

STANDARD CONNECTOR SERIES  
SMALL FORM FACTORS  
SPECIALTY PRODUCTS  
FERRULES AND SLEEVES  
POLISHING SYSTEMS

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## STANDARD CONNECTOR SERIES

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# SC FC ST

## SENKO Connector and Adapter Series

SENKO Offers 3 Product Grades to Meet Customer Needs

### PREMIUM 1 PC Connector Series



#### Pre-assembled 1pc Type Connector

This premium connector is available in SC, FC, and ST. It was designed to meet the highest requirements in the market.

The premium SC and FC Connector is designed to meet and exceed the Verizon FOC TPR requirement, for the OSP application, or for anywhere customers need a high quality product. Premium SM and Premium Low Loss SM (LS) are available. Typical IL of 0.05 for LS SM Ferrule, and 0.08 for Premium UPC. Various option for boots are available.

### STANDARD 1 PC Connector Series



#### Pre-assembled 1pc Connector

This connector series (SC, FC, and ST) gives value for cost. Using high quality components, these connectors meet IEC, and the general requirement of GR-326.

The same crimp and boot can be interchanged for all the Standard Connector Series (SC, FC, ST).

### CONNECTOR KIT Multi-Piece Connector



#### Multi-Piece Connector Kit

*(Ferrule to be Purchased Separately)*

Manufactured to the original NTT designed SC Connector kit, it is supplied as a multi-piece unassembled connector. Using high quality components, this connector meets IEC, and the general requirement of GR-326.

Ferrule with Flange are to be ordered separately.

#### FEATURES COMPARISON CHART

For SC Premium and SC Standard	PREMIUM LS CONNECTOR	PREMIUM SM CONNECTOR	STANDARD CONNECTOR	CONNECTOR KIT
IL Average Against Master (UPC)	0.05	0.08	0.12	***
IL Mean Value Random Mating (UPC)	0.07	0.12	0.25	***
Verizon FOC TPR-9409	○	○		
GR-326 Core Issue 4	○	○	△	
IEC, TIA/EIA JIS Spec	○	○	○	○
IEC Random Mating Grade A*	○			***
IEC Random Mating Grade B*	○	○		***
IEC Random Mating Grade C*	○	○	○	***
RoHS Compliant	○	○	○	○
UL 94V-0	○	○	○	○
4 Position Tuning After Assembly (SC, FC)**	○	○		
MINI Boots	○	○		
Standard Boots	○	○	○	
Long Boots	○	○		○
Premium Crimp Ring	○	○		
Standard Crimp Ring			○	
Pre-assembled 1pc Body	○	○	○	
Push Pull Mechanism	○	○	○	○
Free Floating Ferrule	○	○	○	○
Metal Back Post	○	○	○	○
Premium Duplex Clip	○	○		
Standard Duplex Clip			○	○
Crimp Tool CRT-401	○	○	○	CRT-501

○ Complies with GR-326 issue 4 TWAL test with 4 wavelength △ Good for general usage

Note: \*Based on IEC 61753-1 \*\*Only for UPC Connector

\*\*\*Depend on ferrule selected



## TECHNICAL SPECIFICATIONS Premium and Standard Connector

PRODUCT SERIES	TYPE OF CONNECTOR SENKO P/N	IL AGAINST MASTER (dB)		IL RANDOM MATING (dB)	
		Average IL	Maximum IL	Mean IL	Maximum IL
Premium Low Loss SM	SC (254-199-xxx), FC (351-109-xx), (215-109-xx)	0.05	0.15	0.07	0.15 <sup>*1</sup>
Premium SM	SC (254-193-xxx), FC (351-103-xx), ST (215-103-xx)	0.08	0.20	0.12	0.25 <sup>*2</sup>
Premium Low Loss APC	SC APC (291/294-199-xx), FC APC (292/293-209-xx)	0.07	0.15	0.09	0.20
Premium SM APC	SC APC (291/294-193-xx), FC APC (292/293-203-xx)	0.10	0.25	0.14	0.30
Premium MM Connector	SC (254-291-xxx), FC (351-201-xx), ST (215-201-xx)	0.10	0.20	-	-
Standard SM	SC (231-191-xxx), FC (341-101-xx), (233-101-xx)	0.12	0.30	0.25	0.50 <sup>*3</sup>
Standard MM	SC (231-291-xxx), FC (341-201-xx), (233-201-xx)	0.15	0.30	-	-

	Singlemode	Multimode
Operating Temperature	-40°C to +75°C	-40°C to +75°C
Durability	<0.1dB typical change, 500 matings	<0.1dB typical change, 500 matings

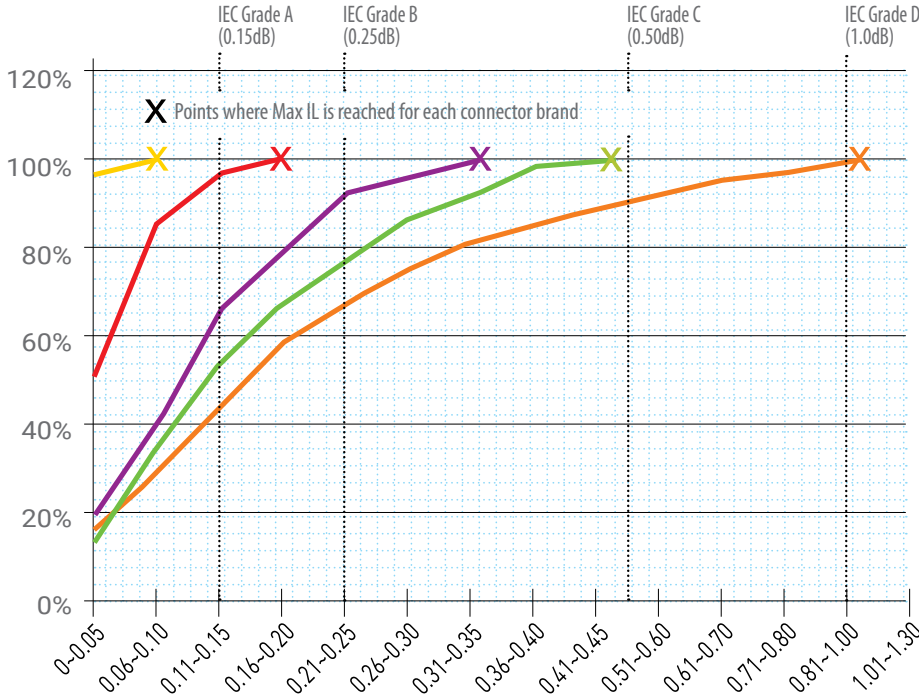
IEC Random mating test IEC 61753-1  
 1 - To meet IEC Random Mating Grade A ( $\leq 0.07\text{dB}$  mean,  $\leq 0.15\text{dB}$  max for >97% of sample).  
 Grade A Spec is not finalized, above is a recommendation  
 2 - To meet IEC Random Mating Grade B ( $\leq 0.12\text{dB}$  mean,  $\leq 0.25\text{dB}$  max for >97% of sample)  
 3 - To meet IEC Random Mating Grade C ( $\leq 0.25\text{dB}$  mean,  $\leq 0.50\text{dB}$  max for >97% of sample)

## Random Mating IL

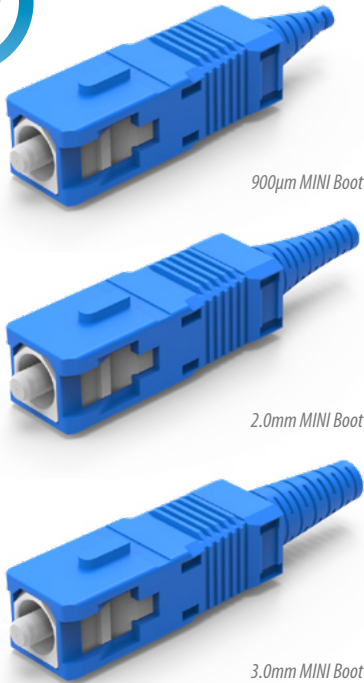
SENKO has categorized its connectors to reflect the IEC Random Mating specified grades A\*, B, and C, allowing the end-user to make an informed decision when selecting connectors, of how finished patchcords using SENKO connectors will perform.

### Random mating Insertion Loss

- SENKO Low Loss
- SENKO Premium
- SENKO Standard
- High quality Competitor
- Low quality Competitor



1 PC Connector (254 Series)



SC UPC PREMIUM

CONNECTOR	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
254 Premium	193 SM: Premium 125µm	5 Aqua	7 Long 3.0mm	1 Blue
	199 SM: Low Loss 125µm	6 Blue	A Long 2.0mm	2 Black
	291 MM: Premium 127µm	7 Black	M Standard 900µm	3 Green
		8 Red	N Standard 2.0mm	4 Red
		9 Beige	P Standard 3.0mm	6 Yellow
			J MINI 900µm	7 White
			K MINI 2.0mm	8 Beige
			L MINI 3.0mm	9 Aqua
			F Flex Angle Boot 3.0mm	
			G Flex Angle Boot 2.0mm	

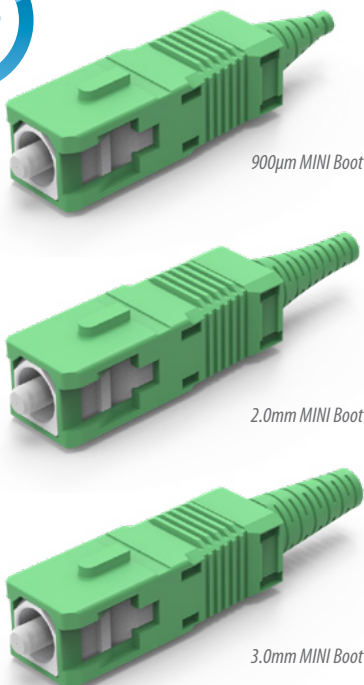
254 - 193 - 6F1 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 81µm SM 125.5µm MM 230µm MM 144µm

**Features:**

- SENKO's flagship Premium Connector series
- Designed to exceed the requirement of Verizon FOC TPR 9409 requirements
- Premium Low Loss SM, typical IL against Master 0.05dB
- Premium Low Loss SM to meet IEC 61753-1 Grade A random mating requirement of Max 0.15dB
- Premium SM typical IL against Master 0.08dB
- Premium SM to meet IEC 61753-1 Grade B random mating requirement of Max 0.25dB
- 4 direction tuning feature to improve random mating IL
- Crimp tool to be used CRT-401

1 PC Connector (291/294 Series)



SC APC PREMIUM

CONNECTOR	FERRULE TYPE	POLISH	BOOT TYPE
291 Premium Step	193 SM: Premium 125µm	1 No Angle	7 Long 3.0mm
294 Premium Cone	199 SM: Low Loss 125µm	2 8° Pre-Angle	A Long 2.0mm
			M Standard 900µm
			N Standard 2.0mm
			P Standard 3.0mm
			J MINI 900µm
			K MINI 2.0mm
			L MINI 3.0mm
			F Flex Angle Boot 3.0mm
			G Flex Angle Boot 2.0mm

291 - 193 - 1F ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 81µm SM 125.5µm

**Features:**

- SENKO's flagship Premium Connector series
- Designed to exceed the requirement of Verizon FOC TPR 9409 requirement
- Premium Low Loss SM, typical IL against Master 0.07dB
- Premium SM typical IL against Master 0.10dB
- Cone Ferrule type and Step Ferrule type available
- Option of an 8 degree pre-angle cut available
- Crimp tool to be used CRT-401



## SC UPC STANDARD

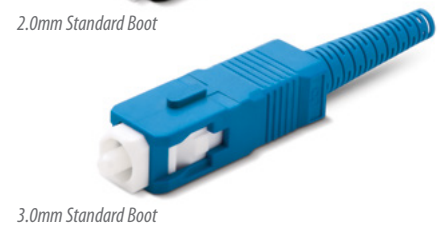
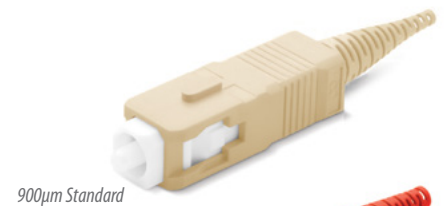
### 1 PC Connector (231 Series)

CONNECTOR		FERRULE TYPE		HOUSING		BOOT TYPE		BOOT COLOR	
231	Standard	191	SM: Standard 125.5µm	5	Aqua	P	Standard 3.0mm	1	Blue
			MM: Standard 127µm	6	Blue	N	Standard 2.0mm	2	Black
				7	Black	M	Standard 900µm	4	Red
				8	Red	J	MINI 900µm	6	Yellow
				9	Beige			8	Beige

231 - 191 - 7N4 ORDER CODE example

#### Features:

- Pre-assembled one piece design to reduce assembly time
- Meets and exceeds the TIA/EIA, IEC and JIS SC Specification
- Typical IL against master to be 0.12dB Max 0.3dB
- Crimp tool to be used CRT-401



## SC CONNECTOR KIT

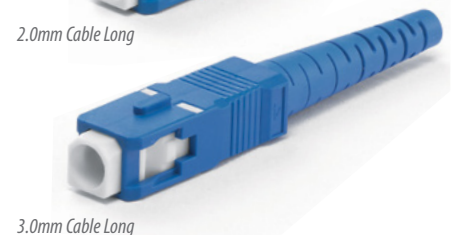
### NTT Kit Style (132 Series)

CODE	OUTER HOUSING		BOOT TYPE		BOOT COLOR	
132	A11	Blue with White Line	7	3.0mm Cable Long	1	Blue
	B11	Black with White Line	9	2.0mm Cable Long	2	Black
	C11	Beige with White Line	D	900µm MINI Fiber Boot	3	Green
	D11	Green with White Line			4	Red
					8	Beige

132 - A11 - 71 ORDER CODE example

#### Features:

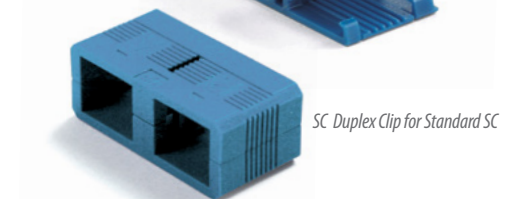
- The original NTT Style Connector Kit design (*Multi Piece Connector*)
- Meets and exceeds the TIA/EIA, IEC and JIS SC Specification
- Various housing and boot color to meet customer need.
- Ferrule to be ordered separately
- Crimp tool to be used CRT-501



## SC DUPLEX CLIP

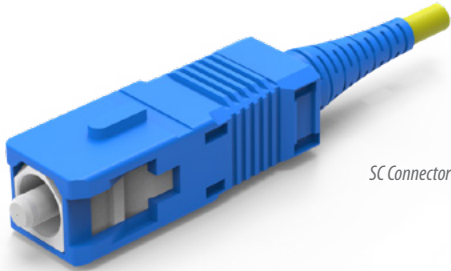
CLIP			CLIP COLOR
224	SC Duplex Clip for Premium Connector		591 Black
274	SC Duplex Clip for Standard & Connector Kit		592 Green
			593 Blue
			594 Beige
			595 Red
			596 Aqua

224 - 591 ORDER CODE example



## SC CONNECTOR 1.2

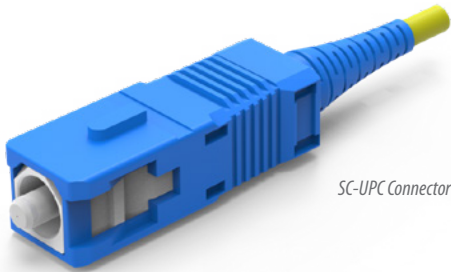
The new SC Connector is as strong as a 3mm cable. Reduce your cable size, but keep the strength. The SC Connector for 1.2mm cable is fully compliant to GR-326-Core for Media 1.



SC Connector

CONNECTOR	FERRULE SIZE	HOUSING COLOR	BOOT SIZE	BOOT COLOR
556 SC Premium 1.2mm Assembled	193 Premium SM	4 Violet (OM4)	R 1.2mm	1 Blue
557 SC Premium 1.2mm Un-Assembled	291 MM 127µm	5 Aqua (OM3)		7 White
		6 Blue		
		7 Black		
		8 Red		
		9 Beige		

556 - 193 - 4R7 ORDER CODE example



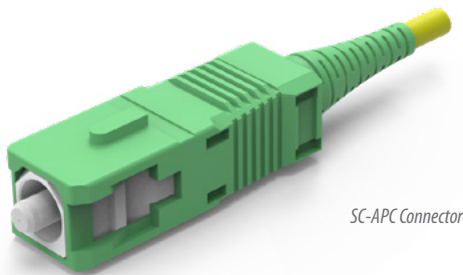
SC-UPC Connector

CONNECTOR	FERRULE SIZE	FERRULE POLISH	BOOT SIZE
596 SC APC Step 1.2mm Assembled	193 Premium SM	1 No angle	R 1.2mm
597 SC APC Step Premium 1.2mm Un-Assembled		2 Pre-angle	
598 SC APC Cone Premium 1.2mm Assembled			
599 SC APC Cone Premium 1.2mm Un-Assembled			

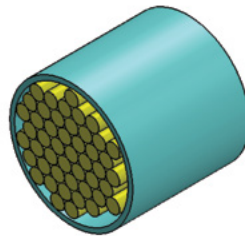
596 - 193 - IR ORDER CODE example

**Features:**

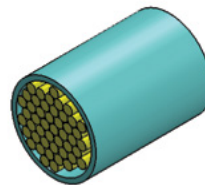
- Meets the same GR-326 mechanical requirements as a conventional 3mm and 2mm cable
- Exceeds 15lb Proof Test Objective as per GR-326-Core section 1.4.4.3.4
- Passes the GR-326 TWAL Test for Media 1 (ruggedized cable) as per section 4.4.3.5
- Reduces cable congestion without sacrificing mechanical strength



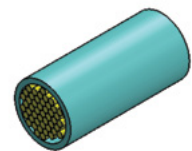
SC-APC Connector



Duct containing 48 x Ø 3mm cable



Duct containing 48 x Ø 2mm cable



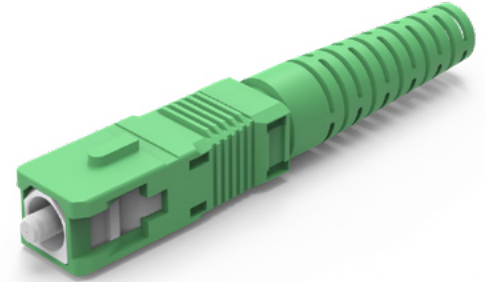
Duct containing 48 x Ø 1.2mm cable

Note: Duct size reduced by 1/6 (approx 16%) compared to a 3mm cable

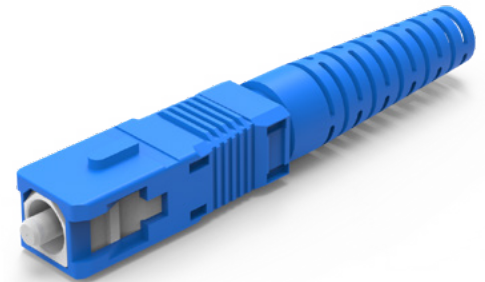
## SC CONNECTOR 4.8

SPECIFICATION	SINGLEMODE	MULTIMODE
<b>For SC Connector 4.8</b>	<b>Typical</b>	<b>Typical</b>
<b>Insertion Loss</b>	<b>Premium Connector UPC</b>	0.08dB
	<b>Premium Connector APC</b>	0.10dB
<b>Return Loss</b>	≥ 55dB typical (PC)	
	≥ 68dB typical (APC)	
<b>Durability</b>	< 0.1dB change, 500 matings	
<b>Operating Temperature</b>	-40 to +75°C	

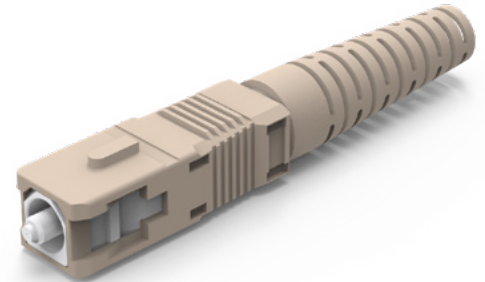
*Note: Specifications shown above were obtained using SENKO recommended products and procedures.*



4.8mm APC Connector



4.8mm UPC Connector



4.8mm MM Connector

CONNECTOR	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
554	193 SM: Premium 125µm	6 Blue	1 4.8mm Boot	1 Blue
	199 SM: Low Loss 125µm	8 Beige		8 Beige
	291 MM: 127µm			

554 - 193 - 611 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 81µm SM 126µm SM 125.5µm

CONNECTOR	FERRULE TYPE	POLISH	BOOT TYPE
591 SC Premium APC Step	193 SM: Premium 125µm	1 No Angle	1 4.8mm Boot
594 SC Premium APC Cone	199 SM: Low Loss 125µm	2 8° Pre-Angle	

591 - 193 - 11 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 81µm SM 126µm SM 125.5µm

### Features:

- Compliance with Telcordia, TIA/IEA, IEC and JIS interface specifications
- Low insertion loss & back reflection\*
- One-piece construction & pull-proof design
- Free-floating ceramic ferrule
- Precision anti-rotation key and corrosion resistant body
- UL-rated plastic housing and boots in a variety of colors
- Telcordia style boots
- Adapters with choice of metal or plastic housing, mount styles & flange options

## SC CRIMP TOOL

CODE	CONNECTOR TYPE
CRT	401 SC, FC, ST One Piece Connectors
	501 SC Connector Kit 132 series
	705 SC/LC 1.2mm Connector

CRT - 401 ORDER CODE example





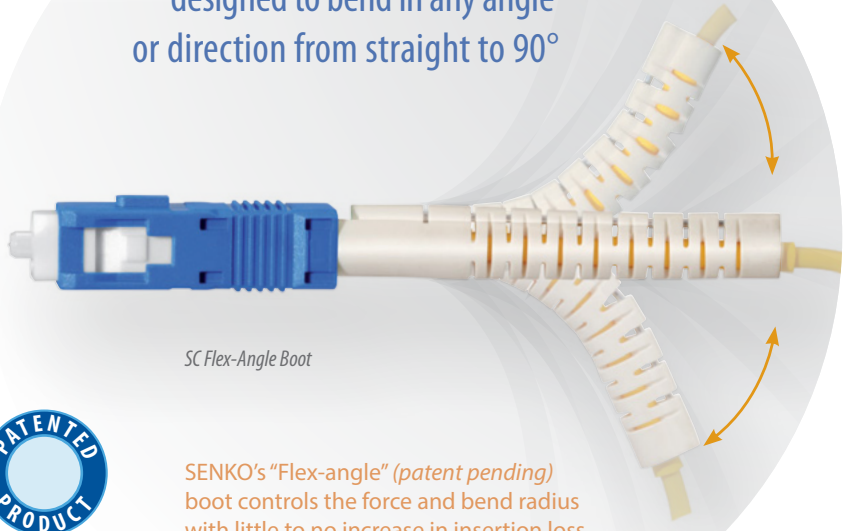
## SC FLEX ANGLE BOOT



SC Flex-Angle Boot

SENKO's new 2.0mm and 3.0mm boot addition for the Premium SC connectors. The Flex-Angle boot is designed to bend and maintain any angle or direction from straight to 90°. The boot is molded over a single stainless steel wire and can be easily positioned by hand. The internal wire holds the boot at the desired angle or direction.

The Flex-Angle boot is designed to bend in any angle or direction from straight to 90°

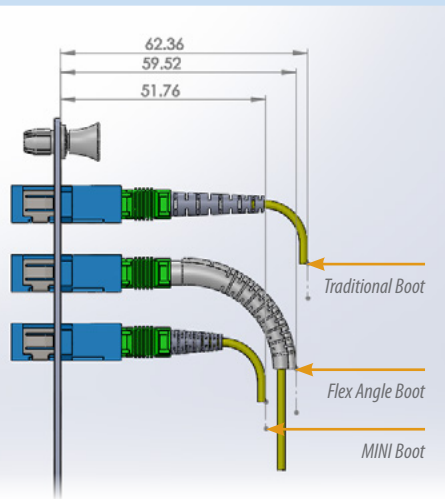


SC Flex-Angle Boot



SENKO's "Flex-angle" (patent pending) boot controls the force and bend radius with little to no increase in insertion loss

### Flex Angle Boot Reduces Boot Protrusion From Panel



PRODUCT SERIES	BOOT	TYPE OF CONNECTOR
Premium SC 2.0mm	HW-25001-xx	254-xxx-xGx
Premium SC 3.0mm	HW-25002-xx	254-xxx-xFx
Standard SC 2.0mm	HW-25001-xx	231-xxx-xGx
Standard SC 3.0mm	HW-25002-xx	231-xxx-xFx

**Note:** When using angled boots, always maintain the proper bend radius per the cable manufacturer's specification

## SC TOP SIMPLEX ADAPTER

TOP (True One Piece) Adapter 263/268 series

CODE	TYPE	COLOR	SLEEVE TYPE	HOOK MATERIAL	SHUTTER
263	Flange	1 Green	1 Zirconia	1 High Tg	N No Shutter
268	No Flange	2 Beige			
		3 Black			
		9 Aqua			

263 - 101 - 1N ORDER CODE example

- Note:** 1. Custom colors available upon request  
2. High TG Hook meets GR326 TG100 requirements

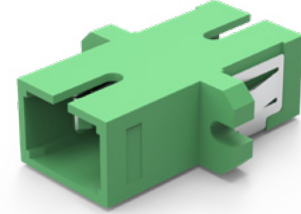


SC One Piece Adapter, No Weld Type

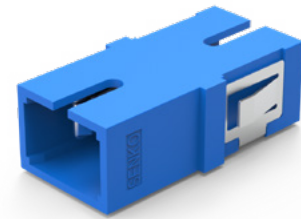


SC Standard Adapter, Welded Type

The new patented one piece housing design prevents breakage of the adapter due to the absence of ultrasonic weld type construction.



SC TOP Simplex Adapter



SC TOP Simplex Adapter without Flange

## SC TOP DUPLEX ADAPTER

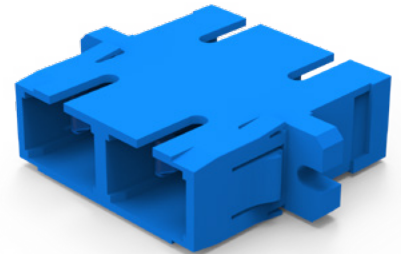
TOP (True One Piece) Adapter 243/248 series

CODE	TYPE	COLOR	SLEEVE TYPE	HOOK MATERIAL	SHUTTER
243	Flange	1 Green	1 Zirconia	1 High Tg	N No Shutter
248	No Flange	2 Beige			
		3 Black			
		9 Aqua			

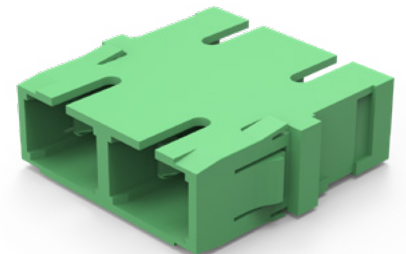
243 - 201 - 1N ORDER CODE example

**Features:**

- One piece solid body, no welding point (*patent pending*)
- Built in panel mounting plate
- Rattle free wings to support tight fit in the panel (*patent pending*)
- Inner shutter and Outer shutter ready for eye safety
- Flange type, and No flange type available



SC TOP Duplex Adapter



SC TOP Duplex Adapter without Flange



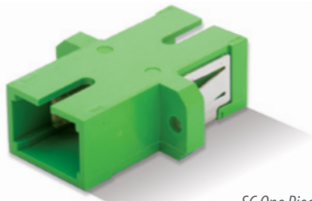
Premium Adapter 242/247 series

**SC PREMIUM ONE PIECE SIMPLEX ADAPTER**

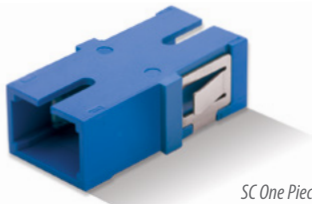
The SENKO patented design, one piece adapter is stronger than the conventional, seam-welded SC adapter giving improved side loading strength and the preventing adapter breakage. SC Simplex adapters have been tested to the Verizon FOC TPR 9409 standard and sleeves used in this adapter have been tested and passed the TRP requirements. High TG hooks are used to meet the GR-326 requirements. Shuttered versions are also available.



senko.com/patents



SC One Piece Adapter



SC One Piece Adapter without Flange

ADAPTER SPECIFICATION	ZIRCONIA SLEEVE		METAL SLEEVE	
	Typical	Max	Typical	Max
For SC, FC and ST Adapters				
Insertion Loss	0.05	0.20	0.10	0.30
Sleeve / Ferrule Withdraw Force	200gf - 600gf			
Operating Temperature	-40° to +75°			
Durability	<0.1 dB typical change, 500 matings*			

*Note: Zirconia tested with SMF Fiber, metal sleeve tested with MMF*

CODE	TYPE	COLOR	SLEEVE TYPE	HOOK MATERIAL	SHUTTER
242 Flange	1 Simplex	0 Blue	1 Zirconia	1 High Tg	N No Shutter
247 No Flange		1 Green			
		2 Beige			
		3 Black			
		9 Aqua			

247 - 101 - 1N ORDER CODE example

**Note:** Custom colors available upon request

**Features:**

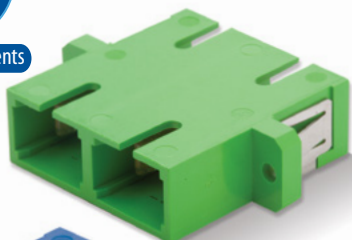
- SENKO's highest quality adapter series
- Patented one piece housing design prevents housing breakage
- Designed to exceed the requirement of the Verizon FOC TPR 9409 requirement
- High TG hook prevents unwanted hook opening in OSP application
- Typical insertion loss under 0.05dB and Max IL of 0.20dB
- Various housing color to meet customer's requirement
- Shutter option ready for eye safety

Premium Adapter 242/247 series

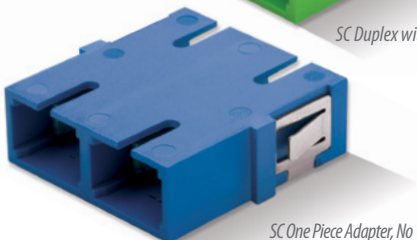
**SC PREMIUM ONE PIECE DUPLEX ADAPTER**



senko.com/patents



SC Duplex with Flange



SC One Piece Adapter, No Weld Type

CODE	TYPE	COLOR	SLEEVE TYPE	HOOK MATERIAL	SHUTTER
242 Flange	2 Duplex	0 Blue	1 Zirconia	1 High Tg	N No Shutter
247 No Flange		1 Green			
		2 Beige			
		3 Black			
		9 Aqua			

247 - 202 - 1N ORDER CODE example

**Note:** Custom colors available upon request



SC One Piece Adapter, No Weld Type



Conventional Adapter Welded type

The new one piece housing design prevents breaking of the adapter due to the absence of ultrasonic weld type construction.

## SC PREMIUM ONE PIECE ADAPTER WITH SHUTTER

### Internal Shutter

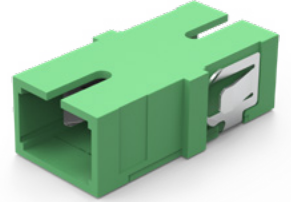
CODE	TYPE	COLOR	SLEEVE TYPE	HOOK MATERIAL	SHUTTER	
242	Flange	1 Simplex	0 Blue	1 Zirconia	1 High Tg	N No Shutter
247	No Flange	2 Duplex Horizontal	1 Green	2 Metal		A Internal Shutter (w/o mark)
		2 Beige				C Internal Shutter (w/mark)
		3 Black				
		9 Aqua				

242 - 121 - 1C ORDER CODE example

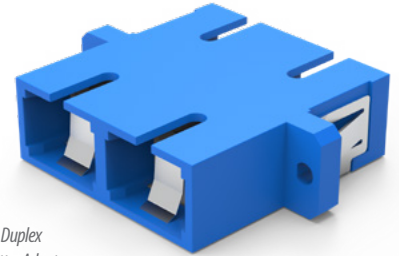


senko.com/patents

SC Premium Simplex Adapter without Flange



SC Premium Duplex Internal Shutter Adapter

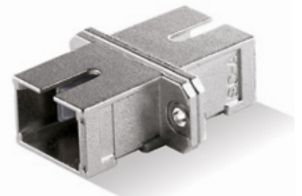


## SC METAL ADAPTER

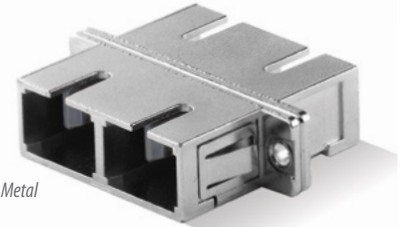
TYPE	SLEEVE TYPE	HOOK MATERIAL
226 Simplex	101 Zirconia	1 Hi-Tg
228 Duplex		

226 - 101 - 1 ORDER CODE example

SC Simplex Metal Adapter



SC Duplex Metal Adapter



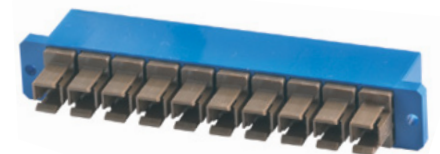
## SC SIMPLIFIED CONNECTOR AND ADAPTER

CONNECTOR CODE	FERRULE TYPE	BOOT TYPE	BOOT COLOR
774 SC Simplified Connector	191 SM: 125.5µm	2 1.0mm Fiber	2 Black

774 - 191 - 22 ORDER CODE example

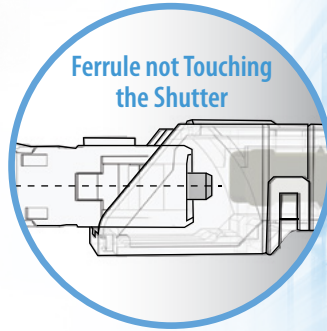
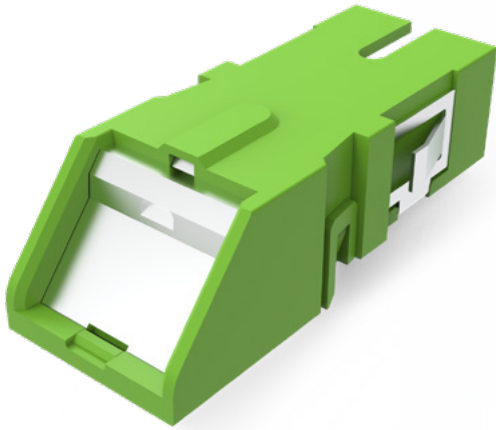
ADAPTER CODE	TYPE	SLEEVE	HOUSING COLOR
229 SC Simplified Adapter	1 Simplex	1 Zirconia Straight Split	1 Blue
	2 Duplex		
	3 8 Ways		
	4 10 Ways		

229 - 111 ORDER CODE example





# SC ADAPTER WITH DUST SHUTTER



**Features:**

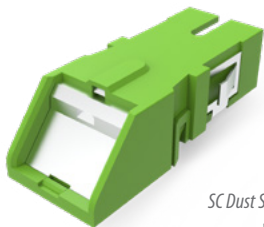
- 100% automatic shutter action
- IP5X dust protection
- SC footprint on non-shuttered side
- Compatible with standard SC connectors
- Adapter traceability with Visible Light Source

**SC Adapter Traceability**

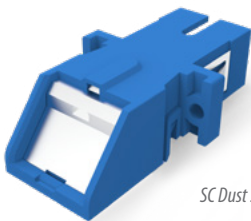


When trying to trace the adapter using a visible light source, you can see the red light glowing through the adapter sleeve.

*Automatic shutter mechanism*



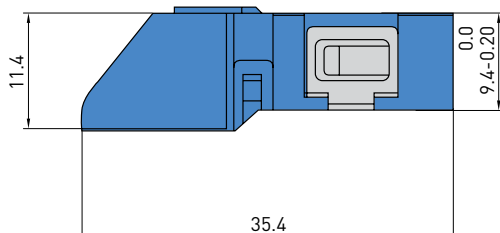
SC Dust Shutter Adapter without Flange



SC Dust Shutter Adapter with Flange

ADAPTER CODE	TYPE	HOUSING COLOR	SLEEVE TYPE	SHUTTER
<b>24A</b> SC Adapter with Dust Shutter with Flange	<b>1</b> Simplex	<b>0</b> Blue <b>1</b> Green	<b>1</b> Zirconia	<b>A</b> Shutter
<b>24B</b> SC Adapter with Dust Shutter no Flange		<b>7</b> Violet OM4 (MOQ Req) <b>9</b> Aqua OM3		

24A - 101 - A ORDER CODE example



Fits in SC Footprint



## FC UPC PREMIUM

### 1 PC Connector (351 Series)

CONNECTOR		FERRULE TYPE		BOOT TYPE		BOOT COLOR	
351	Premium	103	SM: Premium 125µm	7	Long 3.0mm	1	Blue
		109	SM: Low Loss 125µm	A	Long 2.0mm	2	Black
		201	MM: Premium 127µm	M	Standard 900µm	3	Green
				N	Standard 2.0mm	4	Red
				P	Standard 3.0mm	6	Yellow
				J	MINI 900µm	7	White
				K	MINI 2.0mm	8	Beige
				L	MINI 3.0mm	9	Aqua
				F	Flex Angle Boot 3.0mm		

351 - 103 - L6 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 81µm SM 126µm SM 125.5µm MM 230µm MM 144µm

**Features:**

- SENKO's flagship highest quality Premium Connector Series
- Designed to exceed the requirement of Verizon FOC TPR 9409 requirement
- Premium Low Loss SM, typical IL against Master 0.05dB
- Premium Low Loss to meet IEC 61753-1 Grade A random mating requirement of Max 0.15dB
- Premium SM typical IL against Master 0.08dB
- Premium SM to meet IEC 61753-1 Grade B random mating requirement of Max 0.25dB
- 4 directions tuning ferrule to improve random mating IL
- Crimp tool to be used CRT-401
- Narrow key width 2.00mm+/-0.02mm



900µm MINI Boot



2.0mm MINI Boot



3.0mm MINI Boot

## FC APC PREMIUM

### 1 PC Connector (292/293 Series)

CONNECTOR		FERRULE TYPE		FERRULE POLISH		BOOT TYPE							
292	Premium Step	203	SM: Premium 125µm	1	No Angle	7	Long 3.0mm						
						293	Premium Cone	209	SM: Low Loss 125µm	2	8° Pre-Angle	A	Long 2.0mm
												M	Standard 900µm
												N	Standard 2.0mm
												P	Standard 3.0mm
												J	MINI 900µm
												K	MINI 2.0mm
												L	MINI 3.0mm
												F	Flex Angle Boot 3.0mm

293 - 203 - 2A ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 81µm SM 126µm SM 125.5µm

**Features:**

- SENKO's flagship highest quality Premium Connector Series
- Designed to exceed the requirement of Verizon FOC TPR 9409 requirement
- Premium Low Loss SM, typical IL against Master 0.07dB
- Premium SM typical IL against Master 0.08dB
- Cone ferrule type and Step ferrule type available
- Option of an 8 degree pre-angle cut available
- Various choices of boots types
- Crimp tool to be used CRT-401
- Narrow key width 2.00mm+/-0.02mm



Cone Ferrule Step Ferrule



900µm MINI Boot



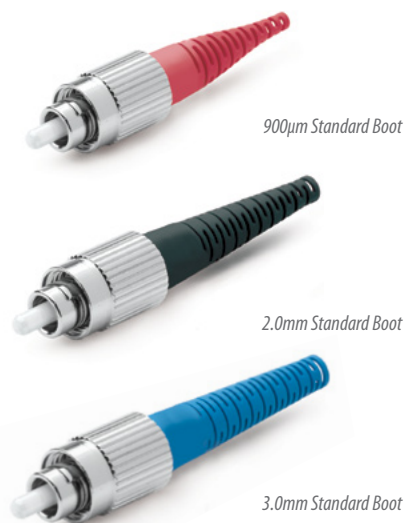
2.0mm MINI Boot



3.0mm MINI Boot

**1 PC Connector (343/331 Series)**

**FC STANDARD**



CONNECTOR	FERRULE TYPE	BOOT TYPE	BOOT COLOR
343 Pre-assembled 1pc	101 SM: 125.5µm	P Standard 3.0mm	1 Blue
332 Unassembled Inner Key	201 MM: 127µm	N Standard 2.0mm	2 Black
		M Standard 900µm	4 Red
		J MINI 900µm	6 Yellow
			8 Beige

343 - 101 - J1 ORDER CODE example

**Features:**

- SENKO's Standard Connector series gives the highest value for cost
- Pre-assembled one piece design and Connector Kit available
- Meets and exceeds the TIA/EIA, IEC and JIS SC Specification
- Typical IL against master to be 0.12dB Max 0.3dB
- Various boot color to meet customer need
- Crimp tool to be used CRT-401
- Narrow key width 2.00mm+/-0.02mm

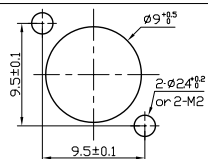
**Square (297) and Oval (298)**

**FC ADAPTER**



ADAPTER TYPE	SLEEVE	KEY WIDTH
297 Solid Body	1 Zirconia Straight Split	01 2.15 +.05/-0 mm
298 FC Oval Adapter "HD"		02 2.05 +/-0.02mm

297 - 101 ORDER CODE example



Mounting Hole Dimensions

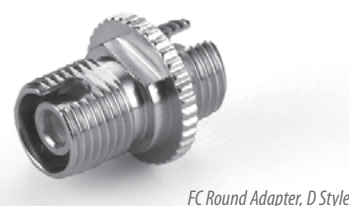
FC Square, Standard Body and Oval Adapter, HD Style

**Features:**

- FC Square, High Density Oval and Round type available
- Available in both Narrow and Wide Key width
- Typical insertion loss under 0.05dB and Max IL of 0.20dB
- High quality and durable Ni-Plated Brass body

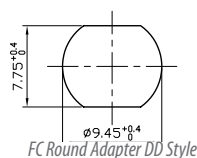
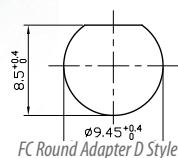
**Round (253 type)**

**FC ROUND ADAPTER**



CODE	SLEEVE	KEY WIDTH	FLANGE
253 FC Round Adapter "D" & "DD"	1 Zirconia Straight Split	0 2.15 +0.05/-0 mm	3 D: Ø8.85mm x 7.95mm
	2 Metal Straight Split	2 2.05 +/-0.02mm	4 DD: Ø9.35mm x 7.65mm

253 - 103 ORDER CODE example



Mounting Hole Dimensions

## ST PREMIUM

### 1 PC Connector (215 Series)

CONNECTOR	FERRULE TYPE	BOOT TYPE	BOOT COLOR
215	103 SM: Premium 125µm	7 Long 3.0mm	1 Blue
	109 SM: Low Loss 125µm	A Long 2.0mm	2 Black
	201 MM: Premium 127µm	M Standard 900µm	3 Green
		N Standard 2.0mm	4 Red
		P Standard 3.0mm	6 Yellow
		J <b>MINI 900µm</b>	7 White
		K <b>MINI 2.0mm</b>	8 Beige
		L <b>MINI 3.0mm</b>	9 Aqua
		F Flex Angle Boot 3.0mm	

215 - 103 - 76 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 81µm SM 126µm SM 125.5µm MM 230µm MM 144µm



900µm MINI Boot



2.0mm MINI Boot



3.0mm MINI Boot

## ST ADAPTER

CODE	SLEEVE
216 Simplex Metal Housing	101 Zirconia Straight Split
316 Duplex Horizontal Metal Housing	

216 - 101 ORDER CODE example



ST Adapter Simplex



ST Adapter Duplex

## SC-ST HYBRID ADAPTER



SC-ST Simplex Adapter  
with Rectangular Flange



SC-ST Adapter  
with Square Flange

CODE		APPLICATION	SLEEVE	
283	Square Flange Simplex (metal)	1 For PC Connector	01	Zirconia Straight Split
286	Rectangular Flange, Simplex (metal)			
288	Rectangular Flange, Duplex (metal)			

**Note:** All adapters listed above are made with metal housing

288 - 101 ORDER CODE example

## FC-SC HYBRID ADAPTER



FC-SC Adapter with  
Square Flange



C-SC Adapter with  
Rectangular Flange

CODE		KEY WIDTH	SLEEVE	
282	Square Flange	1 2.15 +0.05/-0 mm	01	Zirconia Straight Split
285	Rectangular Flange	2 2.05 +/-0.02mm		

282 - 101 ORDER CODE example

## FC-ST HYBRID ADAPTER



FC-ST Adapter with  
Square Flange



FC-ST Adapter with  
Rectangular Flange

CODE		KEY WIDTH	SLEEVE	
284	Square Flange	1 2.15 +0.05/-0 mm	01	Zirconia Straight Split
287	Rectangular Flange			

284 - 101 ORDER CODE example

## D4 PREMIUM

### Connector and Adapter

CONNECTOR	FERRULE TYPE	BOOT TYPE	BOOT COLOR
272 D4 Crimp Style	101 SM: 125.5µm	M Standard 900µm	1 Blue 5 Gray
		N Standard 2.0mm	2 Black 6 Yellow
		P Standard 3.0mm	3 Green 7 White
			4 Red 8 Beige

272 - 101 - N1 ORDER CODE example



D4 Connectors

## SMA 905 STANDARD

### Connector and Adapter

CONNECTOR CODE	FERRULE TYPE	BOOT TYPE	BOOT COLOR
211 SMA with Hex Nut	201 MM: 127µm	P Standard 3.0mm	1 Blue
	202 MM: 230µm		2 Black
	203 MM: 144µm		
	204 MM: 245µm		
	205 MM: 250µm		
	206 MM: 360µm		
	207 MM: 460µm		
	208 MM: 240µm		

211 - 201 - P2 ORDER CODE example



SMA Connector

ADAPTER CODE	ADAPTER TYPE
212 SMA Adapter	101 SMA Adapter

212 - 101 ORDER CODE example



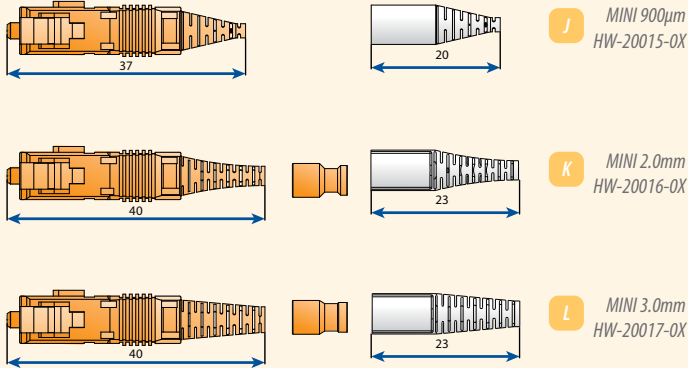
SMA Adapter



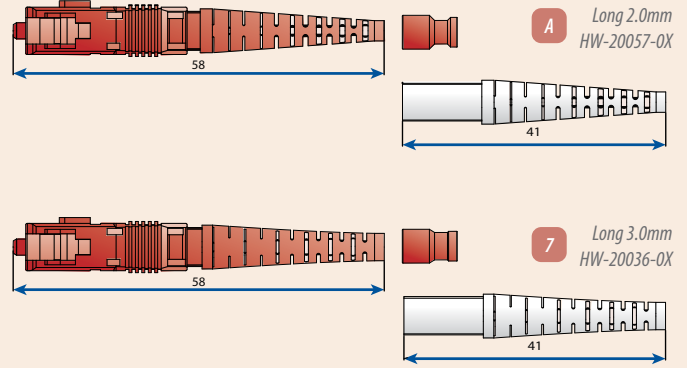
## SC CONNECTOR BOOT OPTIONS

### Premium Connector MINI Boots

Recommended for R7.5 & R15 Fiber

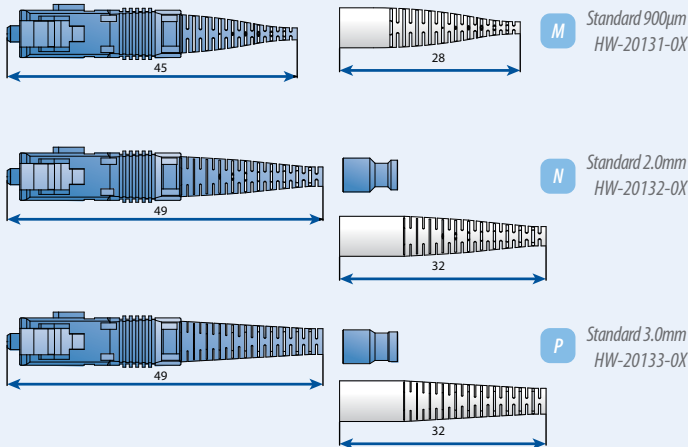


### Premium Connector Long Boots



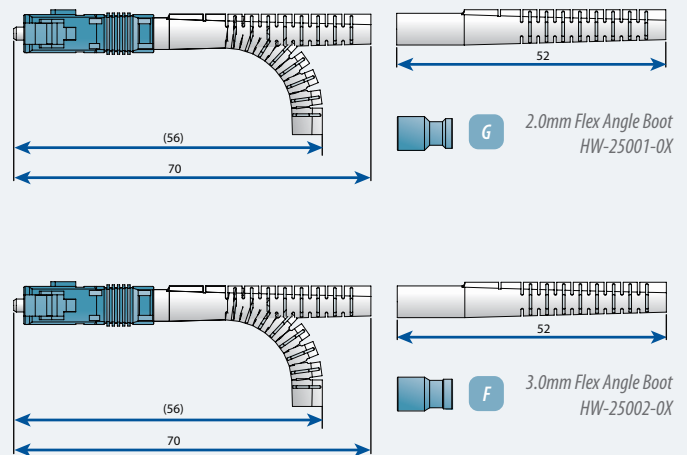
### Standard Boots\*

Recommended for R15 & R30 Fiber



\*These boots are for Premium and Standard connectors

### Flex Angle Boots



### FEATURES COMPARISON CHART

For SC Connector Boots	BOOT PART NUMBER	BOOT ORDER CODE	R-7.5 FIBER	R-15 FIBER	R-30 FIBER
MINI Boot 900µm	HW-20015-0X	J	●	▲	
MINI Boot 2.0mm*	HW-20016-0X	K	●	▲	
MINI Boot 3.0mm	HW-20017-0X	L	●	▲	
Standard Boot 900µm	HW-20131-0X	M	●	●	▲
Standard Boot 2.0mm*	HW-20132-0X	N	●	●	▲
Standard Boot 3.0mm	HW-20133-0X	P	●	●	▲
SC Long Boot 2.0mm*	HW-20057-0X	7	●	●	●
SC Long Boot 3.0mm	HW-20036-0X	A	●	●	●
Flex Angle Boot 2.0mm*	HW-25001-0X	G	●	▲	
Flex Angle Boot 3.0mm	HW-25002-0X	F	●	▲	

● Complies with GR-326 issue 4 TWAL test with 4 wavelength ▲ Good for general usage

\* Also available in 1.6mm

**Note:** 1. X=Color Code: 1=Blue, 2=Black, 3=Green, 4=Red, 5=Gray, 6=Yellow, 7=White, 8=Beige  
2. When using Flex Angle Boot, always maintain the proper bend radius per the cable manufacturer's specification.

BOOT TYPE		BOOT COLOR	
7	Long 3.0mm	1	Blue
A	Long 2.0mm	2	Black
M	Standard 900µm	3	Green
N	Standard 2.0mm	4	Red
P	Standard 3.0mm	6	Yellow
J	MINI 900µm	7	White
K	MINI 2.0mm	8	Beige
L	MINI 3.0mm	9	Aqua
F	Flex Angle Boot 3.0mm		
G	Flex Angle Boot 2.0mm		

### CRIMP RING CODE

Premium Crimp Ring (Supplied with Premium Connector)

1.6mm Premium Crimp Ring	HW-20061
2mm Premium Crimp Ring	HW-20026
3mm Premium Crimp Ring	HW-20001

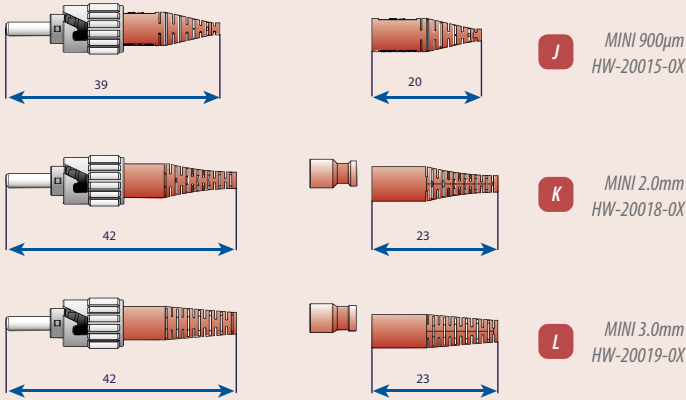
Standard Crimp Ring (Supplied with Standard Connector)

2mm Standard Crimp Ring	HW-23025
3mm Standard Crimp Ring	HW-23026

# ST, FC CONNECTOR BOOT OPTIONS

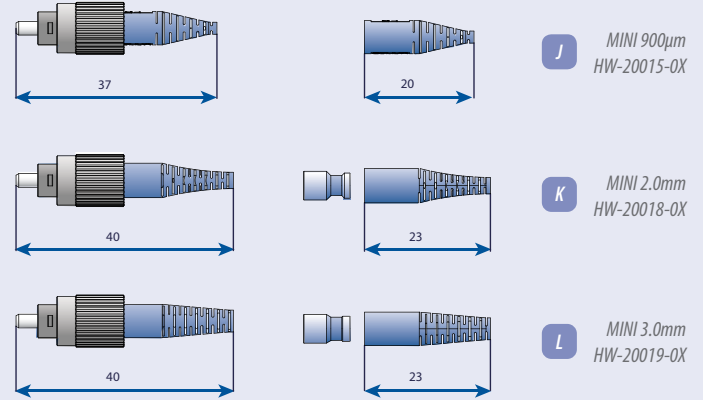
## ST Premium MINI Boot

Recommended for R7.5 & R15 Fiber



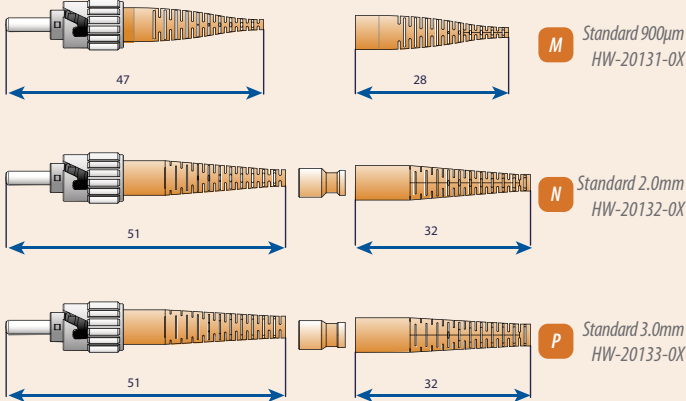
## FC Premium MINI Boot

Recommended for R7.5 & R15 Fiber



## ST Premium Standard Boot

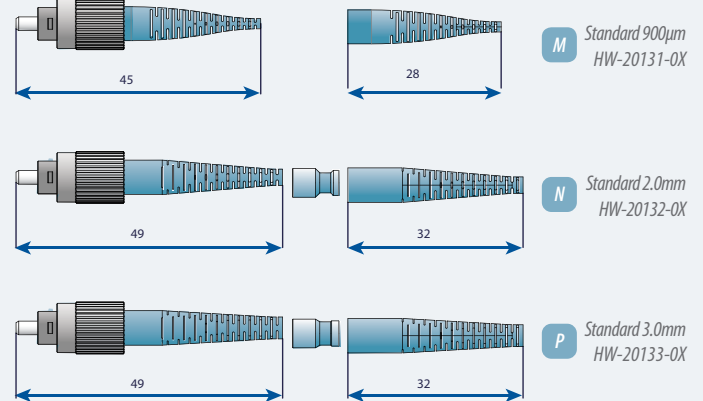
Recommended for R15 & R30 Fiber



Note: These boots are for Premium and Standard Connectors

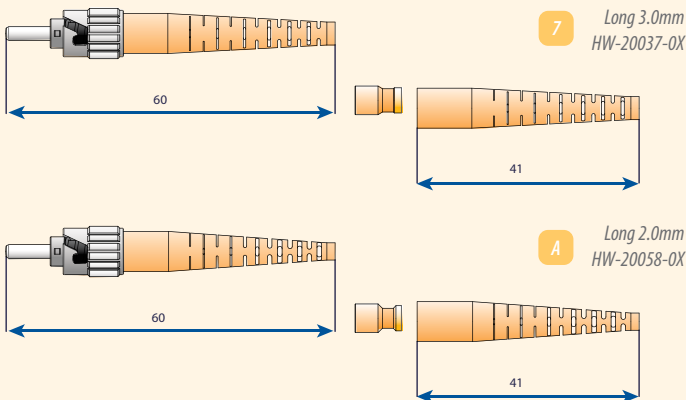
## FC Premium Standard Boot

Recommended for R15 & R30 Fiber

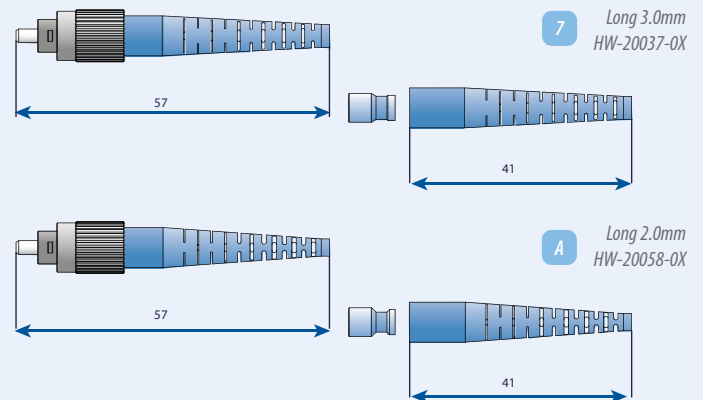


Note: These boots are for Premium and Standard Connectors

## ST Premium Long Boot



## FC Premium Long Boot



### CRIMP RING CODE

Premium Crimp Ring (Comes with Premium Connector)

1.6mm Premium Crimp Ring	HW-20061
2mm Premium Crimp Ring	HW-20026
3mm Premium Crimp Ring	HW-20001

### CRIMP RING CODE

Standard Crimp Ring (Comes with Standard Connector)

2mm Standard Crimp Ring	HW-23025
3mm Standard Crimp Ring	HW-23026

## E-2000™ CONNECTOR

### INSERTION LOSS

For E-2000™	Typical	Maximum
Multimode	0.20dB	0.30dB
Singlemode, PC	0.20dB	0.40dB
Singlemode, APC 8°	0.20dB	0.40dB

### Return Loss

Singlemode, PC	50dB	45dB
Singlemode, APC 8°	-	60dB

### Mechanical Properties

Mating Cycles	1000
Temperature Cycling	-25 to +70°C, 12 cycles

### Materials

Housing, Protective Cap and Tension Relief	PBT/UL94 V-0
--	--------------

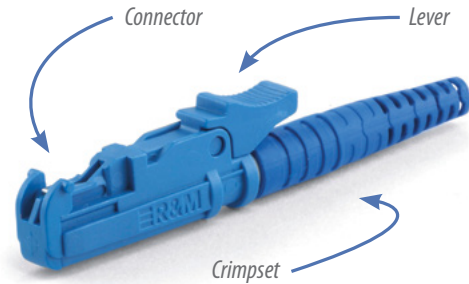


E-2000 APC

Each E-2000 Connector comprises the following three sub components:

- Connector Body
- Lever
- Boot & Crimp set

This allows you to customize the boot and lever color of the finished connector. Please see the order code example, below, for more details.



E-2000 UPC

CONNECTOR BODY CODES		LEVER CODES		BOOT & CRIMPSET CODES	
R847361	Simplex, PC, Multimode, Black	R304403	White	R861303	For Pigtail, Black
R847356	Simplex, PC, Singlemode, Blue	R307017	Blue	R861304	For Pigtail, Blue
R847353	Simplex, APC, Singlemode, Green	R304405	Brown	R861302	For Pigtail, Green
		R307018	Green	R862107	For Pigtail, Red
		R308035	Violet	R861305	For Pigtail, Beige
		R304407	Orange	R812805	FO Crimpset for 1.7-2.3 Cable, Green
		R304408	Red	R812806	FO Crimpset for 1.7-2.3 Cable, Blue
		R309210	Black	R812807	FO Crimpset for 1.7-2.3 Cable, Black
		R304832	Yellow	R812808	FO Crimpset for 1.7-2.3 Cable, Red
		R308034	Turquoise	R812809	FO Crimpset for 2.4-2.8 Cable, Green
				R812810	FO Crimpset for 2.4-2.8 Cable, Blue
				R813158	FO Crimpset for 2.4-2.8 Cable, Black
				R813159	FO Crimpset for 2.4-2.8 Cable, Red
				R813160	FO Crimpset for 2.9-3.2 Cable, Green
				R813161	FO Crimpset for 2.9-3.2 Cable, Blue
				R813162	FO Crimpset for 2.9-3.2 Cable, Black
				R813163	FO Crimpset for 2.9-3.2 Cable, Red
				R813164	FO Crimpset for 2.9-3.2 Cable, White



E2000 Multimode

R847353 - R307018 - R861303 ORDER CODE example

### Features:

- Secure transmission of high bit-rate protocols
- Zirconia ceramic ferrule fully protected by spring loaded shutter
- Push-pull locking mechanism for easy installation
- Color coded release levers
- Compliant with European (EN 186270) and International (IEC 61754-15) standards
- Tested and approved by Swisscom

**Accessories**

Two E-2000 connectors can be joined together to make a duplex connector by using the COMPACT DUPLEX CLIP and the DUPLEX CONNECTOR LEVER.

COMPACT (RJ) DUPLEX CONNECTOR LEVER		COMPACT (RJ) HOUSING CLIP CODE	
R305513	Blue	R305542	Compact (RJ) Duplex Clip for Connector Housing
R305514	Green		
R305515	Orange		
R309004	Turquoise		
R305517	Black		
R305518	White		

**Features:**

- Secure transmission of high bit-rate protocols
- Spring loaded shutter
- Compliant with European (EN 186270) and International (IEC 61754-15) standards
- Tested and approved by Swisscom



E-2000™ Compact APC Connector



E-2000™ Compact Adapter Duplex

**E-2000™ SIMPLEX ADAPTER**

SIMPLEX ADAPTER CODE	
R847081	Black, SC footprint, with Flange
R846580	Blue, SC footprint, with Flange
R846577	Green, SC footprint, with Flange
R846343	Beige/white, Flangeless, SC Footprint
R846340	Blue, Flangeless, SC Footprint
R846339	Green, Flangeless, SC Footprint

R847081 ORDER CODE example

**Features:**

- Spring loaded shutter
- High quality split ceramic sleeve
- Injection molded PBT housing UL94V-01 Rated
- High performance over 1000 matings



E-2000™ APC Simplex Adapter



E-2000™ APC Simplex Adapter

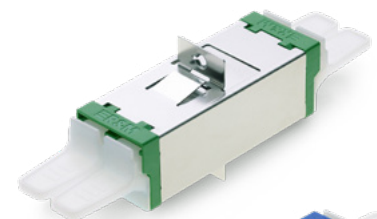
**E-2000™ COMPACT DUPLEX ADAPTER**

COMPACT (RJ) ADAPTER	
R823264	Black, with Flange
R823260	Black, Flangeless
R823262	Blue, With Flange
R823258	Blue, Flangeless
R823261	Green, with Flange
R823257	Green, Flangeless

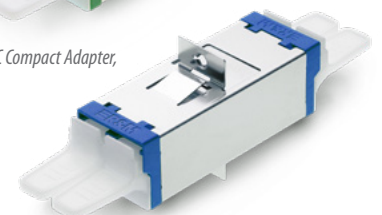
R823264 ORDER CODE example

**Features:**

- Spring loaded shutter
- High quality split ceramic sleeve
- Injection molded PBT housing UL94V-01 Rated
- High performance over 1000 matings



E-2000™ APC Compact Adapter, Flangeless



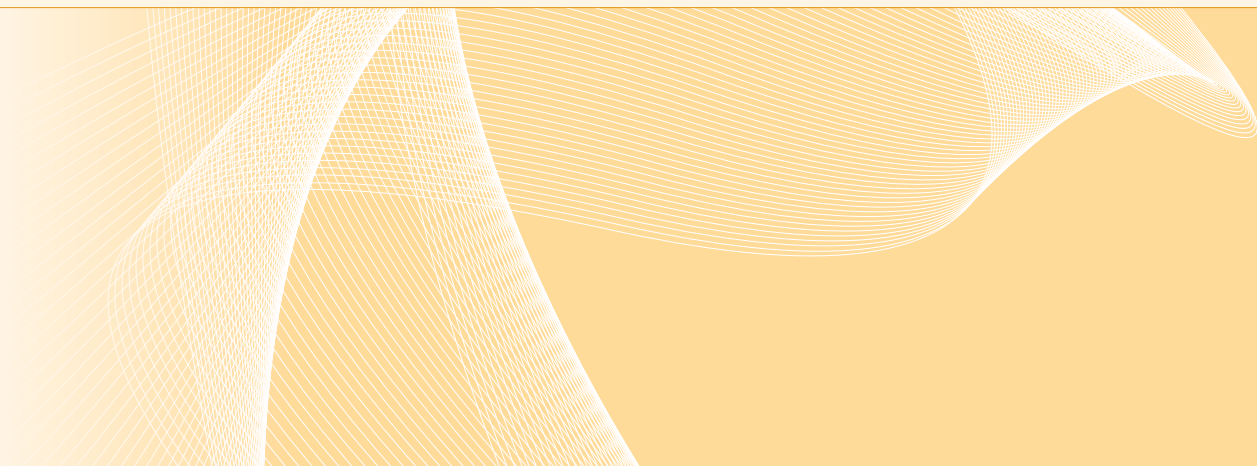
E-2000™ SM UPC Compact Adapter, with Flange





STANDARD CONNECTOR SERIES  
SMALL FORM FACTORS  
SPECIALTY PRODUCTS  
FERRULES AND SLEEVES  
POLISHING SYSTEMS

pg. 02  
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pg. 61  
pg. 73  
pg. 79



## SMALL FORM FACTORS

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LC EZ-Flip	pg. 41	MPO Plus Crimp Tool	pg. 59
Micro-LC	pg. 42	MPO Plus Gender Changeable Pin	pg. 59
MU One Piece Connector	pg. 44		



## SENKO's Long Standing LC Connector License Offers Various Styles of LC Connectors and Adapters to Meet the Customers Need



### LC PREMIUM UNIBODY Connector



The LC Premium Unibody Connector molded with a Single body delivers maximum strength against mechanical tests including side loading test and TWAL tests. Manufactured to the highest standard, the LC Unibody connector is designed to meet and exceed the Verizon FOC TPR requirement and designed for the usage for the OSP application or where customers needs the highest quality product.

- Premium SM and Premium Low Loss SM (LS) are available
- Typical IL of 0.05 for LS SM and 0.08 for Premium SM Ferrule
- Various option of boots are available to meet your need
- PC Type and APC Type available



### LC STANDARD (2PC) Connector



The Original LC designed connector gives the maximum value for cost. Using high quality components, this connector meets IEC, TIA/EIA and the general requirement of GR-326.

- Available with Pre-assembled 1pc style or in a Multi piece kit
- Typical IL of 0.12 for Standard ferrules
- Various options of boots are available to meet your demand

#### FEATURES COMPARISON CHART

For LC Premium and LC Standard	PREMIUM UNIBODY LOW LOSS SM FERRULE	PREMIUM UNIBODY SM FERRULE	STANDARD 2PC SM FERRULE
LC License Holder	○	○	○
IL Average Against Master (UPC)	0.05	0.08	0.12
IL Mean Value Random Mating (UPC)	0.07	0.12	0.25
Verizon FOC TPR-9409	○	○	
GR-326 Core Issue 4	○	○	△
IEC, TIA/EIA JIS Spec	○	○	○
IEC Random Mating Grade A*	○		
IEC Random Mating Grade B*	○	○	
IEC Random Mating Grade C*	○	○	○
ROHS Compliant	○	○	○
UL 94V-0	○	○	○
Ruggedized Unibody Structure	○	○	
Universal Body For Sim-Dup-BTW	○	○	
6 Position Tuning After Assembly (UPC)	○	○	○
LC MINI Boots	○	○	○
Standard Boots	○	○	○
TWAL Proof 900µm Boots	○	○	○
Pre-assembled 1pc Style	○	○	○
Free Floating Ferrule	○	○	○
Metal Back Post	○	○	○
Crimp Tool CRT-701**	○	○	○

○ Complies with GR-326 issue 4 TWAL test with 4 wavelength △ Good for general usage

Note: \*IEC 61753-1 \*\*CRT-705 to be used for 1.2mm Unibody

# TECHNICAL SPECIFICATIONS

## Unibody Premium and Standard 2pc Connector

PRODUCT SERIES	TYPE OF CONNECTOR	IL AGAINST MASTER (dB)		IL RANDOM MATING (dB)	
		Average IL	Maximum IL	Mean IL	Maximum IL
Unibody Premium Low Loss SM	931-159-1xx, 932-159-1xx	0.05	0.15	0.07	0.15 <sup>*1</sup>
Unibody Premium SM	931-153-1xx, 932-153-1xx	0.08	0.20	0.12	0.25 <sup>*2</sup>
Unibody Premium APC Low Loss	931-159-3xx, 932-159-3xx	0.07	0.15	0.09	0.20
Unibody Premium APC	931-153-3xx, 932-153-3xx	0.10	0.25	0.14	0.30
Unibody Premium MM	931-251-2xx, 932-251-2xx	0.10	0.20	-	-
Standard 2pc + Standard SM Ferrule	911-151-1xx, 912-151-1xx	0.12	0.30	0.25	0.50 <sup>*3</sup>
Standard MM	911-251-2xx, 912-251-2xx	0.15	0.30	-	-
<b>Singlemode</b>					
Operating Temperature	-40°C to +75°C				
Durability	<0.2dB typical change, 500 matings*				

IEC Random mating test IEC 61753-1

1 - To meet IEC Random Mating Grade A ( $\leq 0.07$ dB mean,  $\leq 0.15$ dB max for >97% of sample. Grade A Spec is not finalized, above is a recommendation.

2 - To meet IEC Random Mating Grade B ( $\leq 0.12$ dB mean,  $\leq 0.25$ dB max for >97% of sample)

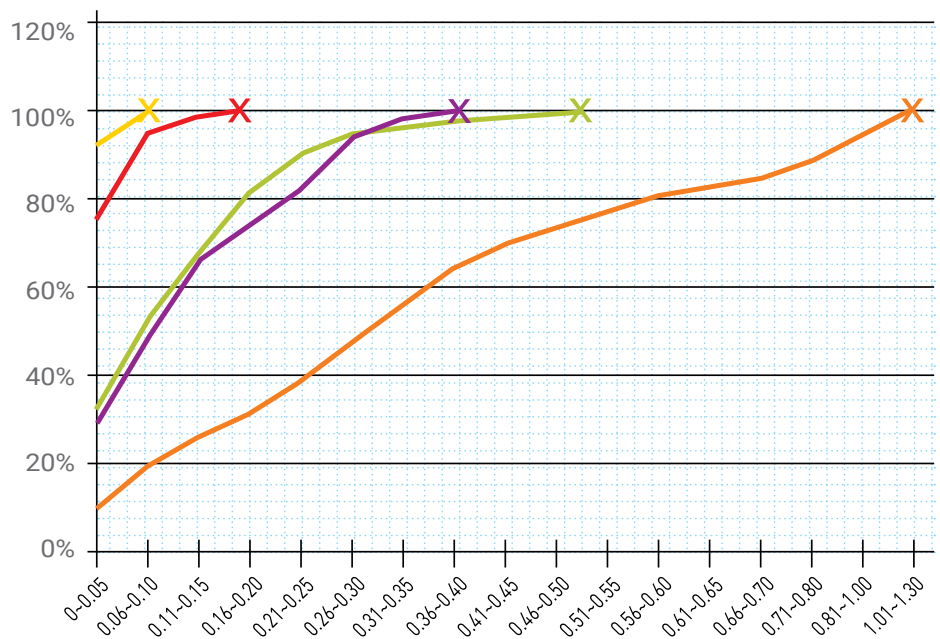
3 - To meet IEC Random Mating Grade C ( $\leq 0.25$ dB mean,  $\leq 0.50$ dB max for >97% of sample)

## Random Mating IL

SENKO has categorized its connectors to reflect the IEC Random Mating specified grades A\*, B, and C, allowing the end-user to make an informed decision when selecting connectors, of how finished patchcords using SENKO connectors will perform.

### Random mating Insertion Loss

- SENKO Low Loss
- SENKO Premium
- SENKO Standard
- High quality Competitor
- Low quality Competitor



931, 932 Series

LC PREMIUM UNIBODY



900µm MINI Boot



2.0mm MINI Boot



3.0mm MINI Boot

CONNECTOR	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
931 LC Unibody Simplex	153 SM: Premium 125µm	1 SM: Blue	B MINI Boot 900µm	1 White
932 LC Unibody Duplex	159 SM: Low Loss 125µm	2 MM: Beige	C MINI Boot 2.0mm	2 Blue
	251 MM: Premium 127µm	5 MM OM3: Aqua	D MINI Boot 3.0mm	3 Black
		6 MM OM4: Heather Violet	1 BTW Boot	4 Yellow
			4 2.0mm Round	5 Red
			5 2.0mm Boot Short	
			6 3.0mm Boot	
			7 Flex-Angle 2.0mm	
			9 Flex-Angle 3.0mm	

931 - 153 - 141 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 126µm SM 125.5µm

**Features:**

- SENKO's flagship highest quality LC connector Series
- Solid body robust design to improve mechanical strength.
- Designed to exceed the requirement of Verizon FOC TPR 9409 requirement
- Premium Super Low loss, typical IL against Master 0.05dB
- Premium Super Low Loss to meet IEC 61753-1 Grade A random mating requirement of Max 0.15dB
- Premium SM typical IL against Master 0.08dB Max
- Premium SM to meet IEC 61753-1 Grade B random mating requirement of Max 0.25dB
- 6 direction tuning feature to improve random mating IL
- Wide choice of boot types
- Crimp tool to be used CRT-701

931, 932 Series

LC PREMIUM UNIBODY



900µm MINI Boot



2.0mm MINI Boot



3.0mm MINI Boot

CONNECTOR	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
931 LC Unibody Simplex	153 SM: Premium 125µm	3 APC: Green	B MINI Boot 900µm	6 Green
932 LC Unibody Duplex	159 SM: Low Loss 125µm		C MINI Boot 2.0mm	
			D MINI Boot 3.0mm	
			1 BTW Boot	
			4 2.0mm Round	
			5 2.0mm Boot Short	
			6 3.0mm Boot	
			7 Flex-Angle 2.0mm	
			9 Flex-Angle 3.0mm	

931 - 153 - 316 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 126µm SM 125.5µm

**Features:**

- SENKO's flagship highest quality LC connector Series
- Solid body robust design to improve mechanical strength
- Designed to exceed the requirement of Verizon FOC TPR 9409 requirement
- Premium Super Low loss, typical IL against Master 0.07dB
- Premium SM typical IL against Master 0.10dB
- Wide choice of boot types
- Crimp tool to be used CRT-701

## LC STANDARD 2PC

### 911, 912, 921, 922 Series

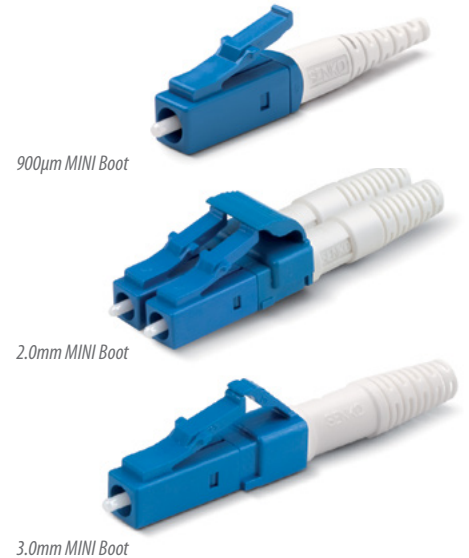
CONNECTOR	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
911 Preassembled Simplex	151 SM: Standard 125.5µm	1 SM: Blue	<b>B</b> MINI Boot 900µm	1 White
912 Preassembled Duplex	251 MM: Standard 127µm	2 MM: Beige	<b>C</b> MINI Boot 2.0mm	2 Blue
921 Kit Simplex		5 MM OM3: Aqua	<b>D</b> MINI Boot 3.0mm	3 Black
922 Kit Duplex		6 MM OM4: Heather Violet	2 2.0mm Original	4 Yellow
			6 3.0mm Boot	5 Red

912 - 151 - 121 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 126µm SM 125µm MM 230µm MM 144µm

#### Features:

- The original 2pc LC Design
- SENKO's Standard Connector series gives the highest value for cost
- Pre-assembled one piece design and Connector Kit style available
- Meets and exceeds the TIA/EIA, IEC and JIS LC Specification
- Standard SM Ferrule typical IL against Master 0.12dB
- Crimp tool to be used CRT-701



## LC CONNECTOR 1.2mm

The new LC Connector is as strong as a 3mm cable. Reduce your cable size, but keep the strength. The LC Connector for 1.2mm cable is fully compliant to GR-326-Core for Media 1.



CONNECTOR PC	FERRULE SIZE	HOUSING COLOR	CABLE SIZE	BOOT COLOR
931 LC Unibody Pre-Assembled Simplex	153 125µm	1 Blue	G 1.2mm	1 White
932 LC Unibody Pre-Assembled Duplex	251 MM 127µm	2 Beige		
933 LC Unibody Un-Assembled Simplex		5 Aqua		
934 LC Unibody Un-Assembled Duplex		6 Heather Violet		

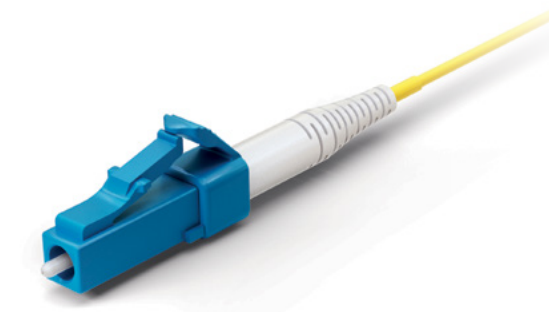
931 - 153 - 1G1 ORDER CODE example

CONNECTOR APC	FERRULE SIZE	HOUSING COLOR	CABLE SIZE	BOOT COLOR
931 LC Unibody Pre-Assembled Simplex	153 125µm	3 Green	G 1.2mm	6 Green
932 LC Unibody Pre-Assembled Duplex				
933 LC Unibody Un-Assembled Simplex				
934 LC Unibody Un-Assembled Duplex				

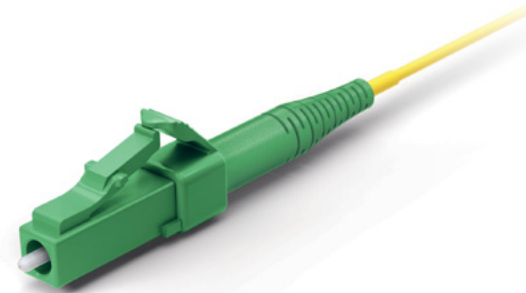
931 - 153 - 3G6 ORDER CODE example

#### Features:

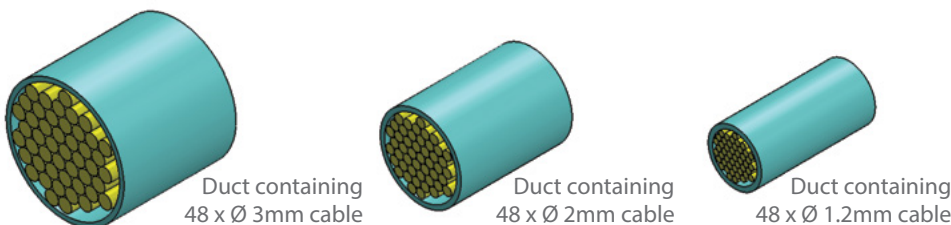
- Meets the same GR-326 requirements as a conventional 3mm and 2mm cable
- Exceeds 15lb Proof Test Objective as per GR-326-Core section 4.4.3.4
- Passes the GR-326 TWAL Test for Media 1 (ruggedized cable) as per section 4.4.3.5
- Reduces cable congestion without sacrificing mechanical strength



LC-UPC Connector



LC-APC Connector



E-3.3

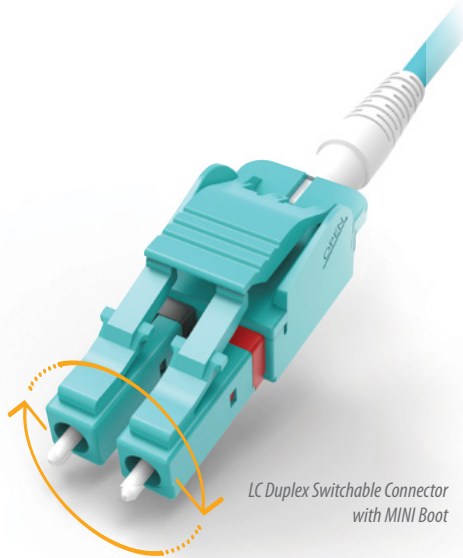
Note: Duct size reduced by 1/6 (approx 16%) compared to a 3mm cable



948 Series

**LC SWITCHABLE UNIBOOT**

SENKO LC Duplex Switchable Connector is a unique design that allows the use of round style, 2.0mm or 3.0mm jacketed cable instead of the traditional zipcord duplex cable for a more compact design. The housing of the LC Duplex Switchable Connector can be taken apart in the field without the use of any special tooling. This duplex LC allows the fiber polarity to be switched at the time of cable assembly installation without having to re-terminate the connectors.



CODE	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
948	151 SM: Standard 125.5µm	1 Blue	<b>C MINI Boot 2.0mm</b>	1 White
	251 MM: Standard 127µm	2 Beige	<b>D MINI Boot 3.0mm</b>	2 Blue
		3 Green	7 Flex-Angle 2.0mm	3 Black
		5 Aqua	9 Flex-Angle 3.0mm	5 Red
		6 Heather Violet	T 90d Boot	6 Green
			V 3.0mm Boot, Cable feed through back post*	7 Aqua
			<b>G MINI Boot 1.2mm</b>	
			L 3.6mm Boot*	
			M 4.5mm Boot*	
			N 5.0mm Boot*	
			P 5.5mm Boot*	

948 251 5D1 ORDER CODE example

Note\*: Standard boot color black.

**Features:**

- Uniboot connector aids cable management
- Switchable Connector to change polarity
- NEW- Latch Lock Ready
- MINI Boot ready
- Right Angle Clip for better panel management
- Flex angle boot ready
- Red / Black color indication for easy Polarity Check



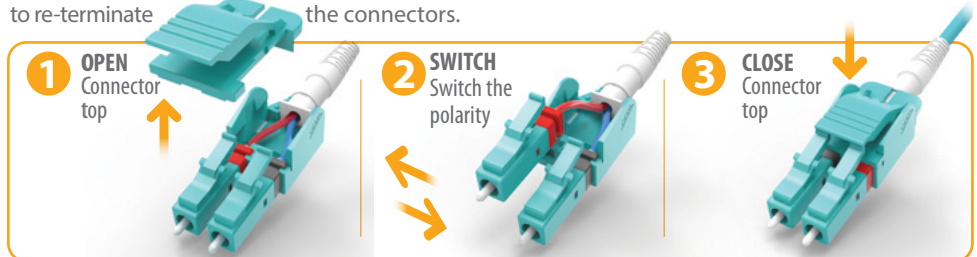
**CONNECTOR**

948-LOCK-01 LC Switchable Uniboot Latch Lock Key Insert

948 LOCK 01 ORDER CODE example

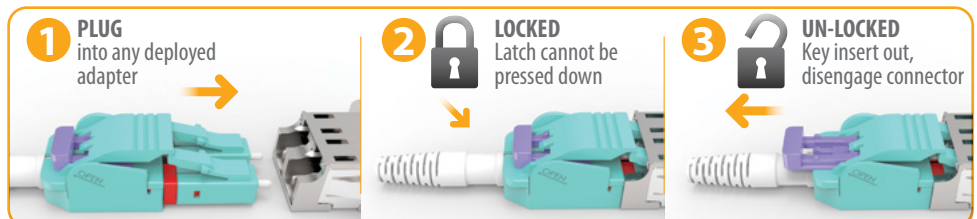
**SWITCH POLARITY**

Allows the fiber polarity to be switched at the time of cable assembly installation without having to re-terminate the connectors.



**LATCH LOCK**

With Add-on key insert, still connects to any conventional adapter but prevents accidental disconnection. Key insert can be removed with no tool.





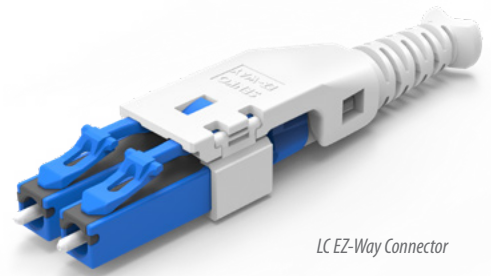
## LC EZ-WAY CONNECTOR

### 94Y Series

The SENKO LC EZ WAY Connector is a versatile, high-performance option crafted for seamless integration across different data transmission settings. It features an innovative push-pull boot design that enables quick and easy patching and removal, even in crowded environments. Additionally, it allows for polarity reversing without tools, provides a visual polarity indicator, and is simple to remove from high-density trunk cables where pull-tabs can act like 'fishing hooks'. This connector also supports a belly-to-belly setup for 800G transceivers. Optimised for high-density applications, the connector ensures easy access and enhanced airflow within electronic enclosures, which helps to lower cooling costs and simplify cable management.

CODE	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
94Y LC EZ-Way Connector Kit	151 SM Premium	1 Blue	C Pull-Boot 2.0mm	1 White
	158 SM Premium Low Loss	2 Beige	D Pull-Boot 3.0mm	
	251 MM Premium	5 Aqua 6 Heather Violet		

94Y 151 1C1 ORDER CODE example



LC EZ-Way Connector

#### Features:

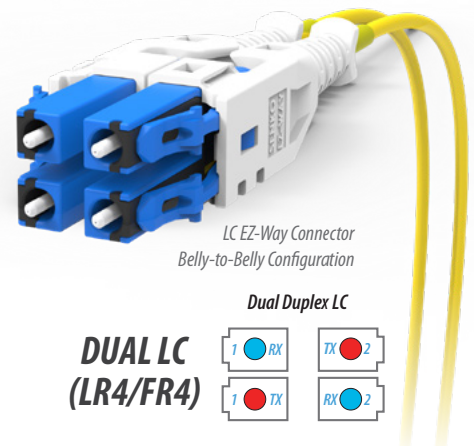
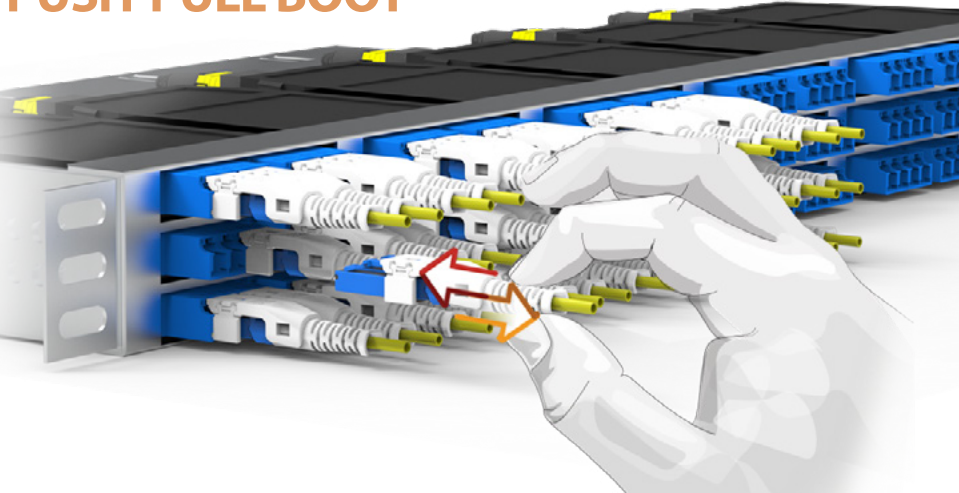
- Polarity reversing without tools
- Visual indicator for polarity
- Easy to remove in high-density trunk cables
- Compact Form Factor
- Belly-to-belly configuration for 800G transceivers
- Robust construction
- Fully compatible with IEC61754-20"

## SWITCH POLARITY

Allows the fiber polarity to be switched at the time of cable assembly installation without having to re-terminate the connectors.



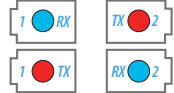
## PUSH-PULL BOOT



LC EZ-Way Connector  
Belly-to-Belly Configuration

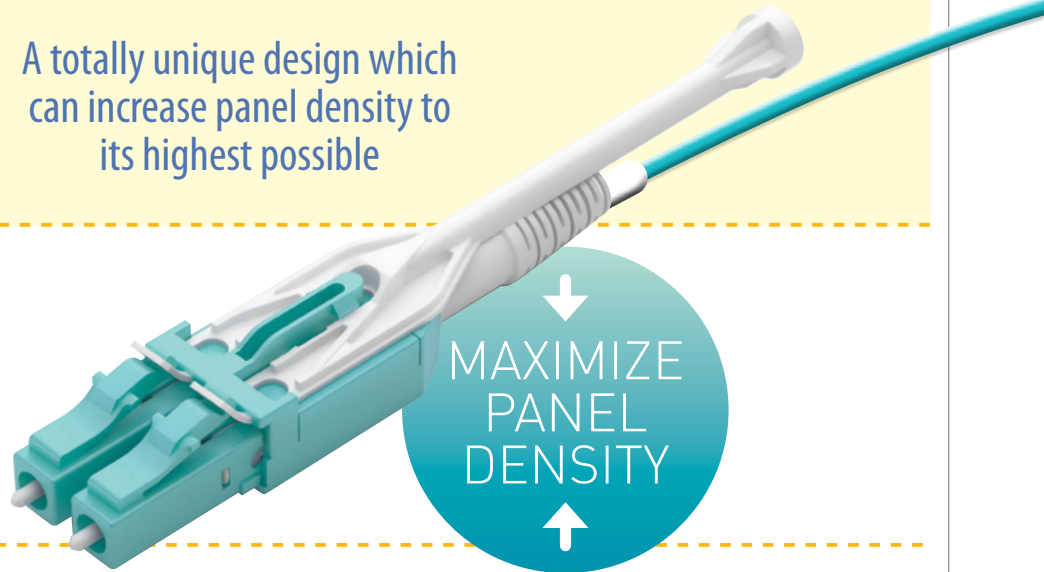
#### Dual Duplex LC

**DUAL LC  
(LR4/FR4)**

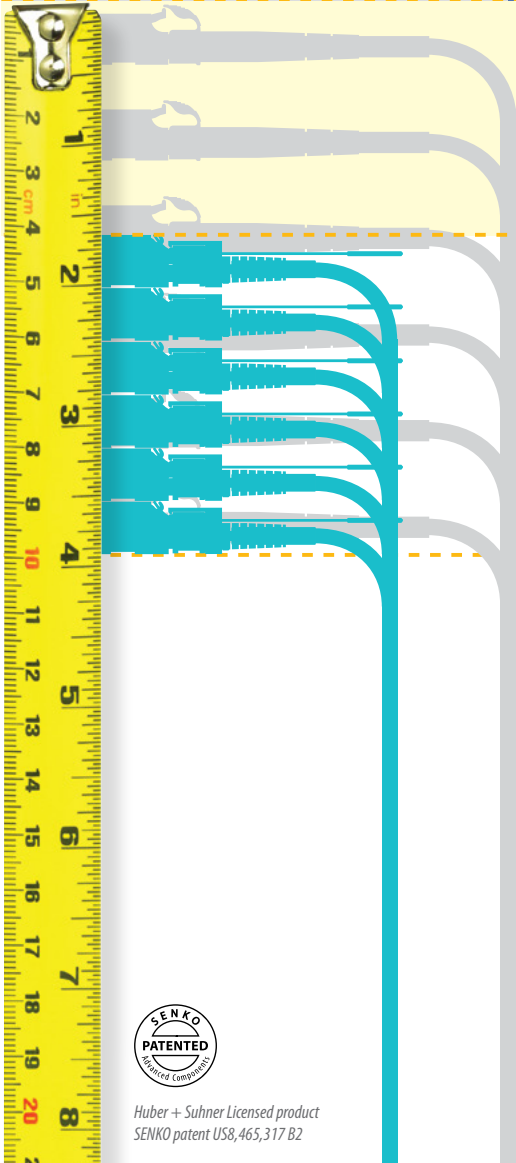


## LC-HD HIGH DENSITY CONNECTOR

A totally unique design which can increase panel density to its highest possible



The SENKO LC-HD, is a totally unique design which can further increase panel density over currently available solutions and allow for the highest density possible. A gentle pull on the tab will disengage it from an extremely dense fiber optical panel. The pull tab is a perfect location to affix a connector label to help in the quick identification of the connector.



Huber + Suhner Licensed product  
SENKO patent US8,465,317 B2

**Features:**

- Easy to release trigger connector
- 60% increase in density
- Stackable adapters

**HIGH DENSITY RACK**

**10**

**PACK LC-HD SPACING**

**60%**  
increase in density

9.4 mm  
(0.37 in)

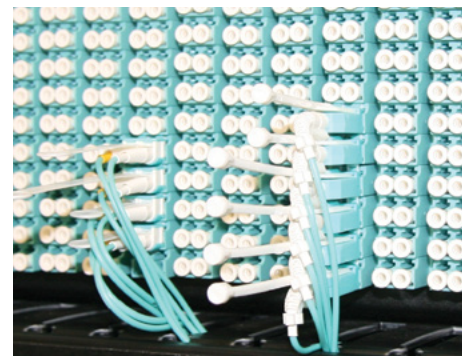
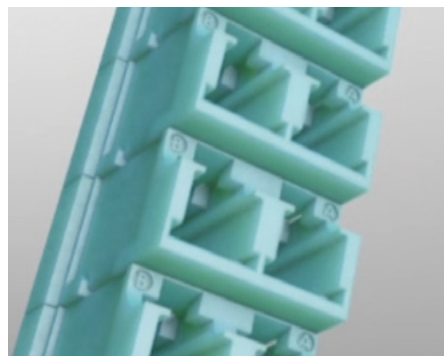
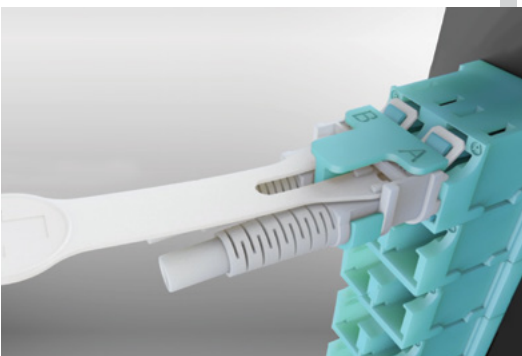
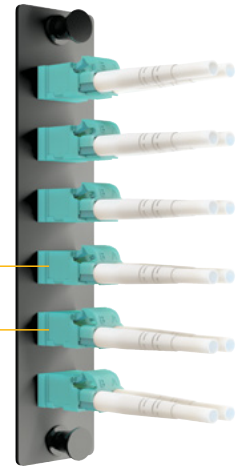


**CONVENTIONAL RACK**

**6**

**PACK SPACING**

17.4 mm  
(0.69 in)



## LC-HD CONNECTOR FEATURES

### Easy to release trigger connector

The Senko LC-HD's lever design utilizes a flexible "pull-tab" allowing for the connector to be disengaged easily from densely loaded panels without the need for special tools. "Pull-Tabs" are available in three standard lengths and multiple colors.

### 60% increase in density

Because the Senko LC-HD connector can be removed using a simple pull tab, it eliminates the need for finger access to the LC connectors latch mechanism, therefore LC adapters can now be mounted much closer than spacing required in the past.

### Stackable adapters

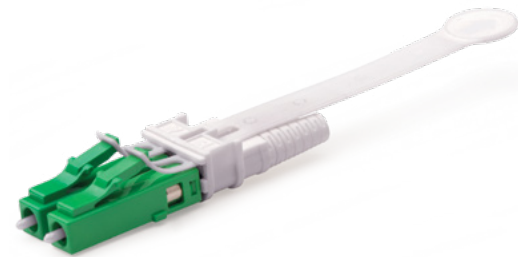
In the days before the Senko LC-HD connector, the LC adapter spacing was limited by the room required to reach LC connectors with the human fingers or with special tools. The low profile Senko LC-HD, together with its pull tab allow LC adapters to be stacked with no vertical space.

## LC-HD

CONNECTOR TYPE	FERRULE ID	HOUSING COLOR	BOOT TYPE	BOOT COLOR
913 LC-HD Simplex	153 SM: Premium 125	1 SM: Blue	B LC-HD MINI 900µm	1 White
913P LC-HD Simplex	159 SM: Low Loss 125	2 MM: Beige	C LC-HD MINI 2.0mm	2 Blue
914 LC-HD Duplex	251 MM: Premium MM	3 SM APC: Green	U LC-HD 2.0mm Duplex	3 Black
914P LC-HD Duplex		5 MM: OM3 Aqua	G LC-HD 1.2mm Boot	4 Yellow
		6 MM: OM4 Heather Violet		5 Red
				6 Green

913P - 153 - 1B1 ORDER CODE example

**Note:** 1. Pull tab must be purchased separately to complete the set  
2. 900µm boot available for 913P and 914P series only



LC-HD Connector with Pull Tab

## LC-HD UNIBOOT

CONNECTOR TYPE	FERRULE ID	HOUSING COLOR	BOOT TYPE	BOOT COLOR
946P LC-HD Uniboot	153 SM: Premium 125	1 SM: Blue	C MINI Boot 2.0mm	1 White
	159 SM: Low Loss 125	2 MM: Beige	D MINI Boot 3.0mm	2 Blue
	251 MM: Premium MM	3 SM APC: Green		3 Black
		5 MM: OM3 Aqua		4 Yellow
		6 MM: OM4 Heather Violet		5 Red
				6 Green

946P - 153 - 1C1 ORDER CODE example

**Note:** Pull tab must be purchased separately to complete the set



LC-HD Uniboot with Push Pull Tab

## PULL TAB

TYPE	CONNECTOR TYPE TO USE WITH	TAB LENGTH	TAB COLOR
HDPT LC-HD Pull Tab	S Simplex	44 44mm	W White
	D Duplex/Uniboot	64 64mm	
		84 84mm	

LC-HD Pull Tab



## PUSH PULL TAB

TYPE	CONNECTOR TYPE TO USE WITH	TAB LENGTH	TAB COLOR
HDPP LC-HD Push Pull Tab	S Simplex	44 44mm	W White
	D Duplex/Uniboot	64 64mm	
		84 84mm	

LC-HD Push Pull Tab

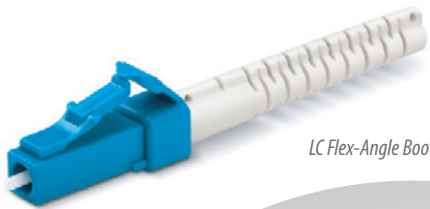


TYPE	CONNECTOR TYPE TO USE WITH
HDPP-S-BTW-W	LC-HD Push Pull Tab Simplex

**Note:** Push Pull Tab for LC-HD Uniboot only



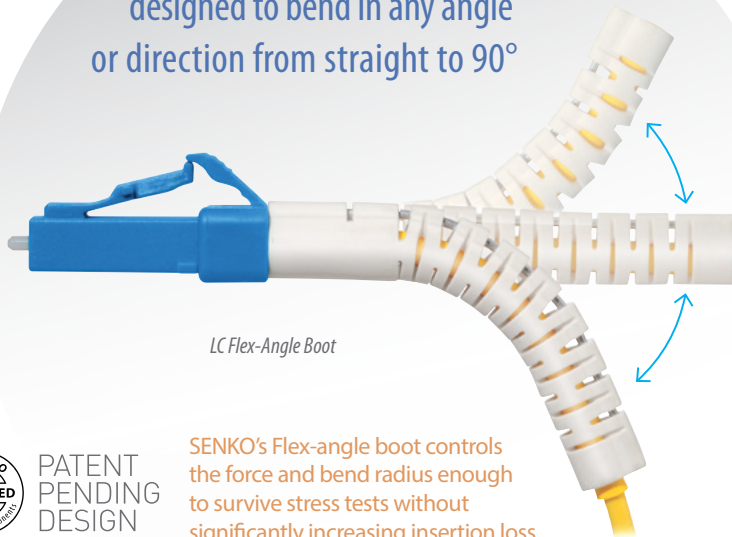
## LC FLEX ANGLE BOOT



LC Flex-Angle Boot

SENKO's new 2.0mm and 3.0mm boot addition for the Premium LC connectors. The Flex-Angle boot is designed to bend and maintain any angle or direction from straight to 90°. The boot is molded over a single stainless steel wire and can be easily positioned by hand. The internal wire holds the boot at the desired angle or direction.

The Flex-Angle boot is designed to bend in any angle or direction from straight to 90°



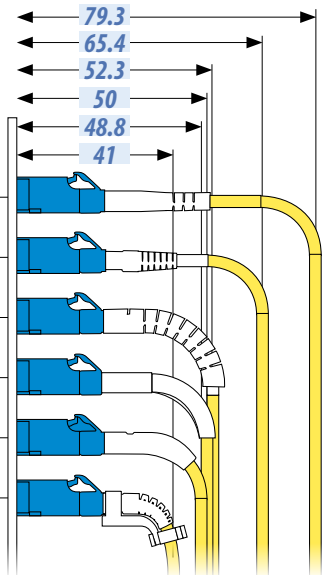
LC Flex-Angle Boot



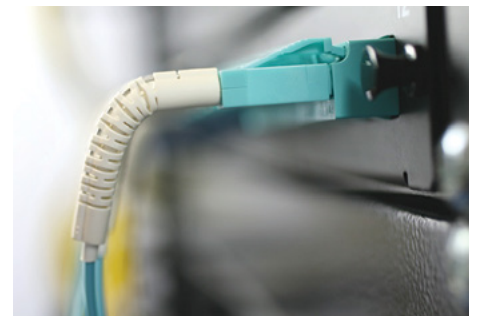
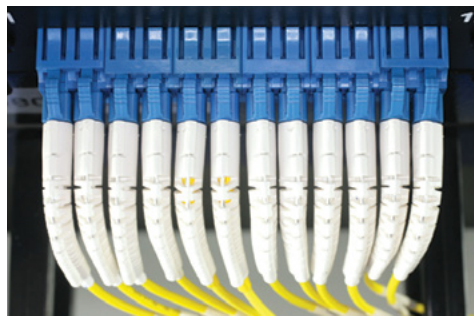
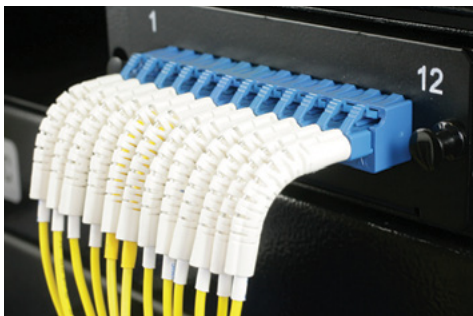
PATENT PENDING DESIGN

SENKO's Flex-angle boot controls the force and bend radius enough to survive stress tests without significantly increasing insertion loss.

- LC Conventional Boot
- LC MINI Boot
- LC w/Flex-Angle Boot
- LC w/90 Degree Boot
- LC w/50 Degree Boot
- LC +MINI Boot+Right Angle Clip



High density patch panels can be tricky to maneuver around when they are fully populated with rigid 90° boots, and the boots can interfere with a technician's access to the panel. SENKO's Flex-Angle boot allows bending in any direction and freedom of movement around other connectors. Also, removing a jumper is made easy; simply straighten out the boot and remove it without worrying about it affecting other connectors in the panel.



## LC ANGLE BOOTS

TYPE	ITEM NUMBER
LC 50 Angle Boot	BTLC-2-50-x
LC 90 Angle Boot	BTLC-2-90-x
LC 2mm Flex Angle Boot	931-JCBF-x
LC 3mm Flex Angle Boot	931-JCBF3-x
LC Right Angle Clip	931-CLIP-RAB-W

BTLC-2-50-X ORDER CODE example

**Highlight:** The Angle boots are assembled using the same termination procedure established for the 2.0mm or 3.0mm connector (same crimp ring and crimp tool), and can be used on simplex and duplex connector configurations.

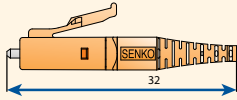
- Provide fixed and flex angle positioning for better cable management
- Made of RoHS material and UL94-V0 rated type

**Note:** Custom configurations available upon request

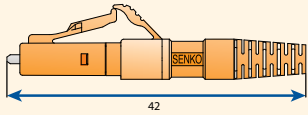
- Note:**
1. Right Angle Clip for 2mm only
  2. When using angled boots, always maintain the proper bend radius per the cable manufacturer's specification

# LC CONNECTOR BOOT OPTIONS

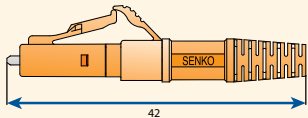
## Standard Connector MINI Boots



**B** MINI 900µm  
931-MINI-X-ON

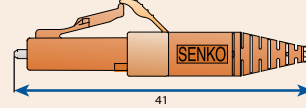


**C** MINI 2.0mm  
931-MINI2-X-ON

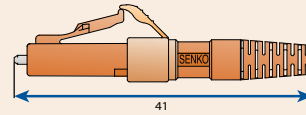


**D** MINI 3.0mm  
931-MINI3-X-ON

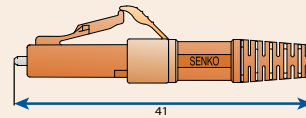
## Unibody Connector MINI Boots



**B** MINI 900µm  
931-UNI1-X-ON

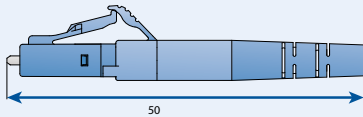


**C** MINI 2.0mm  
931-MINI2-X-ON

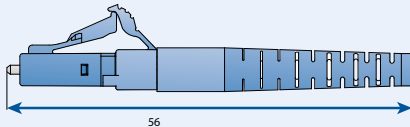


**D** MINI 3.0mm  
931-MINI3-X-ON

## Standard Connector Boots

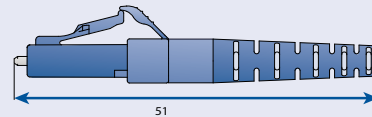


**2** 2.0mm Original  
BTLC-2-X-ON

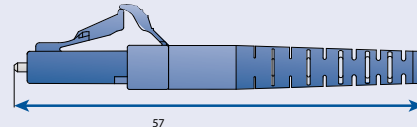


**6** 3.0mm Boot  
931-JCB3-X-ON

## Unibody Connector Boots

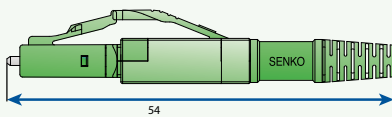


**4** 2.0mm Round  
931-JCB-X-ON

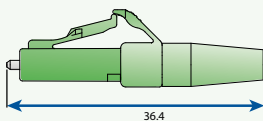


**6** 3.0mm Boot  
931-JCB3-X-ON

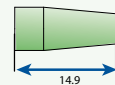
## More Boots Options



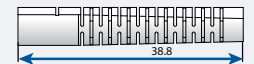
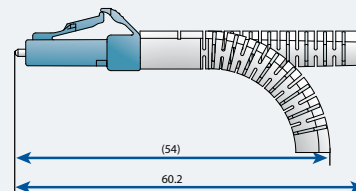
LC Switchable with MINI Boot 3.0mm  
931-MINI3-X-ON



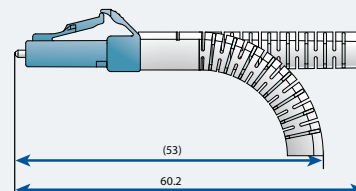
**5** 2.0mm Short Boot  
931-JCBS-X-ON



## Flex Angle Boots



**7** 2.0mm Flex Angle Boot  
931-JCBF-X-ON



**9** 3.0mm Flex Angle Boot  
931-JCBF3-X-ON

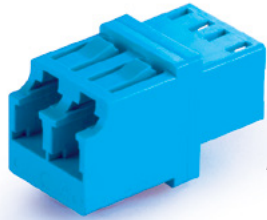
**Note:** 1. X=Color Code

W=White, G=Green, L=Blue, B=Black, A=Aqua, R=Red

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

999 Series

LC ADAPTER STANDARD



LC Adapter Duplex



LC Adapter Duplex

CODE	TYPE	COLOR	SLEEVE TYPE
999	2 Duplex	1 Blue 2 Black 3 APC Green 8 Beige 9 Aqua	1 Zirconia Straight Split

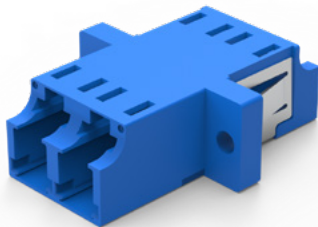
999 - 291 ORDER CODE example

**Features:**

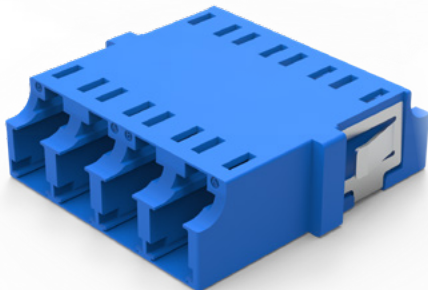
- Compact design
- RJ-45 Style Interface
- Simplex and duplex type available
- Telcordia, ANSI, TIA/EIA, and IEC compliance\*
- Color coding
- High precision alignment with zirconia sleeve or metal sleeve

988 Series (SC Footprint SNR-SNR)

LC ADAPTER (SC FOOTPRINT STYLE) SYMMETRICAL DESIGN



LC Duplex Adapter, with SC Footprint, with Flange, Senior-Senior



LC Quad Adapter, with SC Footprint, without Flange, Senior-Senior

CODE	TYPE	COLOR	SLEEVE TYPE	SHUTTER
988	3S Duplex with Flange 4S Duplex with No Flange 5S Quad with Flange 6S Quad with No Flange	1 Blue 2 Black 3 APC Green 8 Beige 9 Aqua	1 Zirconia Straight Split	N No Shutter

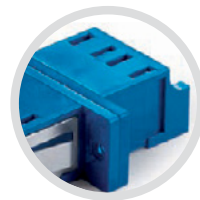
988 - 3S11 - N ORDER CODE example

**Features:**

- SC Foot print design allows to use the LC Adapter in a SC panel and double the density
- Premium One piece housing design / no welding point
- Telcordia, ANSI, TIA/EIA and IEC Compliance
- Internal shutter available
- SC Foot print type, Senior - Junior type also available
- High precision alignment with zirconia sleeve or metal sleeve



LC One Piece Adapter, No Weld Type



LC Two Piece Adapter, Welded Type

The new one piece housing design prevents breaking of the adapter due to the absence of ultrasonic weld type construction.



## LC ADAPTER WITH SHUTTER

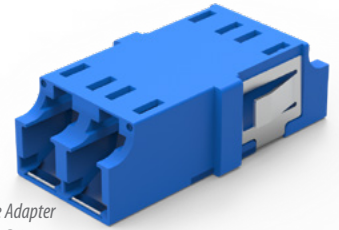
SENKO offers internal shutters for adapters to shield potentially harmful light. SENKO's patented internal shutter is a retractable shutter inside the adapter body and is only actuated by inserting the connector in to the

body, designed specifically to prevent end face damage of the ferrule. The internal shutter is fully automatic and provides an alternative to external shutter solutions.

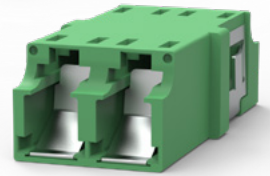
CODE	TYPE	COLOR	SLEEVE TYPE	SHUTTER
988	3S Duplex with Flange	1 Blue	1 Zirconia Straight Split	A Internal Shutter (w/o mark)
	4S Duplex with No Flange	2 Black		
		3 APC Green		
		8 Beige		
		9 Aqua		

988 - 3S11 - A ORDER CODE example

### 988 Series



LC One Piece Adapter with SC Foot Print



LC One Piece Adapter with SC Foot Print (SNR/SNR)

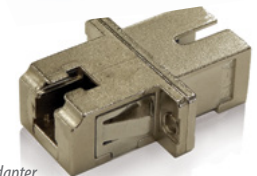
## LC-MU & LC-SC HYBRID ADAPTER

PART NUMBER	DESCRIPTION
M90-101	LC-MU Simplex Hybrid Adapter with Zirconia Sleeve
990-113-M	LC-SC Simplex Hybrid Adapter with Zirconia Sleeve

990 - 113 - M ORDER CODE example



LC-MU Hybrid Adapter



LC-SC Hybrid Adapter

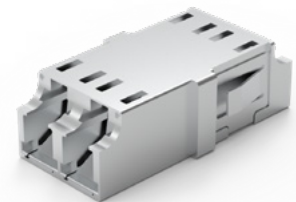
## LC METAL ADAPTER

LC one piece duplex metal adapters are available in symmetrical SC foot print design with or without flanges. They can be ordered with internal shutters to provide much needed eye safety by shielding the potentially harmful laser light. These adapters have color coded

dust cap and sleeve holder to ensure right adapter is used for the correct application (PC SM: Blue, PC MM: Beige, APC: Green). Both zirconia and phosphor bronze alignment sleeves are available on this product.

CODE	TYPE	DUST CAP/INTERNAL COLOR	SLEEVE TYPE	SHUTTER
988M	3S Duplex with Flange	1 Blue	1 Zirconia	N No Shutter
	4S Duplex without Flange	2 Green	2 Metal	A Internal Shutter
		3 Beige		

988M - 3S11 - N ORDER CODE example



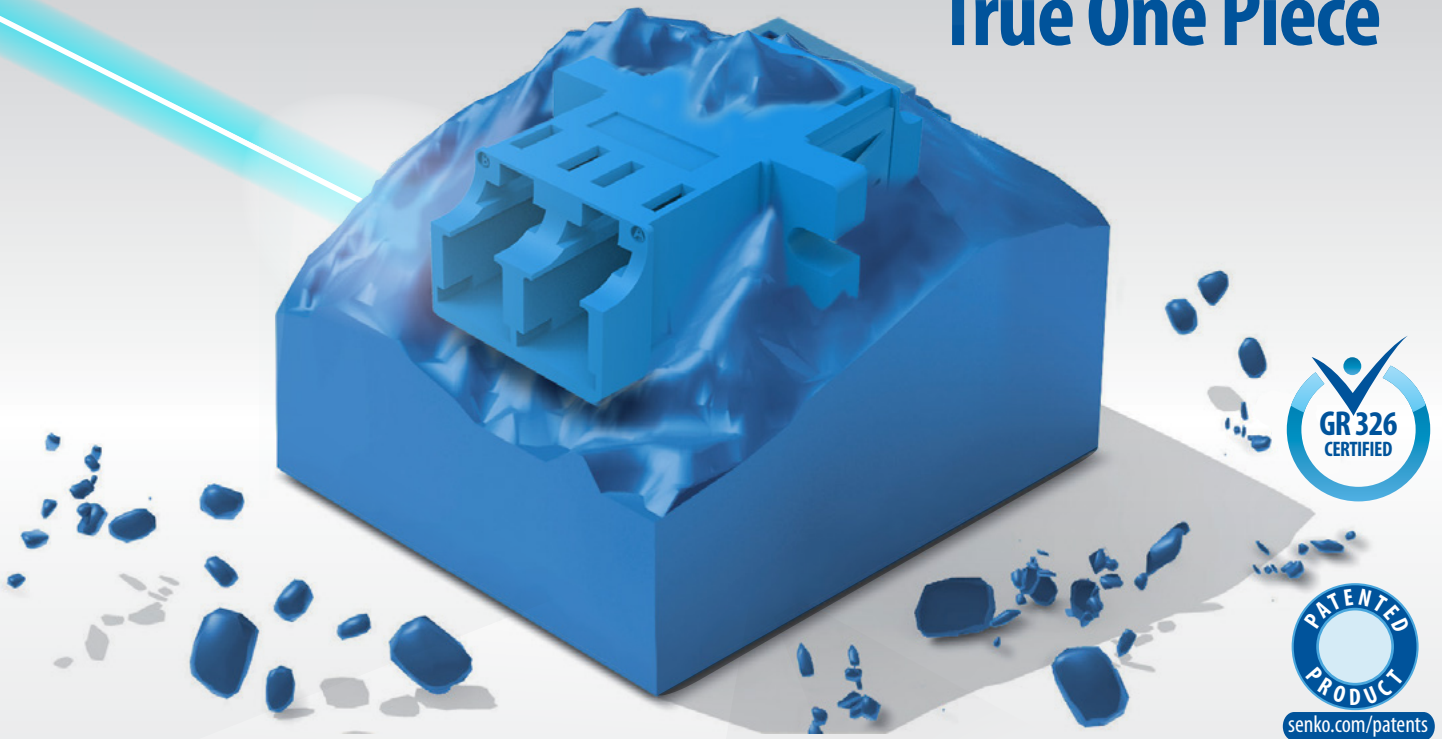
LC One Piece Duplex Adapter without Flange



LC One Piece Duplex Adapter with Flange

# LC TOP ADAPTER

## True One Piece



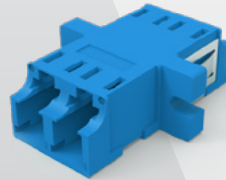
## Meet the New, More Rugged, True One Piece (TOP) Design

### FEATURES

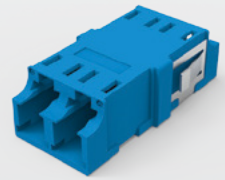


External/Internal  
shutter capable

SENKO introduces its new line of True One Piece adapters. Available in both flange and no flange configurations. The True One Piece design has proven increased side loading performance over conventional adapters.



LC TOP Adapter with flange

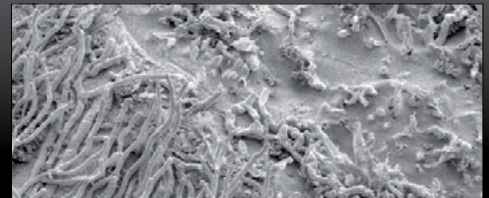


LC TOP Adapter no flange

### FUNGUS RESISTANCE

Over a period of time it is possible that Polymeric materials can grow fungus on the surface, (see image of a Polymeric sample with fungus growth present) but according to the requirements of Telcordia GR-326 it stipulates that samples shall not support fungus growth per ASTM G21-96. A rating of 0 (zero) is required.

NOTE: This requirement applies to the connector (including boots) and adapter plastic components. SENKO premium connectors are manufactured using materials that do not support this fungus growth, after independent testing of SENKO connectors are rated at 0 (zero).



## LC TOP ADAPTER WITH SC FOOT PRINT

### TOP (True One Piece) Adapter 98C series

Senko introduces its new line of True One Piece adapters. Available in both flange and no flange configurations. The True One Piece

design has proven increased side loading performance over conventional adapters.

CODE	TYPE	COLOR	SLEEVE TYPE	SHUTTER
98C	1 Simplex	1 Blue	1 Zirconia	N No Shutter
	3S Duplex with Flange	2 Black		A Internal Shutter (simplex only)
	4S Duplex No Flange	3 Green		
	AS 12 Port with Flange	7 Violet OM4 (MOQ Req)		
	BS 12 Port No Flange	8 Beige		
		9 Aqua OM3		

98C - 3S11 - N ORDER CODE example

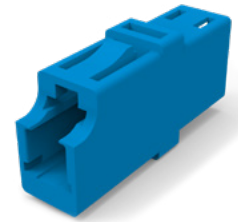


LC One Piece Adapter, No Weld Type

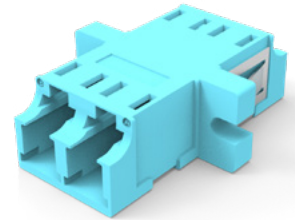


LC Standard Adapter, Welded Type

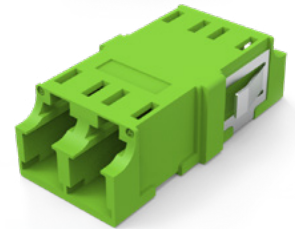
The new one piece housing design prevents breaking of the adapter due to the absence of ultrasonic weld type construction.



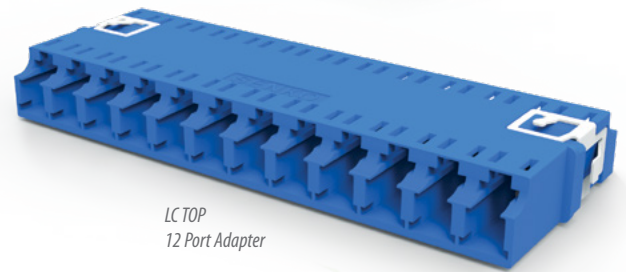
LC TOP Adapter No Shutter



LC TOP Adapter with Flange



LC TOP Adapter no Flange



LC TOP 12 Port Adapter

## LC TOP ADAPTER FEATURES

**Features:**

- One piece solid body design for increased strength over standard welded adapters
- SC Foot print for Duplex adapters
- Anti-Fungus plastic UL94 V-0
- Recesses on both sides of the adapter allow the current external shutter to be used



## LC CRIMP TOOL

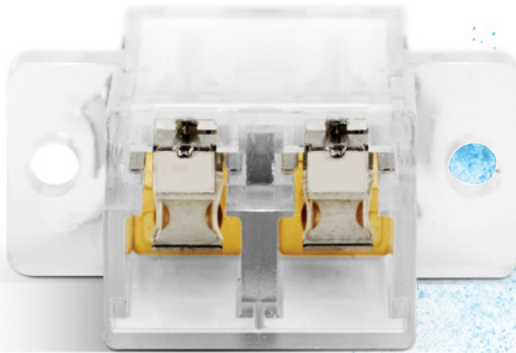
CODE	CONNECTOR TYPE
CRT	701 LC/MU Dual Crimp Tool
	705 SC/LC 1.2mm Connectors

CRT - 701 ORDER CODE example





## LC ADAPTER INNER SHUTTER



It keeps adapter's interior clean from dust



**Features:**

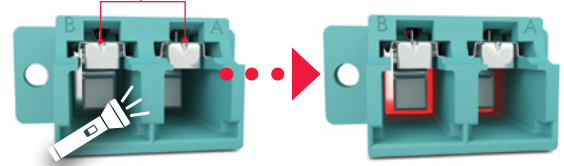
- Provides eye safety by attenuating laser light when the mated connector is removed
- 100% automatic shutter mechanism
- Compatible with standard LC connectors
- Keeps adapter's interior clean from dust
- SC footprint
- Light visible through the adapter

**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.

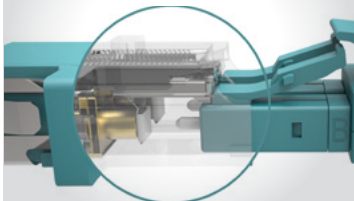
*Automatic shutter mechanism*



**LC Adapter with Inner Shutter Step by Step**

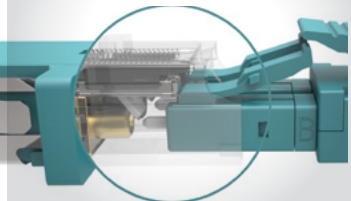
**▶ 1 - Connector insertion**

When the connector is inserted into the adapter it compresses the springs, opening the internal shutter.



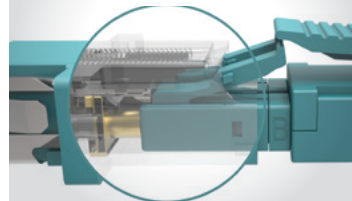
**▶ 2 - Shutter opening**

The internal shutter opens, and due to the special design of the shutter, it will not touch the ferrule end face.



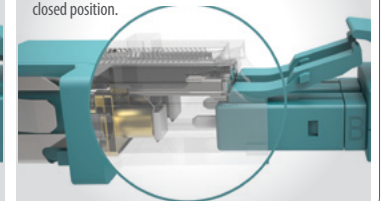
**▶ 3 - Connector mated with adapter**

The opening of the shutter allows for the ferrule to be inserted inside the adapter sleeve.

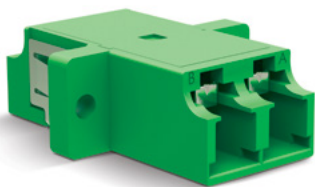


**▶ 4 - Connector removal**

As the connector is removed from the adapter, the shutter spring automatically returns the internal shutter to the closed position.



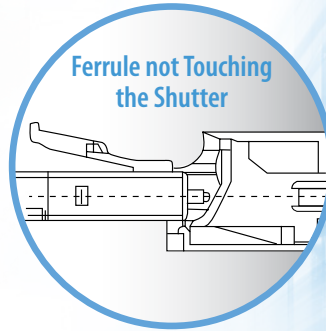
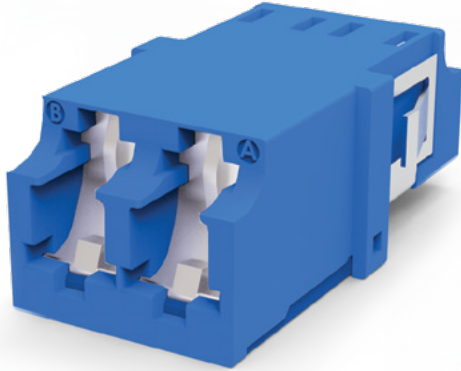
## LC SHUTTERED ADAPTER



ADAPTER TYPE		HOUSING COLOR		SLEEVE MATERIAL		LASER WARNING MARK	
985-3S	Duplex with Flange	1	Blue	1	ZR	A	Without Mark
985-4S	Duplex without Flange	2	Black			C	With Mark
985-5S	Quad with Flange	3	Green				
985-6S	Quad without Flange	5	Lime Green (OMS)				
		7	Violet (OM4)				
		8	Beige				
		9	Aqua (M3)				

985-3S - 11A ORDER CODE example

# LC ADAPTER WITH DUST SHUTTER



**Features:**

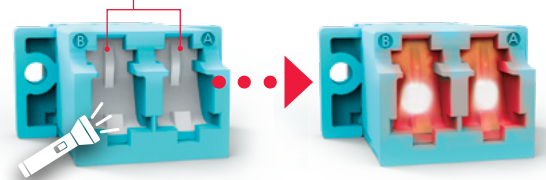
- 100% automatic shutter action
- IP5X dust protection
- SC footprint on non-shuttered side
- Compatible with standard LC connectors
- Adapter traceability with Visible Light Source

**LC Adapter Traceability**



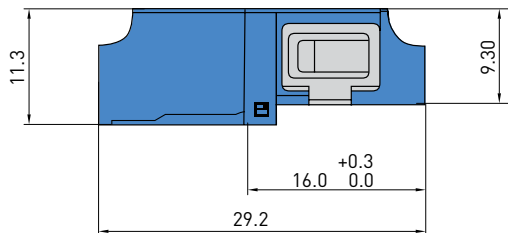
When trying to trace the adapter using a visible light source, you can see the red light glowing through the adapter sleeve.

*Automatic shutter mechanism*



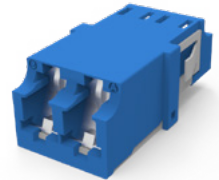
ADAPTER CODE	TYPE	HOUSING COLOR	SLEEVE TYPE	SHUTTER
98D	LC Adapter	3 Duplex with Flange	1 Zirconia	A Shutter
	with Dust Shutter	4 Duplex No Flange		
		5 Quad with Flange		
		6 Quad No Flange		
		7 Violet OM4 (MOQ Req)		
		9 Aqua OM3		

98D - 311 - A ORDER CODE example

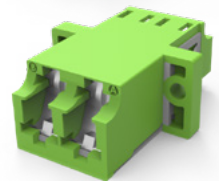


Fits in SC Footprint

LC Duplex Adapter with Dust Shutter



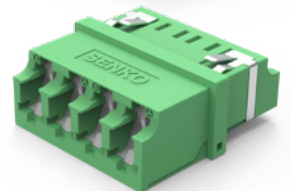
LC Duplex Adapter with Dust Shutter



LC Quad Adapter with Dust Shutter

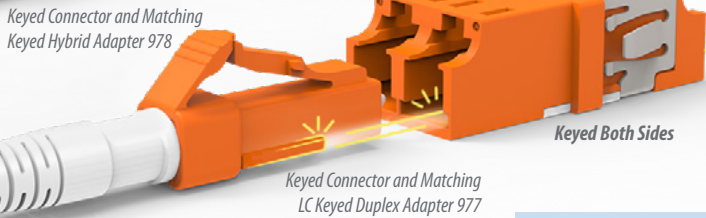
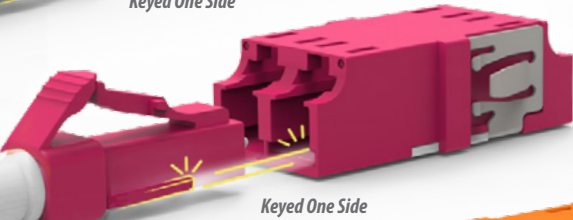
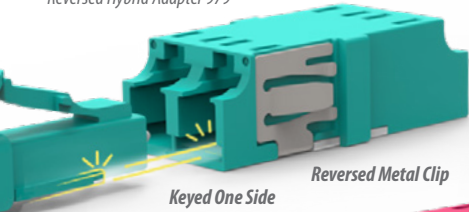


LC Quad Adapter with Dust Shutter

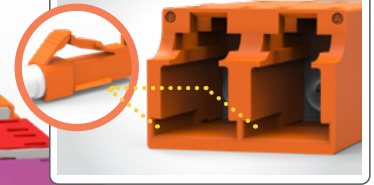


# LC KEYED CONNECTOR AND ADAPTER

Keyed Connector and Matching Keyed Reversed Hybrid Adapter 979



## ALIGNMENT KEYS



LC Keyed Connectors and Matching Adapters

SENKO Keyed LC Connector Solution offers mechanical network security for organizations wanting to segregate networks due to privacy or security concerns.

### Features:

- LC Keyed connectors and adapters prevent improper connection of separate networks with common access points
- LC Keyed products feature twelve color-coded, keyed designs to limit improper connections networks
- Each LC Keyed connector will mate only with same-color LC Keyed adapter

CODE	TYPE	FERRULE I.D.	COLOR/CLIP	HOUSING COLOR & KEY	BOOT	BOOT COLOR
93	LC Keyed Connector	153 SM: 125µm 251 MM: 127µm	1 Blue	A Pink K Turquoise	B MINI Boot 900µm	1 White
	6 Duplex (Un-assembled)		B White L Magenta	C MINI Boot 2.0mm		
	7 Simplex (Assembled)		C Yellow M Olive	D MINI Boot 3.0mm		
	8 Duplex (Assembled)		D Red	4 2.0mm Round		
			E Orange	6 3.0mm Boot		
			F Violet	7 Flex-Angle 2.0mm		
			G Gray	9 Flex-Angle 3.0mm		
			H Cobalt			
	J Brown					

936 - 251 - 2A41 ORDER CODE example

CODE	TYPE	COLOR & KEY	SLEEVE TYPE
977	LC Keyed Adapter	A Pink H Cobalt	1 Zirconia Straight Split
978	LC Keyed Hybrid Adapter	B White J Brown	
979	LC Keyed Reversed Hybrid Adapter	C Yellow K Turquoise	
		D Red L Magenta	
		E Orange M Olive	
		F Violet U Black (Universal)*	
		G Gray *Only available for 977 Series	

977 4SD1 ORDER CODE example



## LC EZ-FLIP

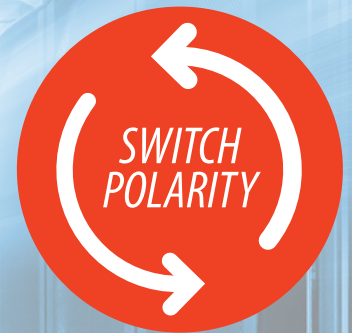
The Duplex LC connector for round cable, which allows the polarity to be switched without connector re-termination or twisting of the fiber.

**Features:**

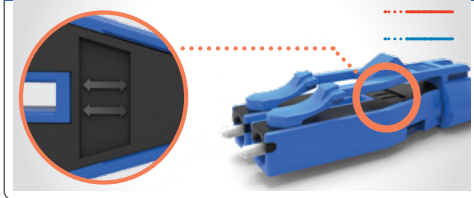
- Pre-assembled for reduced termination and kitting time
- 20% time savings vs standard LC DX
- Push/pull tab ready for high density applications
- Uniboot connector aids cable management
- Polarity reversal without twisting fiber
- Visual indication for polarity check
- Short boot design for reduced connector length



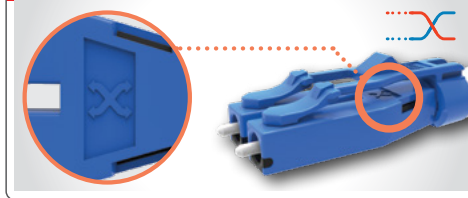
Polarity reversible connectors



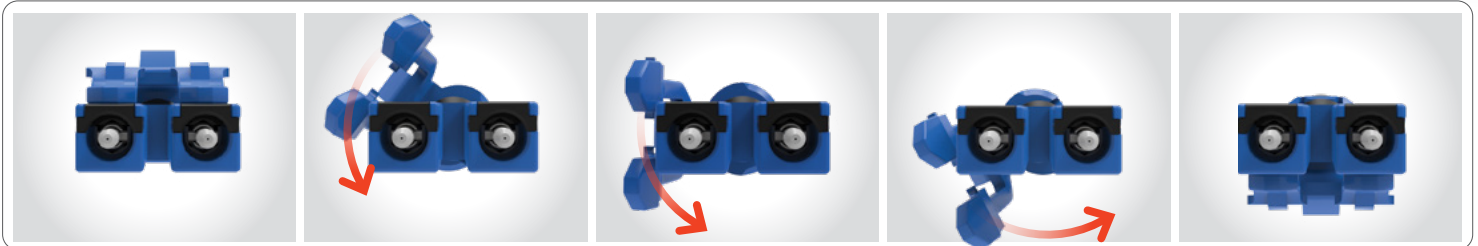
**REGULAR POLARITY**



**CROSSED POLARITY**



**How to switch:**



## LC EZ-FLIP PC 2MM, 3MM

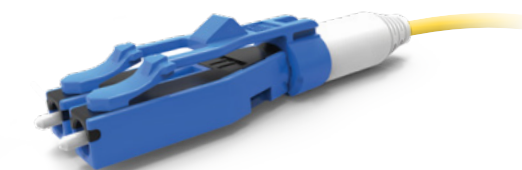
CONNECTOR TYPE	FERRULE SIZE	HOUSING COLOR	BOOT TYPE	BOOT COLOR
<b>94Q</b> EZ Flip LC Uniboot	<b>151</b> SM 125.5µm	<b>1</b> Blue	<b>C</b> 2.0 mm	<b>1</b> White
Premium Unassembled	<b>251</b> MM 127µm	<b>2</b> Beige	<b>D</b> 3.0 mm	<b>2</b> Blue
<b>94Q</b> EZ Flip LC Uniboot		<b>5</b> Aqua	<b>7</b> Flex-Angle 2.0mm	<b>3</b> Black
Premium Pre-assembled		<b>6</b> Heather violet	<b>9</b> Flex-Angle 3.0mm	

94Q - 151 - 1C1 ORDER CODE example

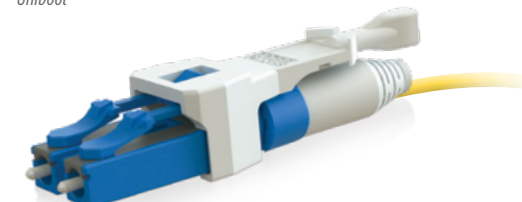
TYPE	
<b>94Q-HDPP-34-W</b>	EZ Flip LC Uniboot, Push-Pull tab 34mm
<b>94Q-HDPP-51-W</b>	EZ Flip LC Uniboot, Push-Pull tab 51mm
<b>94Q-HDPP-67-W</b>	EZ Flip LC Uniboot, Push-Pull tab 67mm

94Q-HDPP-34-W ORDER CODE example

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



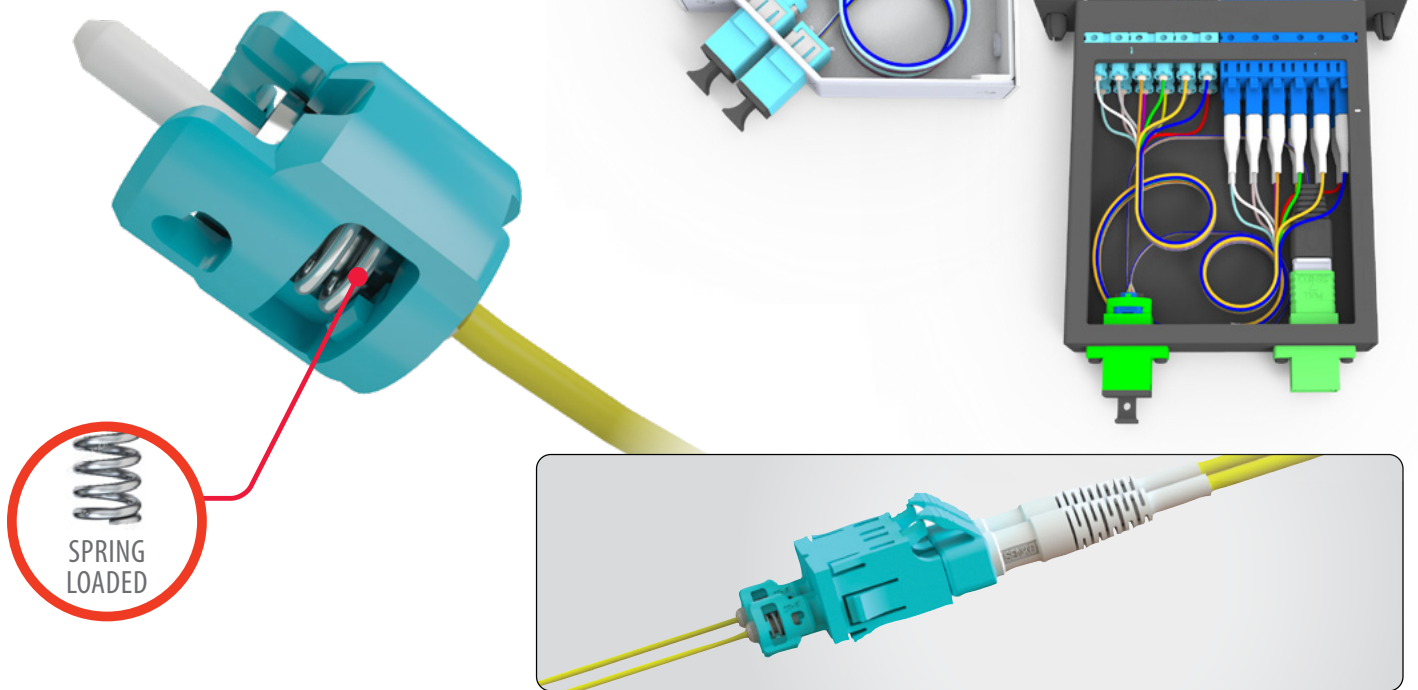
LC EZ-Flip Uniboot



LC EZ-Flip Push-Pul Tab

**MICRO LC CONNECTOR**

**Micro LC**  
Bayonet Style Connector



The unique combination of small size and bayonet style connectivity makes the Micro LC Connector the right choice for BTW applications. The Micro LC Solution is a complete family of products designed to offer the optimal, high-density solution for private and public networks.

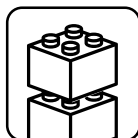
**Features:**

- Compatible to generic LC
- Significant space saving on back end of faceplate
- High density
- Simple bayonet mechanism
- Cost effective
- IEC Grade B compatible

Locking System



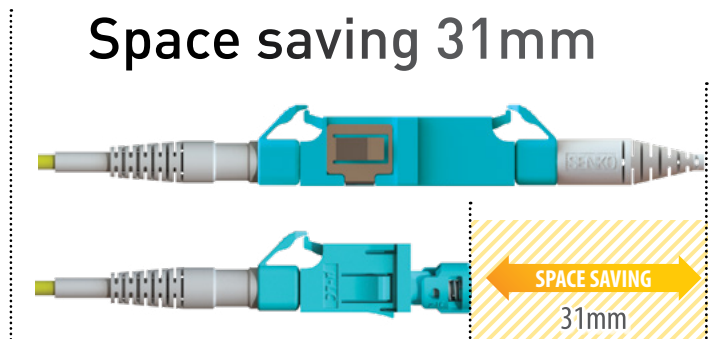
Stackable adapters



Space saving



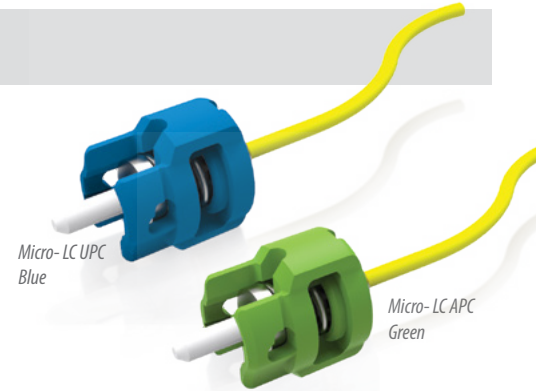
**Space saving 31mm**



## MICRO LC CONNECTOR

CODE	FERRULE TYPE	HOUSING
92B uLC Premium	153 SM: Premium 125µm	T Beige
	159 SM: Low Loss 125µm	A Aqua
	251 MM: Premium 127µm	L Blue

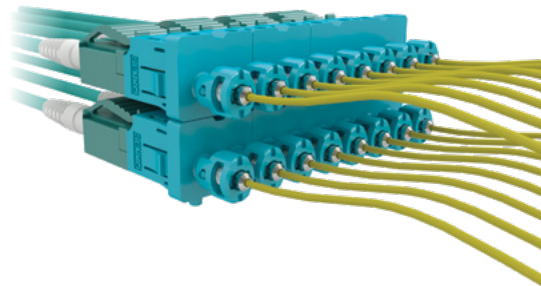
CODE	FERRULE TYPE	HOUSING
94B uLC APC Premium	153 SM: Premium 125µm	G APC-Green
93B uLC APC Premium Separate Piece	159 SM: Low Loss 125µm	



## MICRO LC to LC STACKABLE ADAPTER

CONNECTOR TYPE	HOUSING COLOR	STYLE	POSITION	SHUTTER
96B-P Duplex	1 Blue	1 Vertical Stackable	CO Center Adapter Duplex	N No Shutter
	2 Black	4 Not Vertical Stackable	L1 Left Adapter Duplex Flange	A Inner Shutter
	3 APC Green	7 Top Flat, Bottom Vertical Stackable	L0 Left Adapter Duplex No Flange	
	8 Beige	8 Bottom Flat, Top Vertical Stackable	R1 Right Adapter Duplex Flange	
	9 Aqua	9 Top and Bottom Flat, Not Stackable	R0 Right Adapter Duplex No Flange	

96B-P - 14 - CON ORDER CODE example



## MICRO LC to LC ADAPTER

CODE	HOUSING COLOR	TYPE
99B-P	1 Blue	1 Duplex with Flange
	2 Black	0 Duplex No Flange
	3 APC Green	
	8 Beige	
	9 Aqua	

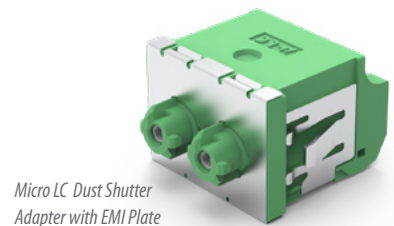
99B-P - 2 - 1 ORDER CODE example



## MICRO LC DUST SHUTTER ADAPTER

ADAPTER TYPE	HOUSING COLOR	FLANGE	SHUTTER
95B-P µLC Premium Duplex	1 Blue (SM PC/UPC)	0 No Flange	A Shutter
95BE-P µLC Premium Duplex with EMI Plate	3 Green (SM/APC)	1 With Flange	
	8 Beige (MM OM1)		
	9 Aqua (MM OM3)		

95B-P - 1 - 0 - A ORDER CODE example



Micro LC Dust Shutter Adapter with EMI Plate

## MICRO LC INSTALLATION-REMOVAL TOOL

CODE	DESCRIPTION
RMT-702	Installation-removal tool

RMT-702 ORDER CODE example



1 PC Connector (510 Series)

**MU ONE PIECE CONNECTOR**



MU with 2.0mm Cable Boot



MU with 1.0mm Fiber Boot



MU with 1.0mm Fiber Short Boot

CONNECTOR	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
510 MU Connector	113 SM: 125µm	1 Blue	1 2.0mm Cable	1 Blue
	211 MM: 127µm	2 Black	2 1.0mm Fiber	2 Black
		3 Red	4 1.6mm Cable	3 Green
		4 Beige	5 1.0 Fiber Short	4 Red
		5 Brown		5 Gray
		6 Yellow		6 Yellow
		0 MU-J*		7 White
				8 Beige
				9 Lavender

510 - 113 - 519 ORDER CODE example

**Note:** Other ferrule ID size are available  
SM 126µm SM 125.5µm

**Features:**

- NTT-MU hardware compatibility
- NTT & JIS compliance
- Pre assembled 1pc style
- Compact, pull-proof design
- One piece construction
- Tunable zirconia connector ferrule
- Corrosion resistant body
- UL-rated plastic housing and boot
- Universal Duplex Clip
- Low insertion loss & back reflection

Connector Kit (511 Series)

**MU CONNECTOR KIT**



MU Kit with 2.0mm Cable Boot



MU Kit with 1.0mm Fiber Short Body

CODE	FERRULE TYPE	HOUSING	BOOT TYPE	BOOT COLOR
511 MU Kit	xxx	5 Brown	1 2.0mm Cable	9 Lavender
		0 MU-J*	3 1.0mm Fiber Short Body	

511 - xxx - 519 ORDER CODE example

**Note:** 1. Custom configurations available upon request  
2. Ferrule to be ordered separately



## MU ADAPTER

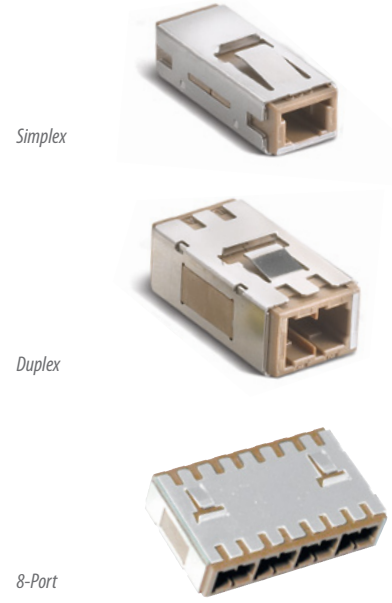
### MU Adapter

CODE	TYPE	SLEEVE
MUA	1 Simplex	ZA Zirconia
	2 Duplex	
	3 8-Port	

ORDER CODE example: MUA - 1 - ZA

**Features:**

- Compact design
- NTT-MU hardware compatibility
- NTT & JIS compliance
- High precision alignment
- Low insertion and return loss and back reflection\*
- Corrosion resistance reflection



## MU BACKBOARD AND PACKAGE HOUSING

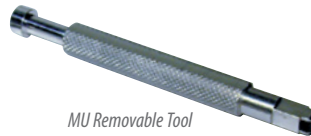
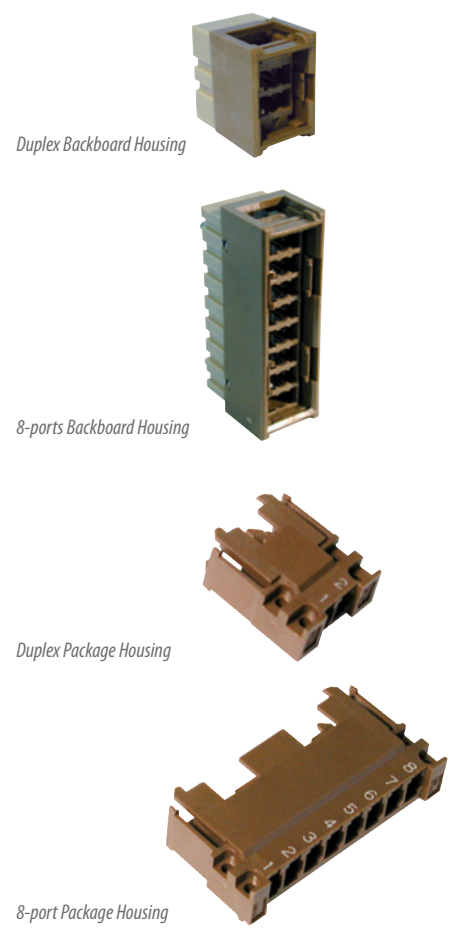
### MU Back Board

CODE	TYPE	HOUSING TYPE
MUB	2 Duplex	1 2.4mm Back Board Thickness
	8 8-Port	2 3.2mm Back Board Thickness
		3 Package Housing

ORDER CODE example: MUB - 2 - 1

**Features:**

- Compact design
- NTT-MU hardware compatibility
- NTT & JIS compliance
- High precision alignment
- Low insertion and return loss and back reflection\*
- Corrosion resistance reflection



CODE	TYPE
MU Sleeve Holder	SH

ORDER CODE example: MU - SH

CODE	TYPE
MU Removable Tool	JRT

ORDER CODE example: MU - JRT

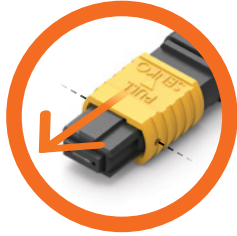


Types and Loss Data

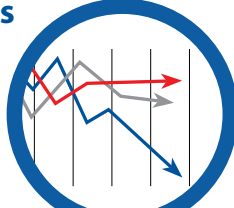
**MPO PLUS CONNECTOR**

**MPO PLUS®**

Removable Housing



Low Insertion Loss

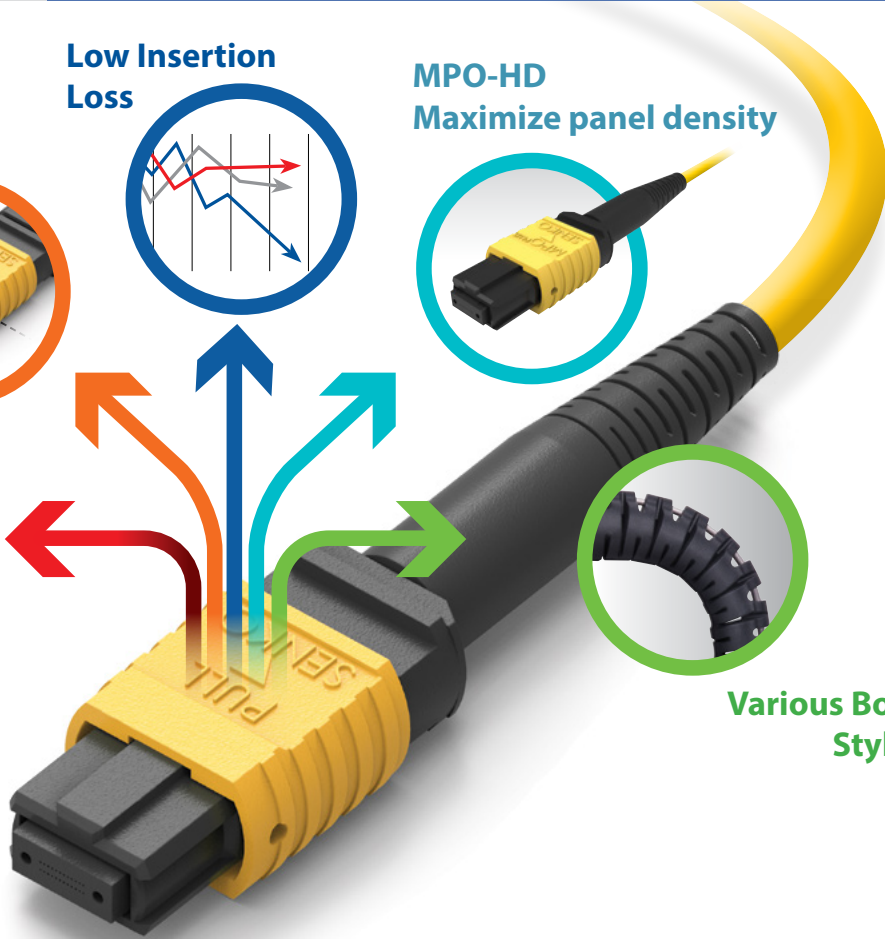


MPO-HD  
Maximize panel density



IP-MPO  
Weatherproof  
Connector

Various Boot  
Styles



**New MPO Plus:  
More Features compared  
to Conventional MPO**

- Lower Insertion loss on SM Typical 0.1dB
- Lower Insertion loss on MM Typical 0.08dB
- Meets and exceeds Telcordia GR-1435
- Removable Housing
- Metal Pin Holder
- Oval Spring
- 20N Spring for 24F MM Ferrule
- Spring Push with Slit for easier assembly
- MPO Plus Premium Mini for High Density Application
- Flex angle boot and other boot styles
- IP-MPO Outdoor rated IP-68 housing
- Stackable MPO Adapter

MPO Premium Mini  
HIGH-DENSITY CONNECTOR



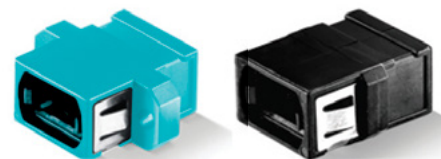
IP-MPO  
WEATHERPROOF CONNECTOR



MPO  
FLEX ANGLE BOOT



MPO  
ADAPTERS



**Features:**

- High precision guide pins for exact alignment
- Compact design, up to 24 fiber ribbons
- IEC 61754-7 Compliant\*
- Telcordia GR-1435-CORE compliant\*
- Polishing does not require diamond film

# MPO+PLUS®

## MT FERRULE

The MPO connector offers up to 24 times the density of standard connectors, providing significant space and cost savings. MPO Connectors utilize precision molded MT Ferrules, with metal guide pins and precise housing dimensions to ensure fiber alignment when mating. MPO Connector housing are available in

Green (for SM) Yellow (for SM Super Low loss), Beige (for MM) and Aqua (for OM3 Fiber). Ferrule available in 4, 8, 12 and 24 fiber hole configuration. Ferrules are available for SM Standard, SM Super Low Loss, MM Standard and MM Low Loss. Boots are available for Ribbon Cable, Ribbon fiber, Round boot and the patent SENKO Flex angle boot.

TYPE	DESCRIPTION	IL MAX	IL TYPICAL	BACK REFLECTION
------	-------------	--------	------------	-----------------

**SM Super Low Loss**  
MT Ferrule



<b>SLS-12</b>	<b>Super Low Loss SM 12 Fiber</b>	0.25dB	0.10dB	60dB
<b>SLS-8</b>	<b>Super Low Loss SM 8 Fiber</b>	0.25dB	0.10dB	60dB
<b>Operating Temperature</b>		-40°C ~ +85°C		

**Note:** 1. All numbers are only achievable when using SENKO recommended reference jumper, splicing process and testing method  
2. SM Low Loss Max IL 0.25dB to be 95% of all fiber  
3. To use SM Low Loss Guide Pin

TYPE	DESCRIPTION	IL MAX	IL TYPICAL	BACK REFLECTION
------	-------------	--------	------------	-----------------

**SM Standard**  
MT Ferrule

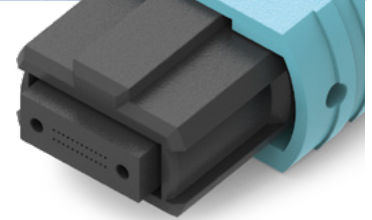


<b>SM-24</b>	<b>SM Standard 24 Fiber</b>	1.0dB	0.25dB	60dB
<b>SM-12</b>	<b>SM Standard 12 Fiber</b>	0.70dB	0.20dB	60dB
<b>SLS-8</b>	<b>SM Standard 8 Fiber</b>	0.70dB	0.20dB	60dB
<b>Operating Temperature</b>		-40°C ~ +85°C		

**Note:** All numbers are only achievable when using SENKO recommended reference jumper, splicing process and testing method

TYPE	DESCRIPTION	IL MAX	IL TYPICAL	BACK REFLECTION
------	-------------	--------	------------	-----------------

**MM Super Low Loss**  
MT Ferrule



<b>SLM-24</b>	<b>Super Low Loss MM 24 Fiber</b>	0.35dB	0.15dB	25dB
<b>SLM-12</b>	<b>Super Low Loss MM 12 Fiber</b>	0.25dB	0.08dB	25dB
<b>SLM-8</b>	<b>Super Low Loss MM 8 Fiber</b>	0.25dB	0.08dB	25dB
<b>Operating Temperature</b>		-40°C ~ +85°C		

**Note:** 1. All numbers are only achievable when using SENKO recommended reference jumper, splicing process and testing method  
2. MM Low Loss Max IL 0.25dB to be 95% of all fiber  
3. To use SM Guide Pin

TYPE	DESCRIPTION	IL MAX	IL TYPICAL	BACK REFLECTION
------	-------------	--------	------------	-----------------

**MM Standard**  
MT Ferrule



<b>MM-32</b>	<b>MM Standard 32 Fiber</b>	0.60dB	0.25dB	25dB
<b>MM-16</b>	<b>MM Standard 16 Fiber</b>	0.60dB	0.20dB	25dB
<b>MM-24</b>	<b>MM Standard 24 Fiber</b>	0.50dB	0.20dB	25dB
<b>MM-12</b>	<b>MM Standard 12 Fiber</b>	0.50dB	0.15dB	25dB
<b>MM-8</b>	<b>MM Standard 8 Fiber</b>	0.50dB	0.15dB	25dB
<b>Operating Temperature</b>		-40°C ~ +85°C		

**Note:** All numbers are only achievable when using SENKO recommended reference jumper, splicing process and testing method

**MPO FLAT RIBBON CABLE**  
Single Mode



**MPO BARE RIBBON FIBER**  
Multi Mode



**MPO BARE RIBBON SHORT**  
SUPER LOW LOSS  
Single Mode



**MPO ROUND 3mm BOOT**  
Multi Mode



Kit with Ferrule

**MPO PLUS STANDARD CONNECTOR**

**MPO PLUS**<sup>®</sup>



PATENT PENDING DESIGN



MPO Green with Flat Ribbon Cable Boot



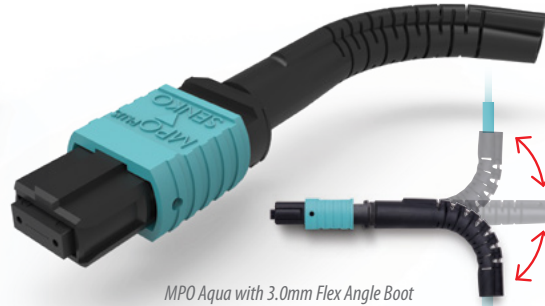
MPO Yellow with Bare Ribbon Short Boot



MPO Beige with Bare Ribbon Boot



MPO Violet with 3.0mm Boot



MPO Aqua with 3.0mm Flex Angle Boot

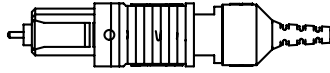
4F ~ 24F TYPE	GENDER/PIN		FERRULE TYPE		FIBER COUNT		HOUSING COLOR		BOOT/CABLE		
702F	F	Female	SS	SM Standard	04	4F	Y	SM Low Loss Yellow	01	Bare Ribbon Fiber	Bare Ribbon Boot
	M	Male	SL	SM Super Low Loss	08	8F	G	SM Green	02	Bare Ribbon Fiber	Bare Ribbon Short Boot
			MS	MM Standard	12	12F	V	MM OM4 Heather Violet	11	Flat Ribbon Cable	Flat Ribbon Cable Boot
			ML	MM Super Low Loss	24	24F	A	MM OM3 Aqua	21	2.0mm Round	2.0mm Boot with Crimp
							T	MM Beige	22		2.0mm Boot without Crimp
							B	MM Black	31	3.0mm Round	3.0mm Boot
									32		3.0mm Flex Angle Boot
									41	3.6mm Round	3.6mm Boot
									42		3.6mm Flex Angle Boot
									51	Other Round	4.5mm Round Boot
									52		5.0mm Round Boot
									53		5.5mm Round Boot

702F - F - MS12 - A31 ORDER CODE example

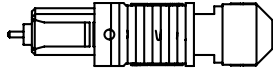
- Note:**
1. Custom configurations available upon request.
  2. Please visit [Senko.com/mposelect](http://Senko.com/mposelect) for other combinations.
  3. 3.8mm and 4.0mm boot option available.

## Ribbon Boots

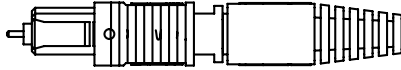
01 Bare Ribbon



02 Bare Ribbon Short

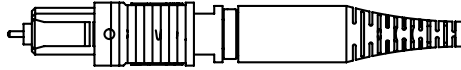


11 Flat Ribbon Cable

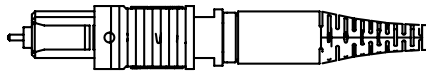


## 2.0mm Round Boots

21 2.0mm Boot with Crimp

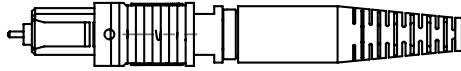


22 2.0mm Boot without Crimp

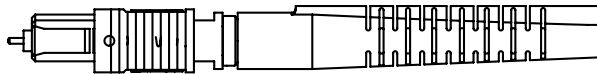


## 3.0mm Round Boots

31 3.0mm Boot

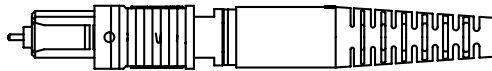


32 3.0mm Flex Angle

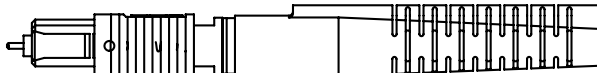


## 3.6mm Round Boots

41 3.6mm Boot

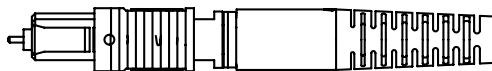


42 3.6mm Flex Angle



## 4.5/5.0/5.5 Round

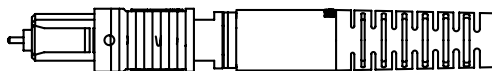
51 4.5mm Boot



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 PREMIUM MINI CONNECTOR

# MPO+PLUS®



senko.com/patents



MPO Mini Connector Aqua with No Boot

MPO Mini Connector Aqua with Bare Ribbon Boot

MPO Mini Connector Aqua with 3.0mm Short Boot

MPO Mini Connector Yellow with 3.0mm Boot

MPO Mini Connector Aqua with 3.6mm Short Boot

MPO Mini Connector Violet with 3.0mm Flex Boot

MPO MINI	GENDER/PIN		FERRULE TYPE		FIBER COUNT		HOUSING COLOR		BOOT/CABLE	
703F	G	Female	SS	SM Standard	04	4F	Y	SM Low Loss Yellow	00	Bare Ribbon Fiber
		Gender Changeable	SL	SM Super Low Loss	08	8F	G	SM Green	01	Bare Ribbon Boot
			MS	MM Standard	12	12F	V	MM OM4 Heather Violet	21	2.0mm Round
			ML	MM Super Low Loss	24	24F	A	MM OM3 Aqua	22	2.0mm Boot with Crimp
							B	MM Black	22	2.0mm Boot without Crimp
									32	3.0mm Round
									A1	3.0mm Flex Angle Boot
									A1	3.0mm Boot (GR Metal Back Post)
									33	3.0mm Short Boot
									42	3.6mm Round
									42	3.6mm Flex Angle Boot
									46	3.6mm Short Boot
									51	4.5mm Round Boot
									52	Other Round
									52	5.0mm Round Boot
									53	5.5mm Round Boot

703F - G - SS12 - G33 ORDER CODE example

- Note:**
1. Custom configurations available upon request.
  2. Gender changeable pins sold separately. Two pins required for one MPO connector. See P.51 for details.
  3. MPO-HD push pull tab option sold separately.
  4. Please visit [Senko.com/mposelect](http://Senko.com/mposelect) for other combinations.
  5. 3.8mm and 4.0mm boot option available.
  6. GR-1435 certified on 12 Fiber SM Super Low Loss with A1 boot and metal back post only.

## MPO PLUS PREMIUM MINI PUSH PULL TAB



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

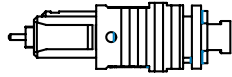
703-HDPP-50-W ORDER CODE example

- Note:**
1. Gender Changeable Tool available - see P.51 for details.
  2. Push Pull tab can be used with the MPO Plus Premium Mini 12/24F.



## Ribbon Boots

00 Bare Ribbon

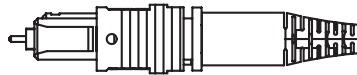


01 Bare Ribbon Short

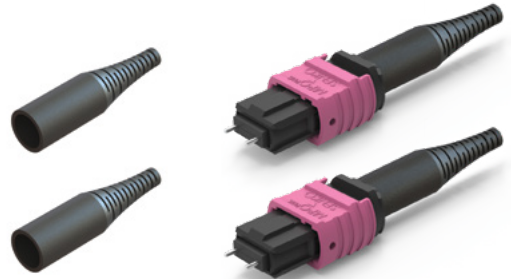
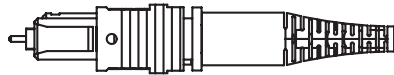


## 2.0mm Round Boots

21 2.0mm Boot with Crimp

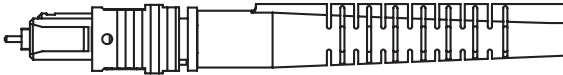


22 2.0mm Boot without Crimp

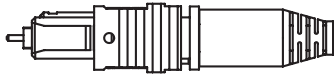


## 3.0mm Round Boots

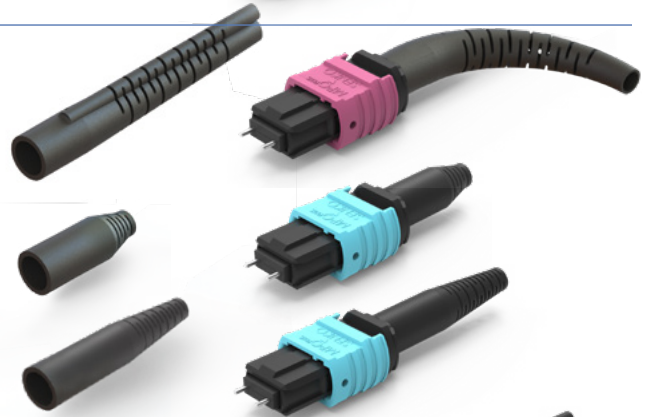
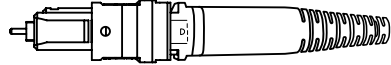
32 3.0mm Flex Angle



33 3.0mm Short



A1 3.0mm Boot

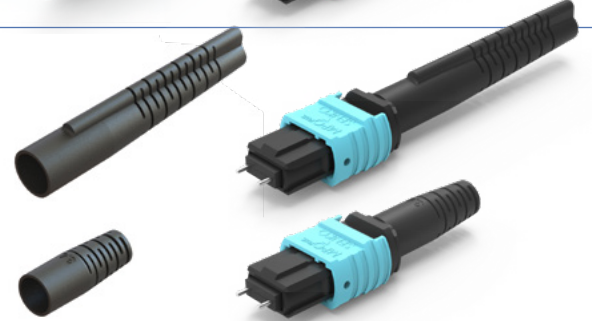


## 3.6mm Round Boots

42 3.6mm Flex Angle

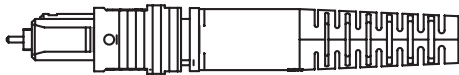


46 3.6mm Short

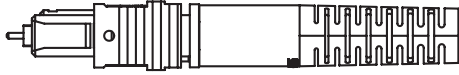


## 4.5/5.0/5.5 Round

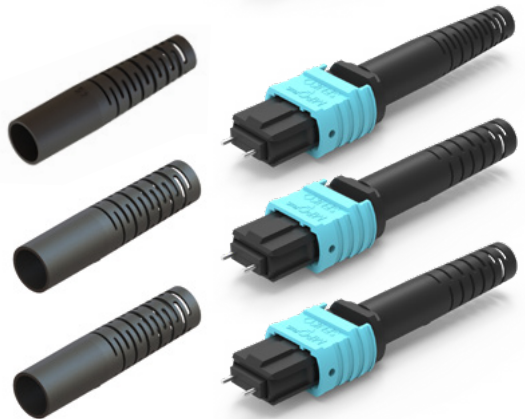
51 4.5mm Boot



52 5.0mm Boot



53 5.5mm Boot



**Note:** When using Flex Angle Boot, always maintain the proper bend radius per E-3.3 the cable manufacturer's specification.

16F / 32F Type

**MPO PLUS STANDARD & PREMIUM MINI CONNECTOR**

**MPO+PLUS®**



senko.com/patents



MPO Mini Connector Aqua with 3.0mm Short Boot



MPO Mini Connector Aqua with 3.6mm Short Boot



MPO Mini Connector Aqua with 4.5mm Boot



16 Fibers MPO Connector with 3.6mm Flex Angle Boot



16 Fibers MPO Connector with Bare Ribbon Boot



16 Fibers MPO Connector with 3.6mm Boot

16/32TYPE		GENDER/PIN		FERRULE TYPE		FIBER COUNT		HOUSING COLOR		BOOT/CABLE		
712F	Standard	F	Female	SS	SM Standard	16	16F	Y	SM Low Loss Yellow	01	Bare Ribbon Fiber	Bare Ribbon Boot
713F	Mini	M	Male	SL	SM Super Low Loss	32	32F	G	SM Green	02	Bare Ribbon Fiber	Bare Ribbon Short Boot
				MS	MM Standard			V	MM OM4 Heather Violet	31	3.0mm Boot	3.0mm Boot
				ML	MM Super Low Loss			A	MM OM3 Aqua	32		3.0mm Flex Angle Boot
								T	MM Beige	33		3.0mm Short Boot
								B	MM Black	41	3.6mm Boot	3.6mm Boot
										42		3.6mm Flex Angle Boot
										46		3.6mm Short Boot
										51	Other Round	4.5mm Round Boot
										52		5.0mm Round Boot
										53		5.5mm Round Boot

712F - F - MS16 - A31 ORDER CODE example

- Note:**
1. Custom configurations available upon request.
  2. Please visit [Senko.com/mposelect](http://Senko.com/mposelect) for other combinations.
  3. 3.8mm and 4.0mm boot option available.

# MPO PLUS LATCH CONNECTOR

# MPO-PLUS<sup>®</sup>



MPO Latch Connector  
with 3.0mm Short Boot



MPO Latch Connector  
with Bare Ribbon Boot



MPO Latch Connector  
with Flex Angle Boot

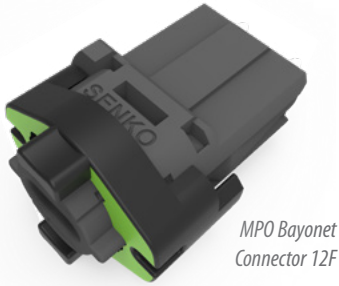
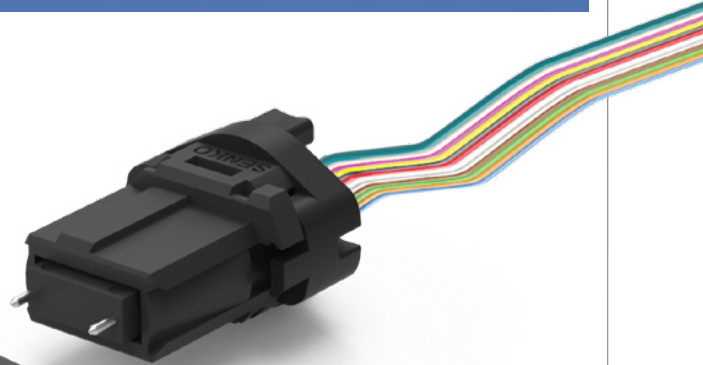
MPO LATCH	GENDER/PIN		FERRULE TYPE		FIBER COUNT		HOUSING COLOR		BOOT/CABLE		
704F	F	Female	SS	SM Standard	04	4F	B	MM Black	00	Bare Ribbon Fiber	Bare Ribbon "No" Boot
	M	Male	SL	SM Super Low Loss	08	8F			01	Bare Ribbon Fiber	Bare Ribbon Boot
	G	Female	MS	MM Standard	12	12F			21	2.0mm Round	2.0mm Boot without Crimp
		Gender Changeable (pin sold separately)	ML	MM Super Low Loss	24	24F			22	2.0mm Round	2.0mm Boot with Crimp
									32	3.0mm Round	3.0mm Flex Angle Boot
									33	3.0mm Round	3.0mm Short Boot
									41	3.6mm Round	3.6mm Boot
									42	3.6mm Round	3.6mm Flex Angle Boot
									46	3.6mm Round	3.6mm Short Boot
									51	Other Boot	4.5mm Boot
									52	Other Boot	5.0mm Boot
									53	Other Boot	5.5mm Boot

704F - M - SS12 - B32 ORDER CODE example

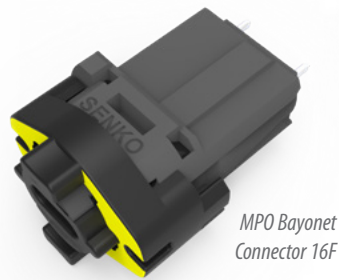
- Note:**
1. Custom configurations available upon request.
  2. Gender changeable pins sold separately. Two pins required for one MPO connector.
  3. Please visit [Senko.com/mposelect](http://Senko.com/mposelect) for other combinations.
  4. 3.8mm and 4.0mm boot option available.
  5. Requires use of MPO Plus Polarity Changeable adapter.

**MPO PLUS BAYONET CONNECTOR**

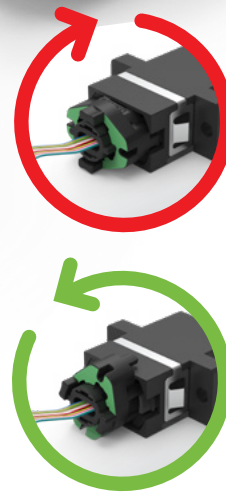
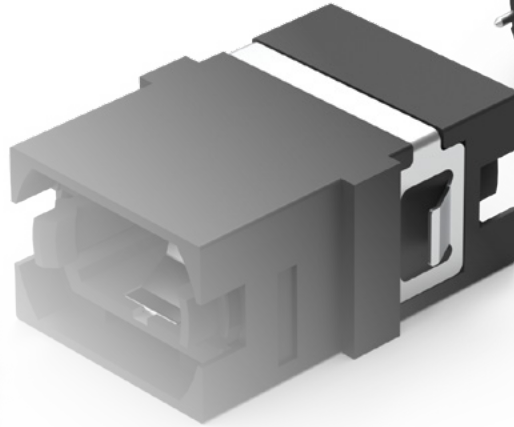
**MPO+PLUS®**



MPO Bayonet Connector 12F



MPO Bayonet Connector 16F



Plug in Connector and turn Bayonet **clockwise** to **ENGAGE**



To remove Connector turn Bayonet **counter clockwise** to **DISENGAGE**

BAYONET	GENDER/PIN	FERRULE TYPE	FIBER COUNT	HOUSING COLOR	BOOT/CABLE
705F	F Female	SS SM Standard	04 4F	Y SM Low Loss Yellow	00 No Boot
	M Male	SL SM Super Low Loss	08 8F	G SM Green	
		MS MM Standard	12 12F	V MM OM4 Heather Violet	
		ML MM Super Low Loss	24 24F	A MM OM3 Aqua	
				T MM Beige	
				B MM Black	
				M Lime Green	

705F - M - SS12 - G00 ORDER CODE example

**Note:** Custom configurations available upon request.

BAYONET	GENDER/PIN	FERRULE TYPE	FIBER COUNT	HOUSING COLOR	BOOT/CABLE
715F	F Female	SL SM Super Low Loss	16 16F	Y SM Low Loss Yellow	00 No Boot
	M Male	MS MM Standard	32 32F	G SM Green	
				V MM OM4 Heather Violet	
				A MM OM3 Aqua	
				T MM Beige	
				B MM Black	
				M Lime Green	

715F - M - SS12 - G00 ORDER CODE example

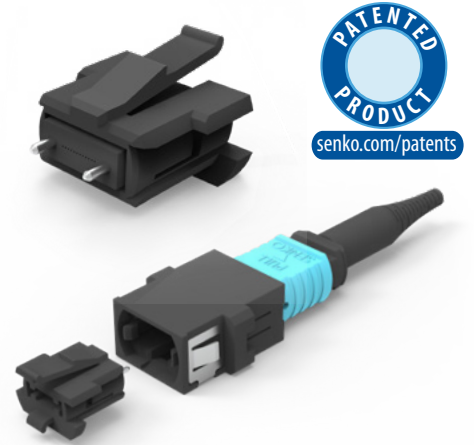
**Note:** Custom configurations available upon request.

## MPO PLUS MICRO LATCH CONNECTOR

MICRO	GENDER/PIN		FERRULE TYPE		FIBER COUNT	
706F	F	Female Pin Clamp	SS	SM Standard	04	4F
			SL	SM Super Low Loss	08	8F
	M	Male Pin Assembly	MS	MM Standard	12	12F
			ML	MM Super Low Loss	24	24F

706F F SS12 ORDER CODE example

**Note:** Requires use of MPO Plus Polarity Changeable adapter.



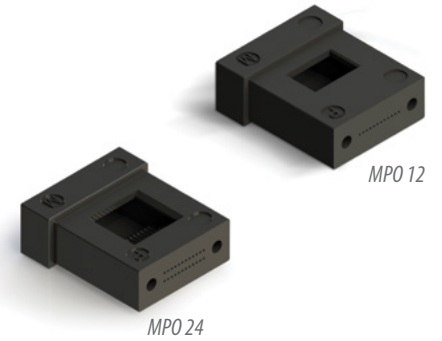
## MPO PLUS MT FERRULE

MT FERRULE	TYPE		FERRULE TYPE		FIBER COUNT		
MT	01	MT Ferrule for MPO	SS	SM Standard	04	4F	2
			SL	SM Super Low Loss	08	8F	
			MS	MM Standard	12	12F	
			ML	MM Super Low Loss	24	24F	
			SR	Master	16	16F	
	02	MT Style Ferrule Thin Type					

MT - 01 - SL12 - 2 ORDER CODE example

**Note:** Super Low Loss Ferrules are available only for 12 fiber.

**MPO+PLUS®**



## MPO PLUS DUST SHUTTER ADAPTER

ADAPTER FLANGE		ADAPTER COLOR		SHUTTER
7D7	Flange	1	Black	A
7D8	No Flange	2	Aqua	
7WA	MPO 16/32F, Flange	3	Heather Violet	
7WB	MPO 16/32F, No Flange	8	Lime	
		K	Gray, Aligned Key	

7D7 - 1A ORDER CODE example



**Features:**

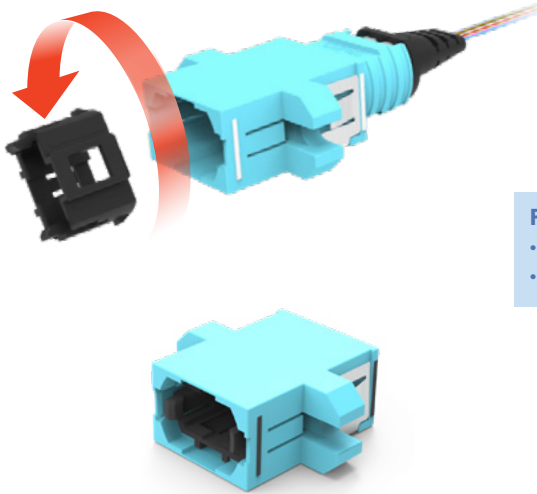
- Unique twin door shutter closes to prevent any ingress of contamination
- 100% automatic shutter mechanism means one handed connection
- No dust cap required on shutter side
- Standard MPO foot print
- Available in black, violet, aqua, lime, green and gray
- Easy identification of SM, OM3, OM4, OM5
- Fully meets GR-1435 mechanical and environmental requirements
- Combine with LC and SC inner shutter adapter for protected plug and play solution
- IEC compliant
- Compatible with Senko MPO+ and HD connectors



## MPO PLUS POLARITY CHANGEABLE ADAPTER



senko.com/patents



ADAPTER FLANGE		ADAPTER COLOR	
773	Flange (Standard Flange)	1	Black
774	No Flange (Reduced Flange)	2	OM3 Aqua
7W3	MPO 16/32F, Standard Flange	3	OM4 Heather Violet
7W4	MPO 16/32F, No Flange	K	Gray Aligned Key

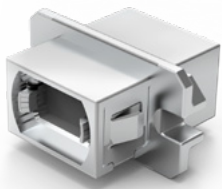
773 - 1 ORDER CODE example

**Note:** 1. Polarity changeable feature recommended for non-angled ferrules only.  
2. RMT-609 tool required for polarity change.

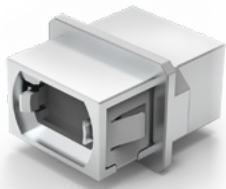
**Features:**

- One-piece design
- Flange and Non-Flanged Types
- Regular and Reversed Key Options

## MPO PLUS METAL ADAPTER



MPO Adapter EMI with Internal Shutter



MPO Adapter EMI No Flange

ADAPTER FLANGE		ADAPTER COLOR		SHUTTER	
7M7	Flange (Standard Flange)	1	Regular Key	None	No Shutter
7M8	No Flange (Reduced Flange)	K	Aligned Key	A	Inner Shutter

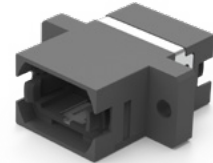
7M7 1 A ORDER CODE example

**Features:**

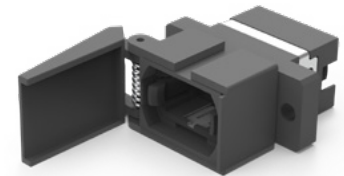
- One-piece design
- Flange and Non-Flanged Types
- Superior shielding effectiveness
- Protects against dust, provides eye safety and reduces EMI when no connector is installed

## MPO PLUS SC FOOTPRINT ADAPTER

ADAPTER FLANGE		ADAPTER COLOR	
775	Flange (Standard Flange)	1	Black
776	No Flange (Reduced Flange)	2	OM3 Aqua
7W5	MPO 16/32F, Standard Flange	3	OM4 Heather Violet
7W6	MPO 16/32F, No Flange	K	Gray Aligned Key



MPO Adapter SC Footprint with Flange



MPO Adapter SC Footprint with Shutter\*\*

Note: \*\*External shutter sold separately - part number 775-OSHU-01

775 - 1 ORDER CODE example

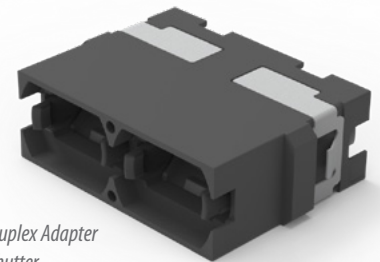
**Features:**

- One-piece outer body design
- Flange and Non-Flanged Types
- Regular and Reversed Key Options
- SC Footprint
- External shutter option

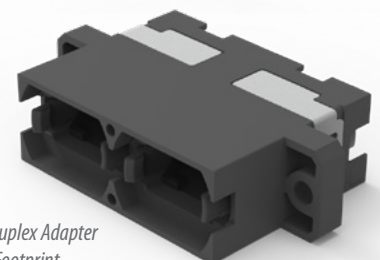
## MPO PLUS SC FOOTPRINT DUPLEX ADAPTER

ADAPTER FLANGE		ADAPTER COLOR		SHUTTER	
7A5	Flange (Standard Flange)	1	Black	None	No Shutter
7A6	No Flange (Reduced Flange)	K	Gray (Aligned Key)	A	Shutter
7B5	MPO 16/32F (Standard Flange)				
7B6	MPO 16/32F (Reduced Flange)				

7A5 - 1 - A ORDER CODE example



MPO Duplex Adapter with Shutter SC DX Footprint No Flange



MPO Duplex Adapter SC DX Footprint With Flange

**Features:**

- Unique twin door shutter closes to prevent any ingress of contamination
- 100% automatic shutter mechanism
- Laser and IP5X dust protection
- SC duplex footprint
- Compatible with standard MPO connectors
- Micro Latch MPO compatible on rear side 12/24F Center Key and 16/32F Offset Key options

## MPO PLUS 90° STACKABLE ADAPTER



senko.com/patents



Top Adapter Simplex



Center Adapter Duplex



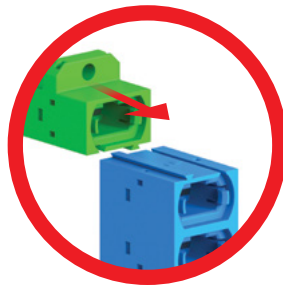
Center Adapter Simplex



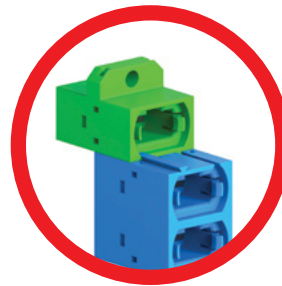
Bottom Adapter Simplex

STACKABLE ADAPTER	STYLE	SHAPE	ADAPTOR COLOR	SHUTTER
780	MPO Stackable	1 90° Type	T Black	None No Shutter
		B Bottom Adapter Simplex	2 OM3 Aqua	A Inner Shutter
		1 Center Adapter Simplex	3 OM4 Heather Violet	
		2 Center Adapter Duplex	K Gray Aligned Key	

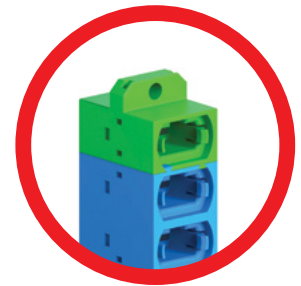
780 1T 1A ORDER CODE example



1 Insert Adapter



2 Slide Adapter



3 Finish

## MPO PLUS 45° STACKABLE ADAPTER



senko.com/patents



Top Adapter Simplex



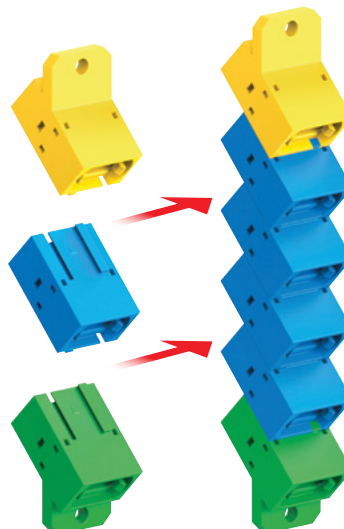
Center Adapter Duplex



Bottom Adapter Simplex

STACKABLE ADAPTER	STYLE	SHAPE	ADAPTOR COLOR	SHUTTER
780	MPO Stackable	2 45° Type	T Black	None No Shutter
		B Bottom Adapter Simplex	2 OM3 Aqua	A Inner Shutter
		1 Center Adapter Simplex	3 OM4 Heather Violet	
			K Gray Aligned Key	

780 2T 1A ORDER CODE example



Use the 45° angled flange to create a staggered array to assist with fiber management in densely populated panels.

## MPO PLUS TOOLS

TYPE

RBN-601 MPO Plus Ribbonizer Tool

RBN-601 ORDER CODE example

TYPE

RMT-603 MPO Plus Disassemble Tool

RMT-603 ORDER CODE example

TYPE

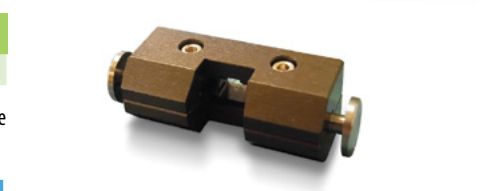
RMT-604 Gender Changeable Pin Assembly/Removal Tool

RMT-604 ORDER CODE example

TYPE

RMT-609 MPO Polarity Changeable Adapter Tool

RMT-609 ORDER CODE example



## MPO PLUS CRIMP TOOL

TYPE

CRT-605 Crimp Tool for MPO Plus Connector (Oval)

CRT-606 Crimp Tool for MPO Plus 3.0 - 5.5mm round crimp (for thick jacket crimp)

CRT-607 Crimp Tool for MPO Plus 3.0 - 5.5mm round crimp

CRT-607 ORDER CODE example



## MPO PLUS GENDER CHANGEABLE PIN

GUIDE PIN CODE

701-PIN-G MPO Gender Changeable Pin

TYPE

MM-02 MM Pin (Premium, Mini, Latch Series)

SM-02 SM Pin (Premium, Mini, Latch Series)

LL-02 Low Loss Pin (Premium, Mini, Latch Series)

32MM-01 MM Pin (Premium 32F/16F)

32SM-01 SM Pin (Premium 32F/16F)

32LL-01 Low Loss Pin (Premium 32F/16F)

701-PIN-G-SM-02 ORDER CODE example



**Note:** 1. Two Gender Changeable pins required for one MPO connector.

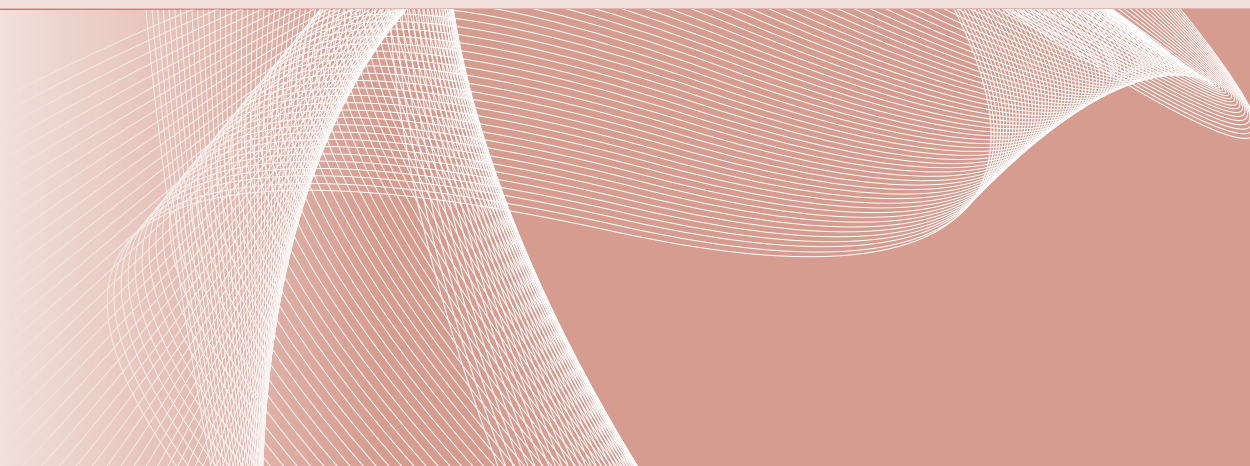
2. Gender changeable pins can be used with MPO-Plus Premium Mini and MPO-Plus Latch connector.





STANDARD CONNECTOR SERIES  
SMALL FORM FACTORS  
SPECIALTY PRODUCTS  
FERRULES AND SLEEVES  
POLISHING SYSTEMS

pg. 02  
pg. 23  
pg. 61  
pg. 73  
pg. 79



## SPECIALTY PRODUCTS

Q-XP Connector SC	pg. 62
XP Fit Plus Connector SC	pg. 63
XP Fit Uni SC	pg. 64
XP Fit Plus Connector LC	pg. 65
XP Fit Plus Termination Kit	pg. 66
XP Fit Plus Connector Tools	pg. 66
Premium Attenuators	pg. 67
Terminators	pg. 68
LC-HD Loopback	pg. 69
MPO Loopback	pg. 69
Inline Attenuator	pg. 70
Switchable Adapter	pg. 71

**Field Installable**

**Q-XP PREMIUM SC CONNECTOR**

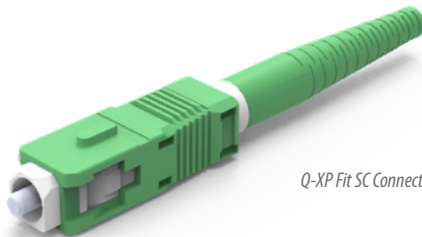
Q-XP is SENKO's highest performing field installable connector. This GR-1081 tested connector provides Telecom grade performance while yielding maximum mechanical and optical characteristics.

SPECIFICATION	SINGLEMODE
<b>For Q-XP Fit</b>	<b>Typical</b>
<b>Insertion Loss</b>	≤ 0.25dB
<b>Return Loss</b>	≥65dB
<b>Durability</b>	<0.1dB change, 500 matings
<b>Operating Temperature</b>	-40°C to +75°C
<b>Storage Temperature</b>	-40°C to +85°C
<b>Tensile</b>	TIA/EIA 568-C.3
<b>Intermateability</b>	IEC 61754-4



- Highlight:**
- No Polishing
  - No Crimp Tools
  - No Adhesives
  - No expensive fusion splicer

*Note: Specifications shown above were obtained using SENKO recommended products and procedures.*



Q-XP Fit SC Connector

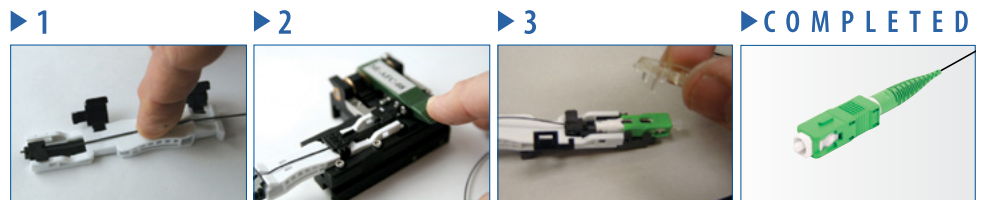
CODE	FERRULE TYPE	OUTER HOUSING	BOOT TYPE	BOOT COLOR
QXP	Q-XP SC Connector	091 SM: APC	4 Green	3 Green
			1 900µm	
			2 1.65mm	
			3 2.0mm	
			4 3.0mm	

QXP 091 413 ORDER CODE example

- Note:**
1. The connector performance specifications include an internal mechanical splice
  2. Typical specification values are at 23°C ±5°C

**Features:**

- Mechanical Splice (index matching gel)
- Highly Stable & Reliable
- RoHS Compliant
- GR-1081 completed
- Termination under 3 minutes
- Finished Connector meets UL94-V0 Flammability Rated
- 92% yield
- TIA/EIA 568-C.3 Compliant



## XP FIT PLUS SC CONNECTOR

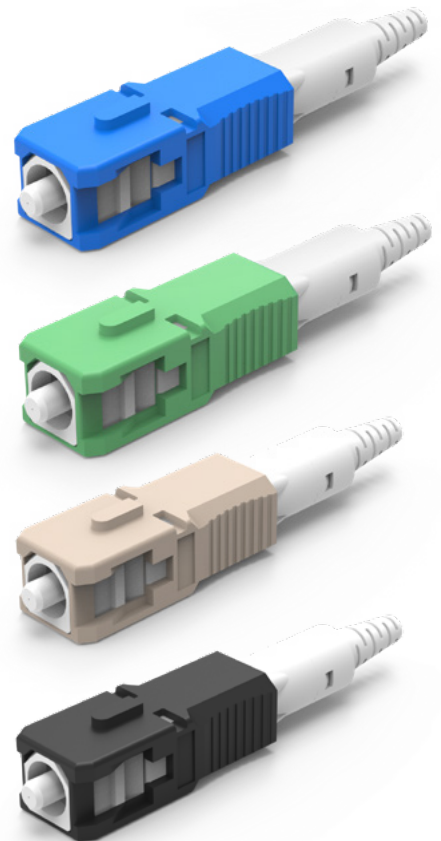
Field Installable

The XP Fit Plus is a pre-polished, pre-assembled connector compatible with the standard SC connector. In place of epoxy, an internal mechanical grip gently but effectively holds the fiber in place and can be installed in under

two minutes. Without polishing or adhesives, the XP Fit Plus makes field installations quick and easy, eliminating the need for epoxy curing and hand polishing at the work site.

SPECIFICATION	SINGLEMODE	MULTIMODE
<b>For XP Fit Plus SC</b>	<b>Typical</b>	
<b>Insertion Loss</b>	0.2dB (PC) and 0.3dB (APC)	0.1dB
<b>Return Loss</b>	55dB (PC) 60dB (APC)	35dB
<b>Durability</b>	<0.1dB change, 500 matings	
<b>Operating Temperature</b>	-40°C to +75°C	
<b>Tensile</b>	TIA/EIA 568-C.3	
<b>Intermateability</b>	IEC 61754-4	

*Note: Specifications shown above were obtained using SENKO recommended products and procedures.*



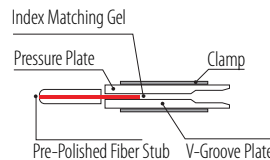
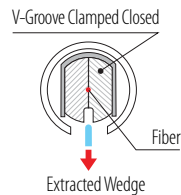
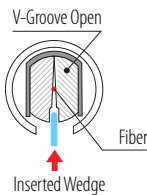
PART NUMBER	DESCRIPTION	HOUSING	BOOT COLOR
318-191-627	XPFit Plus SC Connector SM: PC 900µm/250µm 120pack*	Blue	White
318-091-427	XPFit Plus SC Connector SC: APC 900µm/250µm 120pack*	Green	White
318-291-727	XPFit Plus SC Connector MM: 50/125 900µm/250µm 120pack*	Black	White
318-391-927	XPFit Plus SC Connector MM : 62.5/125 900µm/250µm 120pack*	Beige	White
318-491-527	XPFit Plus SC Connector MM: 50/125 10G OM3900µm/250µm 120pack*	Aqua	White
318-091-452	XPFIT Plus SC Connector SC: APC Drop Cable 120pack*		

318-191-627 ORDER CODE example

- Note:**
1. 12 pack available. Add -12 to existing part number
  2. Typical specification values are at 23°C ±5°C
  3. The connector performance specifications include an internal mechanical splice

### ASSEMBLY PROCEDURE

- NO EPOXY
- NO POLISHING

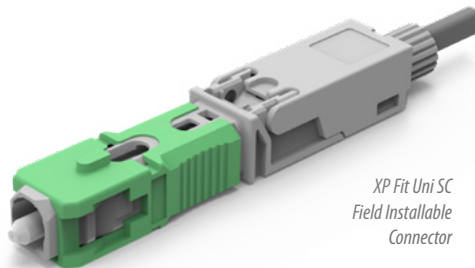


XP Fit Plus SC Field Installable Connector

Field Installable

**XP FIT UNI SC**

The XP Fit Uni SC is a pre-polished, pre-assembled connector compatible with the standard SC connector. The universally designed cable jacket clamping feature allows for various cordage types to be terminated using just one connector. In addition, an internal mechanical grip gently but effectively holds the fiber in place without the need for adhesives. The XP Fit Uni SC makes field installations quick and easy, while reducing the need for multiple connector kits for different applications.



XP Fit Uni SC  
Field Installable  
Connector

SPECIFICATION

XP Fit UNI SC

<b>Applicable Fiber</b>	Indoor Cable/Drop Cable	
<b>Size</b>	1.6x2mm and 2x3mm (Drop Cable) 2mm, 3mm 250/900µm (Indoor Round Cable)	
<b>Intermateability</b>	SC (IEC61754-4)	
<b>Polishing</b>	PC/APC	
<b>Operating Temperature</b>	-40 ~ +75°C	
	<b>SM PC</b>	<b>SMC APC</b>
<b>Insertion Loss dB</b> (against Master Plug)	Typical ≤ 0.2	Typical ≤ 0.3
<b>Return Loss</b> (against Master Plug)	Typical ≥ 50 (Min. ≥ 40)	Typical ≥ 55 (Angled Cleaver ≥ 60)
<b>Tensile IEC 61300-2-6</b>	3N for coated fiber and 10N for round cord and rectangular cable	

PART NUMBER	DESCRIPTION	COLOR
319-191-6	XP Fit Uni SC Connector	Blue
319-091-4	XP Fit Uni SC/APC Connector	Green

319-191-6 ORDER CODE example

**Note:** Specifications shown above were obtained using SENKO recommended products and procedures

**Features:**

- Mechanical Splice (index matching gel)
- Highly Stable & Reliable
- RoHS Compliant
- Termination Under 3 Minutes
- Finished Connector Meets UL94-V0 Flammability rated
- IEC Compliant

**Termination under 2 minutes**

- ▶ 1 Connector preparation    ▶ 2 Drop cable preparation    ▶ 3 Cleaving of the fiber    ▶ 4 Connector termination    ▶ 5 Testing



## XP FIT PLUS LC CONNECTOR

The XP Fit Plus is a pre-polished, pre-assembled connector compatible with the standard LC connector. In place of epoxy, an internal mechanical grip gently but effectively holds the fiber in place and can be installed in under

two minutes. Without polishing or adhesives, the XP Fit Plus makes field installations quick and easy, eliminating the need for epoxy curing and hand polishing at the work site.

SPECIFICATION	SINGLEMODE	MULTIMODE
<b>For XP Fit Plus LC</b>	<b>Typical</b>	
<b>Insertion Loss</b>	0.2dB (PC)	0.1dB
<b>Return Loss</b>	55dB (PC)	35dB
<b>Durability</b>	<0.1dB change, 500 matings	
<b>Operating Temperature</b>	-40°C to +75°C	
<b>Tensile</b>	TIA/EIA 568-C.3	
<b>Intermateability</b>	IEC 61754-20	

*Note: \* Specifications shown above were obtained using SENKO recommended products and procedures.*



PART NUMBER	DESCRIPTION	HOUSING	BOOT COLOR
951-191-111	XPFit Plus LC Connector SM: PC 900µm/250µm 120pack*	Blue	White
951-291-411	XPFit Plus LC Connector MM: 50/125 900µm/250µm 120pack*	Black	White
951-391-211	XPFit Plus LC Connector MM : 62.5/125 900µm/250µm 120pack*	Beige	White
951-491-511	XPFit Plus LC Connector MM: 50/125 10G OM3 900µm/250µm 120pack*	Aqua	White

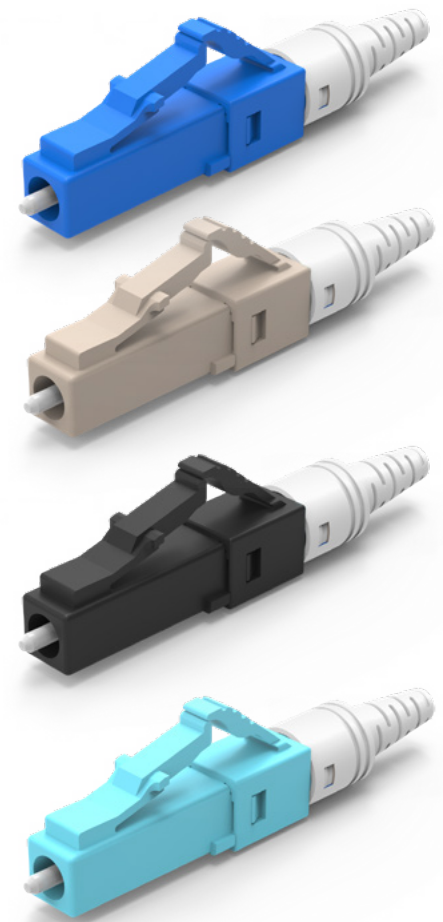
951-191-111 ORDER CODE example

**Note:** The connector performance specifications include an internal mechanical splice

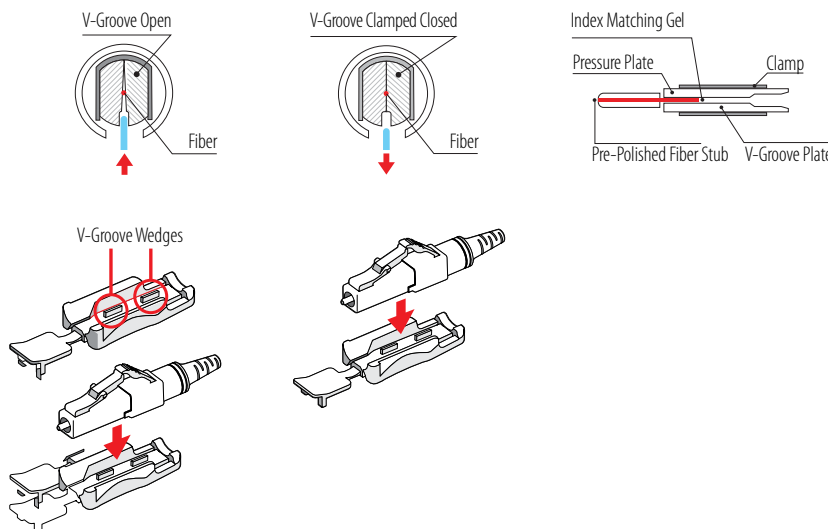
**Note\*:** 1. 12 pack available. Add -12 to existing part number  
2. Typical specification values are at 23°C ±5°C

**Features:**

- Mechanical Splice (*index matching gel*)
- Highly Stable & Reliable
- Perfect Performance
- Compact Package
- RoHS Compliant
- Finished Connector meets UL94-V0 Flammability Rated
- TIA/EIA 568-C.3 Compliant



XP Fit Plus LC Field Installable Connector





## XP FIT PLUS TERMINATION KIT



**Easy installation  
in under 2 minutes**

The Connector Installation Tool Kit contains everything needed for installation of the SC and LC XP FIT PLUS connectors. No epoxy,

polishing film, or other consumables are required, and there is no need to plug into electrical outlets, allowing installers to get in and out of installation sites quickly.



ORDER CODE	DESCRIPTION
XPF-P-F	XP Fit Field Installation Kit with Flat Cleaver - Premium
XPF-S-F	XP Fit Field Installation Kit with Flat Cleaver- Standard

Content for XP Fit Field Installation Kit with Flat Cleaver - Premium - XPF-P-F	SENKO PN
Jacket and 250µm Fiber Stripper + 125µm Buffer Remover	AFT-T-223-S
Thermal Buffer Removal Tool	AFT-T-TBR
Replacement Blade Set	AFT-T-TBR-R
Precision Cleave Tool (Flat) - Premium	AFT-T-CL-SMT
Lint Free Dry Wipes	AFT-A-KW
Fiber Optic Cleaning Pen	AFT-A-EWP
Kevlar Scissors	AFT-T-KS
Fiber Disposal Unit	AFT-A-FU
Fine Permanent Marker Pen	AFT-A-PMB
Fiber Checker	AFT-G-FC
2.5mm to 1.25mm Adapter	AFT-G-CAC
Launch Cables	XPF-TEST-KIT
Soft Case	AFT-A-CS-XP



Premium Cleaver Flat



Standard Cleaver Flat

Content for XP Fit Field Installation Kit with Flat Cleaver- Standard - XPF-S-F	SENKO PN
Precision Cleave Tool (Flat) - Standard	AFT-T-CL-05

**Note:** The contents of this Kit are the same as the XPF-P-F, with substitution of Standard Precision Flat Cleaver

**Features:**

- Fast installation to Minimize onsite labour costs
- Compatible with conventional LC & SC connectors and adapters
- Easy operation
- Quick assembly in under 2 minutes
- No adhesive or polishing required
- Compact tool without electric power

## XP FIT PLUS CONNECTOR TOOLS



The XP Fit Plus Connectors are supplied in conjunction with specific tools for easy termination in the field.

TYPE	ITEM NUMBER
LC version	XPF-LCB-900-FH
SC version	XPF-SCB-900-FH

\_\_\_\_\_ XPF-SCB-900-FH ORDER CODE example

## PREMIUM ATTENUATORS

SENKO's Premium Attenuators are GR 910 certified by Exporior Laboratories (SC APC and LC UPC). The Premium Attenuator passed all required mechanical testing including the extended life 5,000 hour environmental testing, and the solid body LC Attenuator has a stronger

design for greater mechanical strength. The Compact LC Housing reduces the overall length, while the wavelength independent premium fiber allows a wide range of usage including existing PON Network.

### SPECIFICATION

#### For Attenuators

<b>Return Loss</b>	≥ 55dB (UPC) ≥ 65dB (APC)
<b>Attenuation Tolerance</b>	1 to 10dB : ±0.5, 11 to 30 dB : ±5% (for 3 wavelength)
<b>Operational Wavelengths</b>	1310 ± 40nm, 1490 ± 20nm, 1550 ± 40nm
<b>Operating Temperature</b>	-40 to +75°C
<b>Maximum Power</b>	500mw

Note: For full wavelength type (1270 ~ 1650) Attenuation tolerance will be 1db to 10db 0.7db and 11db to 30db ±10%.

CODE		TYPE		ATTENUATOR LEVEL		ATTENUATOR TOLERANCE	
ATN	Dope Fiber Attenuators	432	SC / APC	01	1dB	1	Premium
		532	FC / APC	02	2dB		
		632	SC / UPC	03	3dB		
		732	FC / UPC	04	4dB		
		832	ST / UPC	05	5dB		
		1432	MU / UPC	06	6dB		
		1532	LC / UPC	07	7dB		
		1732	LC/APC	08	8dB		
				09	9dB		
				10	10dB		
				12	12dB		
				15	15dB		
				20	20dB		
				25	25dB		

ATN - 632 - 04 - 1 ORDER CODE example

Note: Custom configurations available upon request

#### Features:

- SC and LC GR910 Certified
- Dope Fiber Technology
- Wide Operating Wavelength (1270 ~ 1650)
- Low Back Reflection
- High Durability over High Power
- One piece housing construction including LC & MU for better side load performance
- Metal-ion doped fiber (continuous)
- Attenuation levels ranging from 1dB to 30dB

SC Attenuator



SC APC Attenuator



FC Attenuator



FC APC Attenuator



ST Attenuator



LC Attenuator



MU Attenuator



## TERMINATORS

SENKO fiber optic terminators use doped fiber designs to eliminate unwanted back-reflection. The terminators are available in FC and SC with

UPC or APC polishes, and also in small form factor design including LC and MU with APC and UPC Polishes.

### SPECIFICATION

#### For Terminators

<b>Return Loss</b>	≥ 55dB (UPC) ≥ 65dB (APC)
<b>Operating Temperature</b>	-40 to +75°C
<b>Operating Wavelength</b>	1250-1650
<b>Maximum Power</b>	500mw

*Note: Specifications shown above were obtained using SENKO recommended products and procedures.*



FC Terminator



SC Terminator



ST Terminator



MU Terminator



LC Terminator

CODE	TYPE	POLISH	DESIGN
TRM	1 SC	2 UPC	1 Doped fiber
	2 FC	3 APC	
	3 ST		
	4 LC		
	5 MU		

TRM - 1 - 3 - 1 ORDER CODE example

**Note:** Custom configurations available upon request

#### Features:

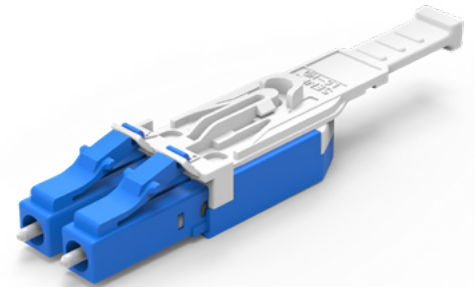
- Dope Fiber Technology
- Wide Operating Wavelength
- Low Back Reflection
- High Durability over High Power

## LC-HD LOOPBACK

Senko's Loopback is designed to provide a media of return patch for a fiber optic signal; typically it is used for fiber optic testing applications or network restorations. For the testing applications, the loopback signal is used for diagnosing a problem. Sending a loopback test to network equipment, one at a time, is a technique for isolating a problem.

### SPECIFICATION

<b>Return Loss</b>	≥ 55dB (SM-UPC)	≥ 65dB (SM-APC)	
<b>Attenuation Tolerance</b>	0dB type - Max 0.5dB	1dB - 5dB ±0.5dB	6dB - 20dB ±10%
<b>Operational Wavelengths</b>	SM: 1310 / 1550 ±40nm	MM: 850 / 1300 ±40nm	
<b>Operating Temperature</b>	-40° to 75°C		
<b>Maximum Power</b>	500mw		



LC Loopback SM Blue

TYPE		HOUSING COLOR/FIBER TYPE		ATTENUATION*	
LPB-LCHD	LC-HD Loopback	A	APC Green	A	Attenuator
		S	SM Blue	00	0dB +0.5dB/-0dB
				05	5dB +/-0.5dB
				10	10dB +/-10%
				20	20dB +/-10%

LPB - LCHD - SA05 ORDER CODE example

\*Note: Other values available upon request

## MPO LOOPBACK

### SPECIFICATION

#### IL for 0dB Type MPO Loopback Connector

<b>Low Loss Type</b>	Max 0.75dB
<b>Standard Type</b>	Max 1.50dB
<b>Attenuation</b>	1 ~ 10dB: ± 1dB 11 ~ 20dB: ± 10%

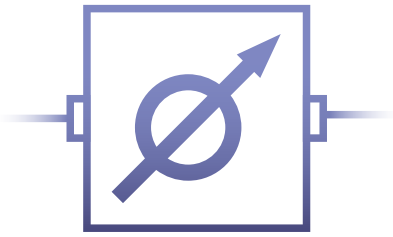


MPO Loopback

CODE		HOUSING COLOR/FIBER TYPE		HOUSING COLOR/FIBER TYPE		"FIBER COUNT (WHEN 12F MT BEING USED IN 8F)"		PIN TYPE		ATTENUATION		CHANNEL TYPE	
LPB-MPO	MPO Loopback	11	Green (SM)	22	SM 8F Standard	(None)		(None)	Female Pin	(None)	0dB	S	Standard Channel Setting
		32	Beige (MM OM2 50/125)	32	SM 8F Low Loss	08	12F MT use 8 Channel	M	Male Pin	01	1dB	Q	QSFP Channel Setting
		41	Yellow (SM LL / SM)	23	SM 12F Standard					~	~		
		52	Aqua (MM OM3 50/125)	33	SM 12F Low Loss					20	20dB		
		62	Heather Violet (MM OM4 50/125)	25	SM 24F Standard								
				35	SM 24F Low Loss								
				42	MM 8F, Flat								
				43	MM 12F, Flat								
				44	MM 12F, Flat Low Loss								
				45	MM 24F, Flat								

LPB - MPO - 1123 - S ORDER CODE example

## INLINE ATTENUATOR

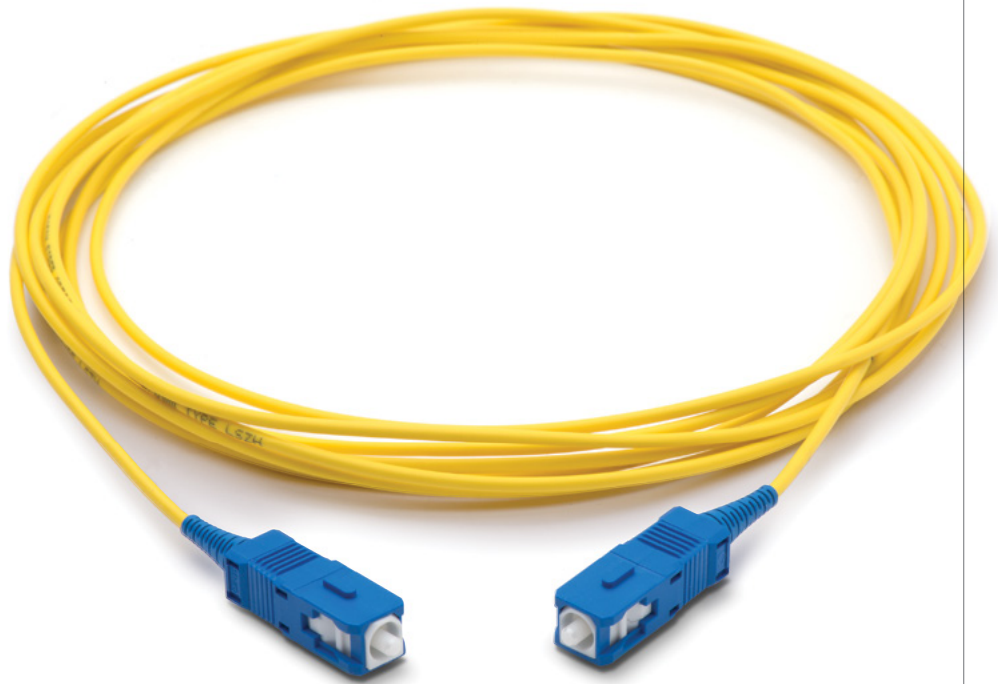


The Senko in-line optical attenuator is integrated into a standard connectorized fiber optic jumper cable.

Senko's Inline Attenuator is designed for easy handling as it works as a jumper. Compared to adding the FIXED attenuator to a normal jumper overall length will become shorter and will be more stable as a product. The Inline Attenuator is constructed all of fiber (no air

gap utilized) and is Telcordia Compliant for Endface Geometry and mechanical strength. With no protected fiber splice area on the cable (It looks like a standard jumper), Senko's Inline Attenuator is easy to handle and environmentally stable.

SPECIFICATION		
<b>Return Loss</b>	>55(UPC) >65 (APC)	Tested at 1310nm and 1550nm
<b>Attenuation</b>	1 to 10±1 11 to 25±10%	Tested at 1310nm and 1550nm



SC Inline Attenuator Jumper Style Patch Cord

TYPE		CONNECTOR TYPE		dB		CABLE TYPE		LENGTH	
ATN-IN	Inline Attenuator SM	SCU	SC/UPC Both Side	01	1dB	W009	900µm White	001M	1 Meter
		SCA	SC/APC Both Side	02	2dB	Y020	2mm Yellow		
		LCU	LC/UPC Both Side	03	3dB				
		LCA	LC/APC Both Side	04	4dB				
		SCULCU	SC/UPC - LC/UPC	05	5dB				

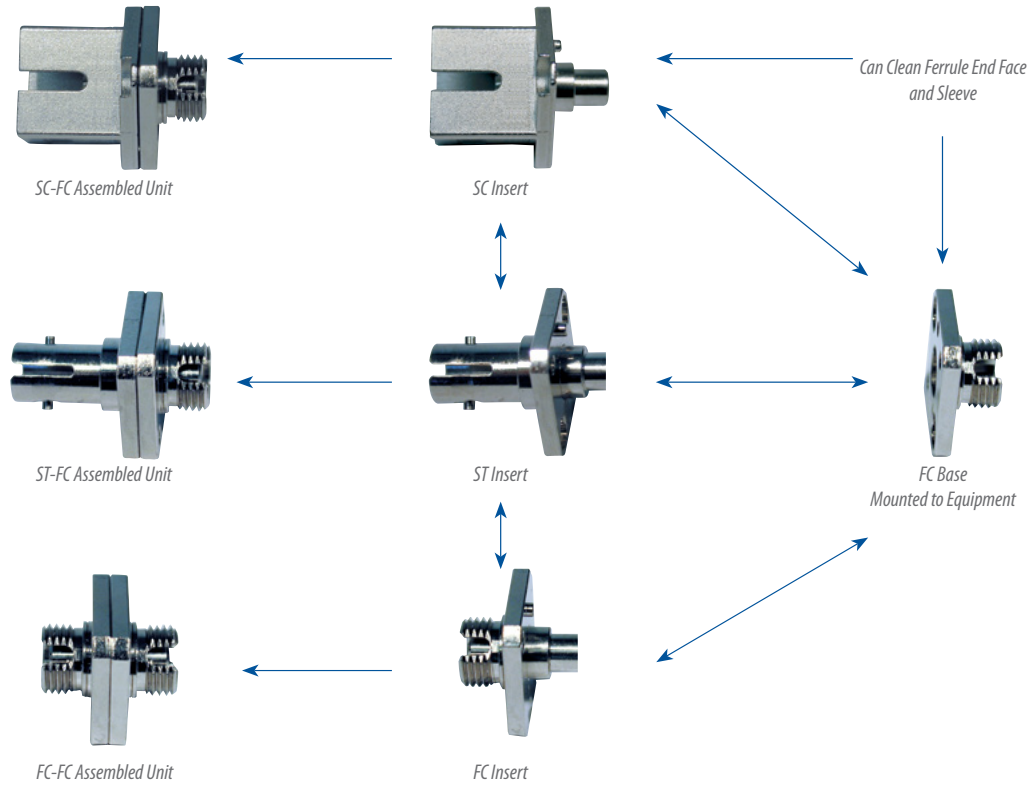
ATN-IN - SCULCU - 05 - Y020 - 001M ORDER CODE example

**Features:**

- Compact Design
- Custom colors available
- Custom assemblies available
- Variable Range 0-20dB



**SWITCHABLE ADAPTER**



**EASY SWITCHING ADAPTER INTERFACE**

The switchable adapter allows test equipment and optical module manufactures to easily change the output adapter interface from FC to ST.

For FC and SC, PC type and APC type are available.

**EASY TO CLEAN**

While changing the adapter interface the Switchable Adapter allows the end user to properly clean both the end face of the jumper on both of the adapters as well as the adapter sleeve without removing the entire adapter from the panel.

**ADAPTER CONFIGURATION**

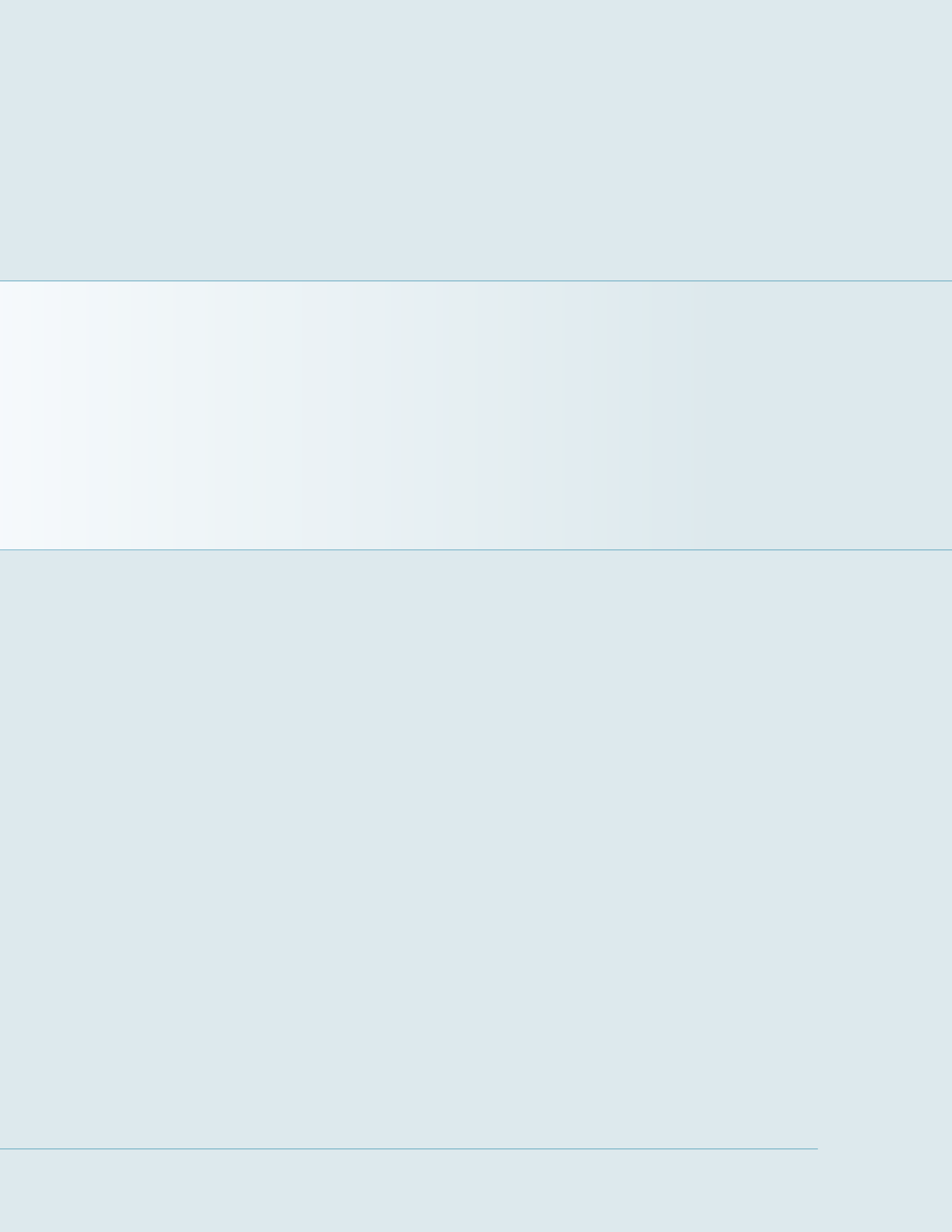
- FC PC to FC PC
- FC APC to FC APC
- FC PC to SC PC
- FC APC to SC APC
- FC PC to ST PC

CODE	SLEEVE CODE	KEY WIDTH CODE
321 FC to FC Switchable Adapter	1 Zirconia Straight Split	01 For PC Connector 2.15 +0.05/-0
322 FC to ST Switchable Adapter	2 Metal Straight Split	02 For APC Connector 2.05 ±0.02
323 FC to SC Switchable Adapter		

321-102 ORDER CODE example

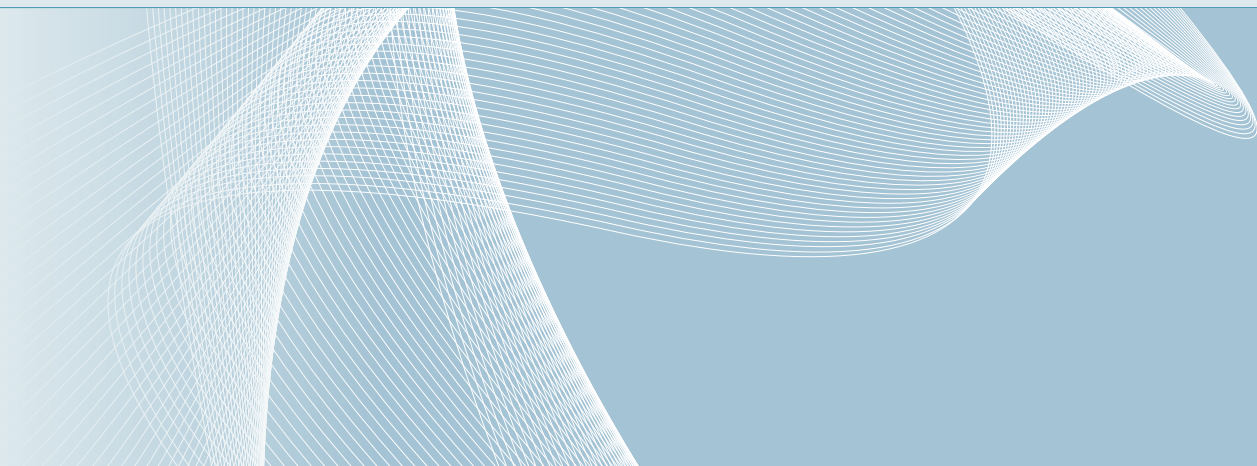
CODE	PART NUMBER	SLEEVE	KEY WIDTH
FC Switchable Adapter Insert	UA-50007-101	Zirconia	2.15/2.20
FC APC Adapter Insert	UA-50007-102	Zirconia	2.03/2.07
ST Switchable Adapter Insert	UA-50008-101	Zirconia	
SC PC Switchable Adapter Insert	UA-50009-101	Zirconia	
SC APC Adapter Insert	UA-50009-102	Zirconia	

UA-50007-101 ORDER CODE example



STANDARD CONNECTOR SERIES  
SMALL FORM FACTORS  
SPECIALTY PRODUCTS  
FERRULES AND SLEEVES  
POLISHING SYSTEMS

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## FERRULE AND SLEEVES

Zirconia Ferrules SC-APC and FC-APC	pg. 74
Zirconia Ferrules SC and FC Singlemode	pg. 74
Zirconia Ferrules SC and FC Multimode	pg. 75
Zirconia Ferrules ST Singlemode and Multimode	pg. 75
Zirconia Ferrules LC and MU Multimode	pg. 76
Zirconia Ferrules LC and MU Singlemode	pg. 76
Zirconia Sleeves	pg. 77

SC-APC and FC-APC

**SC/FC APC ZIRCONIA FERRULE**

SPECIFICATION

For Zirconia Ferrules SC-APC and FC-APC

<b>Material</b>	Zirconia
<b>Concentricity (Standard)</b>	Singlemode ≤ 1 micron
<b>Inner Diameter Tolerance</b>	Singlemode +1/-0 micron
<b>Outer Diameter Tolerance</b>	Singlemode ±0.5 micron
<b>Length Tolerance (No flange)</b>	10.5 ±0.05mm
<b>V-Groove</b>	60/90 ±5 degrees

Note: When following SENKO recommended procedures



Step Zirconia Ferrule  
SC-APC and FC-APC



Cone Zirconia Ferrule  
SC-APC and FC-APC

CONNECTOR	TYPE	END FACE	ID	FLANGE
C SC & FC Connectors	S Singlemode	AS APC Step	125 125µm	NN No Flange*
		AC APC Conical	1255 125.5µm	FA APC Flange*
			126 126µm	*Flange key width 1.35mm

CSAS - 1255 - NN ORDER CODE example

- Note:** 1. Custom length, inner and outer diameter dimensions available upon request  
2. \*0.5µm concentricity also available

**Features:**

- High performance and durability
- Low insertion loss
- Low back reflection
- Standard and custom configuration
- APC type with various endface configurations, as well as pre-angled endface for quick polishing and ultra low back-reflection

SC and FC Singlemode

**SC/FC SM UPC ZIRCONIA FERRULE**

SPECIFICATION

For Zirconia Ferrules SC and FC Singlemode

<b>Material</b>	Zirconia
<b>Concentricity (Standard)</b>	Singlemode ≤ 1 micron
<b>Inner Diameter Tolerance</b>	Singlemode +1/-0 micron
<b>Outer Diameter Tolerance</b>	Singlemode ±0.5 micron
<b>Length Tolerance (No flange)</b>	10.5 ±0.05mm
<b>Spherical Radius (Pre-Dome)</b>	20 + 5/-10
<b>V-Groove</b>	60/90 ±5 degrees

Note: When following SENKO recommended procedures



Zirconia Ferrule  
SC Singlemode



Zirconia Ferrule SC  
Singlemode No Flange

CONNECTOR	TYPE	END FACE	ID	FLANGE
C SC & FC Connectors	S Singlemode	PC Pre-dome	125 125µm	NN No Flange
			1255 125.5µm	F4 4 Slot Flange
			126 126µm	

CSPC - 1255 - NN ORDER CODE example

## SC/FC MM PC ZIRCONIA FERRULE

### SC and FC Multimode

#### SPECIFICATION

##### For Zirconia Ferrules SC and FC Multimode

<b>Material</b>	Zirconia
<b>Concentricity (Standard)</b>	Multimode ≤ 4 micron
<b>Inner Diameter Tolerance</b>	Multimode +4/-0 micron
<b>Outer Diameter Tolerance</b>	Multimode ±1 micron
<b>Length Tolerance (No flange)</b>	10.5 ±0.1mm
<b>Spherical Radius (Pre-Dome)</b>	20 + 5/-10
<b>V-Groove</b>	60/90 ±5 degrees

Note: When following SENKO recommended procedures



Zirconia Ferrule  
SC and FC Multimode



Zirconia Ferrule  
SC and FC Multimode No Flange

CONNECTOR	TYPE	END FACE	ID	FLANGE
C SC & FC Connectors	M Multimode	PC Pre-dome	127 127µm	NN No Flange
			144 144µm	F4 4 Slot Flange
			230 230µm	

CMPC - 127 - NN ORDER CODE example

Note: Custom length, inner and outer diameter dimensions available upon request

## ST SM/MM ZIRCONIA FERRULE

### ST Singlemode and Multimode

SPECIFICATION	SINGLEMODE	MULTIMODE
---------------	------------	-----------

##### For Zirconia Ferrules ST

<b>Material</b>	Zirconia	
<b>Concentricity (Standard)</b>	≤1 micron	≤ 4 micron
<b>Inner Diameter Tolerance</b>	+1/-0 micron	+4/-0 micron
<b>Outer Diameter Tolerance</b>	±0.5 micron	±1 micron
<b>Length Tolerance (No flange)</b>	12.7 +/- 0.05	12.70 +/-0.1
<b>Spherical Radius (Pre-Dome)</b>	20 + 5/-10	
<b>V-Groove</b>	60/90 ±5 degrees	

Note: When following SENKO recommended procedures



For ST Singlemode Connector  
ø 2.499mm No Flange

CONNECTOR	TYPE	END FACE	ID	FLANGE
T ST	S Singlemode	PC Pre-dome	125 125µm	NN No Flange
	M Multimode		126 126µm	
			127 127µm	

TSPC - 125 - NN ORDER CODE example



LC and MU Singlemode

**LC/MU SM ZIRCONIA FERRULE**

SPECIFICATION

For Zirconia Ferrules LC and MU Singlemode

<b>Material</b>	Zirconia
<b>Concentricity (Standard)</b>	Singlemode ≤1 micron
<b>Inner Diameter Tolerance</b>	Singlemode +1/-0 micron
<b>Outer Diameter Tolerance</b>	Singlemode ±0.5 micron
<b>Length Tolerance (No flange)</b>	6.5 ±0.5mm (MU) 6.5 ±0.7mm (LC)
<b>V-Groove</b>	60/90 ±5 degrees



Zirconia Ferrule  
LC Singlemode



Zirconia Ferrule  
MU Singlemode

Note: When following SENKO recommended procedures

CONNECTOR	TYPE	END FACE	ID	FLANGE
M MU Connectors	S Singlemode	FL Flat	125 125µm	NN No Flange
L LC Connectors			1255 125.5µm	FM MU Flange
			126 126µm	FL LC Flange

LSFL - 126 - FL ORDER CODE example

LC and MU Multimode

**LC/MU MM ZIRCONIA FERRULE**

SPECIFICATION

For Zirconia Ferrules LC and MU Multimode

<b>Material</b>	Zirconia
<b>Concentricity (Standard)</b>	Multimode ≤4 micron
<b>Inner Diameter Tolerance</b>	Multimode +4/-0 micron
<b>Outer Diameter Tolerance</b>	Multimode ±1 micron
<b>Length Tolerance (No flange)</b>	6.5 ±0.5mm (MU) 6.5 ±0.7mm (LC)
<b>V-Groove</b>	60/90 ±5 degrees



Zirconia Ferrule  
LC Multimode



Zirconia Ferrule  
MU Multimode

Note: When following SENKO recommended procedures

CONNECTOR	TYPE	END FACE	ID	FLANGE
M MU Connectors	M Multimode	FL Flat	127 127µm	NN No Flange
L LC Connectors			144 144µm	FM MU Flange
				FL LC Flange

LMFL - 127 - FL ORDER CODE example

**Note:** Custom length, inner and outer diameter dimensions available upon request

## ZIRCONIA SLEEVES

Zirconia sleeves and tubes are precision manufactured according to strict quality and performance standards. They are available for singlemode and multimode applications. Reliable mating is assured with strictly controlled

dimensions and withdrawal force. Standard styles for FC include SC, FC, ST, D4, LC and MU, with custom designs also available. Diagonal split sleeves are available for superior durability requirements. Tubes are also available.

SPECIFICATION	ST	SC, FC	LC, MU
<b>Material</b>	Zirconia		
<b>Withdrawal Force</b>	200gf~600gf		100gf~250gf
<b>Insertion Loss</b>	Max 0.5dB, 0.1dB typical or better		
<b>Durability</b>	<0.02dB deviation after 1000 matings, <0.02dB after temperature cycle test		
<b>Outer Diameter</b>	3.2 ±0.02mm		1.62 ±0.01mm
<b>Inner Diameter</b>	(2.49)mm		(1.246)mm
<b>Length</b>	10.1 ±0.1mm	11.4 ±0.1mm	6.8 + 0/-0.1mm
<b>Slit Width</b>	Max 0.5 ±0.01mm		Max 0.2 ±0.01mm
<b>Chamfer</b>	2 x R0.1		

### For Zirconia Sleeves ST, SC, FC, LC and MU

Note: When following SENKO recommended procedures

SLEEVE CODE	INNER DIAMETER	LENGTH
ZRS Straight Split Sleeve	25 (2.49)mm	101 10.1mm ST
		114 11.4mm SC & FC

ZRS - 25 - 114 ORDER CODE example

- Note:** 1. Outer and inner diameter dimensions in ( ) are to be considered as references, which shall be adjusted to the required withdrawal force as specified  
2. Custom configurations and dimensions available upon request

SLEEVE CODE	INNER DIAMETER	LENGTH
ZRS Straight Split Sleeve	12 (1.25)mm	680 6.8mm for LC/MU

ZRS - 12 - 680 ORDER CODE example

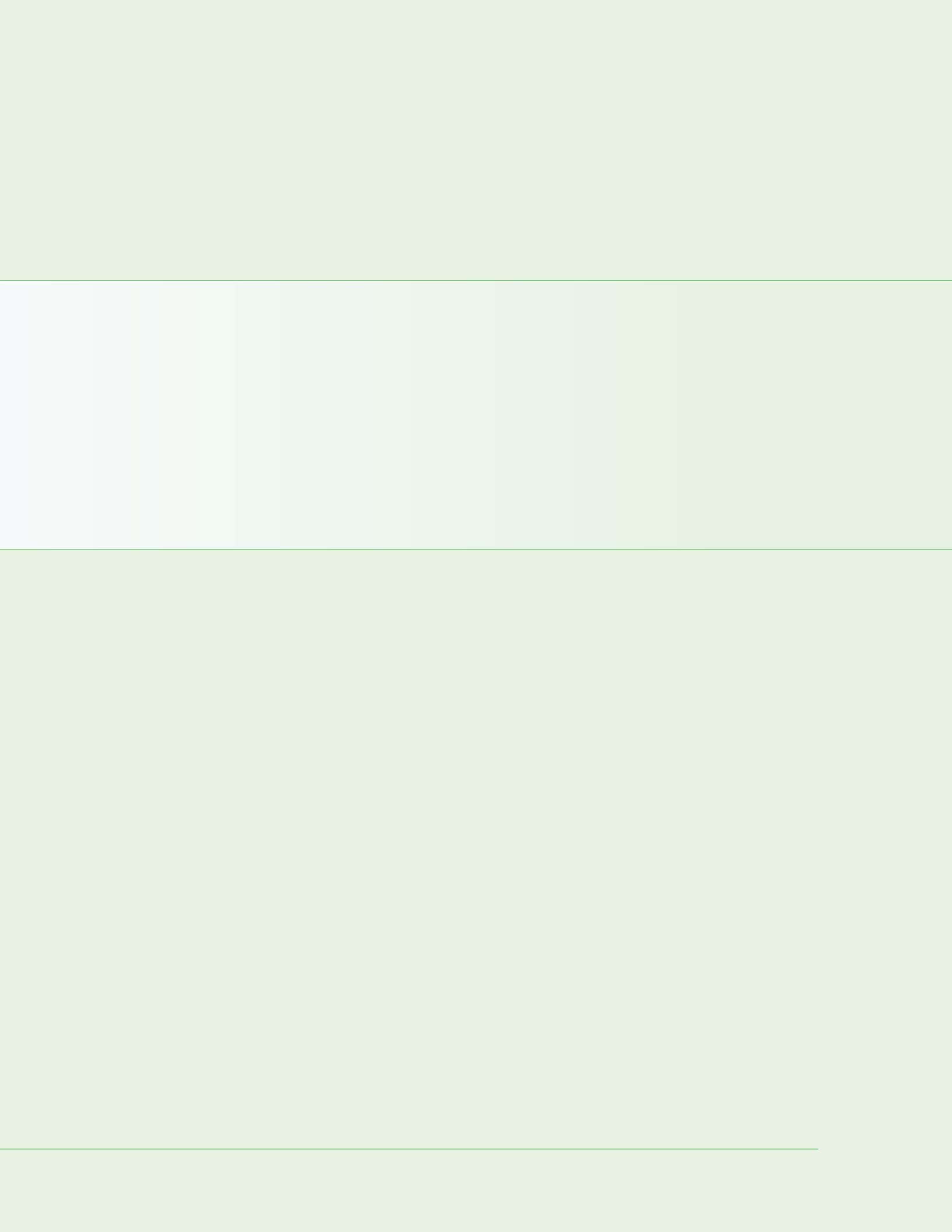
- Note:** 1. Outer and inner diameter dimensions in ( ) are to be considered as references, which shall be adjusted to the required withdrawal force as specified  
2. Zirconia tubes also available  
3. Custom configurations and dimensions available upon request



For LC and MU Adapters Straight Split



For SC and FC Adapters Straight Split



STANDARD CONNECTOR SERIES

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SMALL FORM FACTORS

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SPECIALTY PRODUCTS

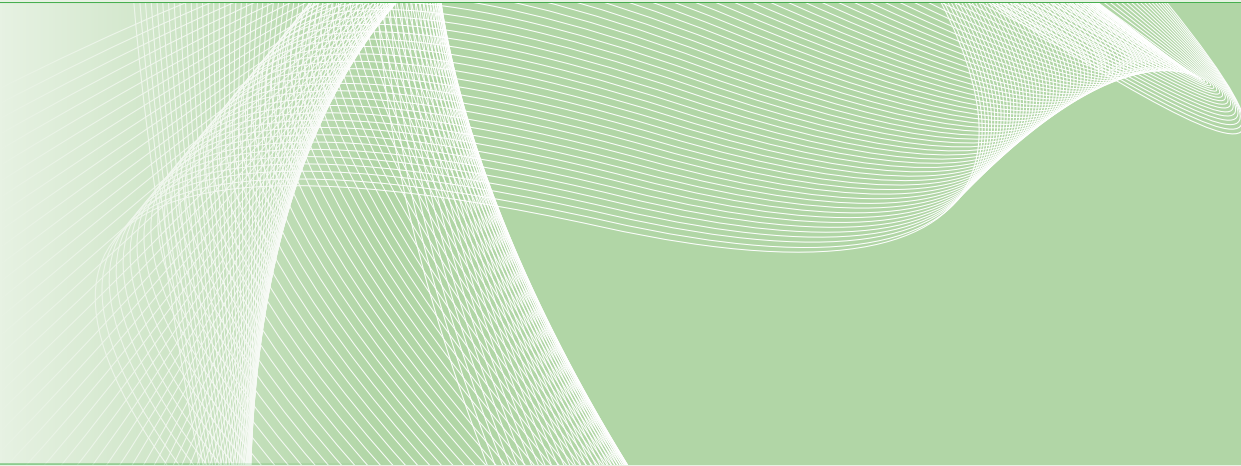
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FERRULES AND SLEEVES

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POLISHING SYSTEMS

pg. 79



## POLISHING SYSTEMS

Polishing Rubber Pads

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Polishing Films

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Interferometers

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Microscopes

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## RUBBER POLISHING PADS

All rubber pads are certified for hardness and parallel flatness. Pads are available with durometer specifications and color coding for ease of identification.



Polishing Rubber Pads

### Features:

- Long lasting
- Varying durometers for every application
- Color coded for quick identification
- Ideal parallel flatness

### SPECIFICATION

#### For Polishing Rubber Pads

<b>Thickness</b>	0.5mm ~ 5.5mm
<b>Parallelism</b>	± 0.05mm
<b>Durometer</b>	40 ~ 90
<b>Durometer Tolerance:</b>	± 2.5

Note: 4.8mm, 4.9mm thicknesses and custom types available upon request.

PART NUMBER	COLOR	DESCRIPTION
RUGNG55.0-90	Black	5" x 5mm 90 Duro
RUGNG55.0-85	Grey	5" x 5mm 85 Duro
RUGNG55.0-80	Green	5" x 5mm 80 Duro
RUGNG55.0-75	Brown	5" x 5mm 75 Duro
RUGNG55.0-70	Violet	5" x 5mm 70 Duro
RUGNG55.0-65	Dark Blue	5" x 5mm 65 Duro
RUGNG55.0-60	Blue	5" x 5mm 60 Duro
RUGNG55.0-55	Rust	5" x 5mm 55 Duro
RUGNG55.0-50	Red	5" x 5mm 50 Duro
RUGNG55.0-45	Burgundy	5" x 5mm 45 Duro
RUGNG55.0-40	Orange	5" x 5mm 40 Duro

RUGNG55.0-90 ORDER CODE example

## Polishing Films

## POLISHING FILMS

SENKO Polishing Films are available with surface textures and particle density to suit the end user's performance requirements. Films are lot tested for quality, consistency and longevity. A range of films are available for epoxy removal, grinding, fine polish and cleaning of industry standard fiber optic connectors and ferrules.

### Features:

- Consistent particle deposition
- Various film diameters
- Various particle sizes



MT Polishing Films

POLISHING FILMS PART NUMBER	DESCRIPTION	DIAMETER
LFSIC-300-XOR-N	Silicon Carbide, 30.0µm	(X) Specify 4" or 5"
LFSIC-150-XOR-N	Silicon Carbide, 15.0µm	(X) Specify 4" or 5"
LFSIC-090-XOR-N	Silicon Carbide, 9.0µm	(X) Specify 4" or 5"
LFDA-090-XOR-N	Diamond, 9.0µm	(X) Specify 4" or 5"
LFDA-060-XOR-N	Diamond, 6.0µm	(X) Specify 4" or 5"
LFDA-030-XOR-N	Diamond, 3.0µm	(X) Specify 4" or 5"
LFDA-010-XOR-N	Diamond, 1.0µm	(X) Specify 4" or 5"
LFPOS-000-XOR-N	UPC Final Polishing Film	(X) Specify 4" or 5"
LFCL-000-XOR-N	Cleaning Film	5 inches

MT POLISHING FILMS PART NUMBER	DESCRIPTION
LFSIC-300-50R-P	PSA Type, Silicon Carbide, 30.0µm
LFSIC-150-50R-P	PSA Type, Silicon Carbide, 15.0µm
LFSIC-030-50R-P	PSA Type, Silicon Carbide, 3.0µm
LFSC-030-50R-P	PSA Type, Flocked Silicon Carbide, 3.0µm
LFFAO-010-50R-P	PSA Type, Flocked Aluminum Oxide, 1.0µm
LFFAO-005-50R-P	PSA Type, Flocked Aluminum Oxide, 0.5µm
LFFCO-005-50R-P	PSA Type, Flocked Cerium Oxide, 0.5µm
LSS-1	Colloidal Silica Suspension

LFSIC-300-50R-P ORDER CODE example



## POLISHING FILMS

### FOS-01 Final Polish Series

Final Polishing Film, FOS-01 is a highly efficient final polishing film formulated using ultra-fine particles which are uniformly deposited on a polyester film surface, without irregular height protrusions. FOS-01 is specifically designed for

polishing fiber optic connector ferrules used in high performance applications.

#### SPECIFICATION

##### For FOS-01

<b>Particle Size</b>	< 0.1µm
<b>Coating Weight</b>	6.0g/m <sup>2</sup>
<b>Film Surface Roughness</b>	0.15µm
<b>Polisher</b>	All SENKO APC Series Polishers
<b>Return Loss</b>	< - 55dB
<b>Fiber Height</b>	0~50nm
<b>Radius of Curvature</b>	10~25mm
<b>Apex Offset</b>	< 50µm

*Note: U.S. Patented*

#### Features:

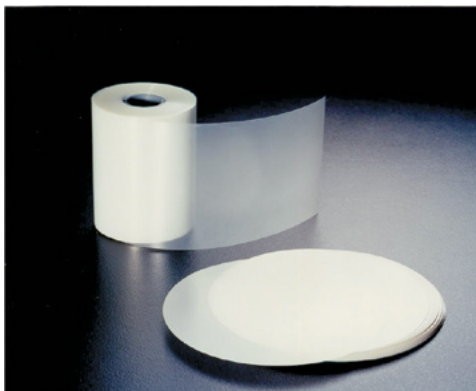
- Easy to use
- Clean slurry-free work environment
- Used for high performance applications
- Ultra-fine polishing particles < 0.1µm
- Excellent uniformity



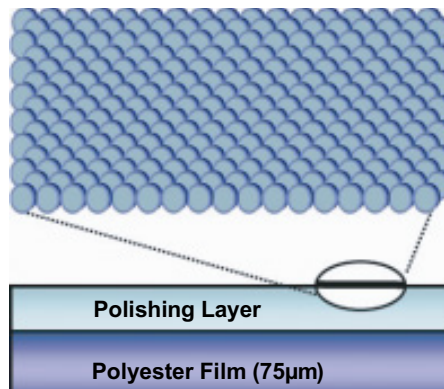
FOS-01 Series

POLISHING FILM FOS-01	DESCRIPTION
LFFOS-000-50R-N	UPC Final Polishing Film, 5 Inch Diameter
LFFOS-000-60S-N	UPC Final Polishing Film — 6 x 6 Inch Square

LFFOS-000-50R-N ORDER CODE example



FOS-01 Series



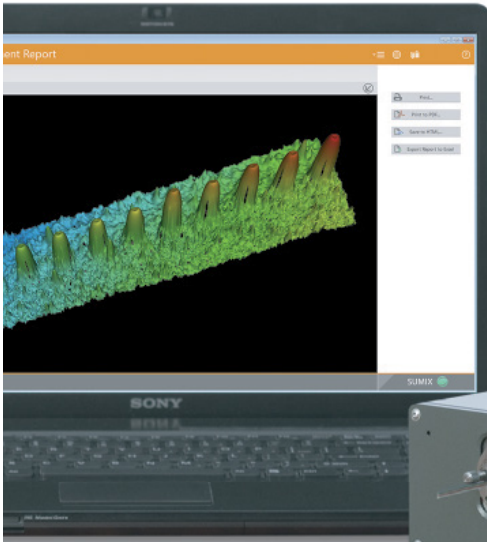
Geometry Measurements

**SUMIX INTERFEROMETERS**

**3D MICROSCOPY**  
*INTERFEROMETERS*



for Fiber Optic Connector Surface Inspection



Sumix interferometers are designed to be utilized for detailed measurements of end face geometry and inspection of fiber optic ferrules, patch cords, pigtails or bare fiber. It is possible to follow test criteria laid out by IEC and Telcordia or your own custom standards. Results are stored into a database and can be accessed for report generation and measurement traceability. Sumix interferometers combine high-resolution and accurate measurements with a modern software suite for ease-of-use and production efficiency.

**Features:**

- Single and Multi-fiber connectors
- Autofocus
- Automated PASS/FAIL verdict
- Detailed 2D/3D surface profiles
- Scratch detection
- Connects to tablets or laptops
- High resolution optics
- Database storage
- One-click operation
- Large field of view

LIST OF CONNECTORS SUPPORTED

Optimal for Connectors	MAX-QS+	MAX-QM-B+	MAX-Quantum	WIZ-QS-110
	Single fiber and MT-RJ	Single and multi-fiber	Single and multi-fiber	Single fiber
ST, FC, SC (PC and APC)	○	○	○	○
MU, LC (PC and APC)	○	○	○	○
E2000™ (PC and APC)	○	○	○	○
MIL-ST (M83522/16)	○	○	○	○
MIL-ST (83522)	○	○	○	○
M29504/14 (MIL-PRF-29504/14)	○	○	○	○
SMA 905	○	○	○	
MT-RJ (PC and APC)	○	○	○	
MT12 - MT72 (PC and APC)		○	○	
MT16, MT32 (PC and APC)			○	
MTP®/MPO(PC and APC)		○	○	
MTP®/MPO (12-72 fiber and 16-32 fiber; PC and APC) with testing guide hole parallelism			○	

SPECIFICATION				
Lateral Resolution	1.1µm	2.2µm	1.47µm	2.5µm
Measurement Time*	2 sec (PC)	3 sec (MT12) 1 sec (Single Fiber)	7 sec (MT12) 1.4 sec (Single Fiber)	1.8 sec
Field of View	1.1 x 0.9mm	5.6 x 3.5mm	6.0mm x 4.4mm	1.2 x 0.9mm
Measurement Mode	Phase Shift and White Light			
Anomalies Detection	Yes	No	Yes	No
Microscopy Mode	Yes	No	Yes	No
Power Supply	External, USB 3.0 Cable, 12 V DC Power Adapter			
Weight	3.9 kg (8.6 lbs)	3.8 kg (8.4 lbs)	4.8 kg (10.6 lbs)	3.9 kg (8.6 lbs)
Dimensions (H x W x L)	103 x 137 x 183mm (4.06 x 5.39 x 7.2 in)	103 x 137 x 183mm (4.06 x 5.39 x 7.2 in)	181 x 213 x 117mm (7.13 x 8.39 x 4.61 in)	150 x 120 x 90mm (5.9 x 4.72 x 3.5 in)

\* Measurement time may vary depending on computer performance and connector end face shape.

E2000 is a trademark of Diamond SA  
MTP is a registered trademark of US Conec Ltd.  
CS is a registered trademark of Senko Advanced Components Inc.

## SUMIX MICROSCOPE

### End Face Inspection



Connector end face inspection is a critical step in manufacturing facilities and field installations. Various studies have indicated that contaminated connectors are the leading cause of network failures. With the Sumix MANTA inspection scope, testing is made simple with

one button PASS/FAIL analysis of a wide range of connectors. With its wide field of view and software analysis, the Manta is the perfect tool to locate scratches, defects and contamination for multi-fiber assemblies for both bulkheads and connectors ends.

**Features:**

- Single and Multi-fiber connectors
- Automated PASS/FAIL verdict
- High-resolution optics
- Reinforced stainless steel housing
- One button testing
- Autofocus
- Extended working distance

SPECIFICATION	SMX-MANTA-W+	SMX-MANTA+
<b>Primarily Designed for Inspection of</b>	Single Fiber, Multi-Fiber and SMA Connectors	Single Fiber, Multi-Fiber and SMA Connectors
<b>Compatible with</b>	Desktop PC, Laptop, Tablet	Desktop PC, Laptop, Tablet
<b>Field of View</b>	4.1 x 3.0mm	2.4 x 1.8mm
<b>Defect Size Detection</b>	0.75µm	0.75µm
<b>Optical Resolution</b>	1.8µm	1.8µm
<b>Magnification</b>	260x	290x
<b>Focus</b>	Autofocus	Autofocus
<b>Camera Type</b>	Digital, USB 3.0	Digital, USB 3.0
<b>Power Source</b>	USB 3.0 Port of PC	USB 3.0/2.0 Port of PC
<b>Cable</b>	USB 3.0, Detachable	USB 3.0, Detachable
<b>Dimensions (H x W x L)</b>	70 x 28 x 246mm (2.52 x 1.1 x 9.17 in)	64 x 28 x 233mm (2.52 x 1.1 x 9.17 in)
<b>Weight</b>	435g (0.96 lbs)	425g (0.94 lbs)
<b>External Test Button</b>	Yes	Yes
<b>Housing Material</b>	Aluminum Body and Stainless Steel Barrel	Aluminum Body and Stainless Steel Barrel



SENKO Advanced Components, Incorporated is a recognized global leader in the design, production, sales, marketing and distribution of over 1000 fiber optic products. It is headquartered in Boston, Massachusetts, USA and is the fiber optic division of the Japan based SENKO Group.

The SENKO Group is a family of companies serving clients in the Electronic / Electrical, Telecom / Fiber Optic, and Automotive / Industrial industries. We continually expand our product line to suit your business needs, both through innovations in product design and via international partnerships. Our top quality products are backed with superior technical support and logistic services provided by our worldwide facilities.



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