TN-1110_MMC-PSG, Version 1.0
July 2025

MMC Connector Product Solutions Guide

INTRODUCTION

This product solutions guide is intended to provide a general technical overview of the US Conec MMC connector family and includes product specifications, information on compliance with industry standards (where applicable), guidance on component identification, selection and compatibility, and information necessary to support cable assembly and hardware solutions using the MMC Connector.

PRODUCT FAMILY OVERVIEW

US Conec's MMC connector is a Very Small Form Factor (VSFF) multi-fiber optical connector designed for termination of single-mode and multi-mode fiber cables up to 2.5 mm (nominal) in outside diameter. The MMC connector employs the TMT ferrule technology having an alignment structure and optical interface harmonized with the MT or MT-16 ferrule. This compatibility between TMT and MT ferrules enables flexibility and interoperability with existing industry connectivity and associated ecosystem.

The TMT ferrule compared to the MT ferrule is similar in width but ~30% smaller in thickness and ~50% in shorter length.

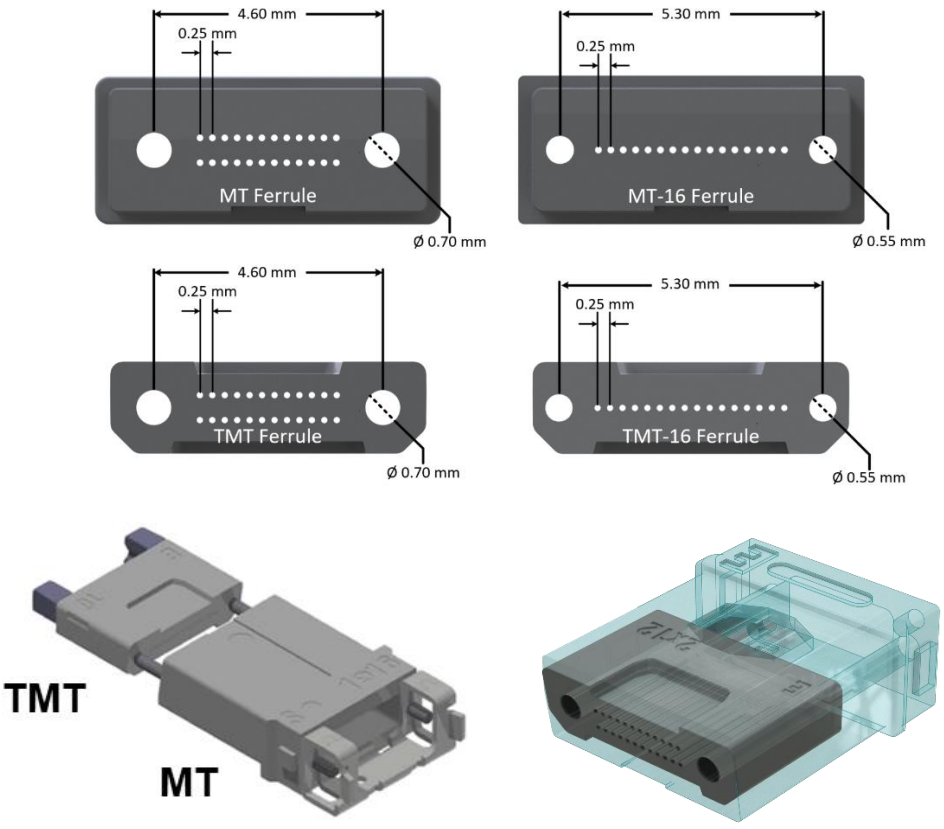


Figure 1 – TMT vs MT Ferrule

SPECIFICATIONS

INDUSTRY STANDARDS

MMC brand connectors, when terminated on a suitable optical fiber cable, are designed to meet the relevant optical, mechanical, and environmental performance against telecommunication standards including:

- Telcordia GR-1435
- ANSI/TIA-568.3-E

PERFORMANCE

Performance specifications for the TMT and TMT-16 ferrules used in MMC brand connectors can be seen in the table below.

FERRULE TYPE	*RANDOM MATED ATTENUATION [1] (≥ 97 % dB)*	*MEAN RANDOM MATED ATTENUATION (dB)*	*RETURN LOSS (dB)*
Single-mode TMT Elite®	≤0.25 [2,3]	≤0.12 [2,3]	≥60

Table 1 – TMT and TMT-16 Ferrule Performance Specifications

1 IEC 61755-1 defines Grades based on ≥97% random mated loss probability of channels meeting or exceeding loss specification.
2 IEC 61755-3-31 is defined for up to 12 fibers for SM APC only.
3 Exceeds IEC 61755-1 Grade B performance.

RECOMMENDED ACCEPTANCE CRITERIA - VISUAL

US Conec recommends the use of IEC 61300-3-35 Ed. 3, 2022 for visual acceptance criteria for allowable defects on fibers to provide acceptable optical performance.

RECOMMENDED ACCEPTANCE CRITERIA – END FACE GEOMETRY

US Conec recommends the use of IEC 61755-3-31 for end face geometry acceptance criteria to provide acceptable optical performance.

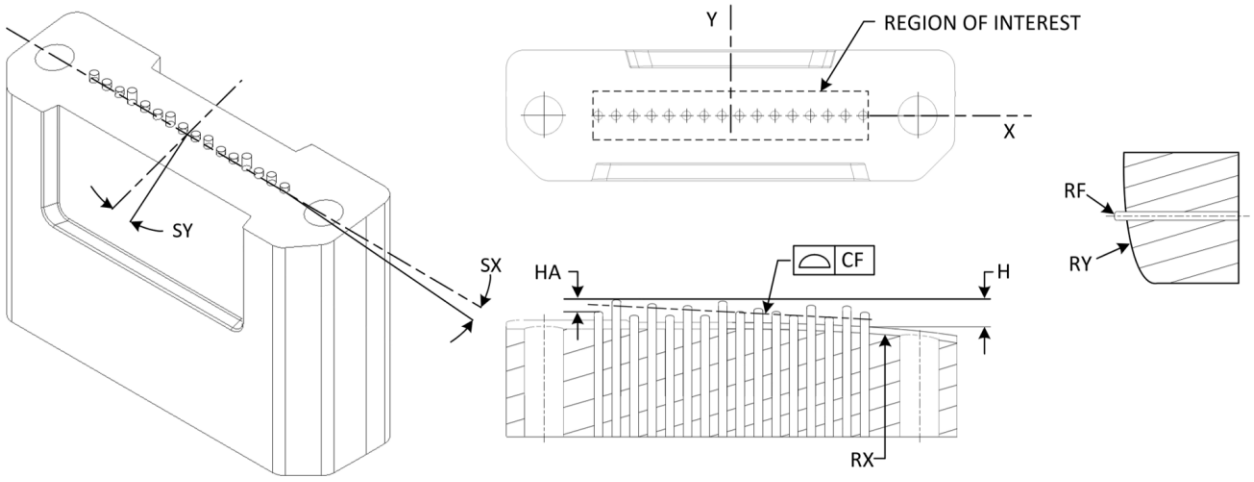


Figure 2 – End Face Geometry Parameter Definition per IEC 61755-3-31

PARAMETER	*SPECIFICATION*
Minus Coplanarity (CF)	Max: 200 nm
Ferrule Surface X-Angle (SX)	-0.15 to 0.15°
Ferrule Surface Y-Angle (SY)	7.8 to 8.2°
Fiber Height (H)	1500 to 3500 nm
Fiber Tip Spherical Radius (RF)	Min: 1 mm
Ferrule Surface X-Radius (RX)	Convex, Min: 2000 mm Concave, Min: |-5000| mm
Ferrule Surface Y-Radius (RF)	Min: 5 mm
Region of Interest	2900 µm x 675 µm (1x12f) 2900 µm x 1160 µm (2x12f) 3900 µm x 675 µm (1x16f)

Table 2 – TMT End Face Geometry Dimensions

RECOMMENDED ACCEPTANCE CRITERIA – TMT FERRULE LENGTH

Over-polishing a TMT ferrule could impact performance in multiple ways including a significant degradation in function of the key connector components and increase in optical attenuation due to a detrimental change in fiber hole position as the ferrule optical mating plane is eroded back from its original location. Therefore, necessary controls should be implemented to prevent over-grinding the ferrule during the first step (epoxy removal) of the polishing process or multiple uncontrolled attempts at re-polishing to re-work failures of conformance tests (e.g. visual inspection). The following figures and tables provide guidance on acceptable TMT ferrule length.

Note: *The overall TMT ferrule length can only be measured if the MMC connector housing is removed. If the MMC connector housing is in place, the location of the back end of the ferrule cannot be properly located.*

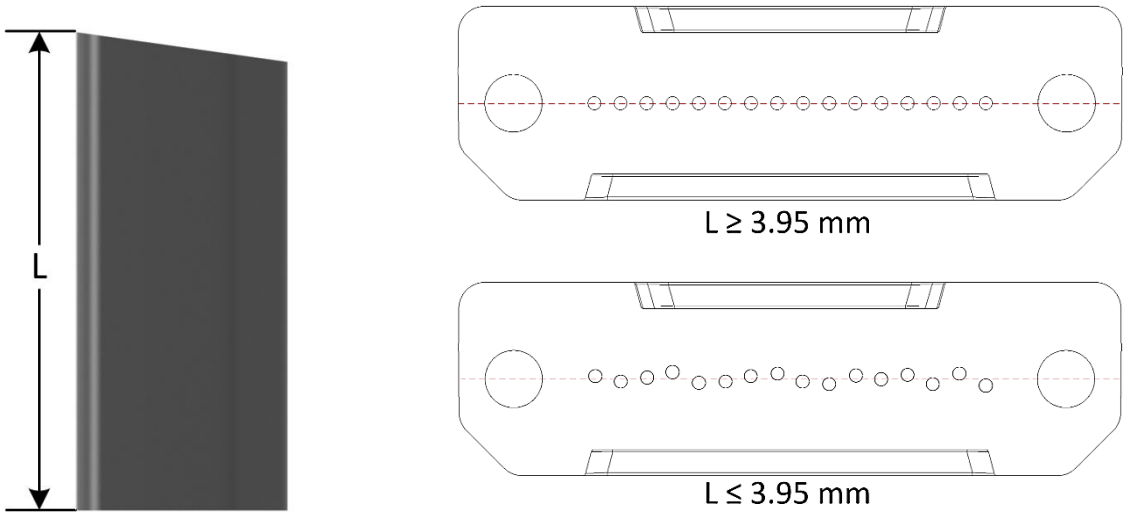


Figure 3 – TMT Ferrule Length

DESCRIPTION	*DIMENSION L (MM)*	
	MIN	MAX
Unpolished	4.09	4.19
Post-Polish	3.95	N/A

Table 3 – TMT Ferrule Length Acceptable Dimensions

MMC COMPONENT IDENTIFICATION, SELECTION, AND COMPATABILITY

This section is intended to provide a general overview of the different components used in MMC connectors.

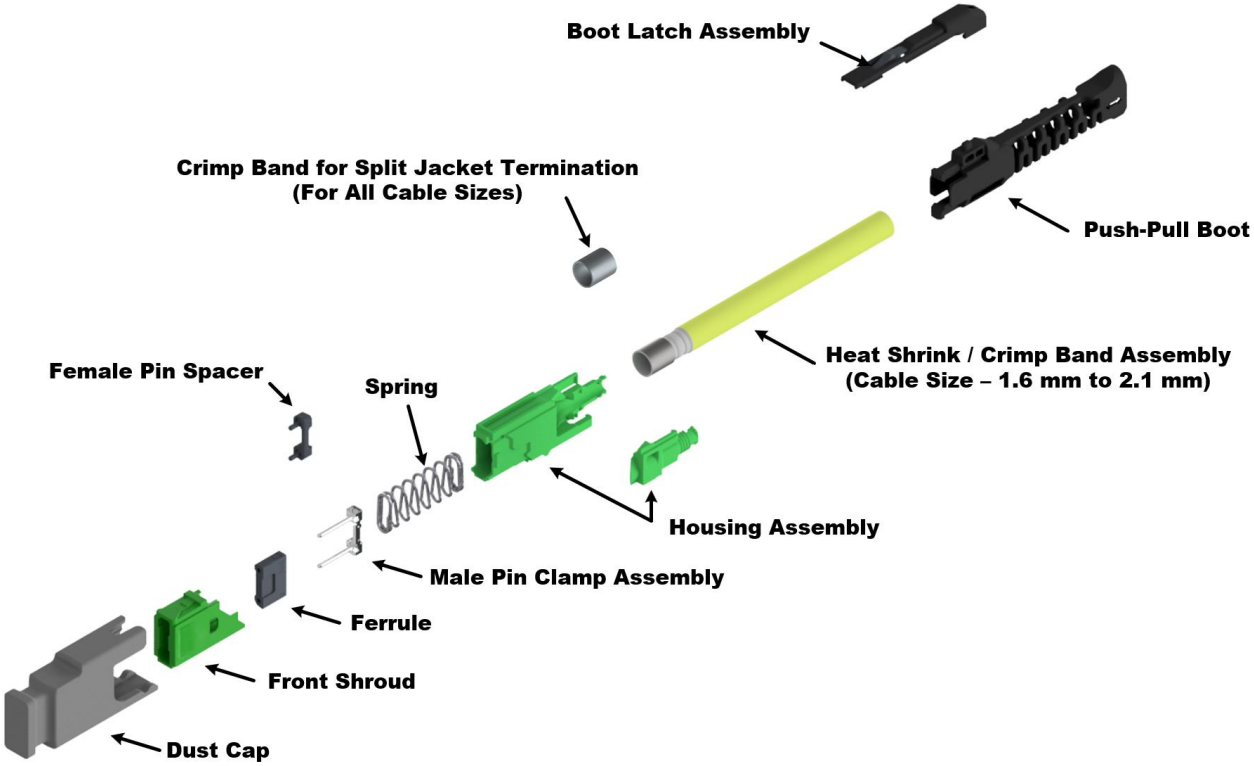


Figure 4 – MMC Connector Components

DUST CAP

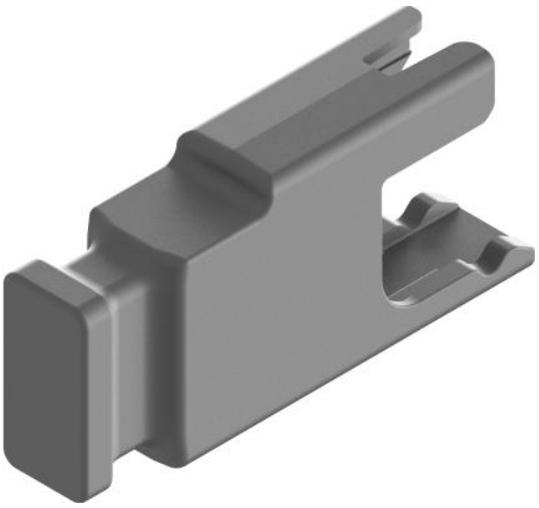


Figure 5 – MMC Dust Cap – P/N 23358

FRONT SHROUD

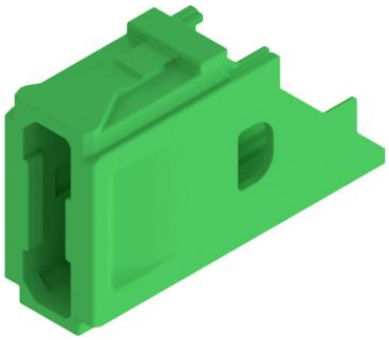


Figure 6 – MMC Front Shroud – P/N 23647

TMT FERRULE

US Conec offers TMT ferrules in multiple fiber counts. All TMT ferrules are Elite® grade performance.

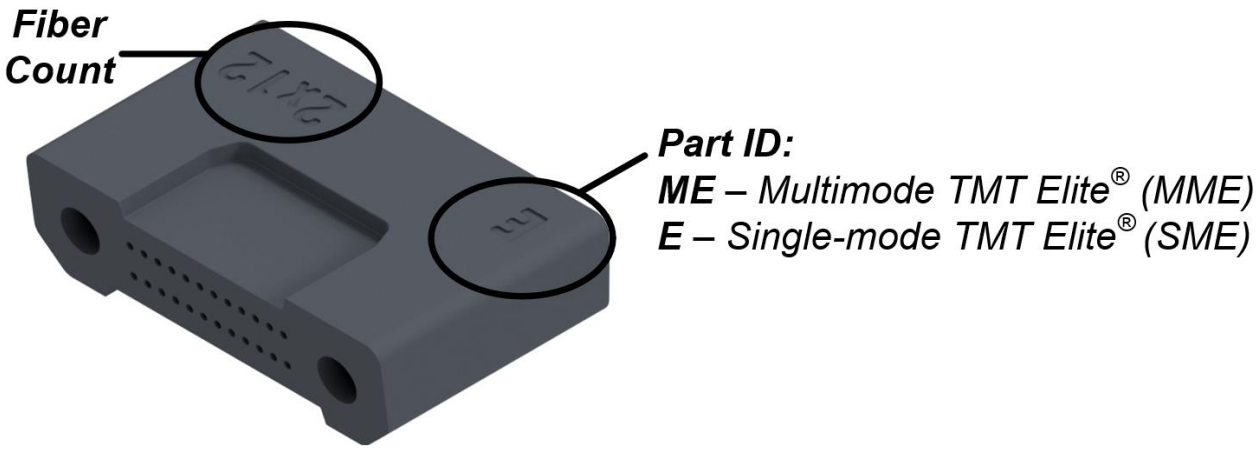


Figure 7 – MT Ferrule Identification

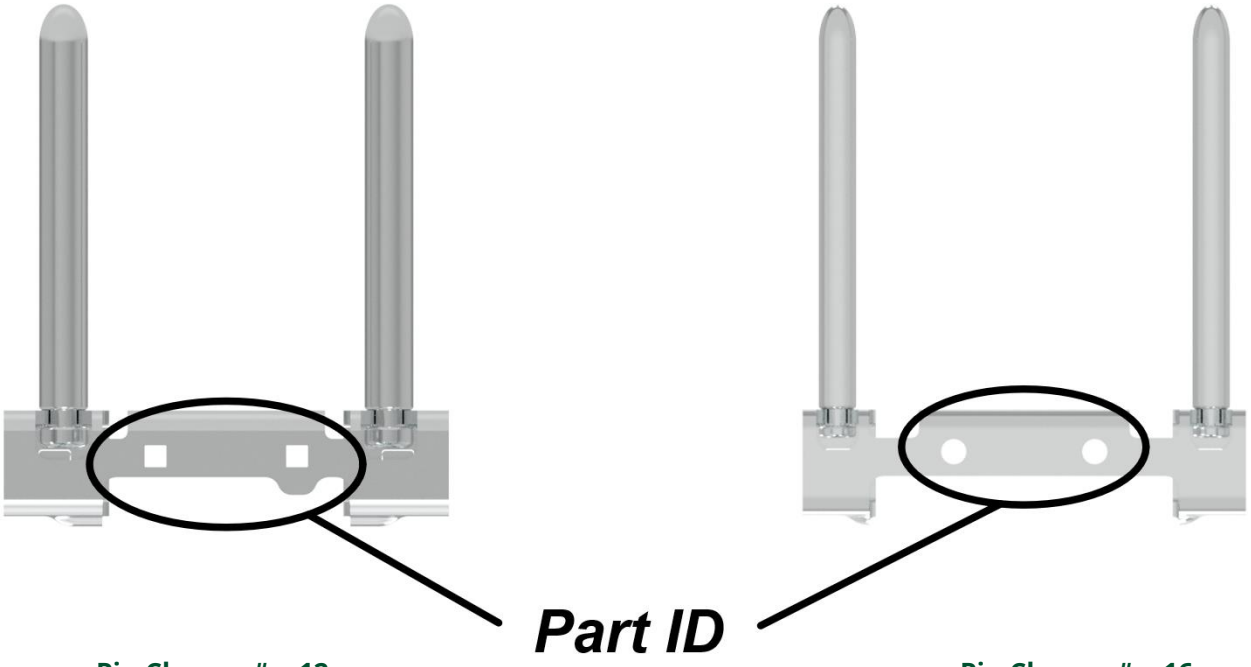
FEMALE PIN SPACERS

Gray – # x 12
P/N 24142

Black – # x 16
P/N 23136

Figure 8 – MMC Female Pin Spacers

MALE PIN CLAMP ASSEMBLIES



Pin Clamp - # x 12
P/N 24153

Pin Clamp - # x 16
P/N 22662

Figure 9 – MMC Male Pin Clamp Assemblies

SPRING

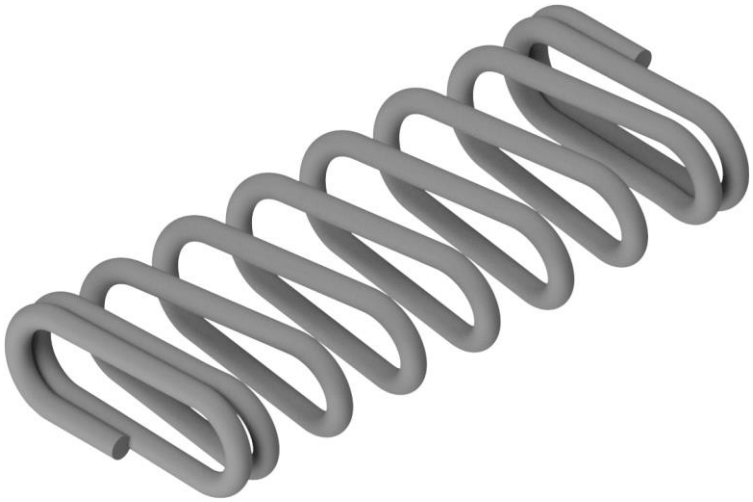


Figure 10 – MMC 10N Spring – P/N 22551

HOUSING ASSEMBLY

The MMC housing assembly (PN – 23361) is comprised of two components: the main connector body and crimp body half. The crimp body half is installed during the hardware assembly process.

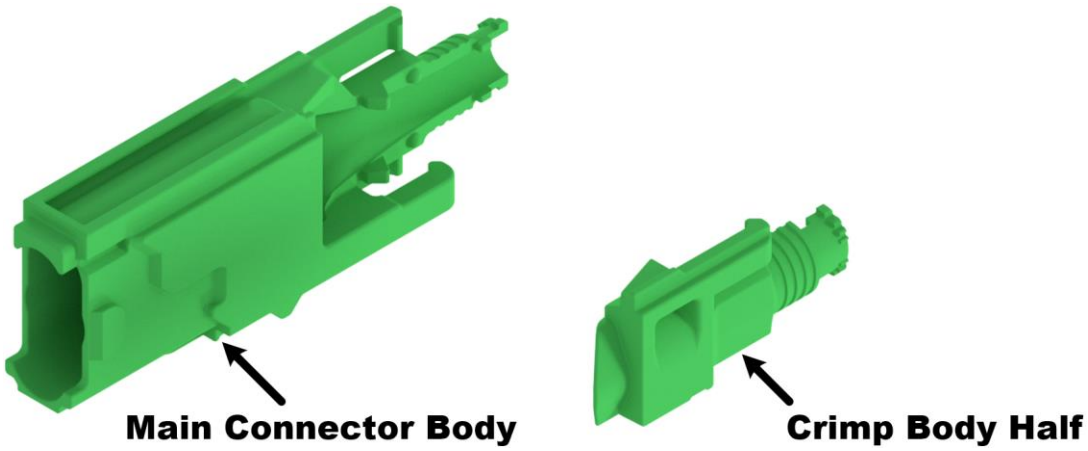
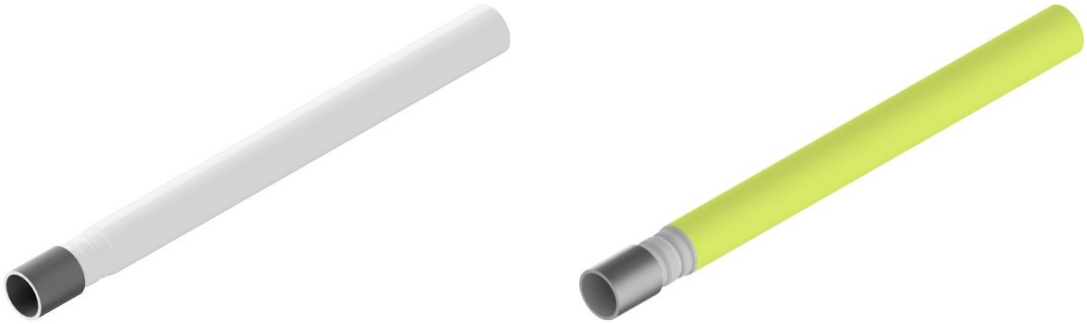


Figure 11 – MMC Connector Housing Assembly – P/N 23361

STRAIN RELIEF

There are two different methods of strain relief for the MMC connector package. The combined heat shrink / crimp band combo can be used for cable jacket sizes ranging from 1.6 mm to 2.1 mm. The jacket crimp strain relief method can be used for all cable jacket sizes. Both strain relief methods utilize the same crimp die and crimp die guide.

Strain Relief – Standard



Heat Shrink / Crimp Band – White
P/N 17221

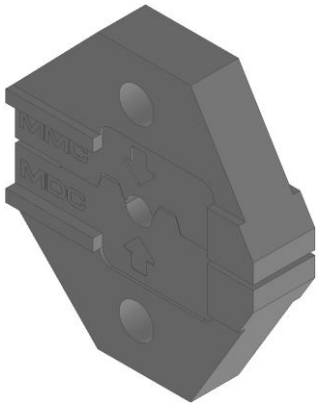
Heat Shrink / Crimp Band – Yellow
P/N 17222

Figure 12 MMC Heat Shrink / Crimp Band Assemblies

Strain Relief – Jacket Crimp

Figure 13 – Jacket Crimp Band – P/N 25203

Strain Relief – Crimp Die and Crimp Die Guide



Crimp Die
P/N 21708

Crimp Die Guide
P/N 24687

Figure 14 – MMC Crimp Die and Crimp Die Guide

CONNECTOR BOOT

The MMC connector boot is comprised of two components: the boot latch assembly and the push-pull boot. These two parts are assembled prior to the loading of components during the cable preparation process.

Figure 15 – Boot Latch Assembly

Push Pull Boot – Extended, 44 mm
P/N 24944

Push Pull Boot – Standard Length
P/N 19819

Figure 16 – MMC Connector Boots

MMC Jr. COMPONENT IDENTIFICATION, SELECTION, AND COMPATABILITY

The MMC Jr. is a reduced footprint connector variant designed for minimizing space in areas such as transceivers, on-board optics, and module/cassette applications. To achieve the required mating spring force, an MMC Jr. connector must always be opposed by an MMC Sr. connector in an MMC Jr. to MMC Sr. adapter.

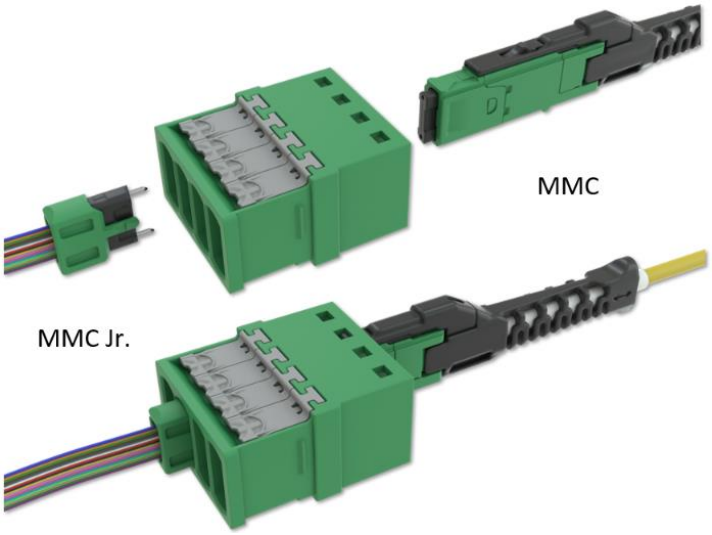


Figure 17 – MMC Jr. to MMC Mating

The following is intended to provide a general overview of the different components used in MMC Jr. connectors.

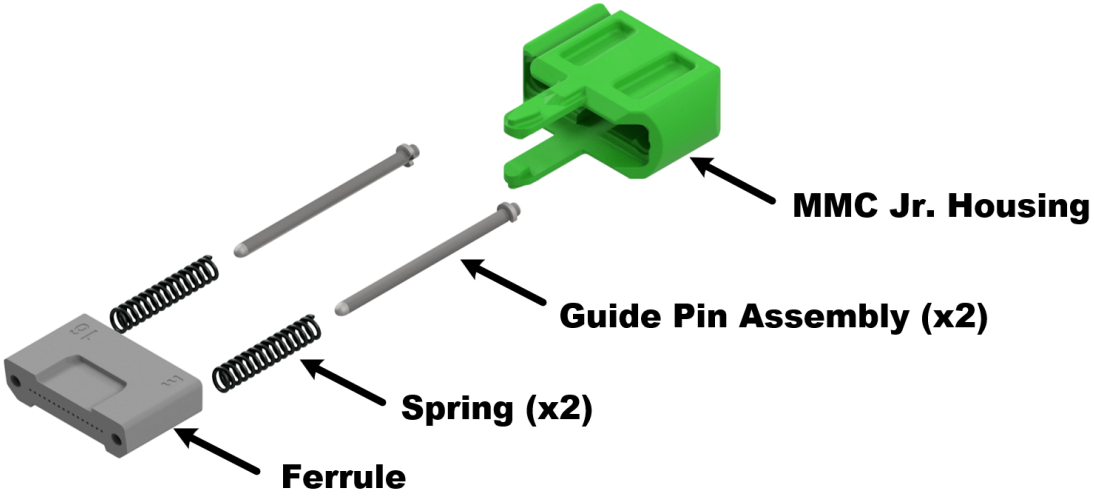
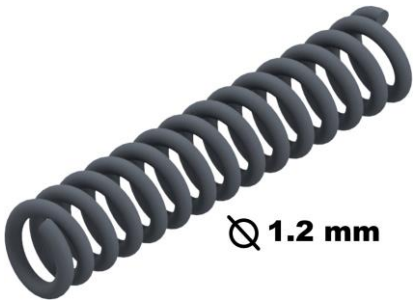


Figure 18 – MMC Connector Components

SPRINGS

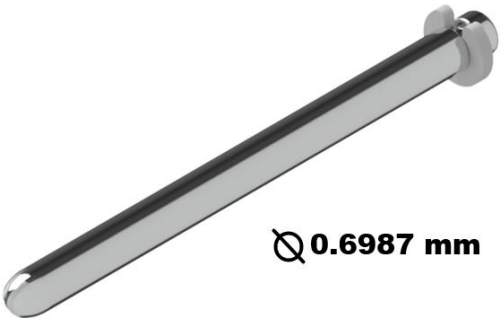


MMC Jr Spring - # x 12
P/N 24781

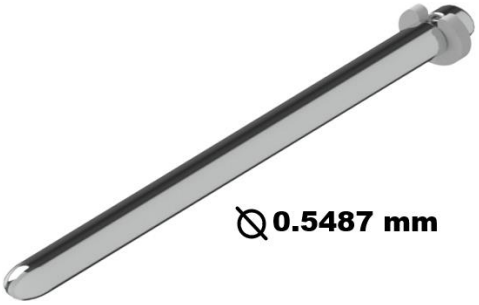
MMC Jr. Spring - # x 16
P/N 23154

Figure 19 – MMC Jr. Springs

GUIDE PIN ASSEMBLIES



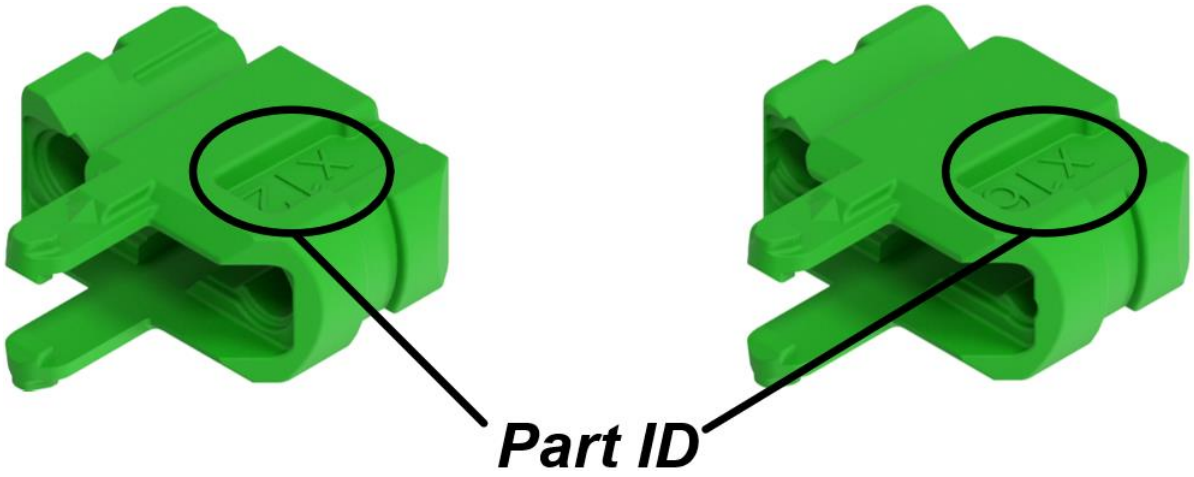
MMC Jr Guide Pin Assembly - # x 12
P/N 24431



MMC Jr. Guide Pin Assembly - # x 16
P/N 23155

Figure 20 – MMC Jr. Guide Pin Assemblies

HOUSINGS



MMC Jr Housing - # x 12
P/N 24429

MMC Jr. Housing - # x 16
P/N 23153

Figure 21 – MMC Jr. Housings

ADAPTER PANEL CUTOUT DIMENSIONS

This section provides the recommended panel cutout dimensions for MMC adapter products.

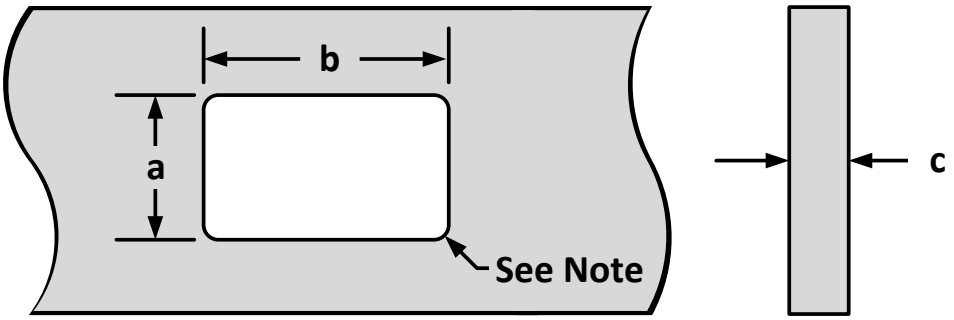


Figure 2223 – Adapter Panel Cutout Dimensions

ADAPTER	*US CONEC ADAPTER PANEL CUTOUT DIMENSIONS (MM)*			*ADAPTER DRAWING NUMBER*	*ADAPTER FOOTPRINT*
	a	*b*	*c*		
2-Port, Sr-Sr	**9.65 – 9.85**	**13.15 – 13.35**	**1.5 – 1.7**	**C24188**	**SC Simplex**
4-Port, Sr-Sr	**13.35 – 13.55**	**17.75 – 17.95**	**1.5 – 1.7**	**C24245**	**MMC, 4-Port, Sr-Sr**
4-Port, Sr-Jr	**10.15 – 10.35**	**17.75 – 17.95**	**1.5 – 1.7**	**C24279**	**MMC, 4-Port, Sr-Jr**

Notes: R0.5 Max or Corner Relief (TYP) applied to all cutouts

Table 4 – MMC Adapter Cutout Dimensions