Asked Questions

MMC Cable Assemblies and Adapters

What is the expected loss rate for MMC connectors?

MMC Cable Assemblies and Adapters enable IEC Grade B insertion-loss performance of less than 0.35 dB, with an angled physical contact (APC) interface that supports superior return-loss performance of less than -55 dB.

What are the advantages of MMC connectors over standard MPO/MTP connectors?

MMC connectors use a VSFF design to maximize the port density, enabling up to three times the cabling port density when compared with MPO/MTP connectors. This enables higher bandwidth per rack unit for multiple applications, including structured cabling, hyperscale data center connectivity, transceivers and onboard optics.

In what fiber counts are MMC solutions available?

MMC Cable Assemblies and Adapters are currently offered in 16- and 24-fiber TMT ferrule options.

Solving Industry Challenges

MMC Cable Assemblies and Adapters



Industry Need	Industry Challenge	Industry Solution	Anticipated Results
Higher-density connectivity solutions to meet bandwidth demands	To meet demands for increased bandwidth, data centers need to accommodate more connectivity in smaller spaces while maintaining high performance and reliability.	The VSFF form factor and 16F or 24F capacity of the MMC connector support high fiber counts and enable customers to aggregate 8F or 12F transceivers, providing far higher fiber capacity in a 1RU space in order to support high-bandwidth applications.	Improved density supports easier scaling of capacity and higher data rates. It also improves airflow, simplifies network management and enhances design flexibility. This helps data centers meet fluctuating bandwidth demands and maximize performance and efficiency.
Simple installation	Customers want connectors that are fast and easy to install, which helps streamline upgrades and maintenance.	MMC connectors use a push-pull boot for easy mating and unmating. They also use polarized rails to speed assembly and help eliminate polarization errors.	Fast and simple installation reduces downtime by speeding assembly and maintenance operations and by reducing assembly errors, reducing costs.
Robust SI and EMI protection	Customers want connections capable of withstanding EMI effects in dense or challenging applications.	The MMC system offers an EMI shielding adapter that delivers superior protection against EMI and helps ensure exceptional SI and low latency for high-performance applications.	Shielding against EMI helps ensure a reliable signal, supporting high-speed connectivity even in dense and space-constrained applications subject to electronic noise.

Product Advantages and Features

MMC Cable Assemblies and Adapters

Offers higher port density than alternative optical connectors. The compact form factor delivers up to three times the fiber density per rack unit when compared to MPO/MTP connectors.

Simplifies data center architecture by consolidating multiple connections into one connector

Aggregating multiple 8F MPO/MTP connections into a single 16F MMC connector streamlines infrastructure and helps optimize both space and network reliability.

Simplifies installation and maintenance
The push-pull boot and polarized guide rails make installation faster and easier while reducing the chance of assembly errors.

Supports higher data rates and increased capacity for data centers

With increased fiber counts of 16 or 24 fibers in a single connector, the MMC system simplifies capacity upgrades for high-performance applications like hyperscale data centers.

Enhances EMI protection and helps improve signal integrity
EMI adapters use shielded designs, grounding mechanisms and high-quality materials to improve performance in applications subject to electronic noise.



Key Specifications	
Insertion Loss (max.)	0.35 dB
Return Loss (max.)	-55 dB
Cable Outside Diameter	2.00 to 2.50mm
Cable Lengths	1.0 to 20.0m; longer cables available as custom solutions
Cable Assemblies	MMC-to-MMC, MMC-to-MPO, MMC-to-LC duplex, MMC-to-pigtail, MMC-to-MDC
Operating Temperatures	-40 to +70°C

Unique and Useful Differentiation vs. Similar Molex Products

MMC Cable Assemblies and Adapters



	Molex MMC Cable Assemblies	Molex MTP/MPO Cable Assemblies	Molex MDC Cable Assemblies
Series Number	106292	106283	106205
1RU Fiber Count (max.)	Up to 4,224 (16F) or 6,336 (24F)	Up to 864	Up to 432
Fibers per Connector	16 or 24	16	2
Fiber Type	Single mode (SM)	SM or multi-mode (MM)	SM or MM
EMI Adapters	Yes	Yes	Yes
Push-Pull Boot	Yes	Optional	Yes
Polarized Guide Rails	Yes	No	No
Product Image			

Product Specifications

MMC Cable Assemblies and Adapters



Reference Information

Series: 106114 (adapters), 106292 (cable assemblies)

Packaging: Bag

Designed in: Millimeters

RoHS: Yes

Low Halogen: Available upon request

Fiber Count: 16 or 24

Cable Assemblies: MMC-to-MMC, MMC-to-MPO, MMC-to-LC duplex, MMC-to-pigtail, MMC-to-MDC

Optical

Connector Insertion Loss (max.): 0.35 dB

Connector Return Loss (max.): -55 dB

Physical

Boot Type: Straight

Cable Type: Single mode

Cable Lengths: 1.0 to 20.0m (cable lengths up to 100.0m available as custom solutions)

Cable Outside Diameter: 2.00 to 2.50mm

Fiber (Core/Cladding) Diameter: 9/125 μ m

Operating Temperatures: -40 to +70°C

Additional Resources

Web Overview Page

<https://www.molex.com/en-us/products/optical-solutions/fiber-optic-connectors-and-adapters/mmc-connectors-and-assemblies>

Datasheet

[987652-7683.pdf \(molex.com\)](https://www.molex.com/datasheets/987652-7683.pdf)



THANK YOU

creating connections for life

molex