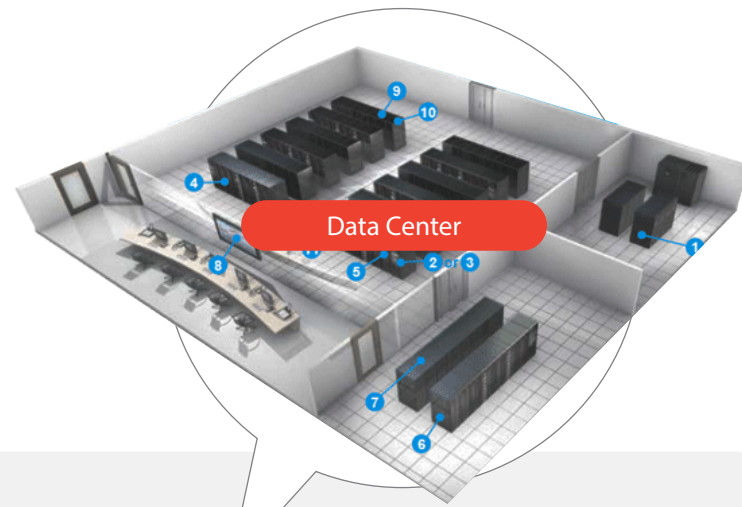




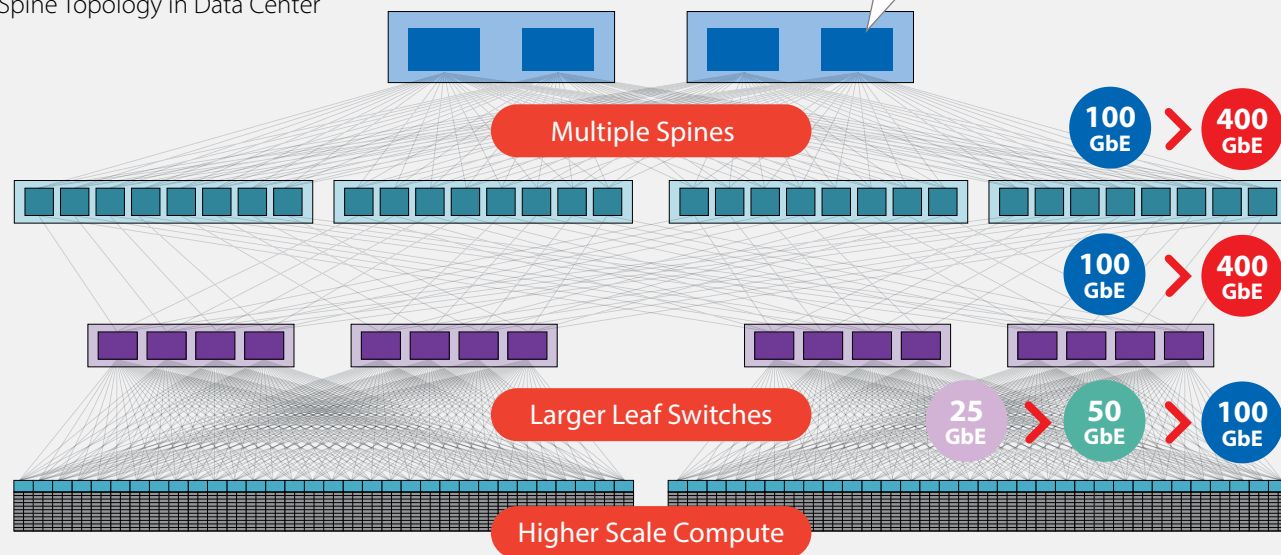
# DATA CENTER SOLUTIONS

- DATA CENTER INTRODUCTION pg. 4
- HOW TO CHOOSE THE RIGHT CONNECTOR pg. 10
- CS SERIES pg. 14
- SN SERIES pg. 28
- SN-MT pg. 40
- LC SERIES pg. 42
- MPO SERIES pg. 46
- AIR-MT SERIES pg. 52
- CLEANING AND INSPECTION pg. 57

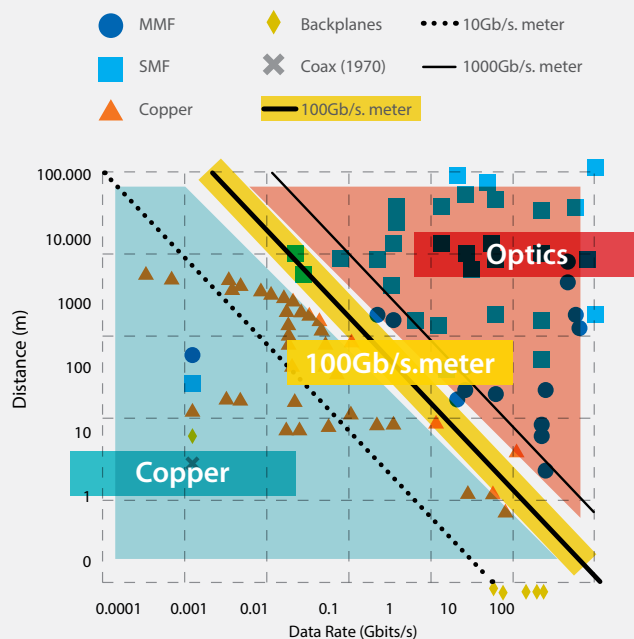
More and more fibers are required in Data Center applications as the data traffic requirements and bandwidths grow so does the need for new innovative interconnect solutions



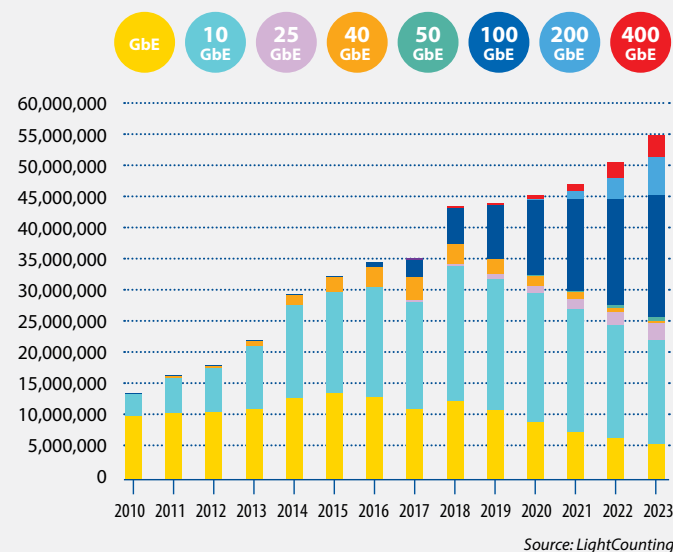
Distributed Data Center  
Leaf-Spine Topology in Data Center



Copper vs. Optics



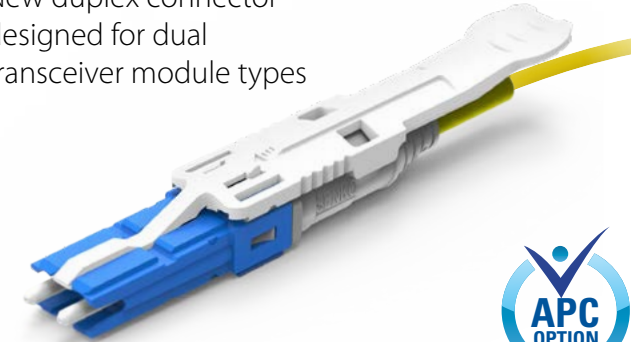
Shipments of ethernet optical transceivers by Data Rate  
(historical data and forecast)



SENKO's solutions for the future data centers:

**CS<sup>®</sup> EZ-FLIP CONNECTOR**  
Reach higher density

New duplex connector designed for dual transceiver module types



- Double the density from legacy LC solutions
- Great usability while maintaining performance
- Specified in QSFP-DD, OSFP, COBO for 2x 100/200/400G applications
- Meets GR-326 Objective

**SN<sup>®</sup> EZ-FLIP CONNECTOR**  
Simplifying Network Cabling

New duplex connector optimized for simplifying the cabling in data center cross connection systems



- Super high density duplex solution
- Specified in QSFP-DD, OSFP for 4x duplex break out MDI
- Simplifying the Data Center structure to easily make cross-connections and mesh structures without cassettes or fan-out assemblies
- Meets GR-326

**LC EZ-FLIP<sup>®</sup>**  
Polarity Reversible Connectors

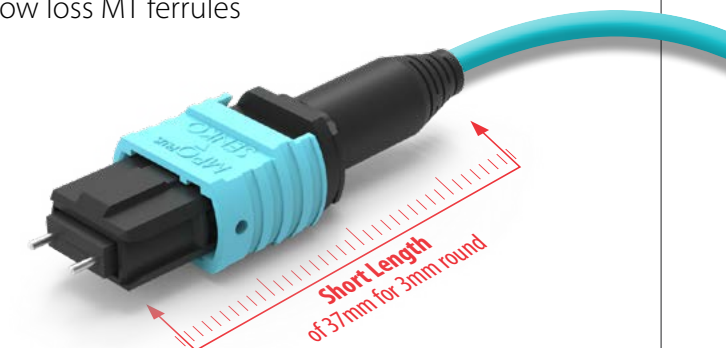
Polarity change made easy without opening the housing



- Push-Pull tab option
- Uniboot aids in cable management
- Polarity Reversal without twisting fiber

**MPO+PLUS<sup>®</sup>**  
Premium Mini Connector

High-density connectors with industry leading low loss MT ferrules



- GR-1435 compliant
- Gender changeable guide pins



# CS® Connector

Reach Higher Density/Capacity with CS®



**TIA ANSI/TIA-604-19 GR 326 COMPLIANT**

**Shorter Uniboot connector compared to LC**

Standard CS® Connector	40 mm
LC Uniboot connector with Mini-boot	54 mm

**LC Duplex, CS, CS Comparison**

Parameter	LC Duplex	CS
Height	10.7 mm	5.3 mm
Width	13 mm	7.85 mm
Pin Spacing	6.25 mm	3.8 mm

**4x CS® Duplex connector** (28mm width) vs **4x LC Duplex connector** (54mm width) = **40% SPACE SAVING**

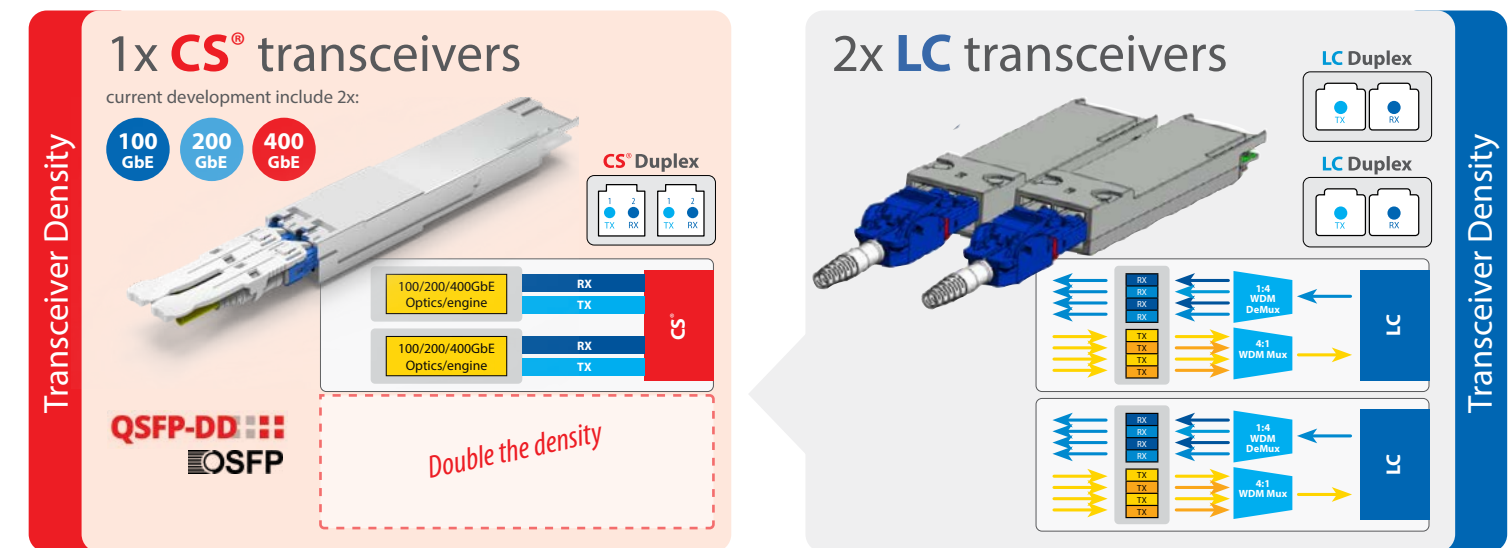
**30% SPACE SAVING** (vertical stacking)

- Higher density vertically and horizontally
- Low profile connector design allows to stack adapter vertically
- 40% reduction in width compared to LC

# Go with CS and Double the Density from LC

Doubling Density/Capacity in Many Ways

Doubling Transceiver Density/Capacity



**1x CS® transceivers**  
current development include 2x:  
100 GbE, 200 GbE, 400 GbE

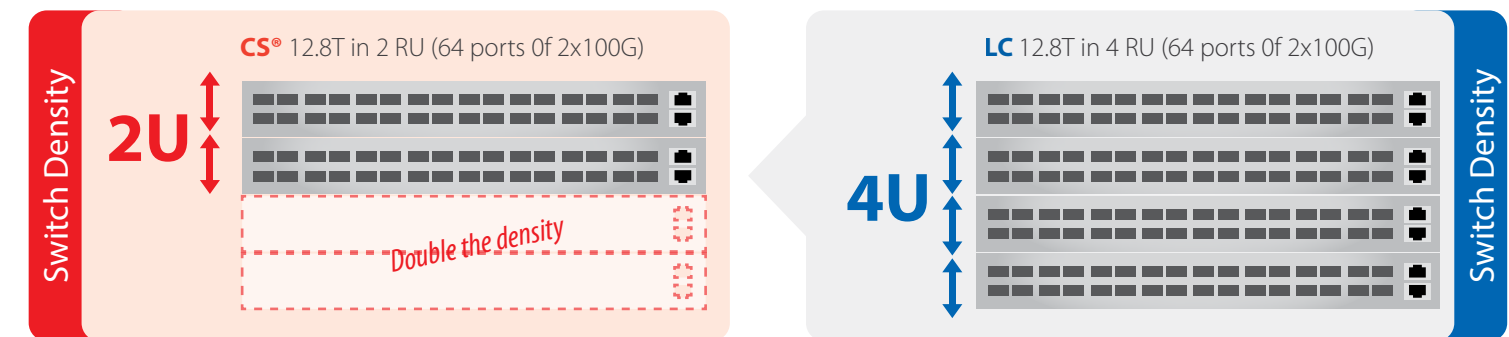
**2x LC transceivers**

**Double the density**

**Transceiver Density**

CS Duplex vs LC Duplex comparison showing internal optics (WDM Mux, DeMux) and port configurations.

Doubling Switch Density/Capacity



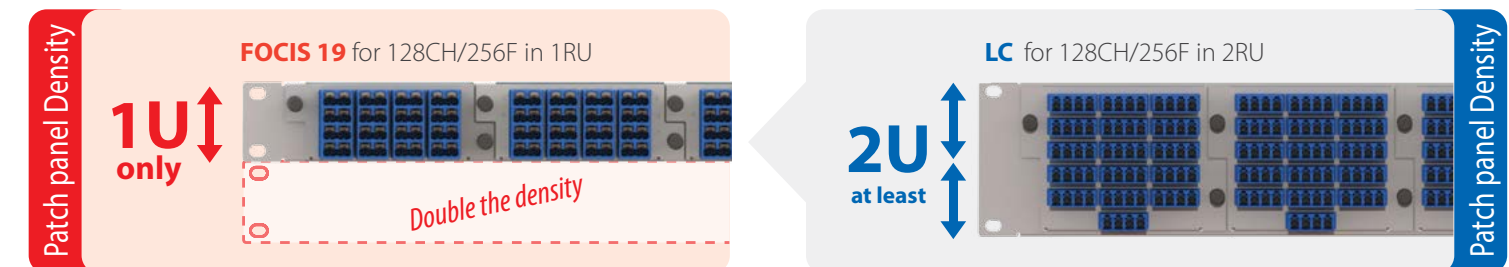
**CS® 12.8T in 2 RU (64 ports of 2x100G)** vs **LC 12.8T in 4 RU (64 ports of 2x100G)**

**2U** vs **4U**

**Double the density**

**Switch Density**

Doubling Patch Panel Density/Capacity



**FOCIS 19 for 128CH/256F in 1RU** vs **LC for 128CH/256F in 2RU**

**1U only** vs **2U at least**

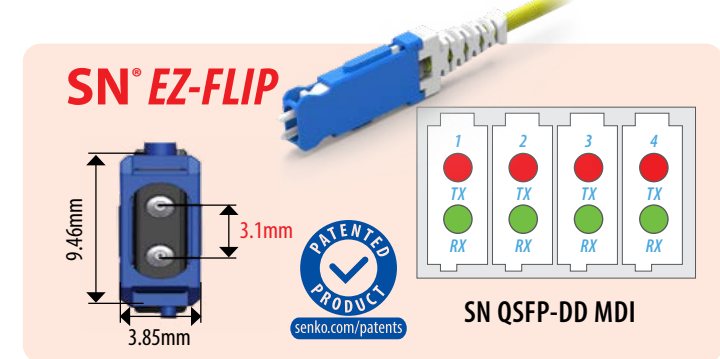
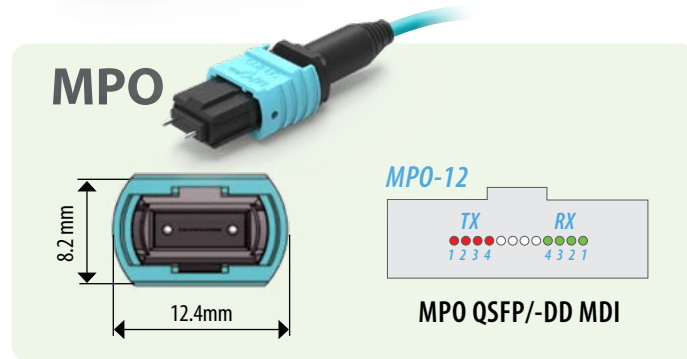
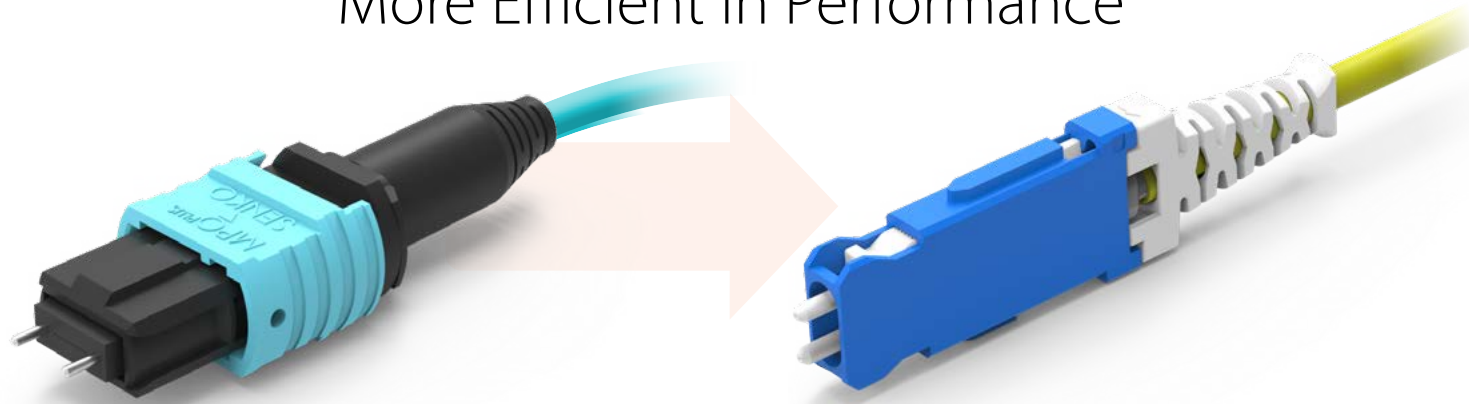
**Double the density**

**Patch panel Density**



# SN<sup>®</sup> Connector

SN Simplified Cabling  
More Efficient in Performance

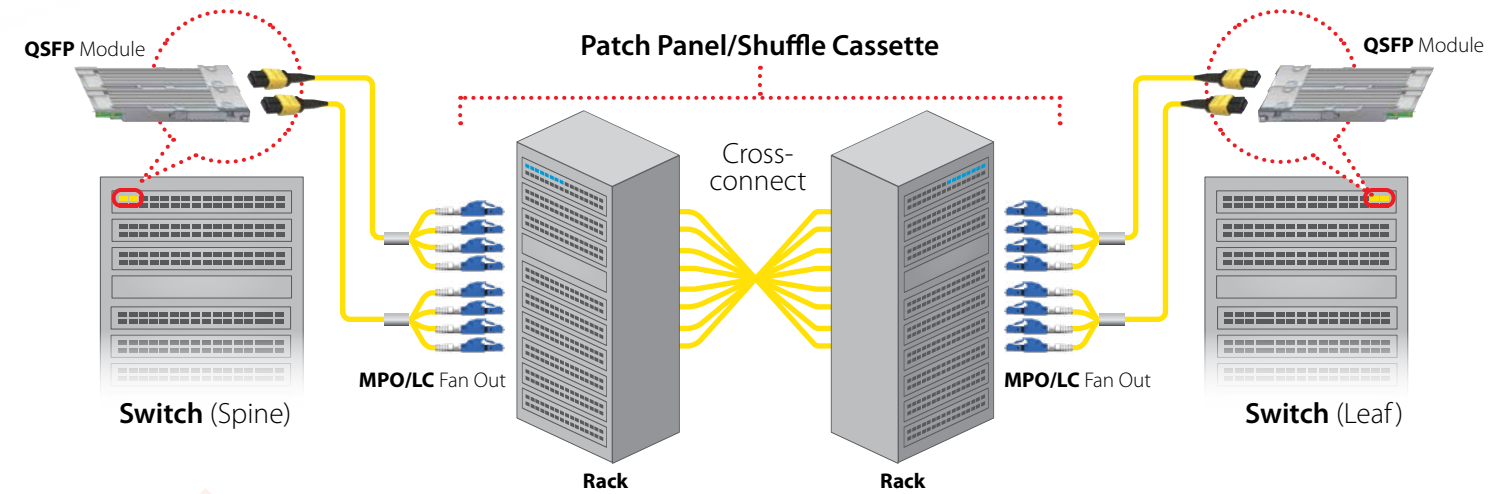


SN with more stable performance and easier maintenance

MPO Connector	Ferrule end face	SN <sup>®</sup> EZ-FLIP Connector	Ferrule end face
<ul style="list-style-type: none"> <li>Multi-fiber ferrules inherently have higher insertion loss when compared to single fiber ferrules</li> <li>Multi-fiber ferrules have a large surface area making them challenging to clean</li> </ul>		<ul style="list-style-type: none"> <li>Utilizes proven 1.25 mm ferrule technology for low insertion loss and high return loss</li> <li>Single fiber ferrule is easy to clean and maintain</li> </ul>	

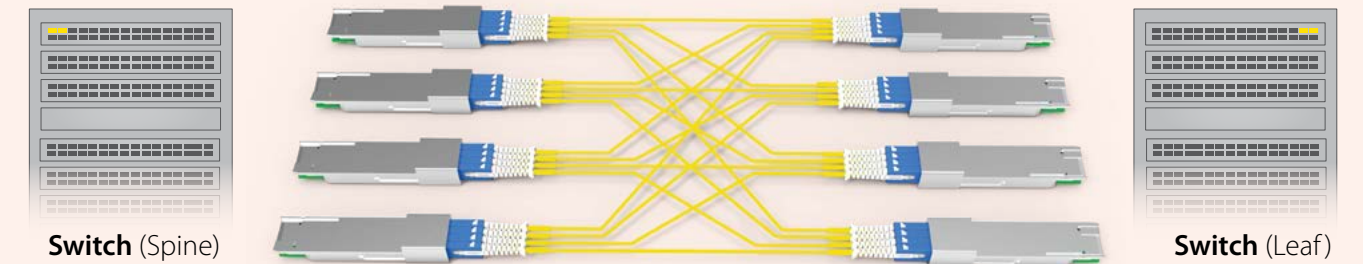
# Go with SN and Improve from MPO

Leaf-Spine Cross Connection  
Existing solution with MPO 8F based Transceiver



New solution with 4x SN based Transceiver

Less connectivity points required  
No fanout or breakout cables are required



## Simplified Cabling

- Reduce the number of connection points
- Shuffle or fanout is not required to make cross connection

As you would with your car, choose the right connector for your needs:

### Density

What is the density you need?

### Durability

What is the environment you are working in?

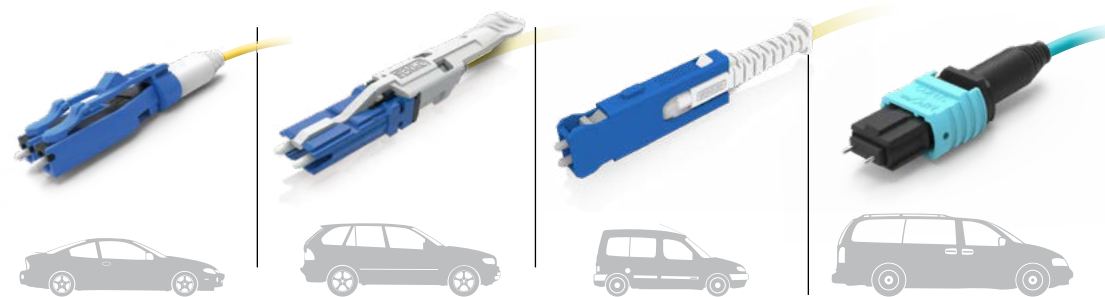
### Ease of Use

Who is using it and how often do you need to connect/disconnect?

### Ease of Maintenance

What is the skill set & tools available to the maintenance team?

Connector	LC	CS	SN	MPO
Density	●●	●●●	●●●●	●●●●●
Durability	●●●●	●●●●●	●●●●	●●●●
Ease of Use	●●●●	●●●●●	●●●	●●●●
Ease of Maintenance	●●●●●	●●●●●	●●●●●	●●●



Car type	Coupe	SUV	Family	Minivan
Passenger capacity	●●	●●●	●●●●	●●●●●
Durability	●●●●	●●●●●	●●●●	●●●●
Ease of Use	●●●●	●●●●●	●●●	●●●●
Ease of Maintenance	●●●●●	●●●●●	●●●●●	●●●

## CONNECTOR COMPARISON

Connector		LC
Density	●●	Large footprint (largest of the 4 connectors) connector for two fibres
Durability	●●●●	Complies to GR-326 SFF requirements
Ease of Use	●●●●	Larger footprint allows space for finger access
Ease of Maintenance	●●●●●	Standard 1.25mm ceramic ferule where cleaning & inspection methodology is convenient

Connector		CS
Density	●●●	Medium footprint connector for 2 fibres
Durability	●●●●●	Complies to GR-326 requirements. Highest durability among the 4 connectors (similar to SC)
Ease of Use	●●●●●	Larger footprint allows space for finger access
Ease of Maintenance	●●●●●	Standard 1.25mm ceramic ferule where cleaning & inspection methodology is convenient

Connector		SN
Density	●●●●	Smallest footprint connector for 2 fibres
Durability	●●●●	Complies to GR-326 SFF requirements (similar to LC)
Ease of Use	●●●	Small footprint with limited space for finger access. Not suitable for glove operation in the field
Ease of Maintenance	●●●●●	Standard 1.25mm ceramic ferule where cleaning & inspection methodology is convenient

Connector		MPO
Density	●●●●●	Large footprint connector but for 12, 16, 24, 32 fibres
Durability	●●●●	Complies to GR-1435 requirements (similar to LC)
Ease of Use	●●●●	Larger footprint allows space for finger access
Ease of Maintenance	●●●	Rectangular non-ceramic ferule where cleaning & inspection methodology is challenging

At SENKO, we are continuously pushing the limits with our ferrule technology to achieve lower losses. When defining your network budget needs, it is important to know what optical losses are required. While using the Single-mode Premium ferrules will help achieve the lowest loss, it may not always be needed. For Connectors like the CS, SN or LC, the following performance can be expected when choosing the right ferrule for your application.

Parameters	Single-mode				Multimode
	UPC		APC		MM
	SM Premium Low Loss	SM Premium	SM Premium Low Loss	SM Premium	Premium
Typical Insertion Loss (dB) Random Mating	0.05	0.08	0.07	0.12	0.05
Maximum Insertion Loss (dB) Random Mating	0.15	0.20	0.15	0.25	0.15
Typical Return Loss (dB)	≥55	≥65	≥25		
Operating Temperature (°C)	-40°C to +75°C				
Durability	<0.2dB typical change, 500 mating's				
Ferrule Ø	125µm				127µm

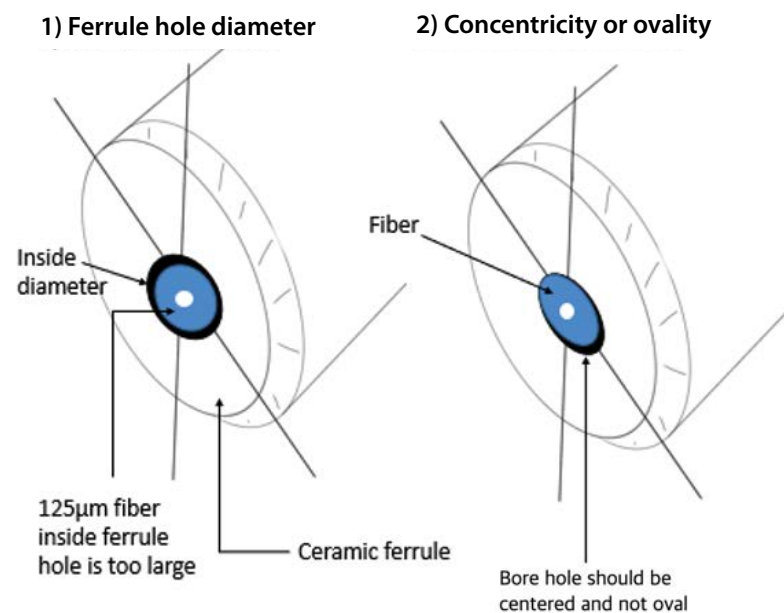
\* Per random mating testing IEC 61753-1 For more details about random mating performance, visit: <https://www.senko.com/wp-content/uploads/2022/04/Random-Mating-IL-vs-IL-by-Master-Jumer-110221.pdf>

The two most critical measurements to meet these losses are:

- Ferrule hole diameter – For a minimum Insertion Loss, it is better to use the tightest-tolerance ferrule hole diameter available. As an example, if the typical values for a single-mode fiber glass Outer Diameter (OD) are 124.5µm to 124.9µm the desirable ferrule Inner Diameter (ID) should be 125.0µm to 125.5µm. Through multiple studies SENKO ensures
- Ferrule hole concentricity – The shape of the bore hole must be round and in the center of the ferrule. An oval shape instead of perfectly round one will not hold an optical fiber in perfect centered alignment. Additionally, the bore hole should be centered relative to the outside of the ferrule to achieve the best alignment and performance. Ferrule hole concentricity is measured inside diameter to outside diameter (ID to OD).

Therefore, it's important to use ferrules considering the above tolerances for optimum performance.

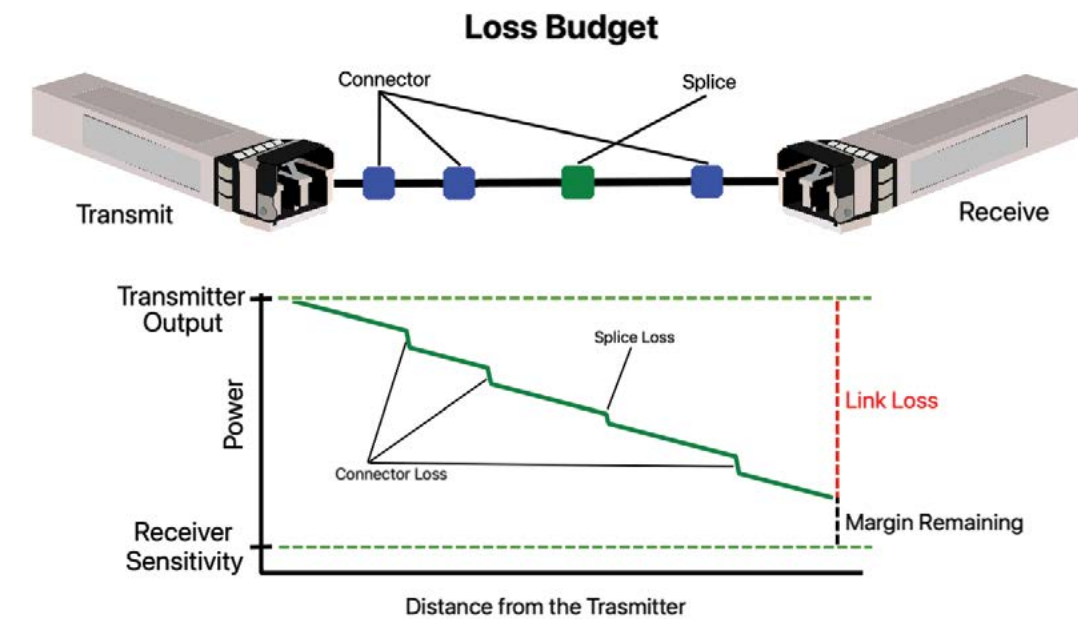
1. Ferrule hole diameter
2. Ferrule hole concentricity



The manufacturing process of ferrules is focused on making the highest quality ferrule possible with the best possible specifications in terms of ferrule concentricity, and tolerances on the bore hole ID dimensions. However, due to difficulties and complexities of the zirconia ceramic manufacturing process the manufacturers have a secondary operation which is inspection and sorting of produced ferrules. At this stage, 100% of the ferrules are inspected and measured with the state-of-the-art equipment and separated into their respective categories such as SM Premium Low Loss, SM Premium, and Multimode. Typically, the yields for the highest quality ferrules, or Premium Low Loss ferrules are lower when compared to the rest and therefore they command a premium cost.

**Is the most expensive Premium Low Loss always better to use over the Premium? The simple answer is, no.**

Reasons would include that the Premium Low Loss ferrules typically tighter ID, and if a low-grade fiber is used that has more than typical variation of the cladding OD, it may be difficult to terminate due to potential tolerance overlap and fiber stubbing. In most cases the Premium Low Loss ferrules are used in applications where the optical loss must be the lowest possible. However, the ferrule choice should depend on the end applications optical power loss budget. The optical power loss budget is the allowable amount of loss that a fiber link should have if it is installed properly without external factors such as contamination. The power budget is determined as the difference between the output power of the transmitter and the minimum input power of the receiver. An average Data Center that utilizes most of the Worlds Interconnect today utilizes transceivers with -18 to -19dBm power output and the receivers with -23 to -24dBm sensitivity. This equates to a dynamic range or data link power budget of about 4 to 6 dB. This means in the typical Data Center deployment the SENKO Premium ferrules would be satisfactory as the average connector loss difference between the SENKO SM Premium Low Loss and SENKO SM Premium is less than 0.1dB which is insignificant for the given power budget.

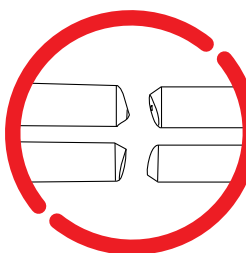
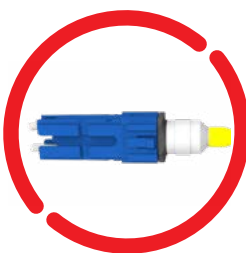
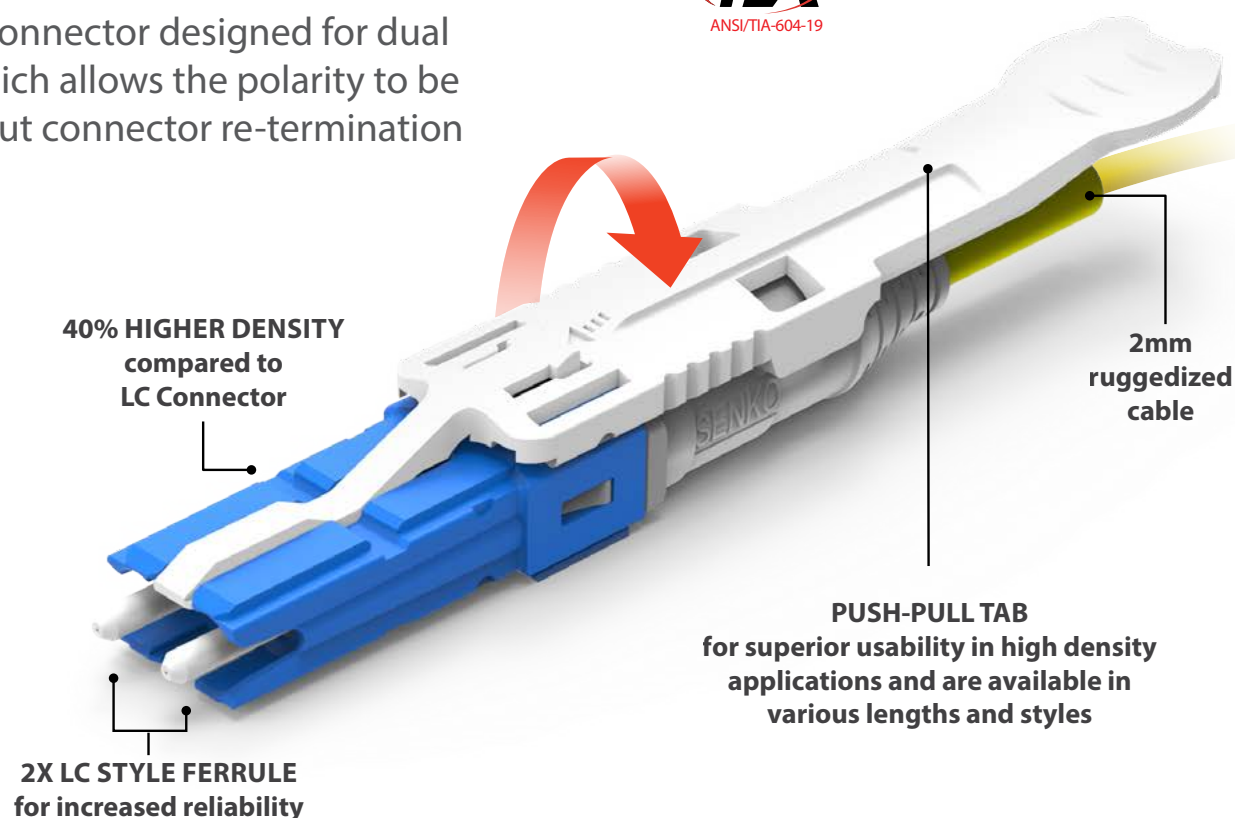
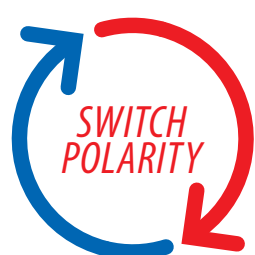
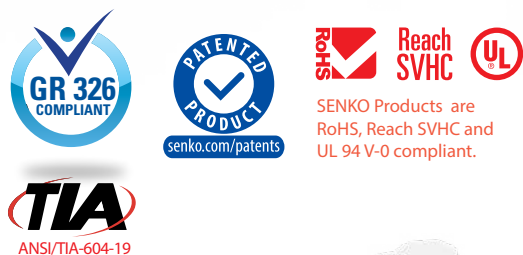


SENKO offers a range of ferrules including Premium Low Loss, Premium, and Standard connectors that offer varying loss specifications. In most cases SENKO Premium grade ferrules achieve the desired results while keeping cost savings in mind. We suggest contacting your SENKO representative if you have any additional questions.

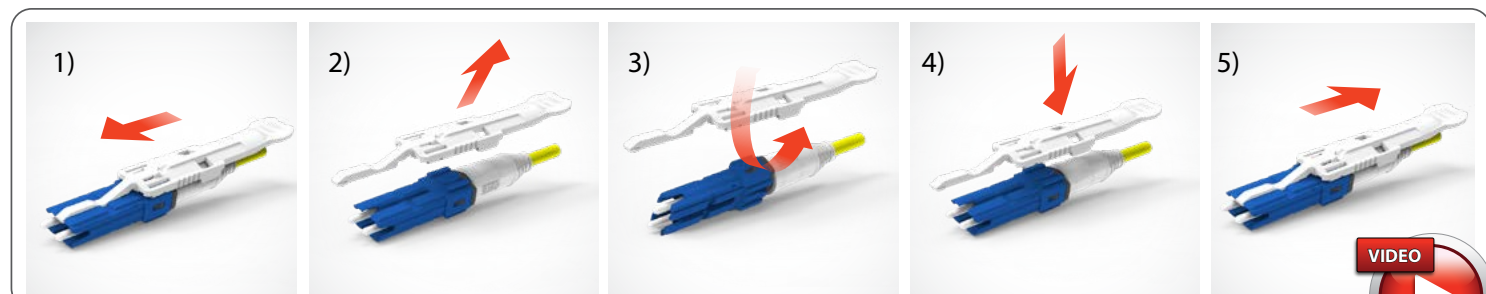


# Premium series CS® EZ-FLIP CONNECTOR

A new duplex connector designed for dual transceivers which allows the polarity to be switched without connector re-termination



CS EZ-Flip Polarity Switching simply by flipping the tab to the opposite side



CLICK TO WATCH THE VIDEO

### CS-EZ-Flip APC Connector

VIDEO

New opposing APC angle design makes polarity changing possible.

EZ-ily Flip the CS push-pull tab and connect. Angles maintain the same alignment after polarity change!

### TIME SAVING PRE-ASSEMBLED CS EZ-FLIP SWITCHABLE CONNECTOR

VIDEO

Just Insert the two fibers into the ferrules

The CS EZ-Flip connector is available in a pre-assembled condition. This offers the user the ability to minimize the assembly operations, reduce the risk for damaging the components during assembly and improve assembly yield while reducing assembly labor time.

## CS® EZ-FLIP APC and UPC 900 μm, 2 mm, 3 mm

CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR	TAB LENGTH	TAB COLOR
6E4 CS EZ-Flip UPC Connector Pre-assembled for 2 mm/3 mm Cable	151 SM Premium	1 Blue	2 2.0 mm	1 White	47 47 mm	W White
	158 SM Premium Low Loss	5 Aqua	3 3.0 mm		55 55 mm	
	251 MM Premium	6 Heather Violet	4 2.0 mm Flex Boot		62 62 mm	
6F4 CS EZ Flip UPC Connector Unassembled Kit for 2 mm/3 mm Cable	151 SM Premium	1 Blue	2 2.0 mm	1 White	47 47 mm	W White
	158 SM Premium Low Loss	5 Aqua	4 2.0 mm Flex Boot		55 55 mm	
	251 MM Premium	6 Heather Violet			62 62 mm	
6H4 CS EZ-Flip Connector APC Unassembled Kit for 2 mm/3 mm Cable	153 APC Premium	3 Green (APC)	2 2.0 mm	1 White	47 47 mm	W White
	158 SM Premium Low Loss		4 2.0 mm Flex Boot	6 Green	55 55 mm	
					62 62 mm	
6E4 CS EZ-Flip UPC Connector Pre-assembled for up to 900 μm Cable	151 SM Premium	1 Blue	1 900 μm BTW	1 White	36 36 mm	W White
	158 SM Premium Low Loss	5 Aqua				
	251 MM Premium	6 Heather Violet				
6F4 CS EZ Flip UPC Connector Unassembled Kit for up to 900 μm Cable						
6H4 CS EZ-Flip APC Connector APC Unassembled Kit for up to 900 μm Cable	153 APC Premium	3 Green (APC)	1 900 μm BTW	1 White	36 36 mm	W White
	158 APC Premium Low Loss			6 Green		

6E4 - 153 - 311 - 36W ORDER CODE example

Note: Preassembled version is currently offered only in UPC configuration.

# Reach higher density with the CS® CONNECTOR



New duplex connector designed for dual transceiver module types

40% HIGHER DENSITY compared to LC Connector

2 mm ruggedized cable

PUSH-PULL TAB for superior usability in high density applications and are available in various lengths and styles

2 x LC STYLE FERRULE using proven 1.25 mm ferrule technology

Can achieve IEC random mating Grade B performance

- FEATURES**
- 40% size reduction compared to LC duplex
  - Designed for OSFP/QSFP-DD break out application
  - Proven 1.25 mm ferrule technology
  - Push-pull tab
  - Can achieve IEC random mating Grade B

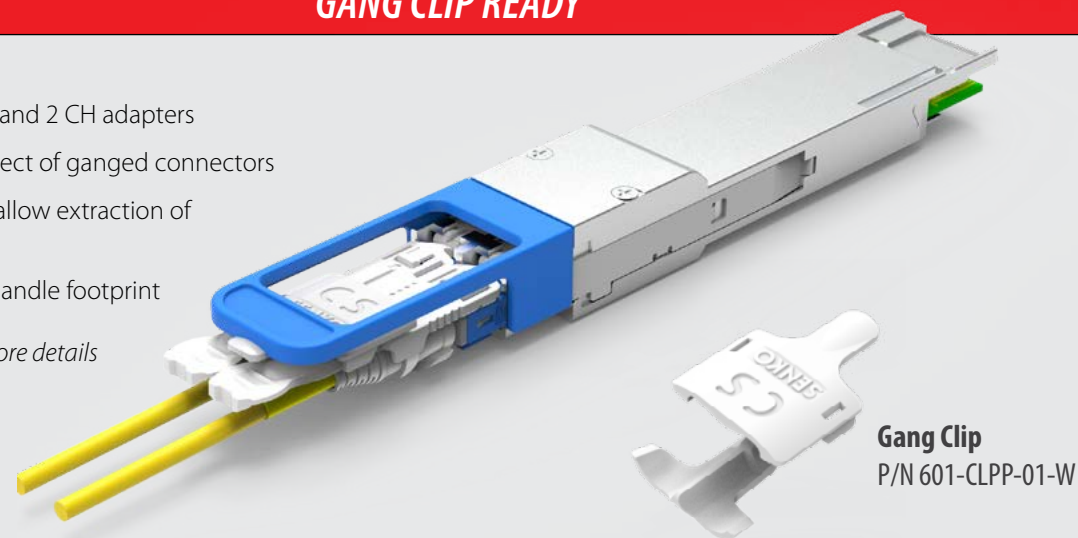


## GANG CLIP READY

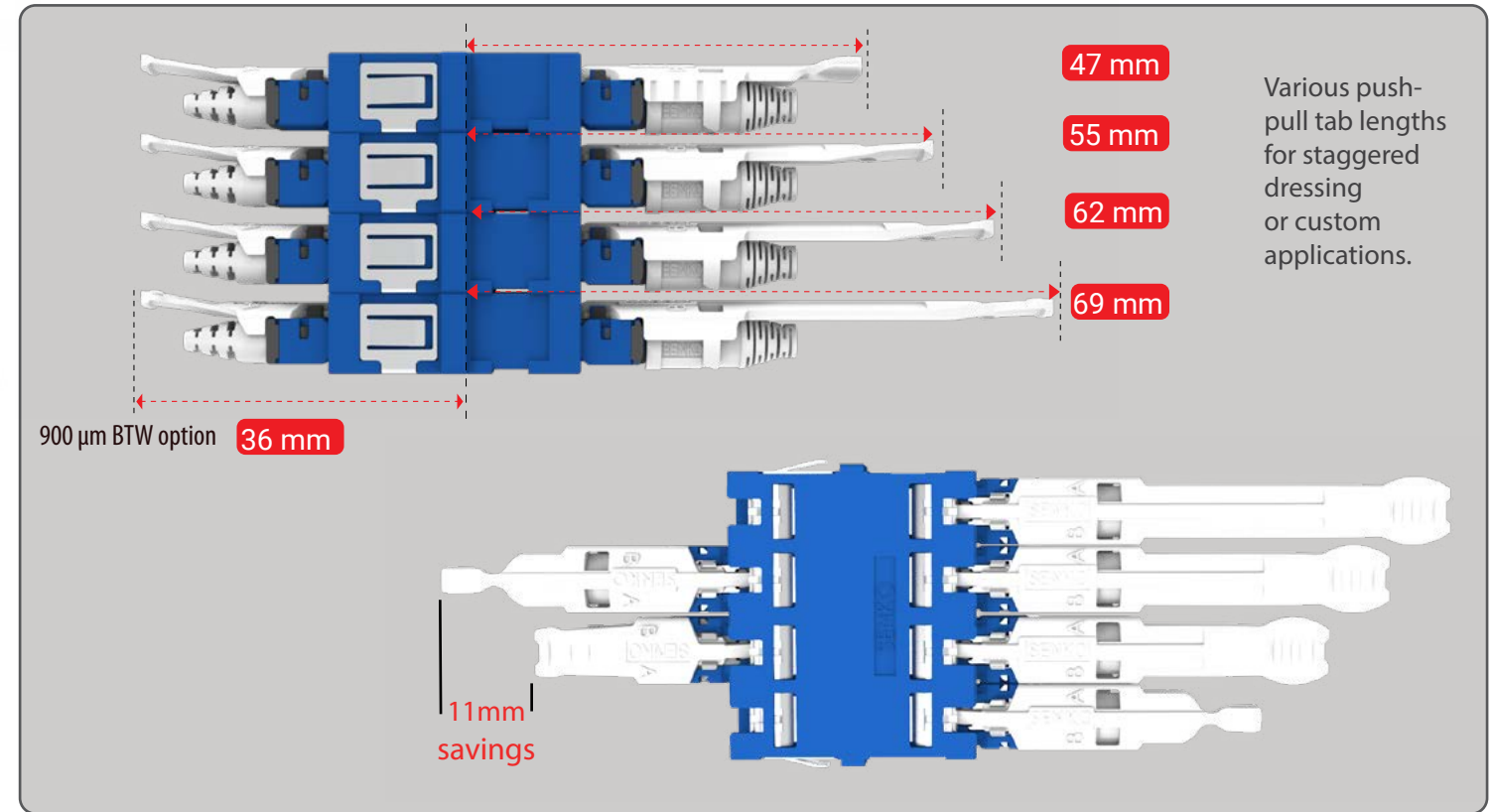
**FEATURES and BENEFITS**

- Solutions for: QSFP-DD and 2 CH adapters
- Quick connect/disconnect of ganged connectors
- Easy removal of clip to allow extraction of individual connector
- Fits within transceiver handle footprint

See Accessories page for more details

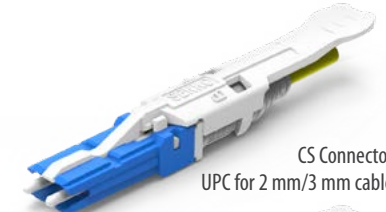


**Gang Clip**  
P/N 601-CLPP-01-W

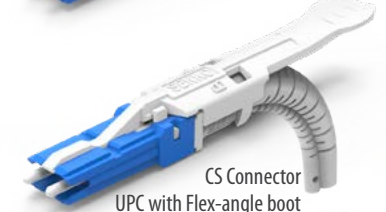


## CS® CONNECTOR

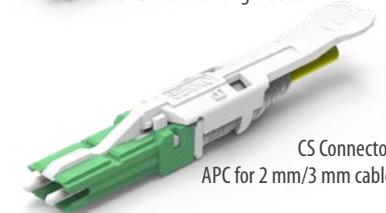
### APC and UPC 900 µm, 2 mm, 3 mm



CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR	TAB LENGTH	TAB COLOR
601 CS Connector UPC Unassembled for 2mm/3mm Cable	151 SM Premium	1 Blue	2 2.0 mm	1 White	47 47 mm	W White
	158 SM Premium Low Loss	5 Aqua	3 3.0 mm		55 55 mm	
	251 MM Premium	6 Heather Violet	4 2.0 mm Flex Boot		62 62 mm	



CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR	TAB LENGTH	TAB COLOR
611 CS Connector APC Unassembled for 2mm/3mm Cable	153 APC Premium	3 Green (APC)	2 2.0 mm	1 White	47 47 mm	W White
	158 APC Premium Low Loss		3 3.0 mm		55 55 mm	
			4 2.0 mm Flex Boot		62 62 mm	



CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR	TAB LENGTH	TAB COLOR
601 CS Connector UPC Unassembled for up to 900 µm Cable	151 SM Premium	1 Blue	1 900 µm BTW	1 White	36 36 mm	W White
	158 SM Premium Low Loss	5 Aqua				
	251 MM Premium	6 Heather Violet				

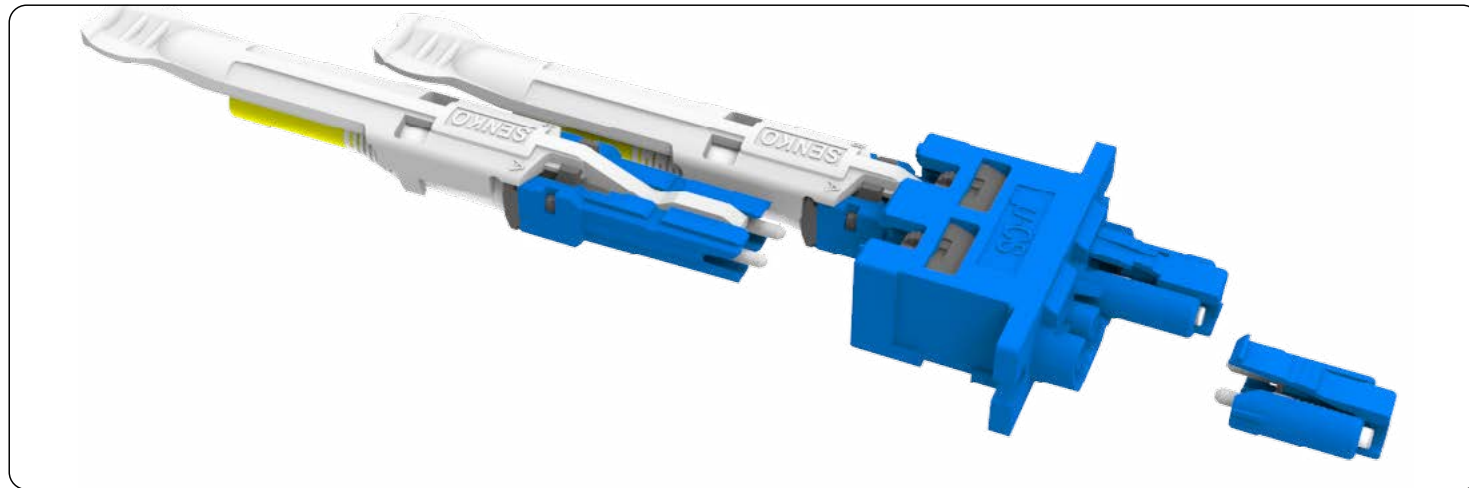


CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR	TAB LENGTH	TAB COLOR
611 CS Connector APC Unassembled for up to 900 µm Cable	153 APC Premium	3 Green (APC)	1 900 µm BTW	1 White	36 36 mm	W White
	158 APC Premium Low Loss					

611 - 153 - 316 - 36W ORDER CODE example



# Micro CS®



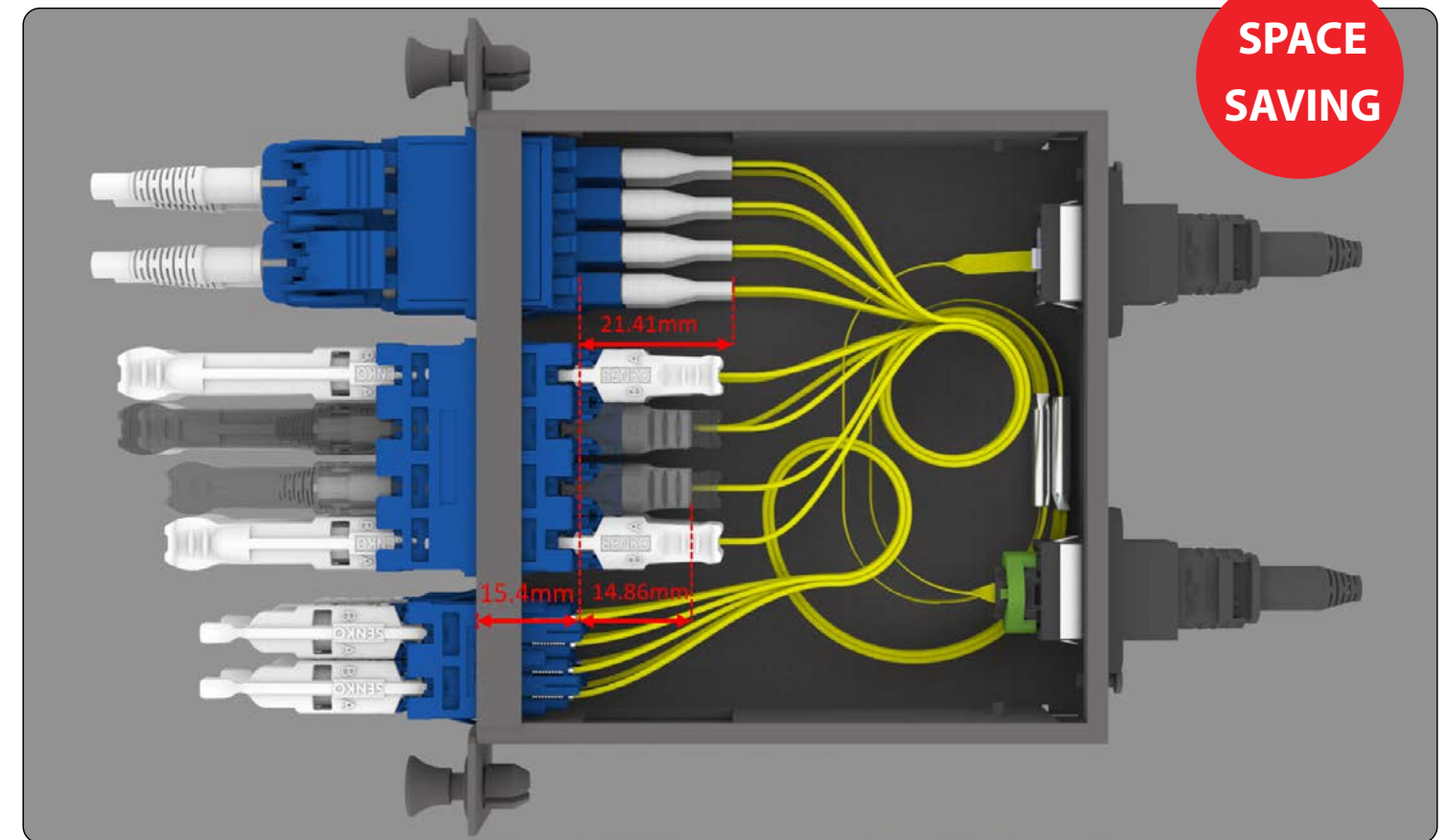
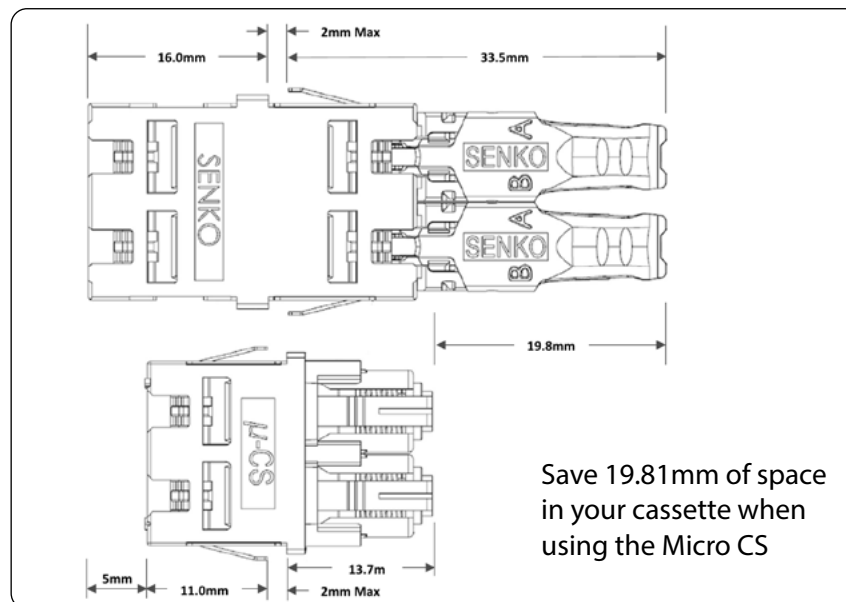
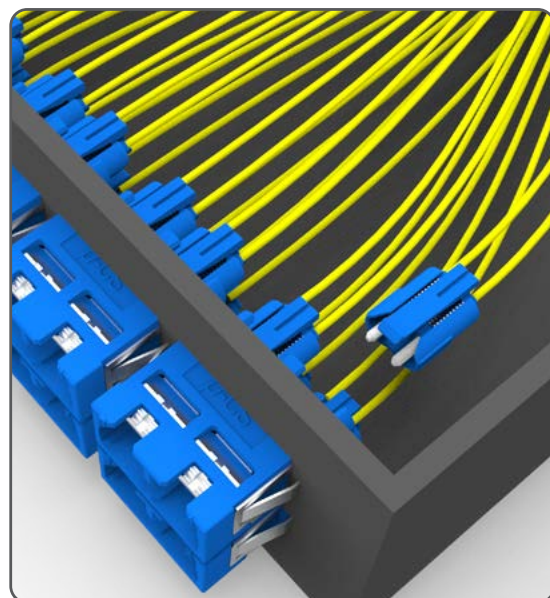
### Features

- Significant space saving
- Minimizing behind the wall (btw) side adapter depth
- Cost effective
- IEC Grade B compatible
- Simplifying connector structure
- Available in UPC, MM, and APC configuration

### Applications

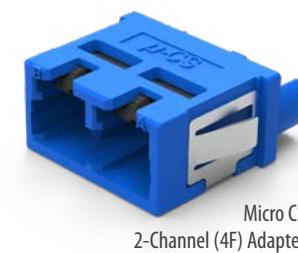
- Ideal for cassettes, enclosure, on board optics used in plug and play modules
- FTTH, FTTA
- Telecom, Wireless

### Standard CS Connector vs Micro CS size comparison



## CS® CONNECTOR

## µCS® Connector and Adapter



CONNECTOR TYPE	FLANGE	HOUSING COLOR
682U Micro CS 2-Channel (4F) Adapter	1 With Flange	1 Blue
	2 Without Flange	3 Green
		7 Heather Violet
		9 Aqua

68B - 11 ORDER CODE example

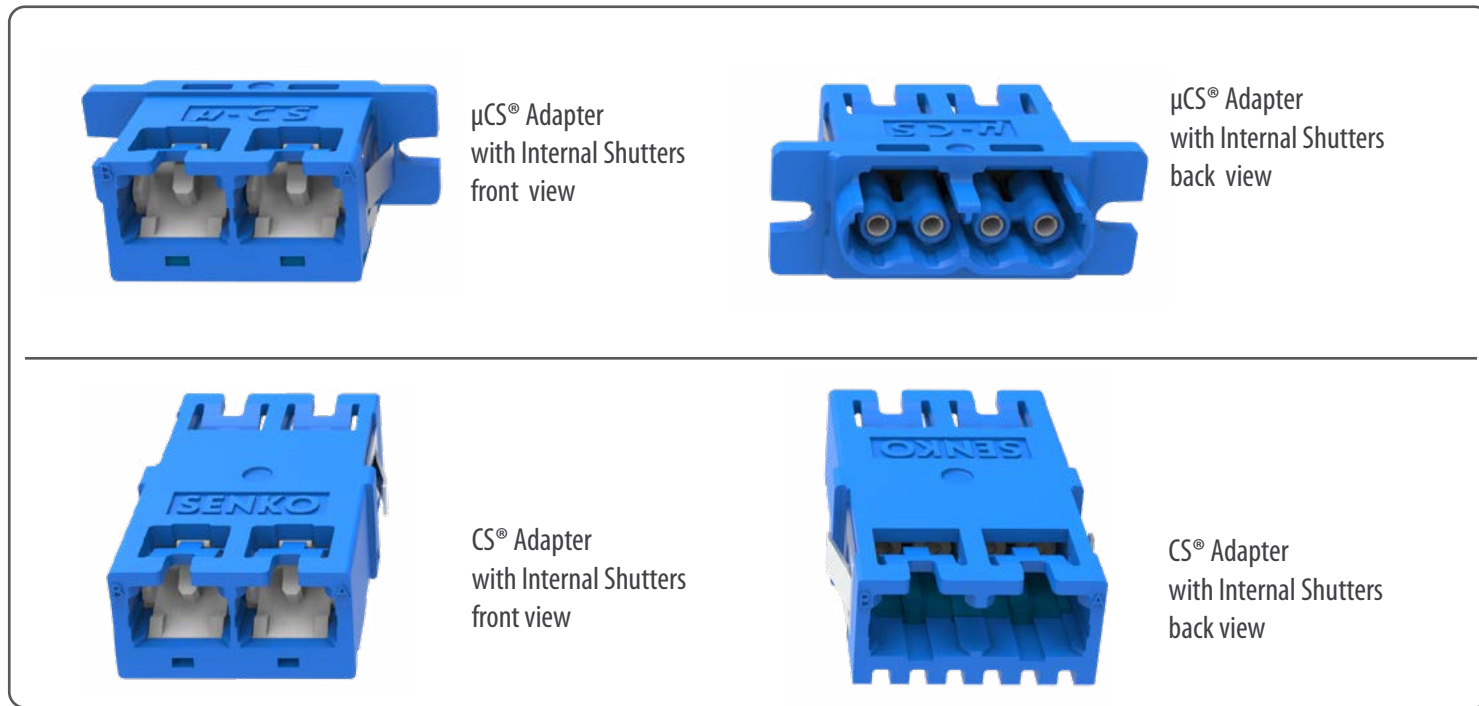


CONNECTOR TYPE	FLANGE	HOUSING COLOR
60B Micro CS 1-Channel (2F) UPC Connector	151 SM Premium	1 Blue
	158 SM Premium Low Loss	7 Heather Violet
	251 MM Premium	9 Aqua

60B - 151 - 1 ORDER CODE example

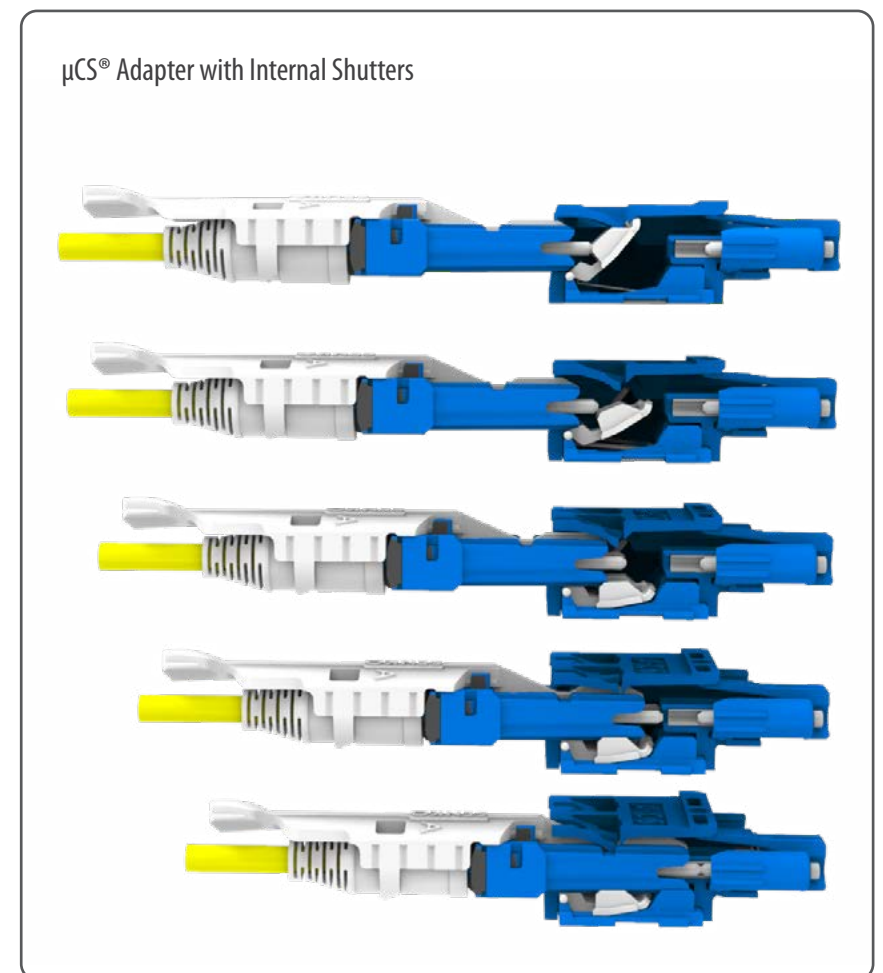
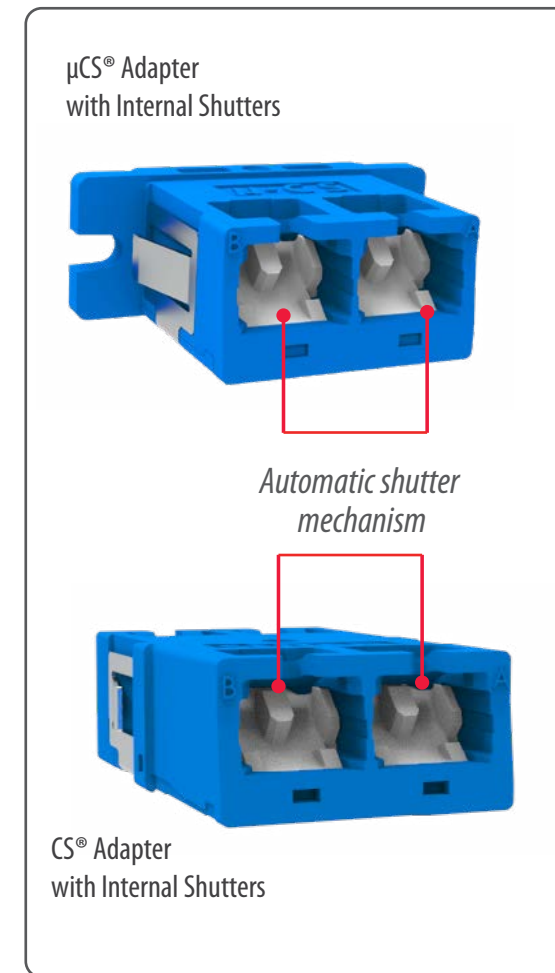
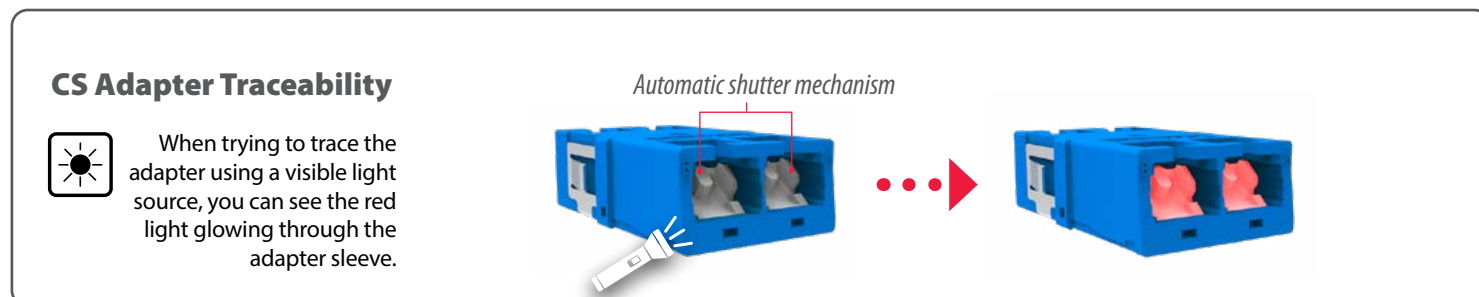


# CS® & μCS® SHUTTER ADAPTERS



- FEATURES**
- Automatic shutter action
  - IP5X dust protection
  - Unique twin door shutter closes to prevent any ingress of contamination
  - Adapter allows for traceability with Visible Light Source
  - Available for both CS and μCS footprint

The CS shutter adapter has been developed to meet the evolving requirements of data centers, telecom, and harsh environment solutions by providing automated dust and laser protection through a built in internal shutter. The CS shutter adapter maintains the protection from dust while other solutions offer a dust cap that is easily lost. Whether the port is used often, or only used once in a while, the CS shutter adapter provides protection from the number one leading cause of network failure, contamination. As power increases in networks, the eye safety of installers becomes more of a concern. The CS shutter adapter provides protection from potentially unconnected ports in order to give you peace of mind.



ADAPTER TYPE	FLANGE	HOUSING COLOR
6825 CS 2-Channel (4F) Shuttered Adapter	1 With Flange	1 Blue
	2 Without Flange	3 Green
		7 Heather Violet OM4
		9 Aqua OM3

6825 - 11 ORDER CODE example

Note: Adapter supplied with protective dust-cap on both sides



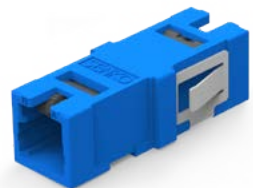
ADAPTER TYPE	FLANGE	HOUSING COLOR
682U μCS 2-Channel (4F) Adapter	1 With Flange	1 Blue
	2 Without Flange	7 Heather Violet
		9 Aqua

682U - 11 ORDER CODE example

Note: Adapter supplied with protective dust-cap on both sides

# CS® CONNECTOR Standard Adapters

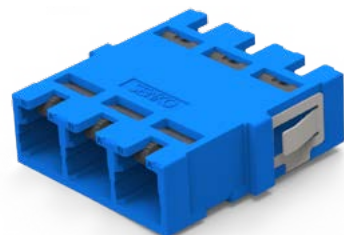
CS® 1-Channel (2F) Adapter  
No Flange



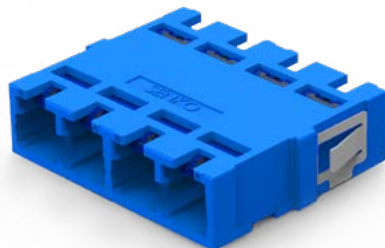
CS® 2-Channel (4F) Adapter  
No Flange



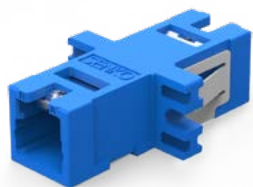
CS® 3-Channel (6F) Adapter  
No Flange



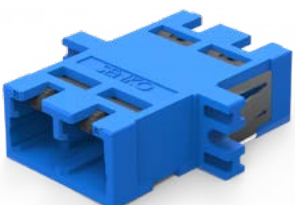
CS® 4-Channel (8F) Adapter  
No Flange



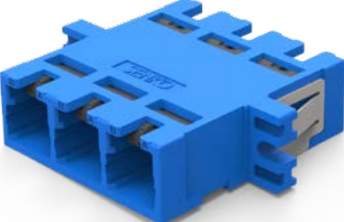
CS® 1-Channel (2F) Adapter  
with Flange



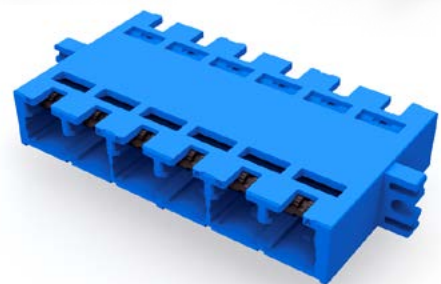
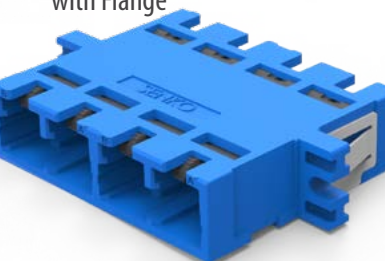
CS® 2-Channel (4F) Adapter  
with Flange



CS® 3-Channel (6F) Adapter  
with Flange



CS® 4-Channel (8F) Adapter  
with Flange

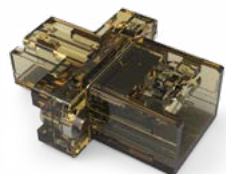


CS® 12-Channel (6F)  
Adapter with Flange

CS® ADAPTER Part Number

CONNECTOR TYPE	FLANGE	HOUSING COLOR
681 CS 1-Channel (2F) Adapter	1 With Flange	1 Blue
682 CS 2-Channel (4F) Adapter	2 Without Flange	3 Green
683 CS 3-Channel (6F) Adapter		7 Heather Violet
684 CS 4-Channel (8F) Adapter		9 Aqua
686-1X CS 6-Channel (12F) Adapter		

681 - 21 ORDER CODE example



CS®-LC Hybrid testing adapter  
Single LC Channel  
P/N 680-0



CS® Loopback  
P/N: LBP-CS-XXX-XX



CS® Adapter with External  
Shutters P/N 682-XX-E22



Parking Adapter  
P/N: 681-PRK-01-X

## CS® Connectivity Solutions



### CS® Consortium aims to promote CS® high density connectivity solutions

The CS® Consortium is a group of leading fiber optic component manufacturers that focuses on educating end users and design consultants about the technical advantages of using CS® based high density connectivity solutions. The CS® Consortium represents technology

leaders committed to providing the most current, reliable, and vendor neutral information about fiber optics and related technologies for advancing new and better communications solutions.

### Founding Members

The CS® Consortium is a group of leading fiber optic component manufacturers that focuses on educating end users and design consultants about the technical advantages of using CS® based high density connectivity solutions. The CS® Consortium represents technology leaders committed to providing the most current, reliable, and vendor neutral information about fiber optics and related technologies for advancing new and better communications solutions.





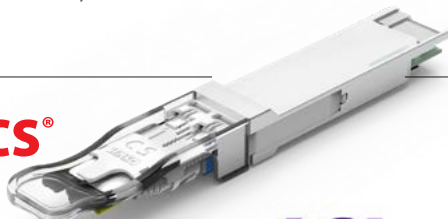
# CS® ECOSYSTEM

## STANDARDIZATION CS®

The CS® connector has been adopted to transceiver specifications such as QSFP-DD, OSFP and COBO as one of fiber optic connector options. CS® connector interface is being specified by IEC 61754-36.



optical connector option. CS® connector interface is being specified by IEC 61754-36.



## TRANSCEIVER CS®



## CABLE ASSEMBLY AND PATCH PANEL CS®



Capture the QR code to receive more information about the CS ecosystem partners



## CONNECTOR AND ADAPTER LICENSEES CS®



## TESTING CS®



## POLISHING CS®



## RACK DISPLAY AT OFC 2022 CS®





# CS® CONNECTOR Patch Panel Examples

## 128CH/256F Patch Panel in 1RU

- 16 slots x 4 CS Dual (2 fiber) adapter
- Fully silk screened



## 128CH/256F Cassette Module in 1RU

- 4 x 32CH/6F Cassette Modules
- Silk Screen on each side of cassette



# Reach higher density with CS® CONNECTOR

New Duplex connector optimized for 400G new generation Data Center



**1U only** CS®  
128CH/256F  
Cassette Module  
Patch in 1RU



**2U at least** LC  
128CH/256F  
Cassette Panel  
in 2RU

Adapters too close to reach your finger to LC connector Latch

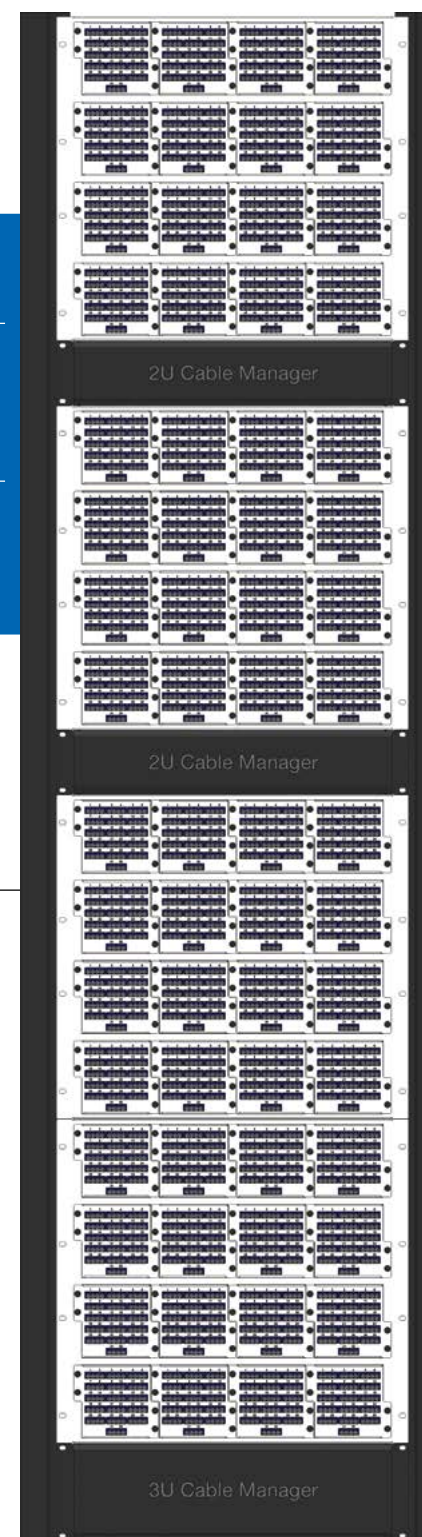
# 45RU Rack Comparison

Double your density with CS® CONNECTOR

Generic LC

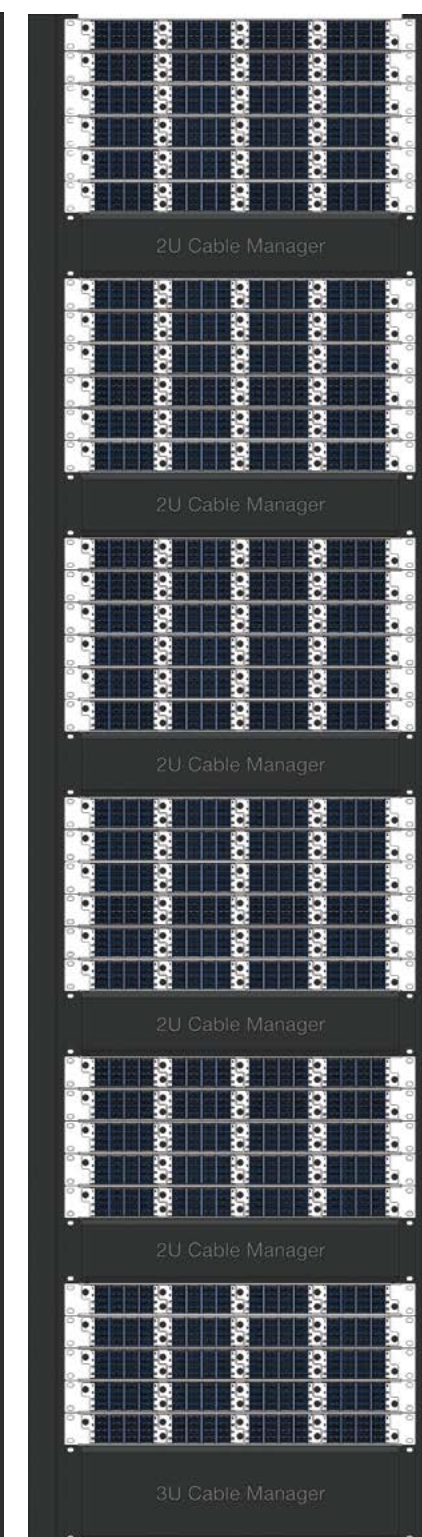
CS® CONNECTOR

with LC  
Total Capacity  
**2048 CH**  
**4096 F**  
(single sided rack/cabinet)



Total **7RU**  
Cable  
Management  
Space

with CS®  
Total Capacity  
**4352 CH**  
**8704 F**  
(single sided rack/cabinet)



Total **13RU**  
Cable  
Management  
Space

*\*Note that the 3 RU wire manager is installed on the bottom rack base plate and the remaining 1 RU space at the bottom of the rack.*



# Premium series SN<sup>®</sup> EZ-FLIP CONNECTOR

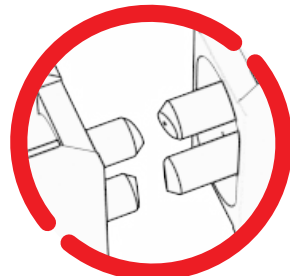
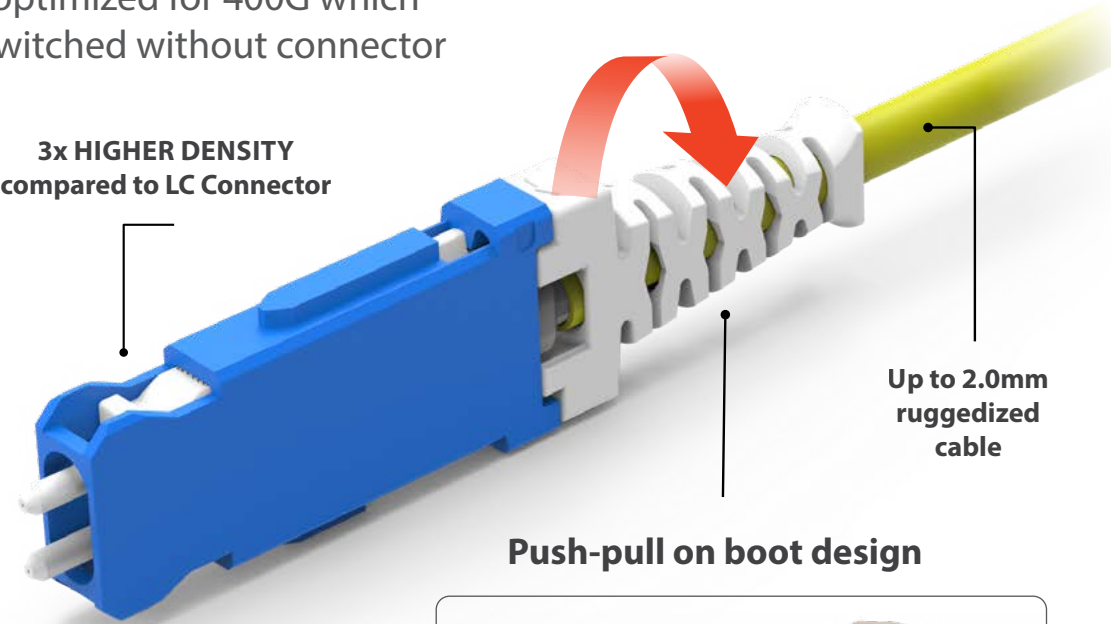
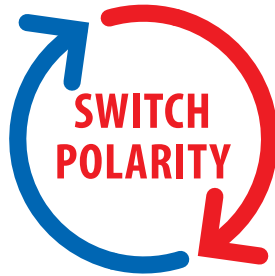
## Simplifying network cabling

A new duplex connector, optimized for 400G which allows the polarity to be switched without connector re-termination



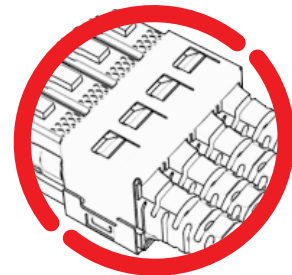
Reach SVHC  
UL  
SENKO Products are RoHS, Reach SVHC and UL 94 V-0 compliant.

3x HIGHER DENSITY compared to LC Connector

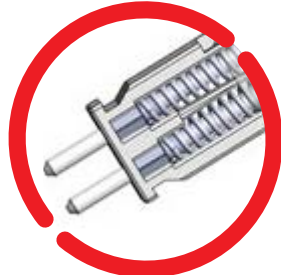


APC OPTION AVAILABLE

2X LC STYLE FERRULE for increased reliability

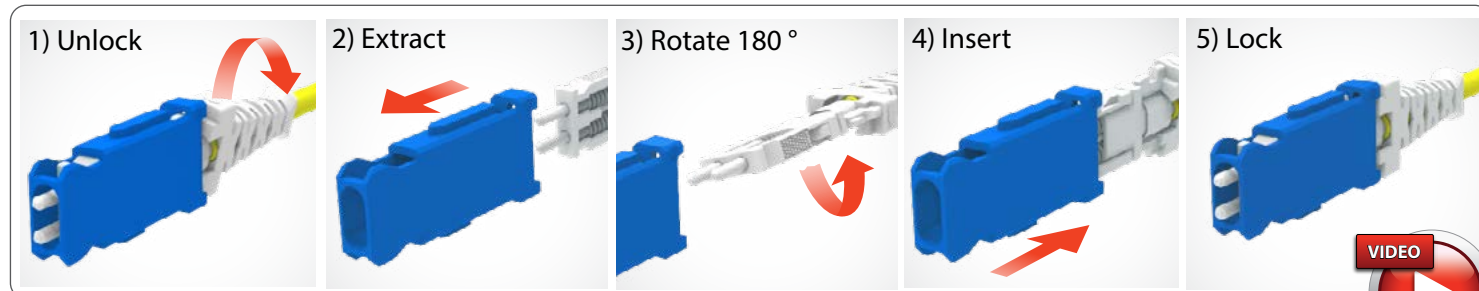


GANG CLIP COMPATIBLE



PREASSEMBLED KIT

### SN EZ-Flip Polarity Switching by unlocking and flipping outer housing

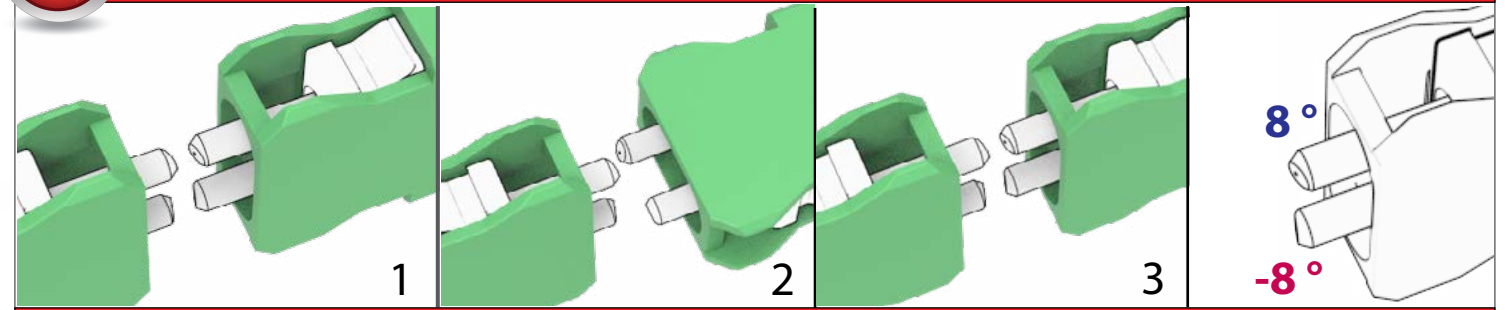


CLICK TO WATCH THE VIDEO



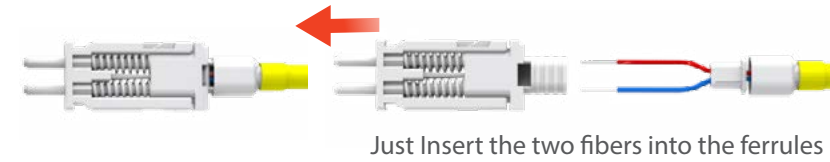
### SN-EZ-Flip APC Connector

CLICK TO WATCH THE VIDEO



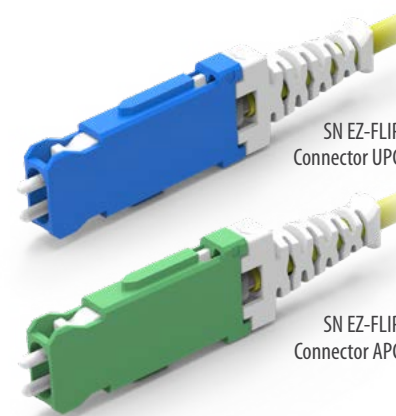
The special design of the ferrule angle allows for perfect alignment of the ferrules after polarity change.

### TIME SAVING PREASSEMBLED SN EZ-FLIP SWITCHABLE CONNECTOR



Because the SN<sup>®</sup> EZ-Flip comes preassembled, there is no need to detach the ferrules from the inner body during termination. This results into an easier termination process and time saving.

## SN<sup>™</sup> EZ-FLIP CONNECTOR



## SN-EZ Premium Connector

CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR
6A5 SN EZ-Flip Connector UPC Preassembled for 2 mm Cable	151 SM Premium	1 Blue	4 44mm Boot (44T)	1 White
6A6 SN EZ-Flip Connector UPC Preassembled for 1.6 mm cable	158 SM Premium Low Loss	5 Aqua		
6B5 SN EZ-Flip Connector UPC Unassembled for 2 mm Cable	251 MM Premium	6 Heather Violet		
6B6 SN EZ-Flip Connector UPC Unassembled for 1.6 mm cable				
CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR
6D5 SN EZ-Flip Connector APC Unassembled for 2 mm Cable	153 APC Premium	3 Green	4 44mm Boot (44T)	1 White
6D6 SN EZ-Flip Connector APC Unassembled for 1.6 mm Cable	158 APC Premium Low Loss			

6D5 - 153 - 311 ORDER CODE example

Note: Connector supplied with protective dust-cap

## GANG CLIP READY

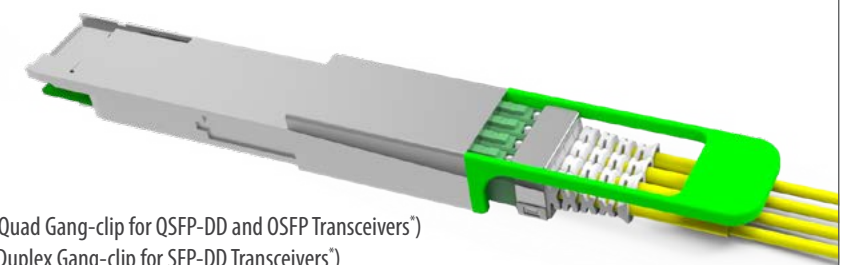
### Features and Benefits

- Solutions for: QSFP-DD and SFP-DD Transceivers
- Quick connect/disconnect of ganged connectors
- Easy removal of clip to allow extraction of individual connector
- Fits within transceiver handle footprint



### GANG CLIP

P/N 6A5-CLIP-QD-01 (Metal Quad Gang-clip for QSFP-DD and OSFP Transceivers\*)  
P/N 6A5-CLIP-DX-01 (Metal Duplex Gang-clip for SFP-DD Transceivers\*)  
P/N 6A5-CLIP-QD-02 (Plastic Quad Gang-clip for Shuttered Adapters or Adapters with Walls Between Each Port)  
\*Note: SN EZ-Flip Connectors Only

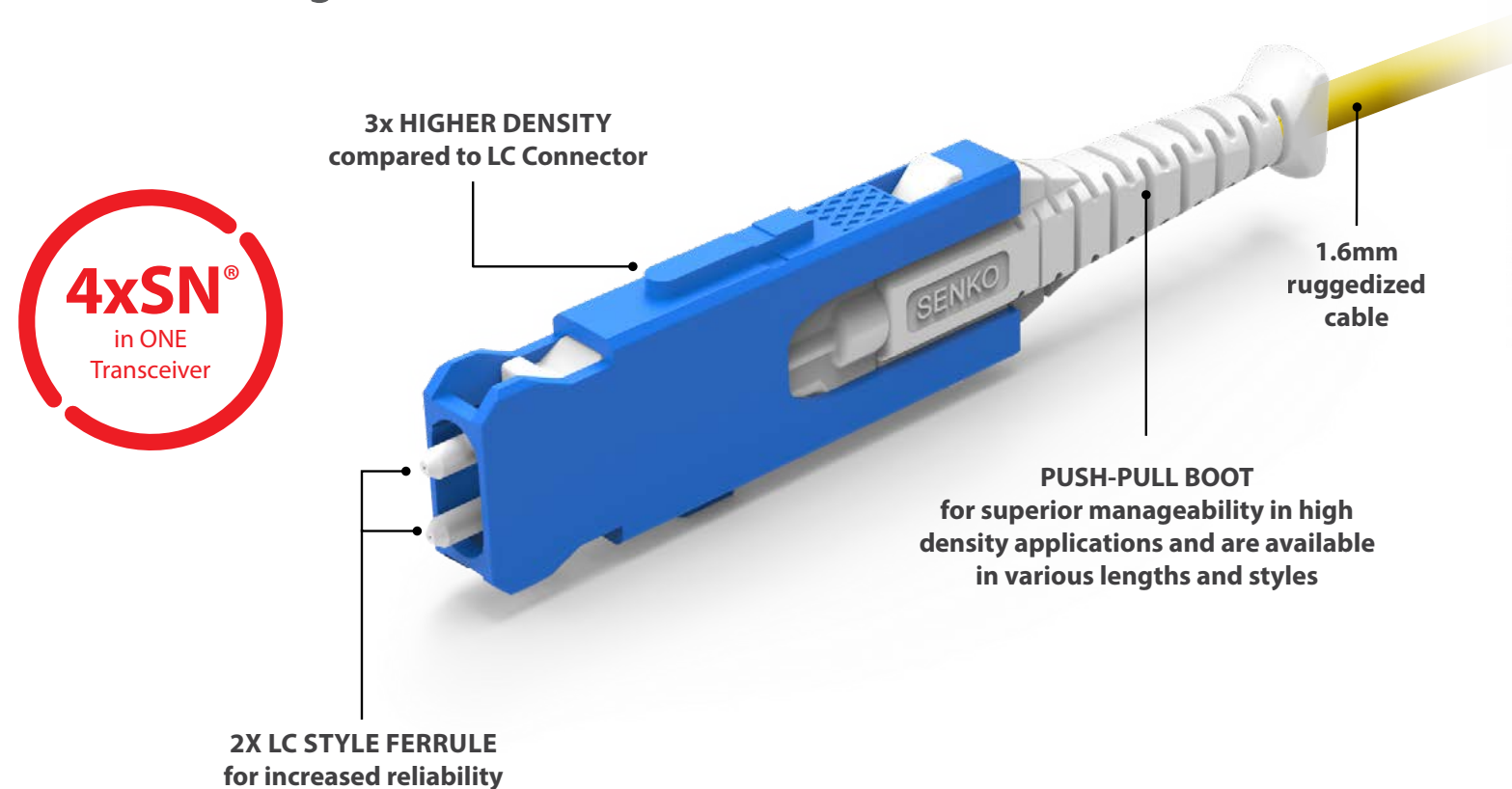


See Accessories page for more details

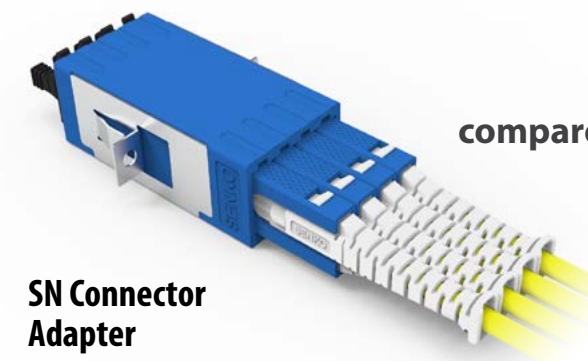
# SN® CONNECTOR

## Next generation connector

New duplex connector optimized for 400G new generation Data Center



## Key Features of SN® connector



**Double density compared to LC Duplex**

**4x SN in 1 Adapter**



- Most dense dual ferrule uniboot connector
- Mechanically stronger
- Allows better cable management/routing

## SN CONNECTOR UPC



CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR
602 SN Connector UPC Unassembled for 1.6 mm Cable	151 SM Premium	1 Blue	1 50 mm Boot (50T)	1 White
	158 SM Premium Low Loss	5 Aqua	B Flex-Angled Boot (57T)	
604 SN Connector UPC Unassembled for 2 mm Cable	251 MM Premium	6 Heather Violet	C Flex-Angled Boot (63T)	
			D Flex-Angled Boot (71T)	

602 - 153 - 111 ORDER CODE example  
Note: Connector supplied with protective dust-cap

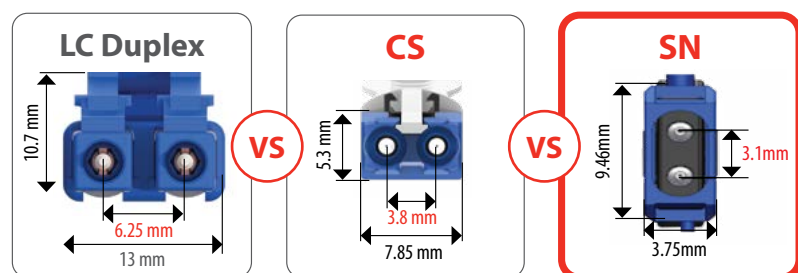
## SN® CONNECTOR APC



CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT TYPE	BOOT COLOR
612 SN Connector APC Unassembled for 1.6 mm Cable	153 APC Premium	3 Green	1 50 mm Boot (50T)	1 White
	158 APC Premium Low Loss		B Flex-Angled Boot (57T)	
614 SN Connector APC Unassembled for 2 mm Cable			C Flex-Angled Boot (63T)	
			D Flex-Angled Boot (71T)	

612 - 153 - 311 ORDER CODE example  
Note: Connector supplied with protective dust-cap

### LC Duplex, CS, SN Comparison

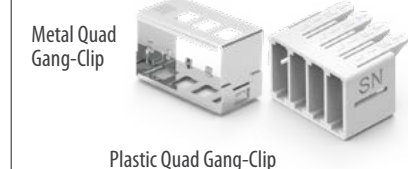


### FEATURES

- LC ferrule base duplex connector
- Ferrule pitch: 3.1mm
- 4x SN® connectors in a QSFP footprint
- 2x SN® connectors in a SFP footprint
- Designed for 4x Duplex break out application
- Push-pull on boot design for better usability

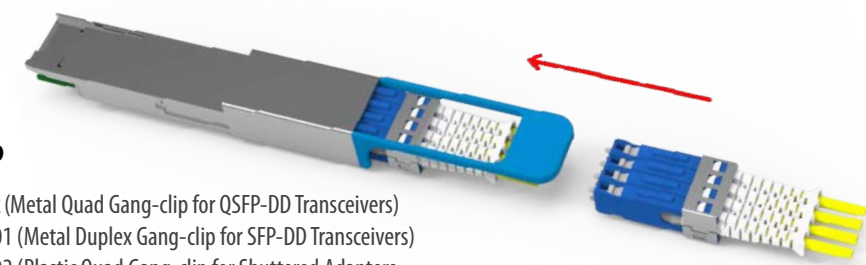
## GANG CLIP READY

- Features and Benefits**
- Solutions for: QSFP-DD and SFP-DD Transceivers
  - Quick connect/disconnect of ganged connectors
  - Easy removal of clip to allow extraction of individual connector
  - Fits within transceiver handle footprint



### GANG CLIP

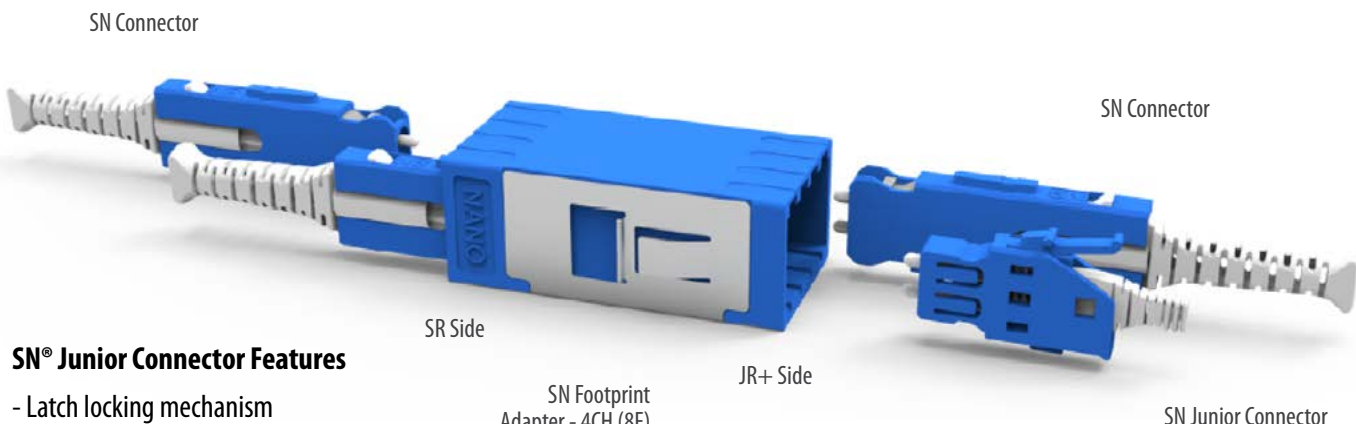
- P/N 602-CLIP-QD-02 (Metal Quad Gang-clip for QSFP-DD Transceivers)
- P/N 602-CLIP-DX-01 (Metal Duplex Gang-clip for SFP-DD Transceivers)
- P/N 602-CLIP-DX-02 (Plastic Quad Gang-clip for Shuttered Adapters or Adapters with Walls Between Each Port)



See Accessories page for more details



# SN® Adapters



SN Connector

SR Side

JR+ Side

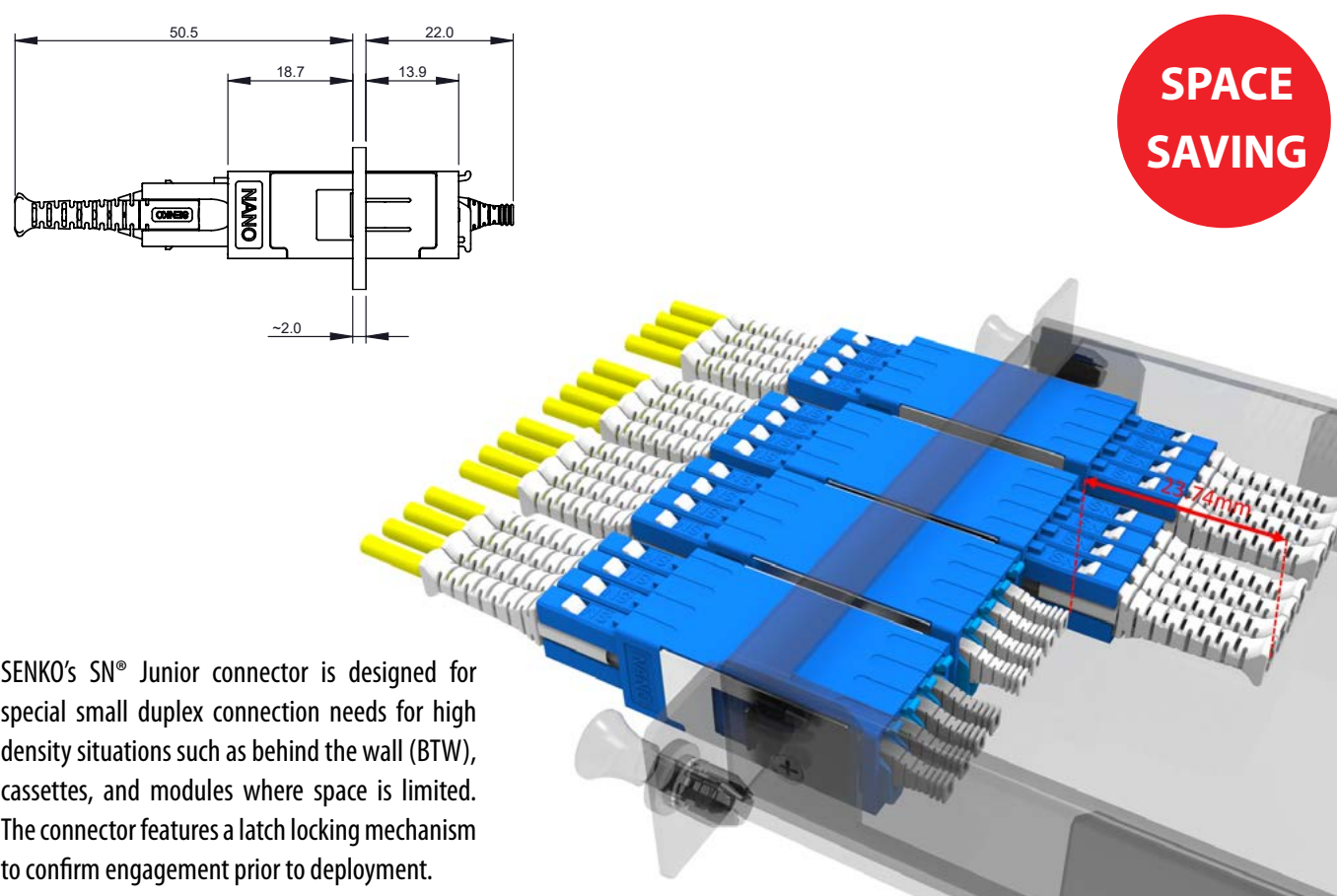
SN Footprint Adapter - 4CH (8F)

SN Junior Connector

**SN® Junior Connector Features**

- Latch locking mechanism
- Accepts 2 x 900 μm buffered fibers
- Uses proven LC ferrule technology
- Extra small for space limited installations

Note: The JR+ side of the adapter can accept the SN Connector and the SN Junior Connector



50.5

18.7

22.0

13.9

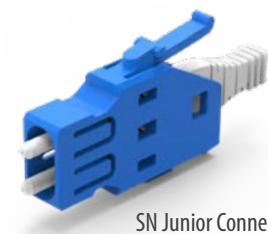
~2.0

**SPACE SAVING**

13.74mm

SENKO's SN® Junior connector is designed for special small duplex connection needs for high density situations such as behind the wall (BTW), cassettes, and modules where space is limited. The connector features a latch locking mechanism to confirm engagement prior to deployment.

# SN® JUNIOR



## SN Junior Connector

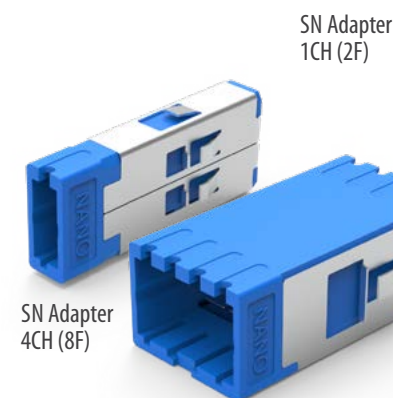
CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT COLOR
603 SN Junior Connector UPC	151 SM Premium	1 Blue	1 White
	158 SM Premium Low Loss	5 Aqua	
	251 MM Premium	6 Heather Violet	

CONNECTOR TYPE	FERRULE SIZE	HOUSING COLOR	BOOT COLOR
613 SN Junior Connector APC	153 APC Premium	3 Green	1 White
	158 APC Premium Low Loss		

613 - 153 - 31 ORDER CODE example

Note: 1. The SN Junior Connector was previously called the BTW1 Connector  
2. Connector supplied with protective dust-cap

# SN® ADAPTER

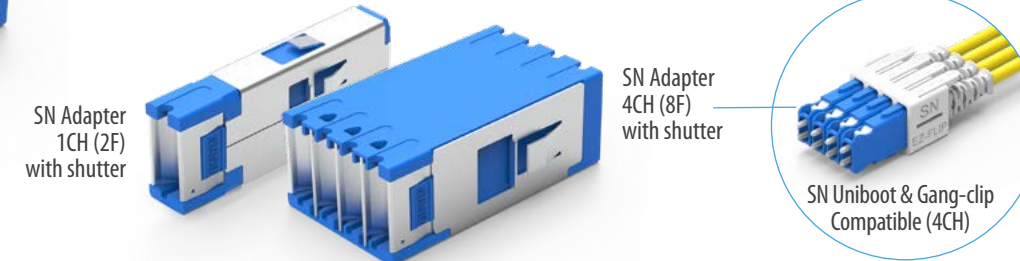


## SN Adapter

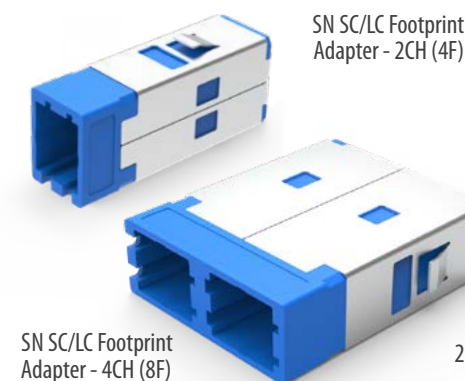
SN FOOT PRINT TYPE	FLANGE	HOUSING COLOR
691 SN 1-Channel (2F) Non-Shuttered Adapter	1 With flange	1 Blue
694 SN 4-Channel (8F) Non-Shuttered Adapter	2 No flange	3 Green
69A SN 1-Channel (2F) Shuttered Adapter		7 Heather violet (OM4)
69D SN 4-Channel (8F) Shuttered Adapter		9 Aqua (OM3)

691 - 1 - 1 ORDER CODE example

Note: Adapter supplied with protective dust-cap on both sides



# SC /LC FOOTPRINT ADAPTER

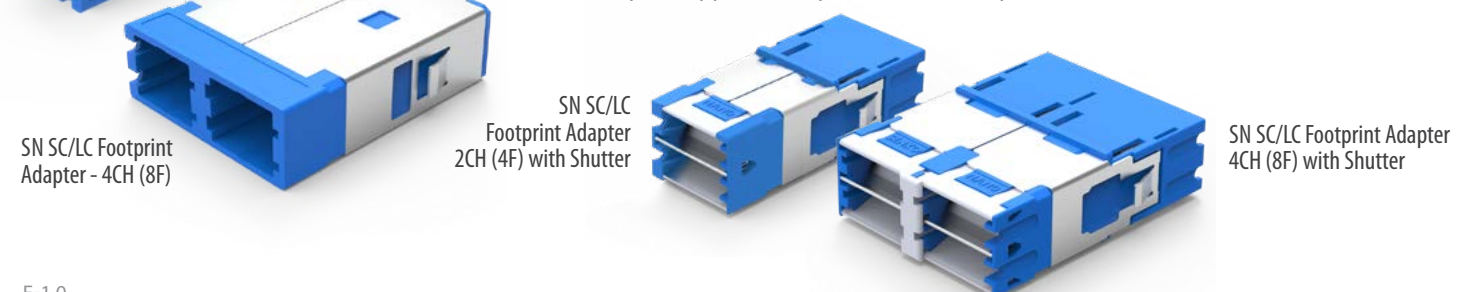


## SN Adapter with SC/LC Footprint

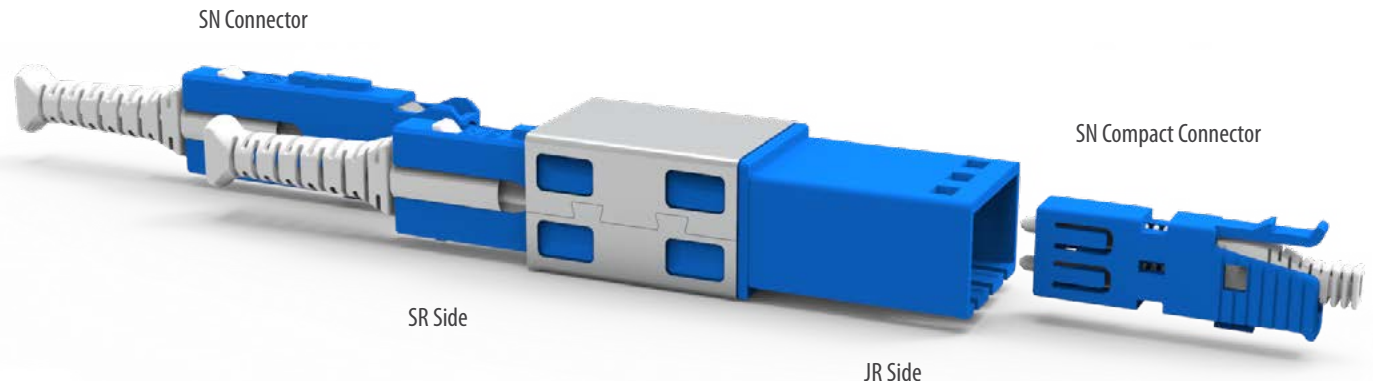
SC FOOT PRINT TYPE	FLANGE	HOUSING COLOR
672 SN 2 Channel (4F) Adapter	1 With flange	1 Blue
674 SN 4 Channel (8F) Adapter	2 No flange	3 Green
67B SN 2 Channel (4F) Shuttered Adapter		7 Heather violet (OM4)
67D SN 4 Channel (8F) Shuttered Adapter		9 Aqua (OM3)

672 - 1 - 1 ORDER CODE example

Note: Adapter supplied with protective dust-cap on both sides



# SN® COMPACT Connector and Adapter



SN Connector

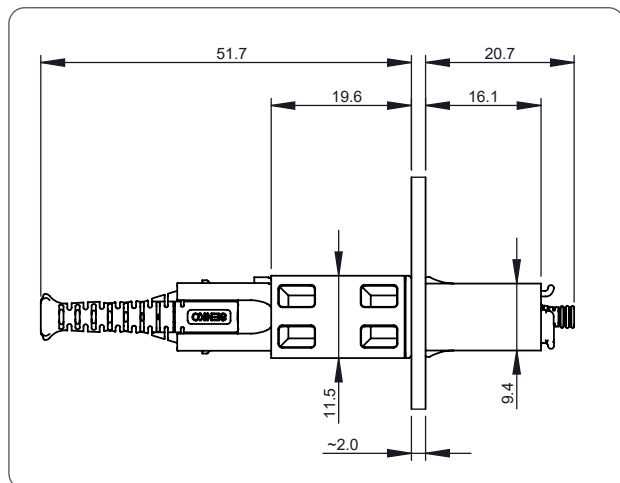
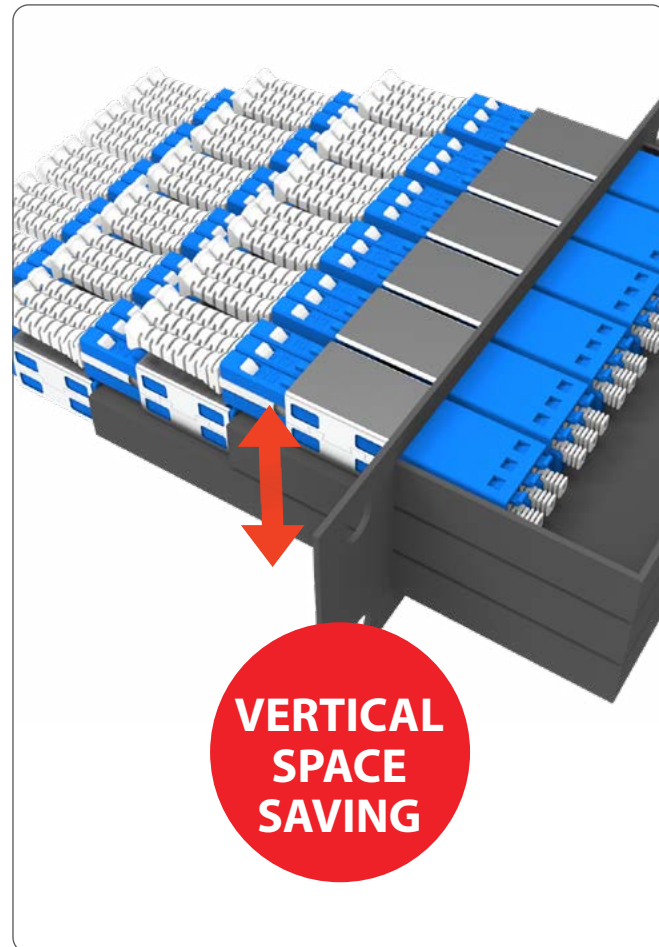
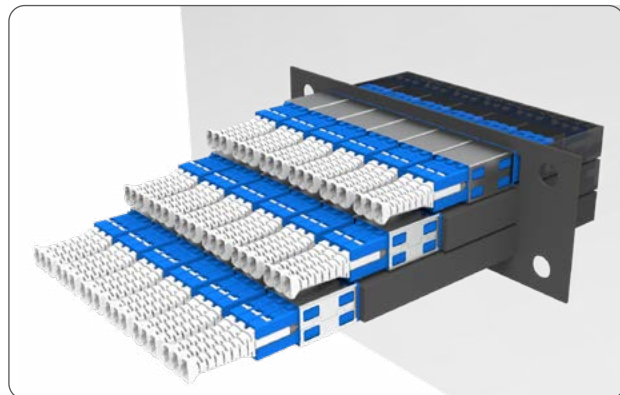
SN Compact Connector

SR Side

JR Side

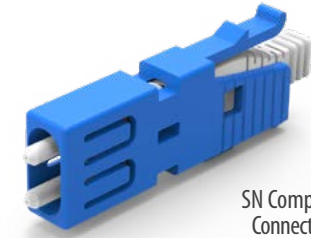
**SN® Compact Connector Features**

- Latch locking mechanism
- Accepts 2 x 900 μm buffered fibers
- Uses proven LC ferrule technology
- Extra small for space limited installations



## SN® COMPACT

### SN Compact Connector



CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT COLOR
606 SN Compact Connector UPC	151 SM Premium	1 Blue	1 White
	158 SM Premium Low Loss	5 Aqua	
	251 MM Premium	6 Heather Violet	

CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR	BOOT COLOR
616 SN Compact Connector APC	153 APC Premium	3 Green	1 White
	158 APC Premium Low Loss		

616 - 153 - 31 ORDER CODE example

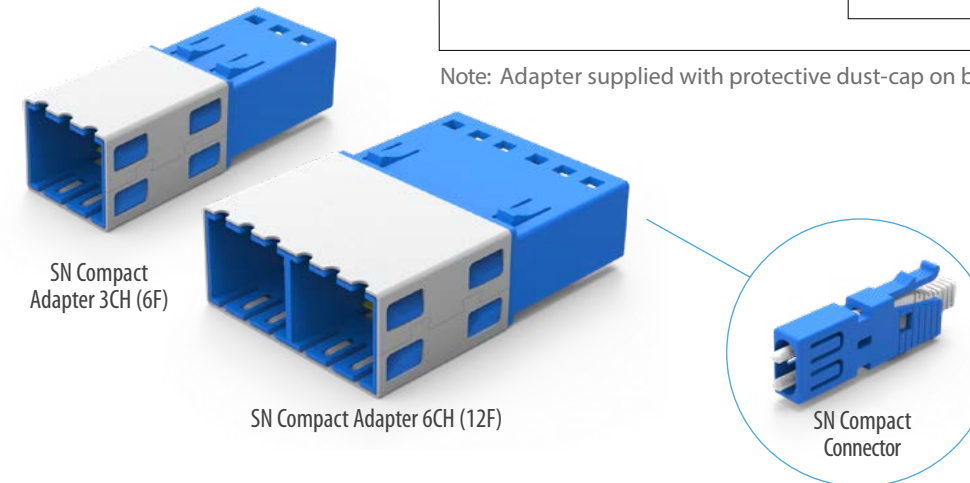
Note: 1. The SN Compact connector was previously called the BTW2 Connector  
2. Connector supplied with protective dust-cap

## SN® 3CH and 6CH Compact Adapter

SN FOOTPRINT TYPE	FLANGE TYPE	HOUSING COLOR
693 SN 3-Channel (6F) Non-Shuttered Adapter	3 Top Mount	1 Blue (SM PC/UPC)
696 SN 6-Channel (12F) Non-Shuttered Adapter		3 Green (SM APC)
		7 Heather Violet (MM OM4)
		9 Aqua (MM OM3)

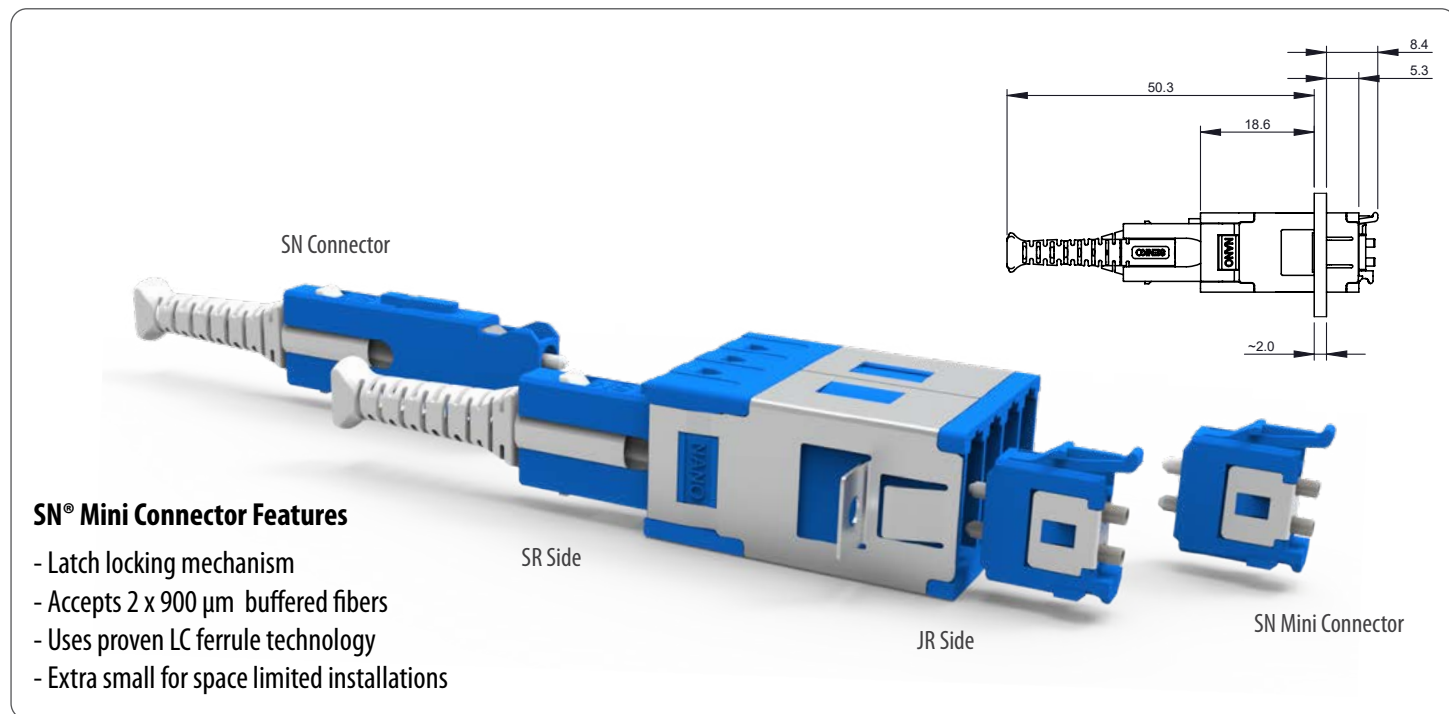
693 - 37 ORDER CODE example

Note: Adapter supplied with protective dust-cap on both sides

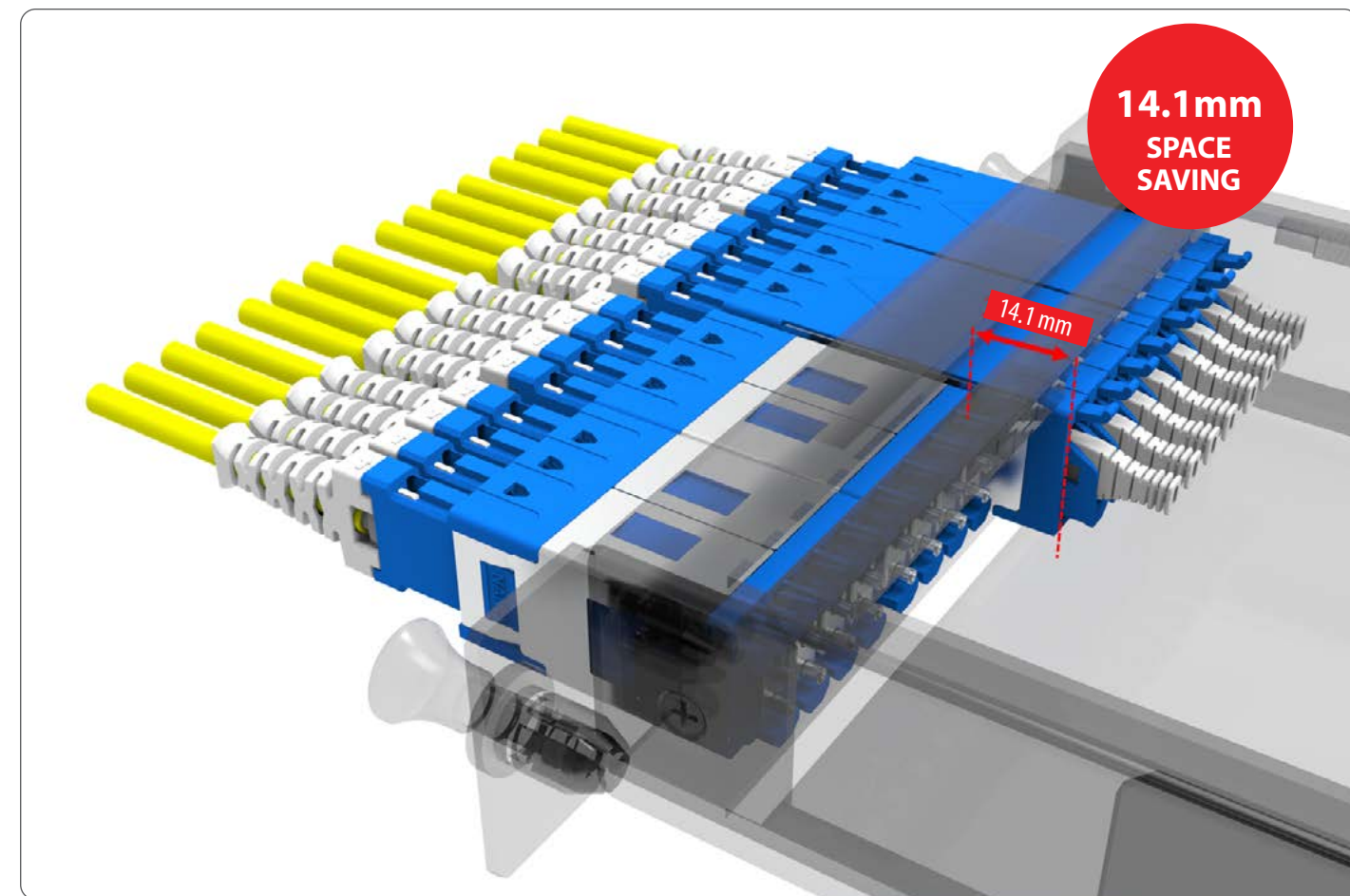




# SN® MINI Connector and Shuttered Adapter



# SN® MINI Connector and Shuttered Adapter



## SN® MINI



SN Mini Connector

### SN MINI Connector

CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR
609 SN Mini Connector	151 SM Premium	1 Blue
	158 SM Premium Low Loss	5 Aqua
	251 MM Premium	6 Heather Violet

CONNECTOR TYPE	PERFORMANCE	HOUSING COLOR
619 SN Mini APC Connector	153 APC Premium	3 Green
	158 APC Premium Low Loss	

619 - 153 - 3 ORDER CODE example

Note: 1. SN Mini Connector has no boot  
2. Connector supplied with protective dust-cap

## SN® MINI



SN Mini Shuttered Adapter

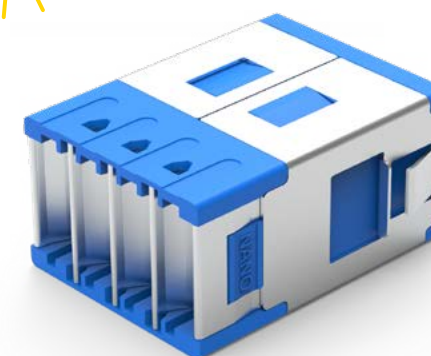
### SN MINI Shuttered Adapter

SN FOOTPRINT TYPE	FLANGE TYPE	HOUSING COLOR
6MD SN 4-Channel (8F) Mini Shuttered Adapter	1 With Flange	1 Blue (SM PC/UPC)
	2 Without Flange	3 Green (SM APC)
		7 Heather Violet (MM OM4)
		9 Aqua (MM OM3)

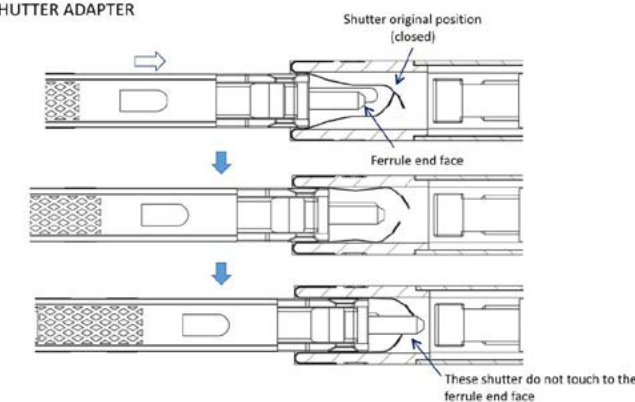
6MD - 27 ORDER CODE example

Note: Adapter supplied with protective dust-cap on both sides

## SN® SHUTTER ADAPTER



SN SHUTTER ADAPTER



### SN® Mini Shuttered Adapter Features

- Metal shutter for eye safety and dust resistance
- One-handed automatic shutter operation
- Density's up to 432F (216CH) per 1RU with SN internal shuttered adapters
- Other footprints coming soon (2CH SC SX and 4CH SC DX cutout)



# SN<sup>®</sup> ECOSYSTEM

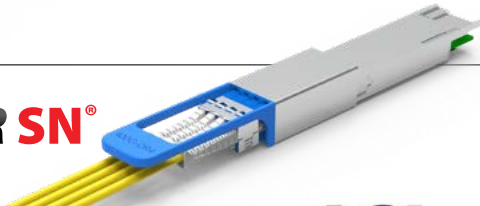
## STANDARDIZATION SN<sup>®</sup>

The SN<sup>®</sup> connector has been adopted to transceiver specifications such as QSFP-DD, OSFP and COBO as one of fiber



optic connector option. SN<sup>®</sup> connector interface is being specified by IEC is 61754-36.

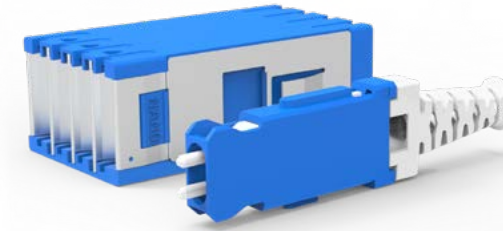
## TRANSCEIVER SN<sup>®</sup>



## CABLE ASSEMBLY AND PATCH PANEL SN<sup>®</sup>



## CONNECTOR AND ADAPTER LICENSEES SN<sup>®</sup>



## TESTING SN<sup>®</sup>



## POLISHING SN<sup>®</sup>



## RACK DISPLAY AT OFC 2022 SN<sup>®</sup>



Capture the QR code to receive more information about the SN ecosystem partners





# SN<sup>®</sup>-MT CONNECTOR

The journey to 1.6TB has already begun



Available in 8F and 16F in one row

**ACCESSIBLE** push-pull boot for fast and easy access

COMPATIBILITY same connector footprint as SN connector

**2.7x Density Increase** Compared to MPO-16F

**Same Footprint** as SN Connector

HYPERSCALE DENSITY 2.7x denser than MPO-16F

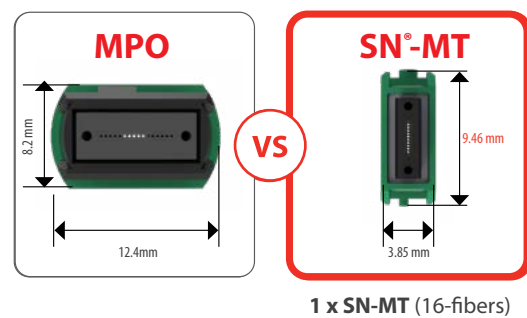
SCALABLE Up to 1.6TB

**1.6 TB**

SN-MT8/16 Multi-Port

**4x 400G DR4**      **2x 800G DR8**

Footprint size comparison with MPO



- FEATURES**
- Carries a maximum of 16-fibers in a row
  - Same connector footprint as SN
  - Carries many features from the SN
  - The industry's highest density connector solution in a QSFP-DD footprint
  - Fiber density per 1RU is improved by
    - 2.7 time over MPO-16F
    - 1.3 time over MPO-32F
  - Insertion loss targeted 0.35dB max for SM

## SN<sup>®</sup>-MT Density Comparison with MPO in 1RU Panel

MPO 80-port: total 1280F with MPO-16F, total 2560F with MPO 32F



SN-MT 216-port: total 3456F with SN-MT 16F



## SN<sup>®</sup>-MT Product Family

### Connectors



SN-MT Connector



SN-MT Bare Ribbon Connector



SN-MT Junior Connector

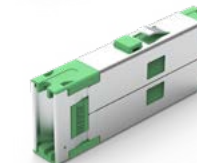


SN-MT Mini Connector

### Adapters



SN-MT 1-Port Adapter



SN-MT 1-Port Shuttered Adapter

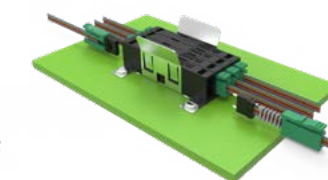


SN-MT 4-Port Adapter

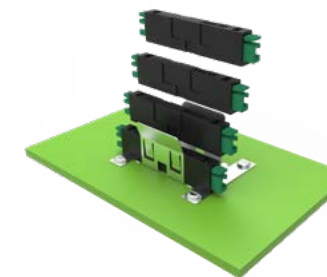


SN-MT 4-Port Shuttered Adapter

### Mid-board Interconnect (Micro Board Mount Connector)



SN-MT Stackable MBMC

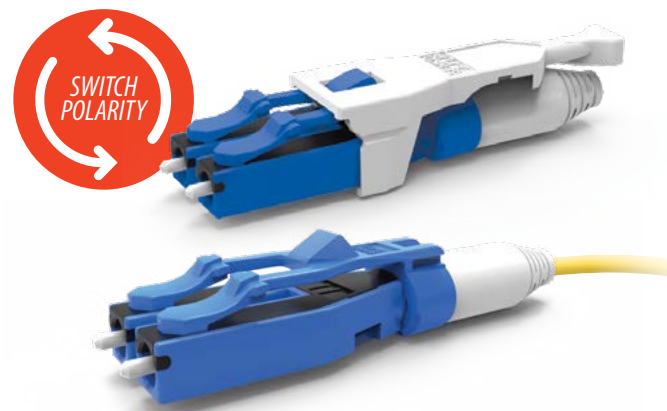


MBMC SN-MT Clip



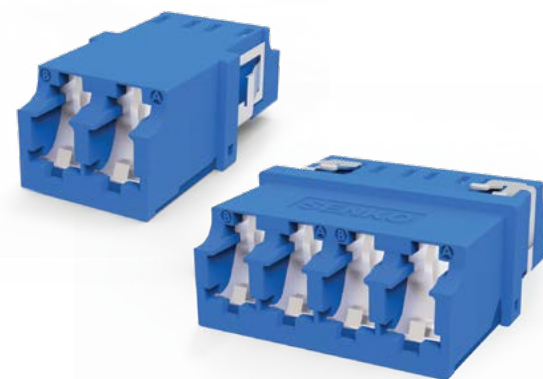
# LC Connector Featured Products

## LC EZ-FLIP® Polarity Reversible Connector



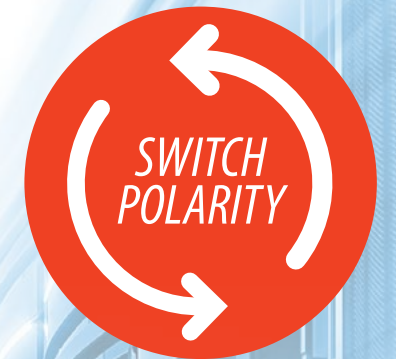
## LC Dust Shutter Adapter with *Inner Shutter*

98D SERIES

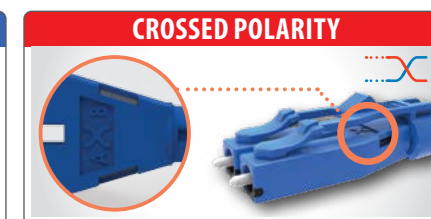
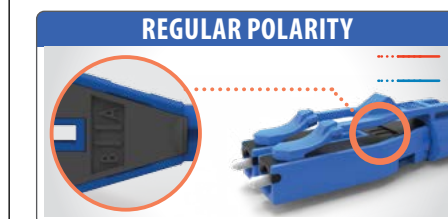
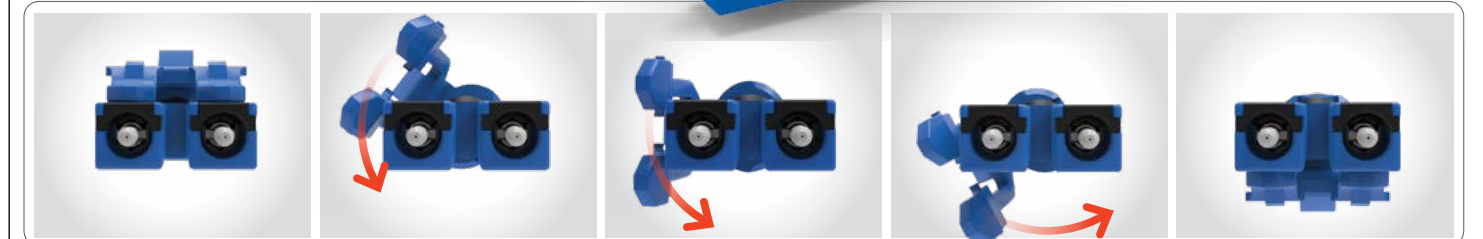


## LC EZ-FLIP® Polarity Reversible Connectors

The Duplex LC connector for round cable, which allows the polarity to be switched without connector re-termination or twisting of the fiber



How to switch:

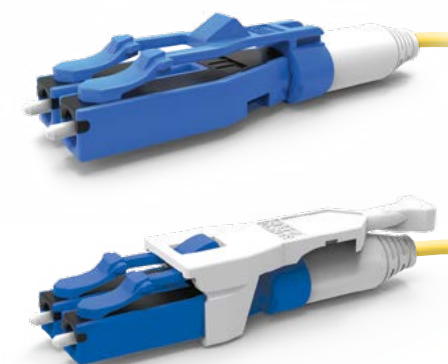


### FEATURES

- Push/Pull Tab Ready for High Density applications
- Uniboot Connector aids cable management
- Polarity Reversal without twisting fiber
- Visual indication for Polarity Check
- Short boot design for reduced connector length

## LC EZ-FLIP®

## PC 2mm, 3mm



CONNECTOR TYPE	FERRULE SIZE	HOUSING COLOR	BOOT TYPE	BOOT COLOR
9AQ EZ Flip LC Uniboot Premium preassembled	151 SM 125.5µm	1 Blue	C 2.0 mm	1 White
	251 MM 127µm	2 Beige	D 3.0 mm	2 Blue
		5 Aqua		3 Black
		6 Heather violet		

9AQ - 151 - 1C1 ORDER CODE example

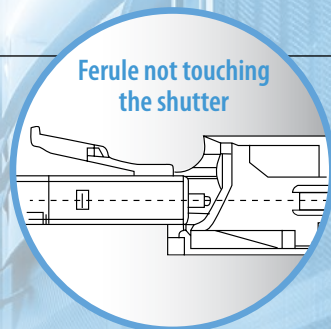
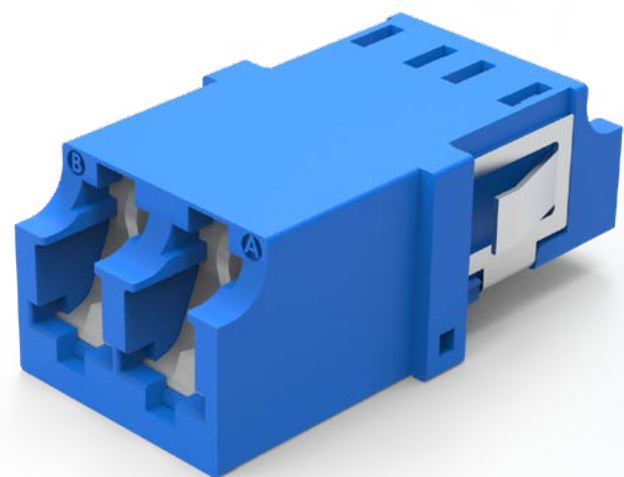
TYPE	DESCRIPTION
94Q-HDPP-34-W	EZ Flip LC Uniboot, Push-Pull tab 34mm
94Q-HDPP-51-W	EZ Flip LC Uniboot, Push-Pull tab 51mm
94Q-HDPP-67-W	EZ Flip LC Uniboot, Push-Pull tab 67mm

94Q-HDPP-34-W ORDER CODE example

\*Push pull tab is optional, connector can be used with/without tabs



# LC Adapter with Dust Shutter



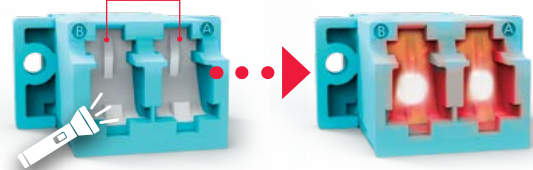
- FEATURES**
- 100% automatic shutter action
  - IP5X dust protection
  - SC footprint on non-shuttered side
  - Compatible with standard LC connectors
  - Adapter traceability with Visible Light Source

**LC Adapter Traceability**

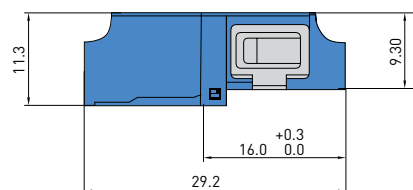


When trying to trace the adapter using a visible light source, you can see the red light glowing through the adapter sleeve.

Automatic shutter mechanism

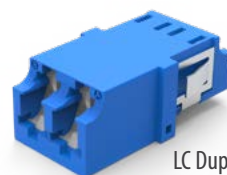


**Fits in SC Footprint**



## LC ADAPTER

## Dust Shutter



LC Duplex Adapter with Dust Shutter



LC Quad Adapter with Dust Shutter

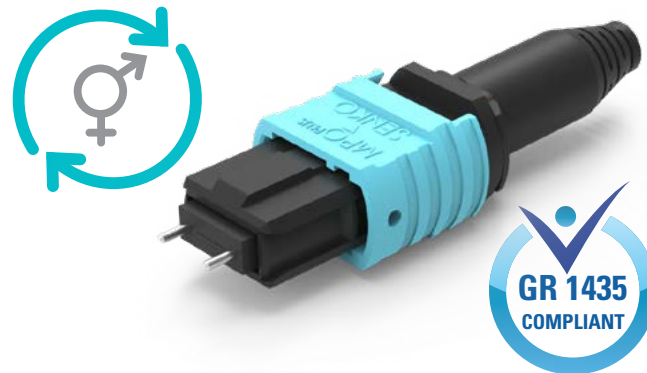
ADAPTER CODE	TYPE	HOUSING COLOR	SLEEVE TYPE	SHUTTER
98D	LC Adapter	3 Duplex with Flange	1 Zirconia	A Shutter
	with Dust Shutter	4 Duplex No Flange		
		5 Quad with Flange		
		6 Quad No Flange		
		7 Violet OM4 (MOQ Req)		
		9 Aqua OM3		

98D - 311 - A ORDER CODE example

# MPO Connector Featured Products

## MPO-PLUS<sup>®</sup> Premium Mini Connector

Gender change made easy without opening the housing

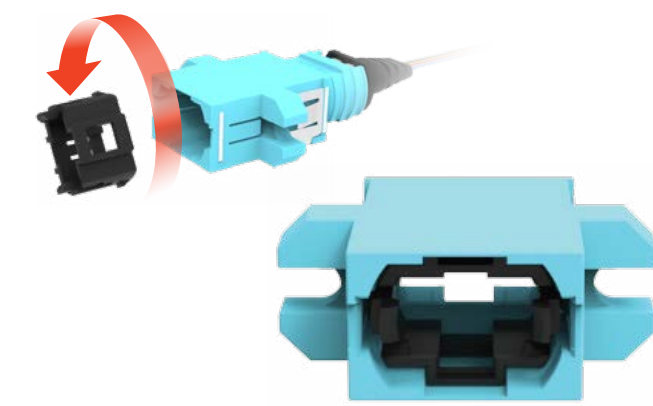


## AirMT MPO-PLUS<sup>®</sup> Connector

Excellent Connection Anytime



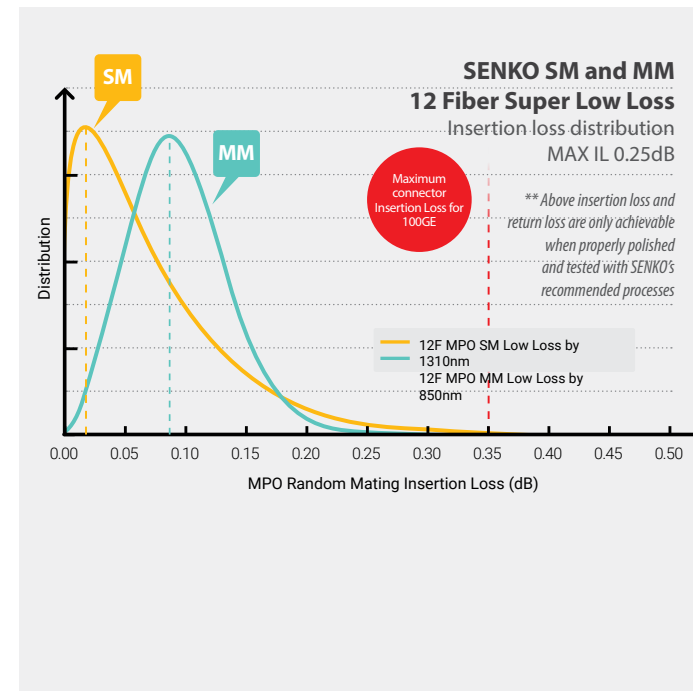
## MPO-PLUS<sup>®</sup> Polarity Changeable Adapter



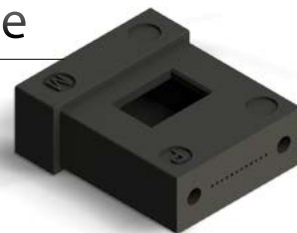
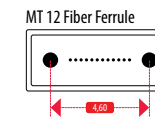
## MPO-PLUS<sup>®</sup> Dust Shutter Adapter DUSTPROOF



## SENKO MT Ferrule performance



## MPO-PLUS<sup>®</sup> MT Ferrule 8 and 12 Fiber Ferrule

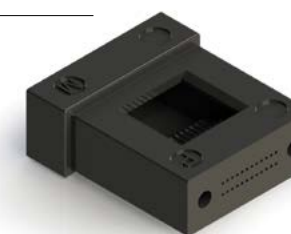
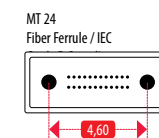


SENKO's MPO Plus MT 12 fiber ferrule are the most common used MT Ferrule in the market which gives the best combination of easy-to-use and low insertion loss. The SM Low Loss and MM Low Loss now guarantees the industry's lowest insertion loss of 0.25dB, with a typical of greater than 0.1dB, which exceeds the IEC 61755-3-31 Grade B Requirement. Quality, Price, durability and ease of assembly makes the 12 fiber your best choice.

SPECIFICATION	SM LOW LOSS	SM STANDARD	MM LOW LOSS	MM STANDARD
IL Typical vs Reference connector	0.10dB	0.20dB	0.08dB	0.15dB
IL Max vs Reference connector	0.25dB	0.70dB	0.25dB	0.50dB
IL Typical Random Mating	0.12dB	0.20dB	0.10dB	0.15dB
Random Mating IEC Spec: IEC61755-3-31	Grade B (0.25)	Grade C (0.5)	n/a	n/a
Return Loss	60dB	60dB	25dB	25dB
Recommended PIN Used	SM Low Loss Pin	SM Pin	SM Pin	MM Pin

\* Above number is only achievable when using SENKO Recommended Reference Jumper, Polishing process and testing method  
 \*\* SM Low loss and MM Low loss Max IL 0.25dB to be 95% of all fiber

## MPO-PLUS<sup>®</sup> MT Ferrule 24 Fiber Ferrule

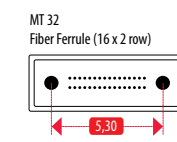
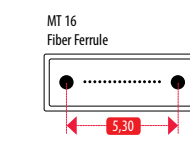


SENKO's MPO Plus 24 fiber MT Ferrule consists of 2 rows of 12 high precision fiber holes, yielding a high density connection with industry leading insertion loss values. Versions available in SM, MM and Low Loss MM make it the ideal choice for super high density connections and high speed 100G and 400G parallel optics platforms. SM 24 fiber is recommended to be used with a 10N Spring, and the MM 24 fiber is recommended to be used with a 20N High force spring.

SPECIFICATION	SM	MM LOW LOSS	MM
IL Typical vs Reference connector	0.25dB	0.15dB	0.20dB
IL Max vs Reference connector	1.00dB	0.35dB	0.50dB
IL Typical Random Mating	0.50dB	0.20dB	0.25dB
Return Loss	60dB	25dB	25dB
Recommended PIN Used	SM Pin	SM Pin	MM Pin

\* Above number is only achievable when using SENKO Recommended Reference Jumper, Polishing process and testing method  
 \*\* For SM 24 ferrule standard 10N Spring to be used  
 \*\* For MM 24 Ferrule High pressure 20N Spring to be used

## MPO-PLUS<sup>®</sup> MT Ferrule 16 and 32 Fiber Ferrule



SENKO's MPO Plus MT 16 and 32 fiber ferrules are designed to meet TIA 604-18 standard which addresses 16 fiber hole width MPO requirements and are available in single row 16 fiber and 2x16 row 32 fiber configurations. Industry leading 16F SM Low Loss ferrules meet the most demanding insertion loss and return loss requirements for high speed 100G, 400G and beyond parallel optical networks.

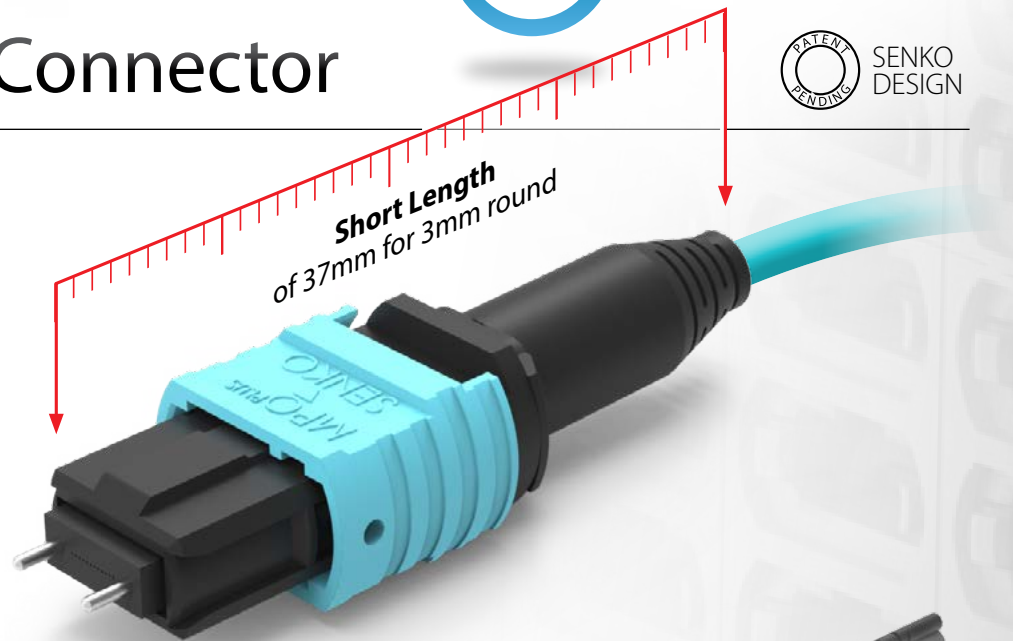
	16 SM LOW LOSS	16F MM	32F MM
IL Typical vs Reference connector	0.15dB	0.25dB	0.25dB
IL Max vs Reference connector	0.35dB	0.60dB	0.60dB
Random Mating Grade IEC 61755-3-31	Grade B 0.25dB	n/a	n/a
Return Loss	60dB	25dB	25dB
Recommended PIN Used	SM Low Loss Pin	MM Pin	MM Pin

\*\*Meets the current IEC Grade B performance requirement for 12F MT ferrule. The grade specification for 16F MT is underdevelopment in IEC  
 \*\*Above number is only achievable when using SENKO Recommended Reference Jumper, Polishing process and testing method

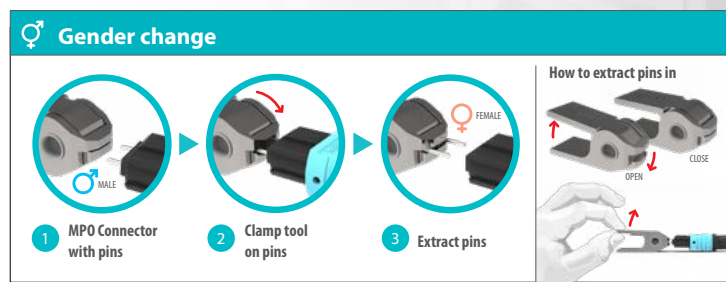


# MPO-PLUS<sup>®</sup> Premium Mini Connector

Gender change made easy without opening the housing



- FEATURES**
- SENKO patent pending design
  - All the benefit of the MPO Plus and more
  - Industries shortest overall length of 37 mm for 3 mm round
  - Simple gender change without taking off the housing
  - Various boot types available
  - Complies with MPO IEC and TIA/EIA requirements



## MPO-PLUS<sup>®</sup> Push Pull Tab

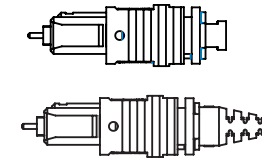


TYPE	
703-HDPP-34-W	MPO Plus Premium Mini Push Pull Tab 34mm White
703-HDPP-50-W	MPO Plus Premium Mini Push Pull Tab 50mm White
703-HDPP-64-W	MPO Plus Premium Mini Push Pull Tab 64mm White

703-HDPP-50-W ORDER CODE example

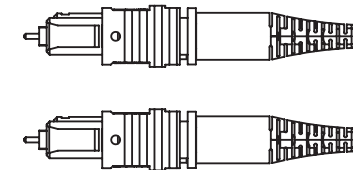
### Ribbon Boots

- 00 Bare Ribbon
- 01 Bare Ribbon Short



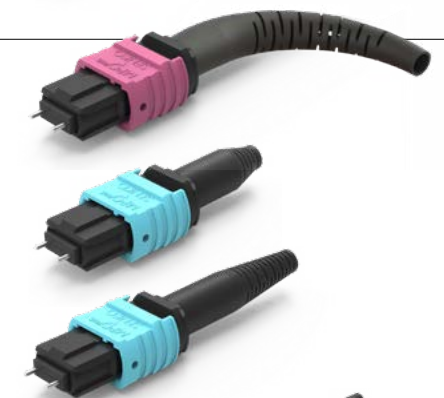
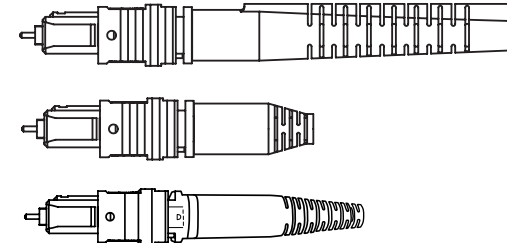
### 2.0mm Round Boots

- 21 2.0mm Boot with Crimp
- 22 2.0mm Boot without Crimp



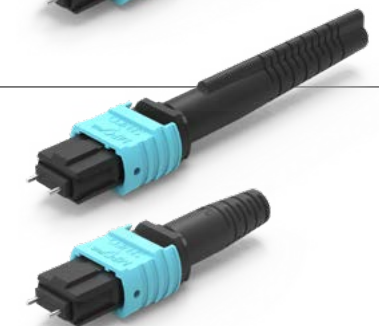
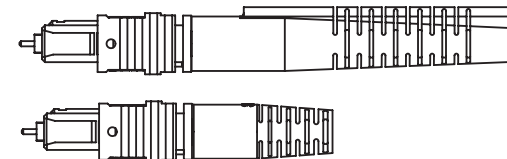
### 3.0mm Round Boots

- 32 3.0mm Flex Angle
- 33 3.0mm Short
- A1 3.0mm Boot



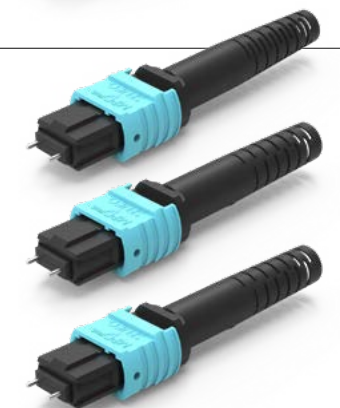
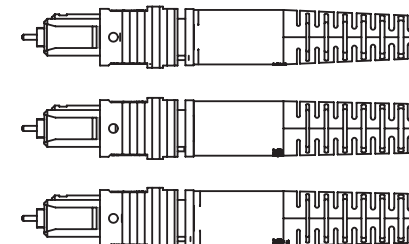
### 3.6mm Round Boots

- 42 3.6mm Flex Angle
- 46 3.6mm Short



### 4.5/5.0/5.5 Round

- 51 4.5mm Boot
- 52 5.0mm Boot
- 53 5.5mm Boot



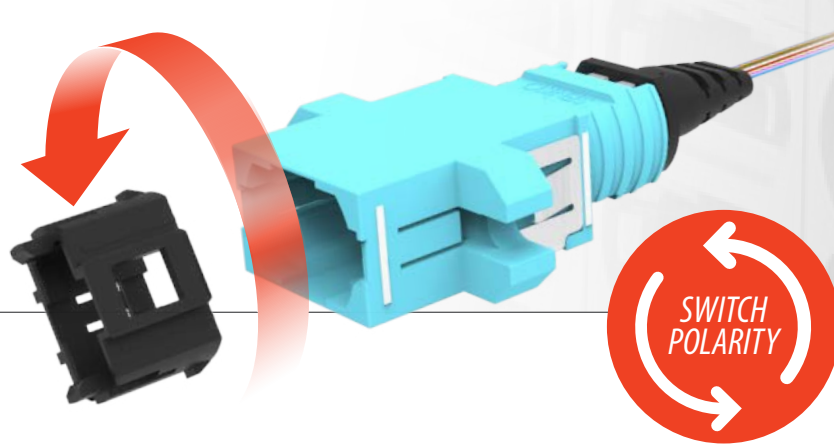
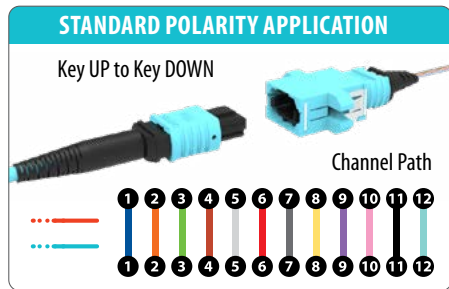
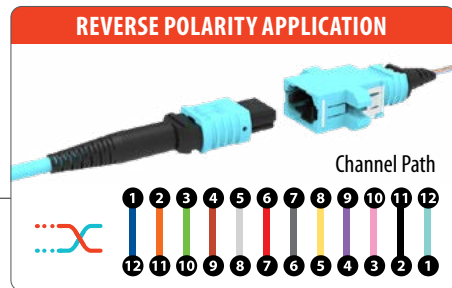
**Note:** When using Flex Angle Boot, always maintain the proper bend radius per the cable manufacturer's specification.

# MPO+PLUS<sup>®</sup> Polarity Changeable Adapter

Scan the QR Code to see the video



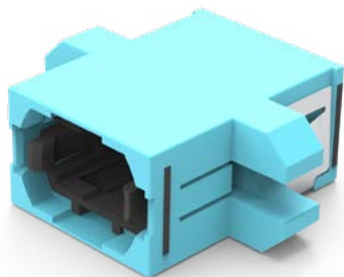
Polarity change made easy without modifying the connector



- FEATURES**
- SENKO Patented Design
  - Compatible with all MPO connectors
  - Standard MPO Foot Print
  - Available in Black, Aqua, Heather Violet and Gray
  - Flanged and Non-Flanged versions available



## Polarity Changeable Adapter

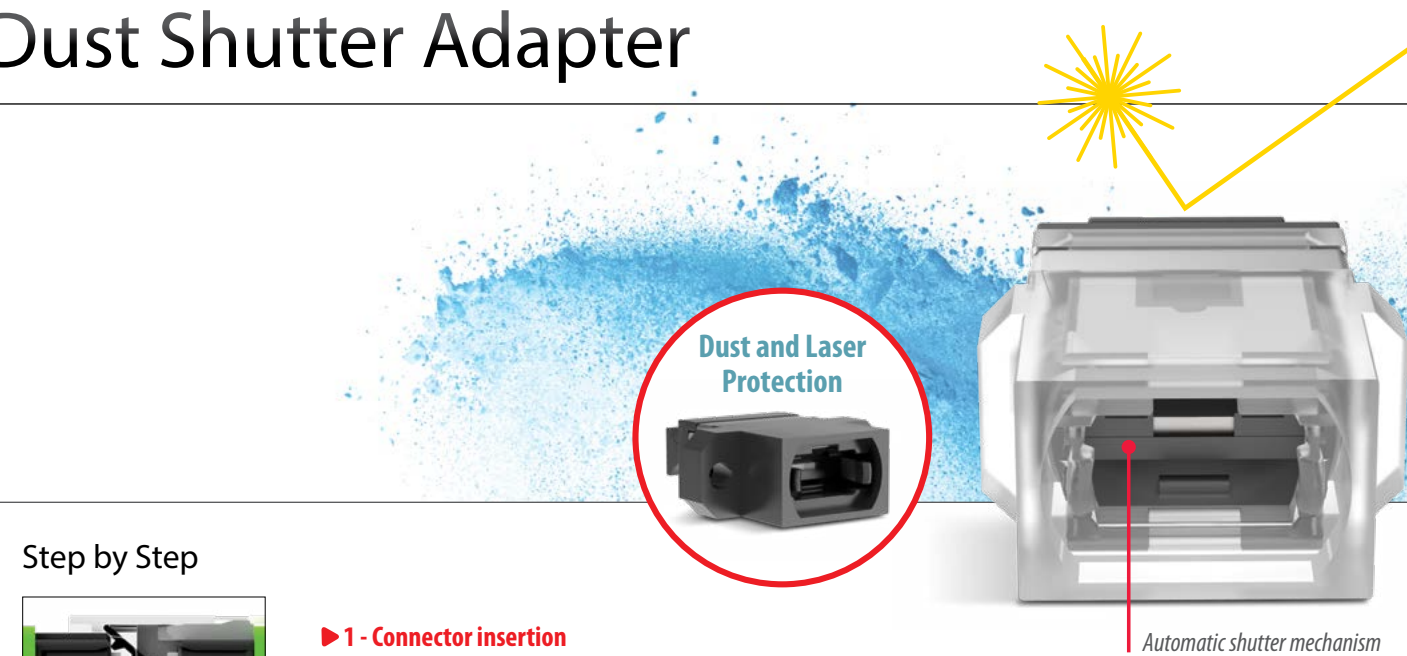


ADAPTER FLANGE	ADAPTER COLOR
773 Flange	1 Black
774 No Flange	2 Aqua
	3 Heather Violet
	K Gray, Aligned Key

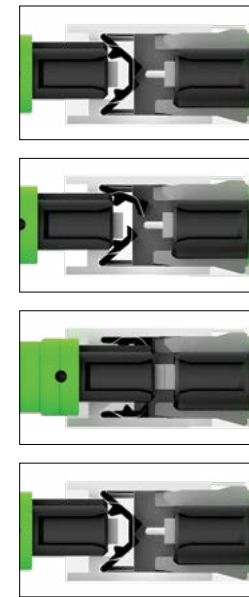
774 - 1 ORDER CODE example

Note: Polarity changeable feature recommended for non-angled ferrules only

# MPO+PLUS<sup>®</sup> Dust Shutter Adapter



### Step by Step



- ▶ 1 - Connector insertion**  
When the connector is inserted into the adapter it compress the springs, opening the internal shutter.
- ▶ 2 - Shutter opening**  
The internal shutter opens, and due to the special design of the shutter, it will not touch the ferrule end face.
- ▶ 3 - Connector mated with adapter**  
The opening of the shutter allows for the ferrule to be inserted inside the adapter sleeve.
- ▶ 4 - Connector removal**  
As the connector is removed from the adapter, the shutter spring automatically returns the internal shutter to the closed position.

### BENEFITS

- Unique twin door shutter closes to prevent any ingress of contamination can be "installed and forgotten" at sites with poor dust control
- 100% automatic shutter mechanism means one handed connection
- No dust cap required on shutter side - reduced waste
- Standard MPO adapter footprint
- Available in Black, Violet, Aqua, Lime, Green, and Gray colours
- Designed to meet GR-1435 requirements
- Can be used in combination with the LC and SC Inner shutter adapter to create a fully dust protected plug and play solution
- Harsh Environment ready
- Fully compliant with IEC dust testing standards
- Compatible with all Senko MPO+ connectors including HD

## Dust Shutter Adapter



MPO Dust Shutter Adapter No Flange

ADAPTER FLANGE	ADAPTER COLOR	SHUTTER
7D7 Flange	1 Black	A with Shutter
7D8 No Flange	2 Aqua	
7WA 16 fiber Adapter with Flange	3 Heather Violet	
7WB 16 fiber Adapter no Flange	8 Lime	
	K Gray, Aligned Key	

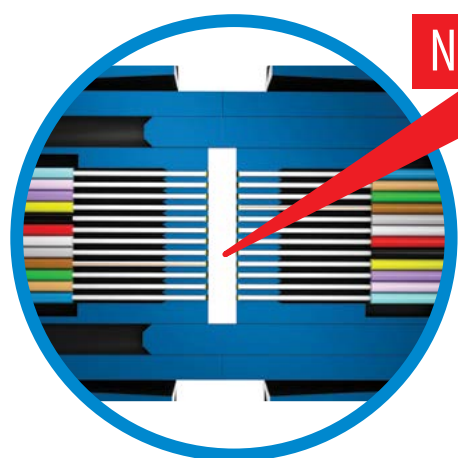
7D7 - 1A ORDER CODE example



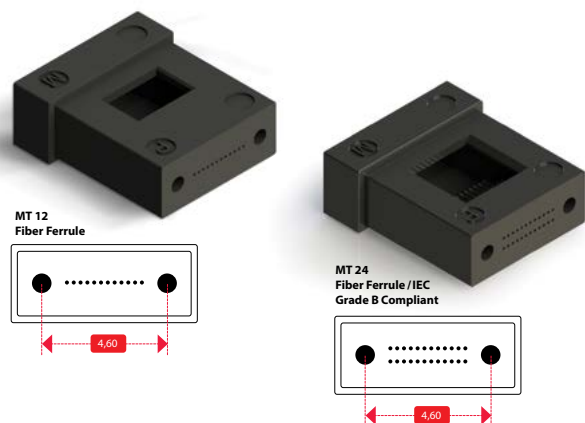
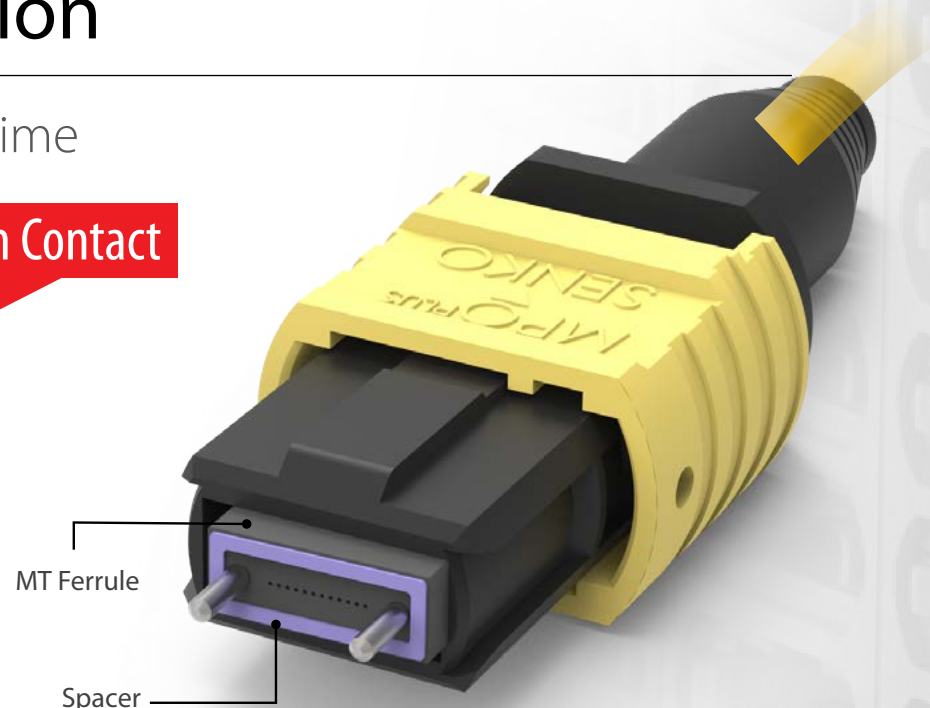
# AirMT MPO+PLUS

## Non-Contact Dust Insensitive Multi-Fiber Solution

Excellent connection anytime

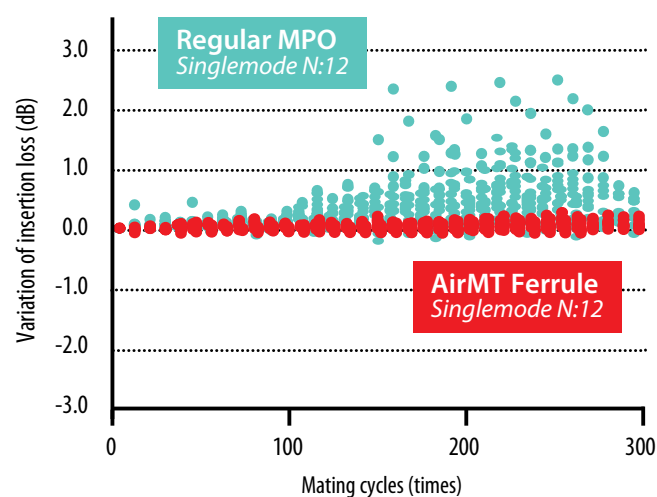


Non Contact



APPLICATION EXAMPLES
<ul style="list-style-type: none"> <li>• Data center</li> <li>• On-board optics</li> <li>• Telecommunications</li> </ul>

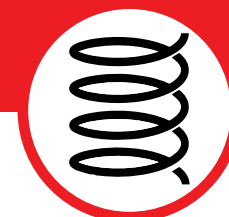
MPO connectors are highly sensitive to all forms of contamination - with such a large end-face and so many fibers, it is very difficult to ensure pristine condition over the entire surface area of the ferrule. Secondly, the standard MPO connector requires high spring force to achieve physical contact for MT to MT ferrules. The non-contact design of the AirMT™ reduces the sensitivity to contamination and allows for a lower spring force for a repeatable Insertion loss over multiple connections.



**Repeated Mating Test**  
300 cycles without cleaning

### Key Features of AirMT MPO Plus connector

#### Lower Spring Force



Consistent optical performance with reduced spring force

#### High Density



40% higher density by FACT footprint

#### Stable Performance



Excellent stable optical performance

#### High Repeatability



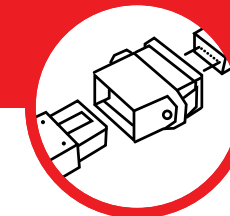
Repeatable optical performance

#### Easy Cleaning



Air blow cleaning capable

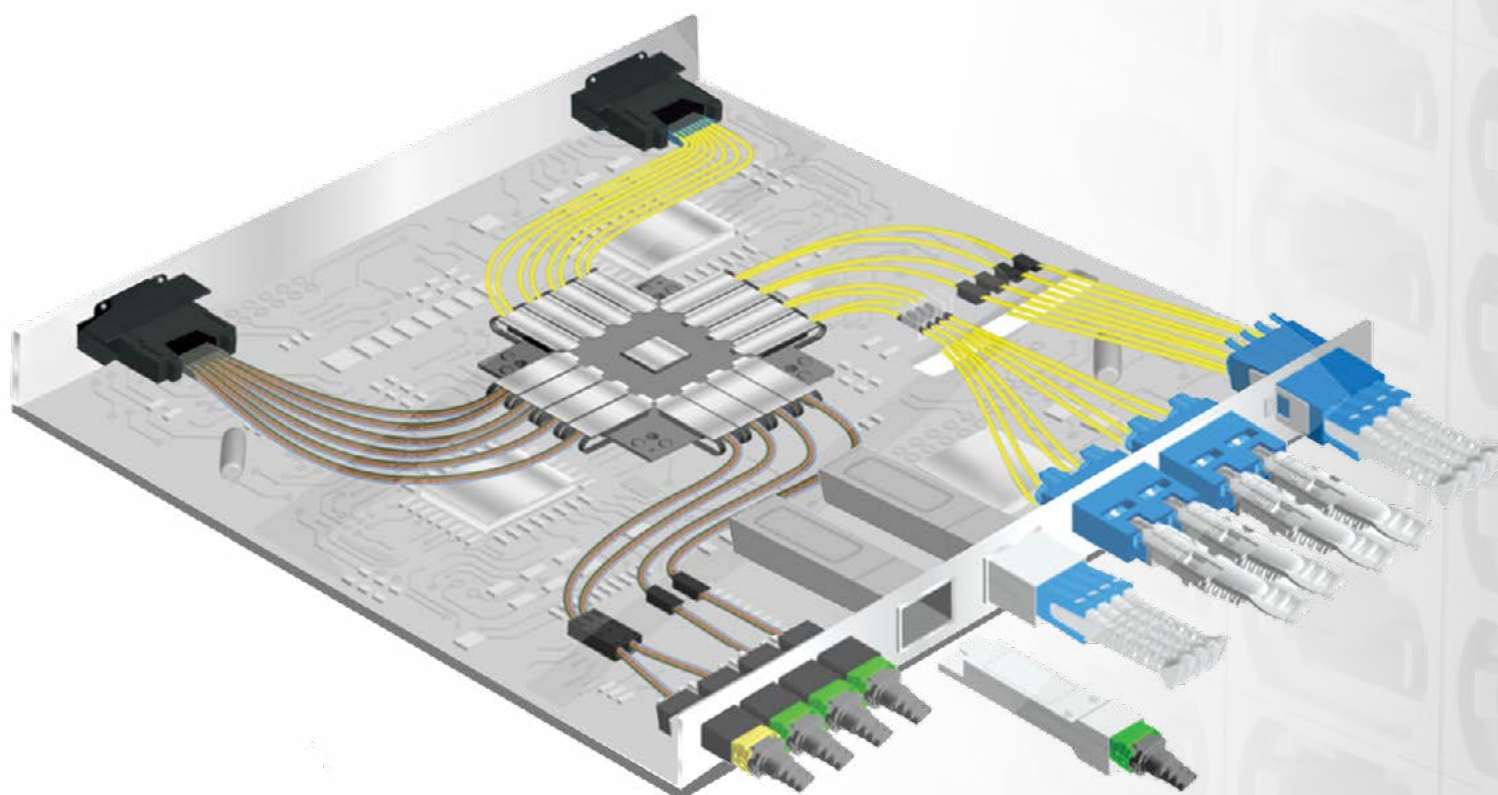
#### Intermateability with MT Ferrule



Retro-fit with conventional MPO Connector

\*AirMT™ technology is licensed by Sumitomo Electric Industries, LTD.  
Trademark of AirMT™ is jointly owned by  
SENKO ADVANCED COMPONENTS, INC and Sumitomo Electric Industries, LTD

# AirMT MPO+PLUS<sup>®</sup> Use Case



## Indoor – Front Panel

### AirMT MPO+PLUS<sup>®</sup>

#### EZ-Flip Connector



- Polarity reversible in multimode
- 12/24 compatible
- Higher density MPO connectivity

### AirMT MPO+PLUS<sup>®</sup>

#### Dust Shutter Adapter



- Dust protection IP5x
- 100% automatic shutter action
- Visual light inspection compatible

### AirMT MPO+PLUS<sup>®</sup>

#### BTW Connector



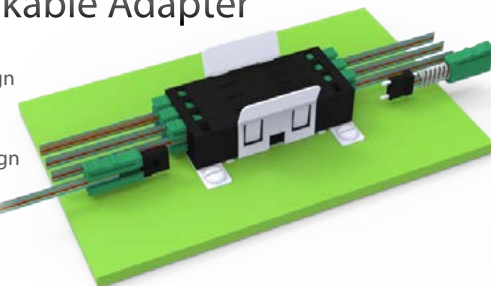
- Behind the Wall connector
- No boot, no spring needed
- Easy latch operation for extraction
- 12/24 compatible

## Onboard Interconnect

### AirMT MPO+PLUS<sup>®</sup>

#### MBMC Stackable Adapter

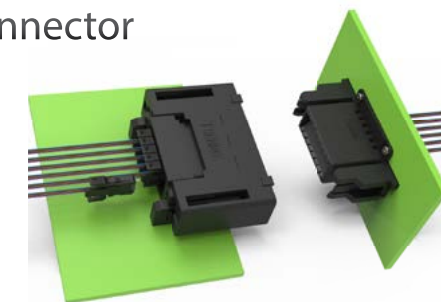
- Easy stackable design
- Scalable design by stacking
- Small footprint design 27.3mm
- Mount option (soldering/screw)
- 12/24F compatible



### AirMT MPO+PLUS<sup>®</sup>

#### Backplane Connector

- Blind mating
- High density
- High mechanical durability
- Excellent connection anytime with AirMT™
- Integrated shutter



Parameters	Single-mode	Multimode <sup>1</sup>
	APC	MM
	Low Loss	Low Loss
Typical Insertion Loss (dB)	0.20	0.20
Maximum Insertion Loss (dB)	0.50	0.25
Typical Return Loss (dB)	≥55	≥23
Operating Temperature (°C)	-40°C to +75°C	
Durability	500 matings	

### APPLICATIONS

- Telco/DC front panel
- Midboard/backplane Interconnect
- Outdoor high density cabling
- Reliable splicing MPO connectivity

NOTES  
 1. Parameters listed for Multimode are target values.  
 2. AirMT technology is licensed by Sumitomo Electric Industries, LTD.  
 3. Trademark of AirMT is jointly owned by Senko Advanced Components, Inc. and Sumitomo Electric Industries, LTD.

## Outdoor High Density Cabling

### AirMT MPO+PLUS<sup>®</sup>

#### IP21

- Factory terminated connector
- High fiber count - up to 96F (MT Ferrule x4)
- Higher durability
- IP68 rated



### AirMT MPO+PLUS<sup>®</sup>

#### IP25

- Factory terminated connector
- High fiber count - up to 192F (MT Ferrule x8)
- Higher durability
- IP68 rated





## MPO-PLUS<sup>®</sup> Removal Tool

Removal tool  
P/N: RMT-603



- Removes Outer housing for gender change and ferrule cleaning

## MPO-PLUS<sup>®</sup> Loopback



- Available for 12ch & 24ch
- Standard and QSFP Applications
- Solid Body
- Attenuated and 0dB version

## MPO-PLUS<sup>®</sup> Quality Master Jumper

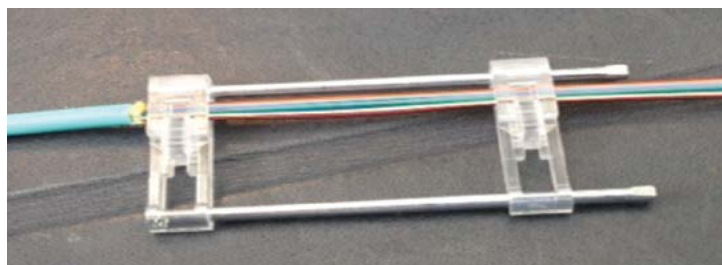


## MPO-PLUS<sup>®</sup> Ribbon stripper

Ribbon Stripper  
P/N: RBN-601



## MPO Ribbonizer



## MPO-PLUS<sup>®</sup> Mini PIN Remover

Pin removal tool  
P/N: RMT-604



## MPO-PLUS<sup>®</sup> Polarity Changeable Adapter Extraction Tool

Polarity Changeable  
Extraction Tool  
P/N: RMT-609



## Smart Cleaner<sup>™</sup> for Fiber Cleaning

The Smart Cleaner is a dry cloth cleaner specifically designed to clean connections residing in an adapter, faceplate or bulkhead.



CLEANINGS  
600+

for MPO Connector



for MPO Port

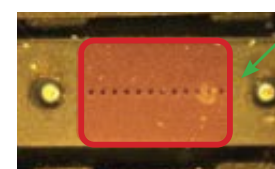


## MPO-PLUS<sup>®</sup> Cleaning Pad

Clean the entire surface of both Male and Female connectors

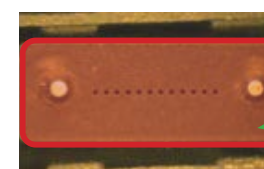


Conventional cleaner  
cleaning area



Particles around the pin area can remain which could cause "air gap."

NEW "Pad" Cleaner Cleaning Zone will clean the full end face



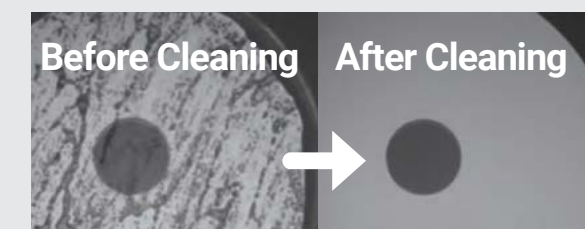
Full surface will be cleaned

## Senko's Optical Connector Lineup creates reliability in telecommunications service

The cause of numerous problems in optical communication equipment is contamination of the end face of optical connectors. Senko has developed optical fiber cleaners with fiber specifically for optical connectors to help create a reliable telecommunications service. Senko's optical connector cleaners eliminate even the smallest contaminants that are visible only through magnification.

### Why is cleaning optical connectors so important?

Contamination of the optical connector end face can easily occur. The transmission quality will be affected once the contaminants adhere to the 10µm diameter optical fiber core, and there is increased danger that the fiber end face will be damaged by any high powered light. Cleaning the optical connector end face is extremely important before making a connection.



Cleaning Tool Options for in Adapter and Unmated

	SN	CS	LC	MPO
NE-CLICK DUPLEX SN Duplex Cleaning SCK-DC-SN	X			
ONE-CLICK DUPLEX CS Duplex Cleaning SCK-DC-CS		X		
SMART CLEANER CS-LC Refillable Dual Purpose Cleaning SCK-SS-CS (Refills SCK-SS-CS-R)		X	X	
SMART CLEANER MINI 1.25MM Tight Spaces Cleaning SCK-SS-M-C125	X	X	X	
OPTRES HANDY MPO Gel Cleaning SCK-PT-MPO-CTR				X
SMART CLEANER MPO 8, 12, 24, 48, 72 F Cleaning SCK-SS-MPO				X
SMART CLEANER MPO 16, 32 F cleaning SCK-SS-MPO-02				X



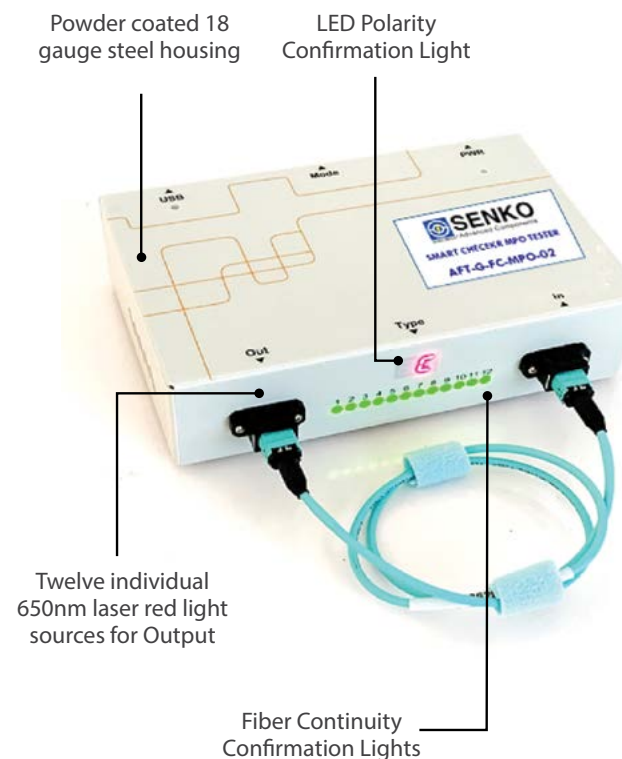
Cleaning Cassettes, Wipes, Sticks and Solvents

	SN	CS	LC	MPO
SMART CLEANER CASSETTE Unpinned MT and Single Fiber SCK-CC-100	X	X	X	X
SMART CLEANER CASSETTE Male MT SCK-CC-200				X
OPTIPOP R Single Slot Unpinned MT and Single Fiber CRE-01 (Refill CRC-RS-01)	X	X	X	X
OPTIPOP R Male MT CRE-03 (Refill CRC-RS-01)				X
OPTIPOP R LC Duplex Dual slots for LC Duplex CRE-02 (Refill CRC-RS-01)			X	
OPTRES GEL PAD CLEANER Gel Cleaning SCK-PT-MPO-01	X	X	X	X
1.25MM NEOCLEAN Sticks Fabric Cleaning Tip CSK-01	X	X	X	
Non-Flammable Solvent Pen Air Ship Safe AFT-A-WEP	X	X	X	X
4X4 Optical Wipes 100 wipes/bag AFT-A-NW	X	X	X	X



SMART CHECKER  
MPO Tester

P/N AFT-G-FC-MPO-02



- Ideal for use in field or in production
- Check continuity and Method A, B or C polarity for 12 fiber MPO assemblies
- 5 Hour battery life

SMART CHECKER  
Visual Fault Locator (VFL)

P/N AFT-G-FC



What can the VFL be used for?

<p><b>1 Polarity</b> Use it to check the polarity of a connector assembly.</p>	<p><b>2 Light continuity</b> Use to quickly check light continuity and locate broken fibers.</p>
<p><b>3 Microbend points</b> Find the microbend points that are causing loss.</p>	<p><b>4 Macrobend points</b> Find the macrobend points that are causing loss.</p>
<p><b>5 Cross connections</b> Use it to check for cross connect.</p>	<p><b>SETTINGS FOR THE VFL LASERS:</b>  <b>CW</b> = Continuous Wave for a continuous light  <b>Pulse</b> = Intermittent on/off for a flashing light</p>



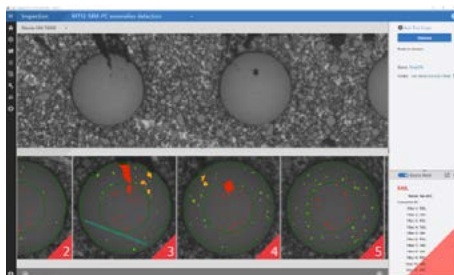
# Benchtop Inspection, Interferometry and Test

## SUMIX Manta W+ Benchtop Inspection Scope

P/N SMX-MANTA-W+



- Inspects 12 fiber in 2.6 seconds, 24 fiber in 4.5 seconds
- 0.5µm defect detection
- Inspection tips for MPO, CS, SN, LC available



### Inspection Tip Guide

Unmated Inspect Tip	SN/UPC	SN/APC	CS/UPC	CS/APC	LC/UPC	LC/APC	MPO Flat	MPO Angled
SMX-T-1.25/PC-M	X		X		X			
SMX-T-1.25/APC-M		X		X		X		
MNT-W-MPO-PC-M-V2-L	X		X		X			
MNT-W-MPO-APC-M-V2-L								

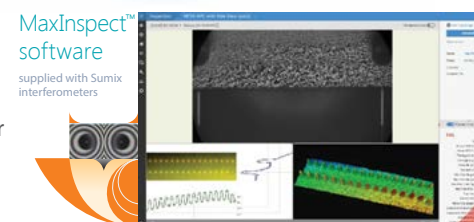
In Adapter Inspect Tip	SN/UPC	CS/UPC	LC/UPC	LC/APC	MPO Flat	MPO Angled
MNT-SN-PC-F-A	X					
MNT-CS-LC-PC-F-A		X	X			
SMX-T-LC/PC-F-K			X			
SMX-T-LC/APC-F-K				X		
MNT-W-MPO-PC-F-V2					X	
MNT-W-MPO-APC-F-V2						X

## SUMIX MAX Quantum Interferometer

P/N MAX-QUANTUM



- Inspects 12 fiber in 2.6 seconds, 24 fiber in 4.5 seconds
- 0.5µm defect detection



## SMX-Manta-W+ Benchtop Holder

P/N MNT-W-STAND



## SMX-Manta-W+ MPO Polarity & Continuity Modul

P/N MPO-VERIFIER



- Works for 8, 12, 24, 48 and 16, 32 fiber MPO
- Auto test and analysis

## SN® Tools



APC FERRULE  
Alignment Tool  
P/N TL-611-APC-1 APC



SN® CRIMP TOOL  
P/N CRT-201

## CS® Tools



APC FERRULE  
Alignment Tool  
P/N TL-611-APC-1 APC



CS® CRIMP TOOL  
P/N CRT-708

## SN EZ-FLIP® Tools



SN EZ-FLIP® CRIMP TOOL  
P/N CRT-202

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