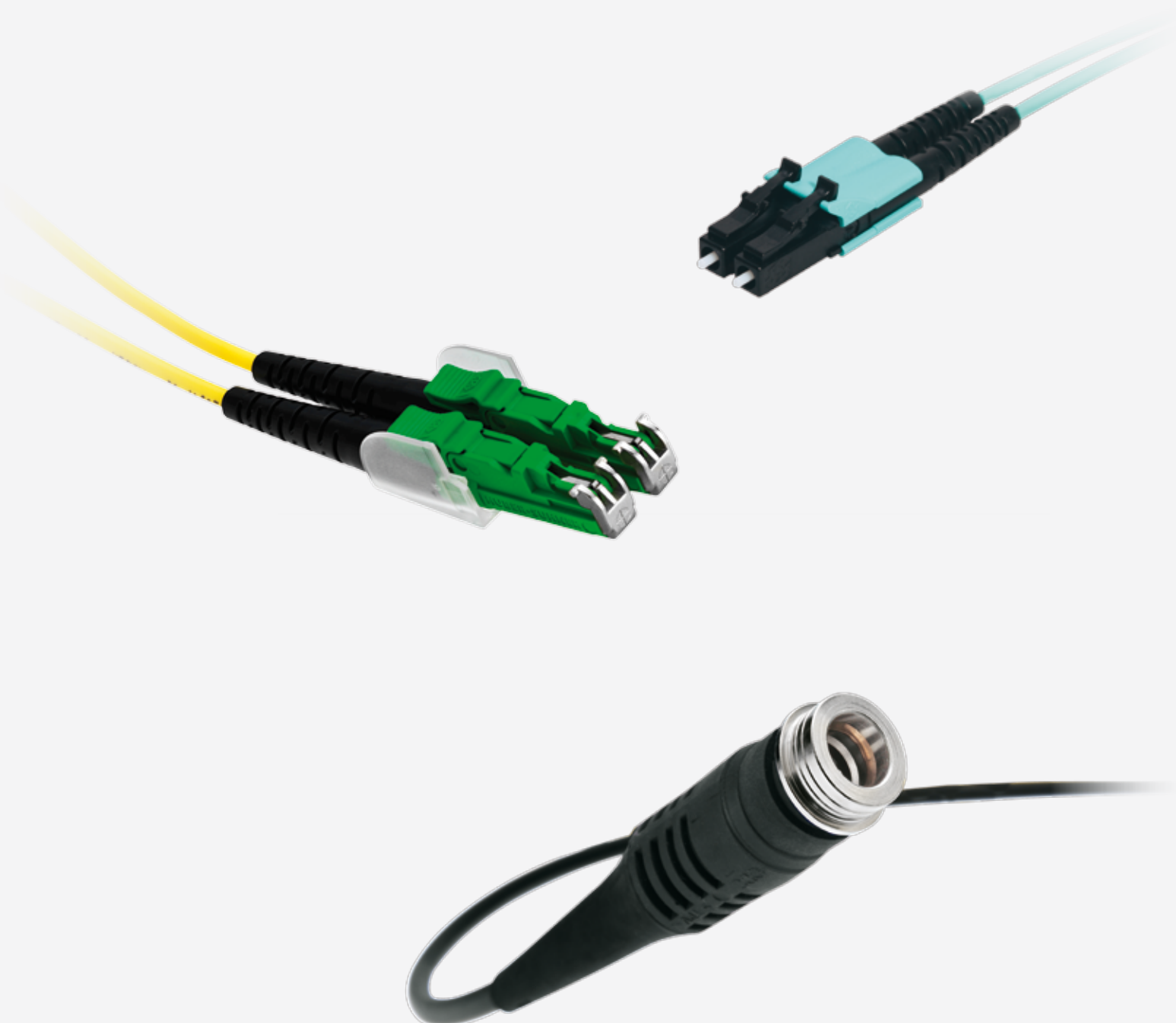
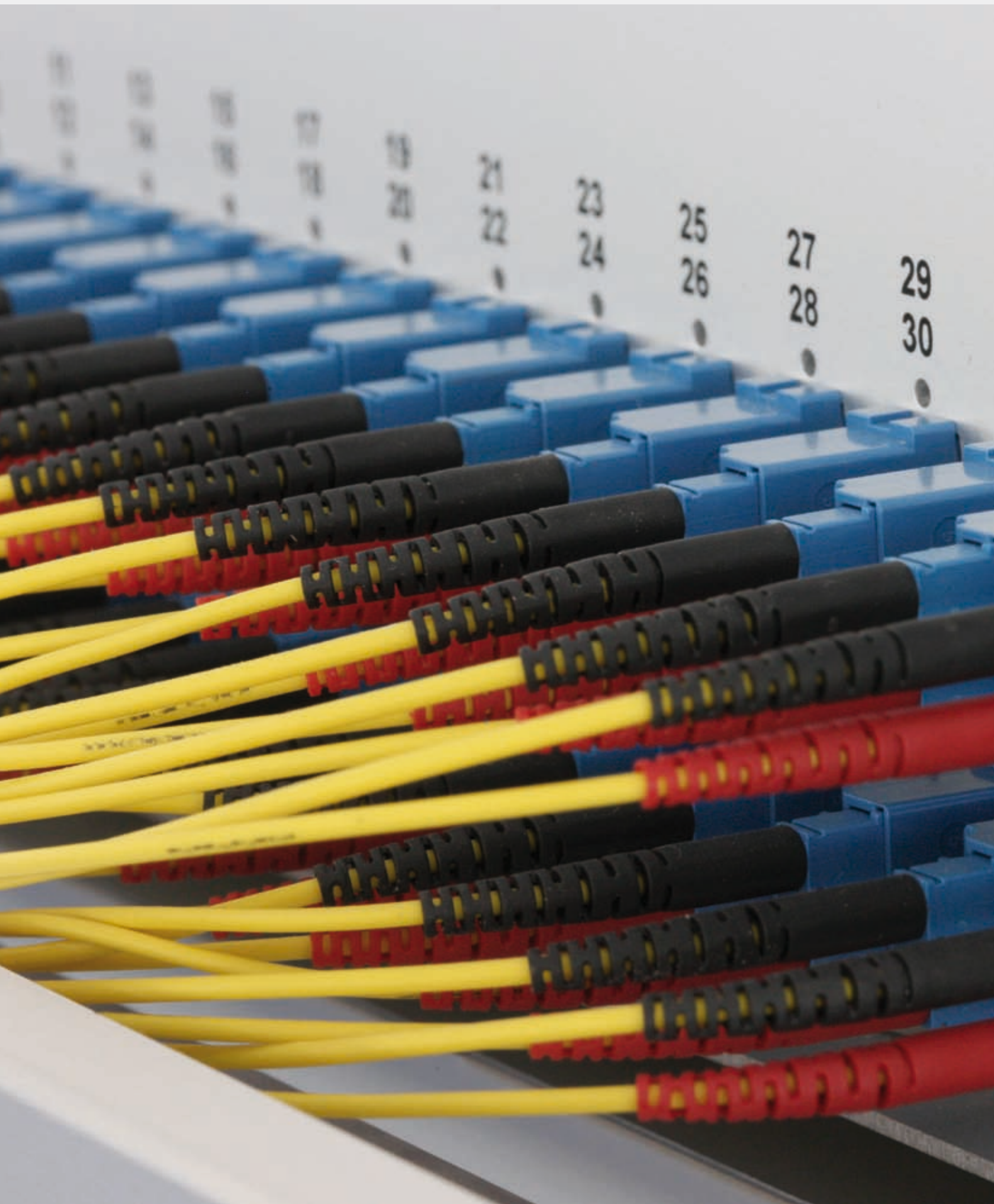


Fiber Optic Connectors and Assemblies

Edition 2010



Excellence in Connectivity Solutions





Your partner for system solutions

The HUBER+SUHNER Group is a leading global supplier of components and systems for electrical and optical connectivity.

Our customers in Communications, Industrial and Transportation markets appreciate that we are specialists with detailed knowledge of practical applications. We offer technical expertise in radio frequency technology, fiber optics and low-frequency under one roof, thus providing a unique basis for continual innovation focused on the needs of our customers all over the world.

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Connectors and Adapters

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Connector Overview



	see page 12	see page 18	see page 24	see page 30	see page 33
Connector type	LSH (E-2000™)	LX.5	LC-HQ	SC	MU
Compliance	IEC 61754-15 TIA 604-16	IEC 61754-23 TIA 604-13	IEC 61754-20 TIA 604-10-A	IEC 61754-4 TIA 604-3	IEC 61754-6
Tuning					
In steps of	60°	45°	45°	45°	90°
Mech./therm. perform.					
Tensile load [N]	100	100	100	100	70
Mating durability [cycles]	1000	1000	1000	1000	1000
Operating temperature	-40° to +85 °C	-40° to +85 °C	-40° to +85 °C	-40° to +85 °C	-40° to +85 °C
Flammability					
UL 94 V-0	•	•	•	•	•
Colour of housing					
SM PC	blue	blue	blue	blue	brown
SM APC	green	green	green	green	
MM	beige	beige	black/beige	beige	
OM3	beige	beige	black/aqua	aqua	
Brass nickel-plated					
Fiber type					
E9/125	•	•	•	•	•
G50/125/OM3	•	•	•	•	•
G62.5/125	•	•	•	•	•
HCS200/230	•	-	-	•	-
Features					
One-piece design	•	•	•	•	-
Automatic metal shutter	•	•	-	-	-
SFF connector	-	•	•	-	•
Colour coding	•	•	•	-	-
For HighPower applications	•	•	•	•	-
Cable diameter [mm]	0.6 up to 3.5	0.6 up to 2.8	0.6 up to 2.8	0.6 up to 3.5	0.6 up to 2.0
Insertion loss [dB]*					
MM/OM3	typ. ≤	0.20	0.20	0.20	0.20
	97 % ≤	0.50	0.50	0.50	0.50
SM 0.1 dB	typ. ≤	0.06	0.06	0.06	n/a
	97 % ≤	0.15	0.15	0.15	n/a
SM High-End	typ. ≤	0.12	0.12	0.12	0.12
	97 % ≤	0.25	0.25	0.25	0.25
SM LAN-Eco	typ. ≤	0.20	0.20	0.20	0.20
	97 % ≤	0.45	0.45	0.45	0.45
Return loss [dB]					
Singlemode	PC >	45	45	45	45
	UPC >	50	50	50	50
* each-to-each	APC >	85	85	85	-

Connector Overview



see page 34

see page 36

see page 36

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FCPC

ST-LEAN

ST-HQ

ST-SEC

LSA (DIN)

FSMA

MT-RJ

IEC 61754-13
TIA 604-4-A

IEC 61754-2
TIA 604-2

IEC 61754-2
TIA 604-2

IEC 61754-2
TIA 604-2

IEC 61754-3
DIN 47256

IEC 61754-22

IEC 61754-18
TIA 604-12

PC infinitely

APC 60°

60°

100

100

100

100

100

100

70

1000

1000

1000

1000

1000

1000

500

-40° to +85 °C

-40° to +85 °C

-40° to +85 °C

-40° to +85 °C

-40° to +85 °C

-40° to +85 °C

-25° to +70 °C

black

black

• (black nut)

•	-	•	•	•	-	•
•	•	•	•	•	•	•
•	•	•	•	•	•	•
•	-	•	-	-	•	-

•	•	•	•	•	•	-
-	-	-	-	-	-	-
-	-	-	-	-	-	•
-	-	-	-	-	-	-
-	-	-	-	-	-	-

0.6 up to 3.5 0.6 up to 3.5 0.6 up to 3.5 0.6 up to 3.5 0.6 up to 3.5 0.6 up to 4.5 0.6 and 1.7

0.20	0.25	0.20	0.20	0.20	1.00	0.25
0.50	0.70	0.50	0.50	0.50	1.50	0.70
0.06	n/a	n/a	n/a	n/a	n/a	n/a
0.15	n/a	n/a	n/a	n/a	n/a	n/a
0.12	n/a	n/a	n/a	0.12	n/a	n/a
0.25	n/a	n/a	n/a	0.25	n/a	n/a
0.20	n/a	0.20	0.20	0.20	n/a	0.25
0.45	n/a	0.45	0.45	0.45	n/a	0.70

45	-	45	45	45	-	35
50	-	50	50	50	-	35
85	-	-	-	85	-	-

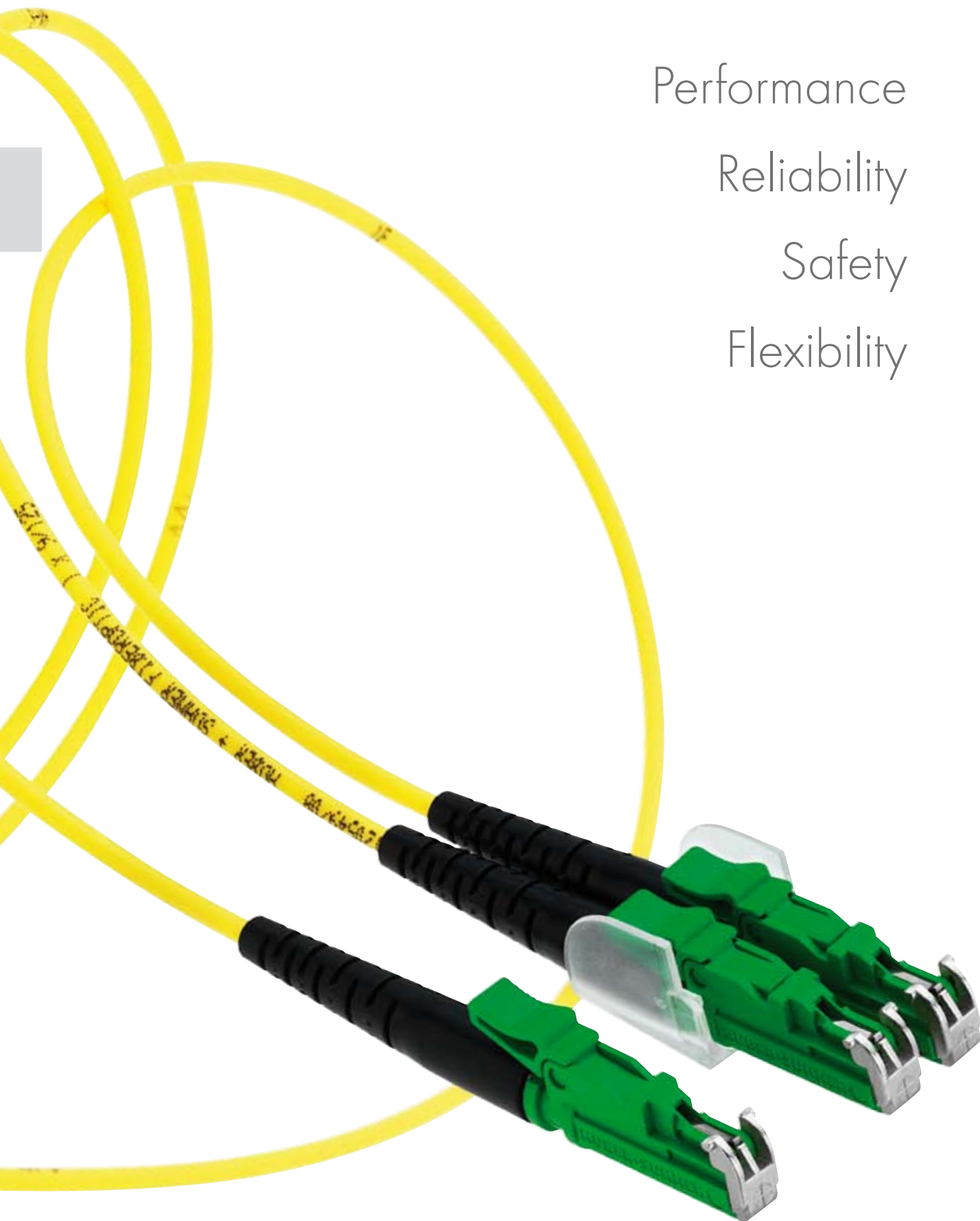
Connector Code

Connector type	Ferrule type	Version	Number of connections	Description
FCPC-				FCPC connector
FLC-				LC connector
FLSH-				LSH (E-2000™) connector
FLSA-				LSA connector
FLX5-				IX.5 connector
FMTJ-				MT-RJ connector
FMU-				MU connector
FSC-				SC connector
FSMA-				FSMA connector
FST-				ST connector
ODCE -				ODC extension
ODCP -				ODC plug
ODCS -				ODC socket
SPEC-				special connector
	CMAX-			for SC
	LEAN-			lean
	SEC-			security
	M/M-			metal ferrule / metal body
	Z/M-			zirconia ferrule / metal body
	Z/K-			zirconia ferrule / plastic body
	2000-			for E-2000™
	A-			singlemode 9/125
	B-			multimode 50/62.5/125
	D-			HCS 200/230
	E-			PCS 200/300
	H-			premium
	L-			OM3
		001 to 099		PC version with flat ferrule
		100 to 199		PC version with radius ferrule
		600 to 699		APC version
			-XX	no. of connections (with one connection, nothing stated)

Adapter Code

Connection side 1	Connection side 2	Flange type	Sleeve type	Number of connections	Description
FCPC-					FCPC
FLC-					LC
FLSH-					LSH (E-2000™)
FLSA-					LSA
FLX5-					LX.5
FMTJ-					MT-RJ
FMU-					MU
FSC-					SC
FSMA-					SMA
	FCPC-				FCPC
	FLC-				LC
	FLSH-				LSH (E-2000™)
	FLSA-				LSA
	FLX5-				LX.5
	FMTJ-				MT-RJ
	FMU-				MU
	FSC-				SC
	FSMA-				SMA
	REC-				receptacle
		A-			without flange
		B-			2 loose nuts as flange
		C-			1 loose, 1 fixed nut
		D-			2-hole flange, fixed
		E-			4-hole flange, fixed
		F-			1 loose nut as flange
			0xx		without sleeve
			1xx		zirconia sleeve
			2xx		phosphor-bronze sleeve
			3xx		OM3
			6xx		APC, zirconia sleeve
				-XX	no. of connections (with one connection, nothing stated)

E-2000™ is manufactured under licence of DIAMOND SA, CH LOSONE



Performance

Reliability

Safety

Flexibility

LSH (E-2000™)

E-2000™ is a high performance connector which meets the highest standards by excellence in design and manufacturing processes. Only high quality and high precision materials are used to guarantee connections at the highest level. HUBER+SUHNER E-2000™ products meet the international standards IEC 61754-15 and TIA 604-16 and are naturally RoHS compliant.



High performance

The E-2000™ has proven its performance world-wide in CATV and telecommunication networks. Quality and performance are in a class of its own. With a high precision Zirconia full ceramic ferrule an insertion loss of 0.1 dB and an APC return loss of more than 85 dB, E-2000™ is especially suited for installation in global high performance networks.

High reliability

The fully controlled manufacturing processes stand for the incomparably reliability of HUBER+SUHNER E-2000™-products. Not only the connector-production is quality proof; HUBER+SUHNER advances quality and reliability a step further. HUBER+SUHNER E-2000™ connectors are terminated only by certified LAS partners. These local assembly shops have been chosen because of their profound knowledge and ability to meet the highest quality standards.

High safety

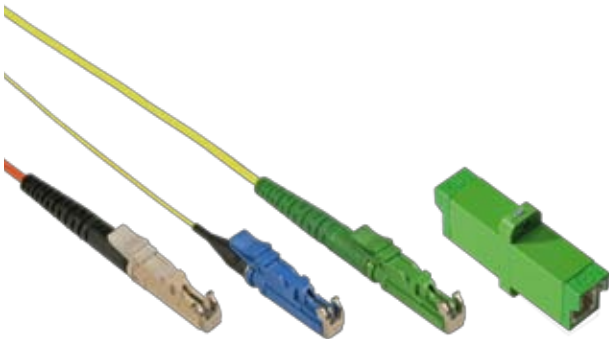
In addition to high performance, E-2000™ offers safety and time savings. With its automatic full metal shutters, E-2000™ conforms to the highest safety requirements in all current laser classes. Full metal shutters are essential in high power applications. All optical functional parts are protected against mechanical damage and dust. Easily establish permanent connections by simply removing the lock-up-lever. This prevents any accidental disconnecting and allows easy and safe handling.

High flexibility

HUBER+SUHNER offers a complete range of E-2000™-products that fit every application. The mechanical and colour coding system can be changed both at the connector and at the adapter. This system prevents interconnection errors and saves time during installation and maintenance.

Now, not only single circuit designs can profit from E-2000™'s outstanding features; the newly designed duplex connectors and adapters allow time and space savings.

LSH (E-2000™)



Features

- Latched Push-Pull connector
- Automatic metal shutter in connector and adapter for dust protection and laser safety
- One-piece design for easy termination
- Colour coding of connector and adapter
- Mechanical coding of connector and adapter
- Ideal for HighPower applications
- Switchable duplex clips

Ordering information: LSH connector, uncoded



Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
SM	APC	0.12/0.25	≤ 3.5	FLSH-2000-A608
SM premium	APC	0.06/0.15	≤ 3.5	FLSH-2000-H600



Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
SM	PC/UPC	0.12/0.25	≤ 3.5	FLSH-2000-A105
SM premium	PC/UPC	0.06/0.15	≤ 3.5	FLSH-2000-H101



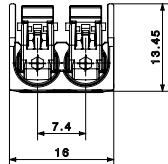
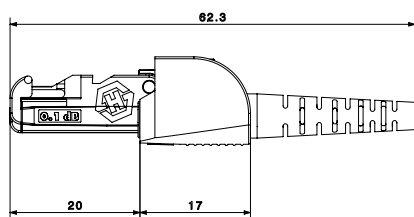
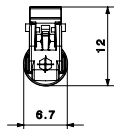
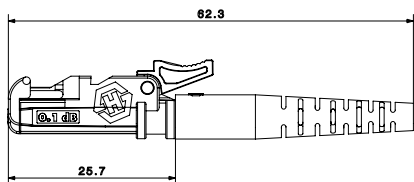
Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
G50/125, G62.5/125	PC	0.2 / 0.5	≤ 3.5	FLSH-2000-B103
HCS200/230	PC	0.3 / 0.75	≤ 3.5	FLSH-2000-D101

¹⁾ IEC 61300-3-34 method 2

Ordering information: LSH accessories





Type	Material	Packing unit
FLSH-DUP-CLIP	Plastic	100 pieces





LSH (E-2000™)

Ordering information: LSH adapter, uncoded, zirconia ceramic sleeve

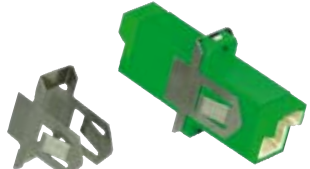
Adapter type simplex with integrated fixing springs		Colour	Type
	compact SM	blue	FLSH-FLSH-A100
	compact APC	green	FLSH-FLSH-A600
	compact SM HighPower 0.1 dB	blue	FLSH-FLSH-A110
	compact SM APC HighPower 0.1 dB	green	FLSH-FLSH-A610
	compact MM	beige	FLSH-FLSH-A101

Adapter type simplex with 2-hole flange		Colour	Type
	SM	blue	FLSH-FLSH-D100
	SM APC	green	FLSH-FLSH-D600
	SM HighPower 0.1 dB	blue	FLSH-FLSH-D110
	SM APC HighPower 0.1 dB	green	FLSH-FLSH-D610
	MM	beige	FLSH-FLSH-D102

Adapter type duplex with integrated fixing springs		Colour	Type
	SM	blue	FLSH-FLSH-A100-02
	SM APC	green	FLSH-FLSH-A600-02
	SM HighPower 0.1 dB	blue	FLSH-FLSH-A110-02
	SM APC HighPower 0.1 dB	green	FLSH-FLSH-A610-02
	MM	beige	FLSH-FLSH-A101-02

Adapter type duplex with 2-hole flange		Colour	Type
	SM	blue	FLSH-FLSH-D100-02
	SM APC	green	FLSH-FLSH-D600-02
	SM HighPower 0.1 dB	blue	FLSH-FLSH-D110-02
	SM APC HighPower 0.1 dB	green	FLSH-FLSH-D610-02
	MM	beige	FLSH-FLSH-D101-02

Ordering information: LSH accessories

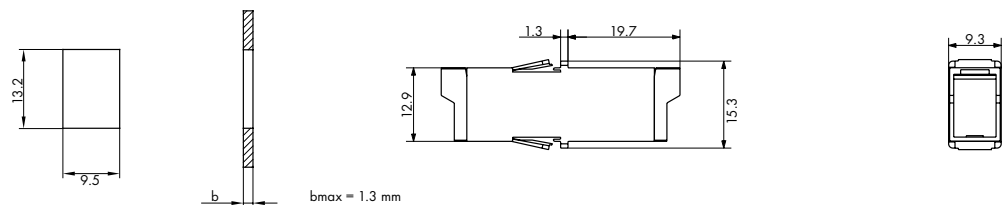
Quick-mounting spring		Material	Type
	100 pieces	metal	ACC-FIX-001
	<ul style="list-style-type: none"> easy snap-in mounting 		

LSH (E-2000™)

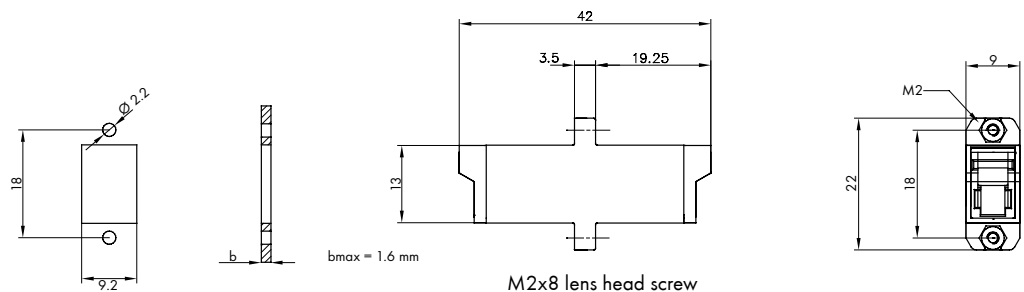
Specifications

Compliance	IEC 61754-15, TIA 604-16		
Technology	full ceramic ferrule (2.5 mm) and sleeve		
Tuning	in 60° steps		
Mechanical resistance	100 N tensile load		
Operating temperature	-40 °C to +85 °C		
Flammability	UL 94 V-0		
Durability	min. 1000 mating cycles		
Colour of housing	singlemode	PC	blue
	singlemode	APC	green
	multimode		beige

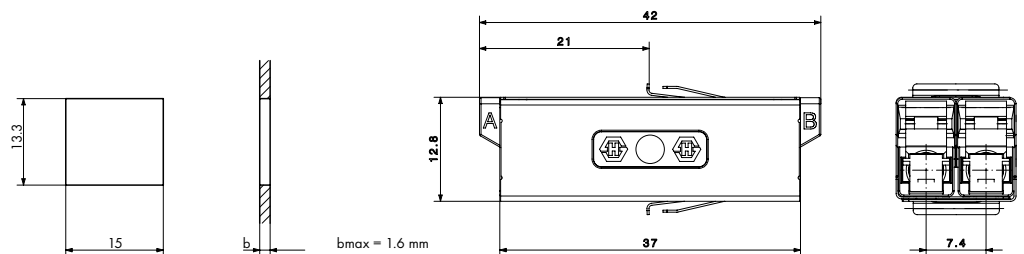
Simplex adapter with integrated fixing springs



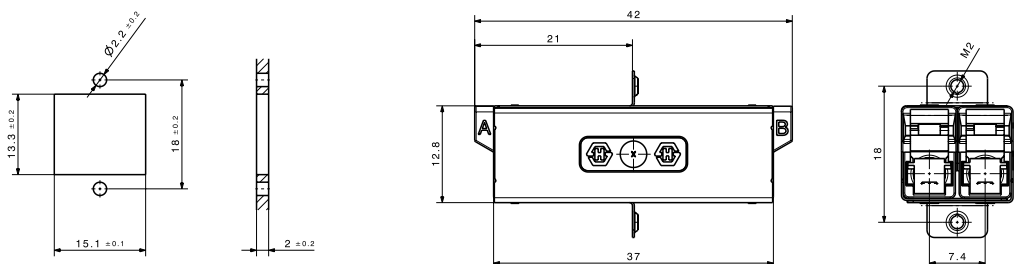
Simplex adapter with 2-hole flange



Duplex adapter with integrated fixing springs



Duplex adapter with 2-hole flange



LSH (E-2000™)

Mechanical coding system

The mechanical and colour coding system allows fast and secure installation of connectors and adapters, ensuring mating without risk of confusion. Connectors and adapters without coding are still available and fit on any coded piece.

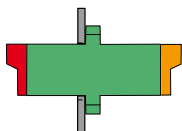
Ordering information

Type		
FLSH-FLSH-D600-A	adapter code	
0	uncoded	same colour as adapter
1	red	coded
2	brown	coded
3	yellow	coded
4	orange	coded
5	purple	coded
6	white	coded
A	red	uncoded
B	brown	uncoded
C	yellow	uncoded
D	orange	uncoded
E	purple	uncoded
F	white	uncoded
G	green	uncoded
H	blue	uncoded
I	black	uncoded
J	grey	uncoded
K	pink	uncoded
L	turquoise	uncoded

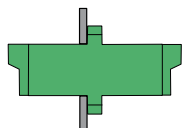
Type		
FLSH-2000-A101-C	connector code	
1	red	coded
2	brown	coded
3	yellow	coded
4	orange	coded
5	purple	coded
6	white	coded
A	red	uncoded
B	brown	uncoded
C	yellow	uncoded
D	orange	uncoded
E	purple	uncoded
F	white	uncoded
G	green	uncoded
H	blue	uncoded
I	black	uncoded
J	grey	uncoded
K	pink	uncoded
L	turquoise	uncoded

Examples:

FLSH-FLSH-D600-A14 – green adapter + red coding frame on frontside, orange coding frame on backside



FLSH-FLSH-D600 – green adapter without coding



FLSH-2000-A101-C1 – blue connector + red coding



FLSH-2000-A101 – blue connector without coding





Reliability

Packing density

Performance

Safety

Flexibility

LX.5 (SFOC 1.25)

Today, packing density is more important than ever. The LX.5-connector, based on the proven 1.25 mm ferrule technology, is the only standardized small form factor connector combining high packing density, reliability, high performance and safety due to its automatic metal shutter.



High packing density

Patch fields with high packing densities do not only require a compact design of single components, but also a stable optical performance. The LX.5 connector fills the gap between small size and safe handling. Two LX.5 connections use the same space as one SC connection.

High performance

Even though being small sized, LX.5 is a big leap in quality and performance. CATV and Telco network operators around the globe rely on the LX.5's proven performance. With a high precision Zirconia full ceramic ferrule, an insertion loss of 0.1 dB and an APC return loss of more than 85 dB LX.5 is especially suited for installation in global high performance networks.

High reliability

HUBER+SUHNER's extensive knowledge in manufacturing processes leads to the highest reliability. The connectors are produced by a process of proven quality, but HUBER+SUHNER advances quality and reliability a step further. LX.5 connectors are terminated only by certified LAS partners. These local assembly shops have been chosen because of their profound knowledge and ability to meet the highest quality standards.

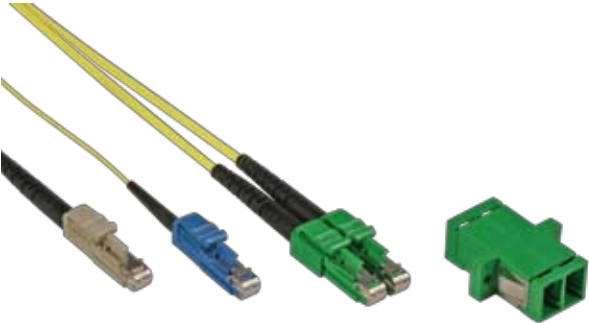
High safety

In addition to its high performance, LX.5 offers safety and time savings. With its automatic full metal shutters it conforms to the highest safety requirements in all current laser classes. Full metal shutters are essential in high power applications. All optical functional parts are protected against mechanical damage and dust. With our special tool to engage the safety lock you easily establish permanent connection and prevent accidental disconnecting.

High flexibility

HUBER+SUHNER offers a wide range of LX.5 products to match every application. The colour coding system can be changed both at the connector and the adapter. It prevents interconnection errors and saves time during installation and maintenance.

LX.5 (SFOC 1.25)

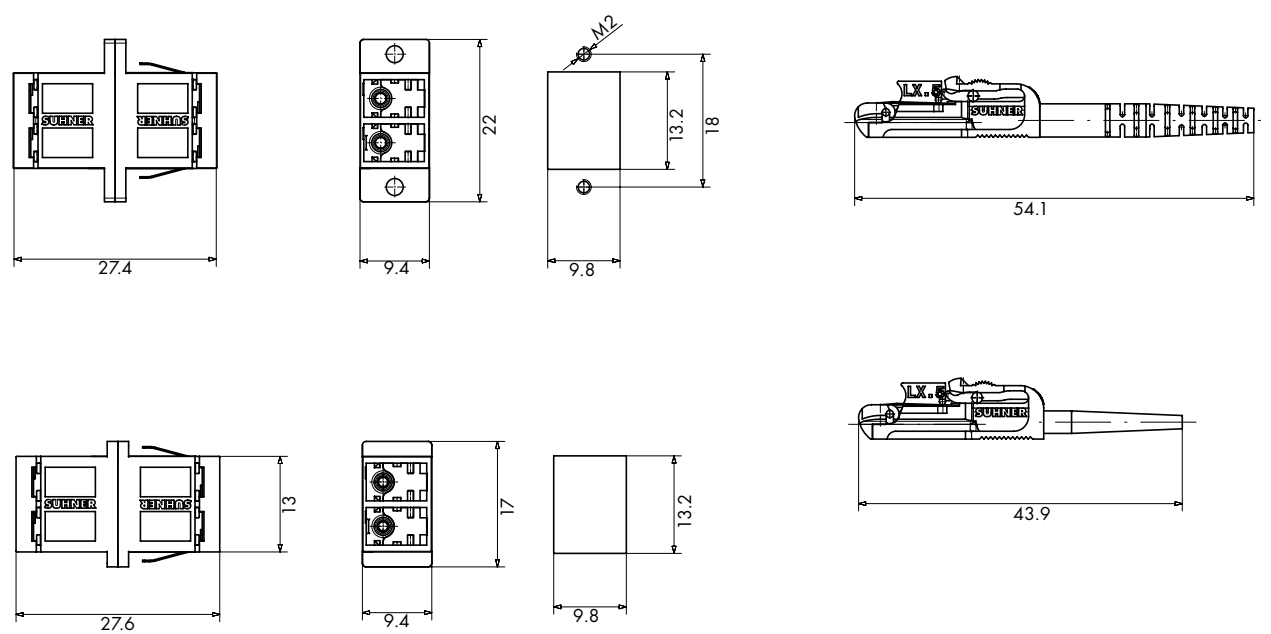


Features

- Small form factor connector for high packing density.
- Two connections in one SC shaped adapter
- Latched Push-Pull connector
- Automatic metal shutter in connector and adapter for dust protection and laser safety
- One-piece design for easy termination
- Short rigid length of pigtail-connector
- Colour coding of connector and adapter
- HighPower type with integrated locking mechanism
- High mechanical and thermal resistance according to Telcordia GR-326-CORE
- Easy duplexing of simplex connectors

Specifications

Compliance	IEC 61754-23, TIA 604-13		
Technology	full ceramic ferrule (1.25 mm) and sleeve		
Tuning	in 45° steps		
Mechanical resistance	100 N tensile load		
Operating temperature	-40 °C to +85 °C		
Flammability	UL 94 V-0		
Durability	min. 1000 mating cycles		
Colour of housing	singlemode	PC	blue
	singlemode	APC	green
	multimode		beige



LX.5 (SFOC 1.25)

Ordering information: LX.5 connector



Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
SM	APC	0.12/0.25	≤ 1.0	FLX5-Z/K-A601
SM	APC	0.12/0.25	≤ 2.8	FLX5-Z/K-A602
SM premium	APC	0.06/0.15	≤ 1.0	FLX5-Z/K-H601
SM premium	APC	0.06/0.15	≤ 2.8	FLX5-Z/K-H602



Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
SM	PC/UPC	0.12/0.25	≤ 1.0	FLX5-Z/K-A002
SM	PC/UPC	0.12/0.25	≤ 2.8	FLX5-Z/K-A003
SM premium	PC/UPC	0.06/0.15	≤ 1.0	FLX5-Z/K-H002
SM premium	PC/UPC	0.06/0.15	≤ 2.8	FLX5-Z/K-H003



Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
G50/125, G62.5/125	PC	0.20/0.50	≤ 1.0	FLX5-Z/K-B002
G50/125, G62.5/125	PC	0.20/0.50	≤ 2.8	FLX5-Z/K-B003

1) IEC 61300-3-34 method 2

LX.5 (SFOC 1.25)

Ordering information: LX.5 adapter



Adapter type	Mounting	Sleeve material	Colour	Type
SM duplex	flange with spring clip	zirconia ceramic	blue	FLX5-FLX5-A101-02
SM duplex HighPower	flange with spring clip	zirconia ceramic	blue	FLX5-FLX5-A102-02
SM APC duplex	flange with spring clip	zirconia ceramic	green	FLX5-FLX5-A601-02
SM APC duplex HighPower	flange with spring clip	zirconia ceramic	green	FLX5-FLX5-A602-02
MM duplex	flange with spring clip	zirconia ceramic	beige	FLX5-FLX5-A201-02

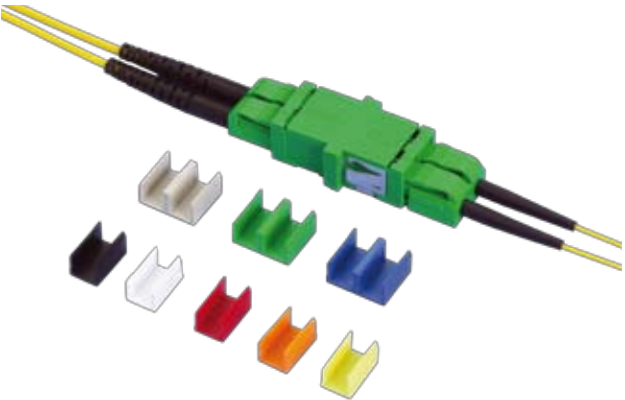


Adapter type	Mounting	Sleeve material	Colour	Type
SM duplex	with 2-hole flange	zirconia ceramic	blue	FLX5-FLX5-D101-02
SM duplex HighPower	with 2-hole flange	zirconia ceramic	blue	FLX5-FLX5-D102-02
SM APC duplex	with 2-hole flange	zirconia ceramic	green	FLX5-FLX5-D601-02
SM APC duplex HighPower	with 2-hole flange	zirconia ceramic	green	FLX5-FLX5-D602-02
MM duplex	with 2-hole flange	zirconia ceramic	beige	FLX5-FLX5-D201-02

LX.5 (SFOC 1.25)

Colour coding

The colour coding system allows fast and secure installation of the connector and the adapter. It ensures mating without risk of confusion. Simplex clips can be used to mark connectors and colour labels to mark adapters.



Ordering information: LX.5 accessories

Description	Colour	Type
Simplex clip	black	FLX5-CLP-BK1
Simplex clip	blue	FLX5-CLP-BL1
Simplex clip	brown	FLX5-CLP-BN1
Simplex clip	green	FLX5-CLP-GN1
Simplex clip	grey	FLX5-CLP-GR1
Simplex clip	orange	FLX5-CLP-OR1
Simplex clip	pink	FLX5-CLP-PK1
Simplex clip	purple	FLX5-CLP-PU1
Simplex clip	red	FLX5-CLP-RD1
Simplex clip	turquoise	FLX5-CLP-TU1
Simplex clip	white	FLX5-CLP-WT1
Simplex clip	yellow	FLX5-CLP-YE1
Duplex clip	blue	FLX5-DUP-BL2
Duplex clip	green	FLX5-DUP-GN2
Duplex clip	beige	FLX5-DUP-BG2



Colour label pad	Type
Including 24 stickers per colour	ACC-LAB-001



Tool	Type
To unlock LX.5 HighPower disconnection lock	9801.40.D



Packing density
Flexibility
Handling
Performance

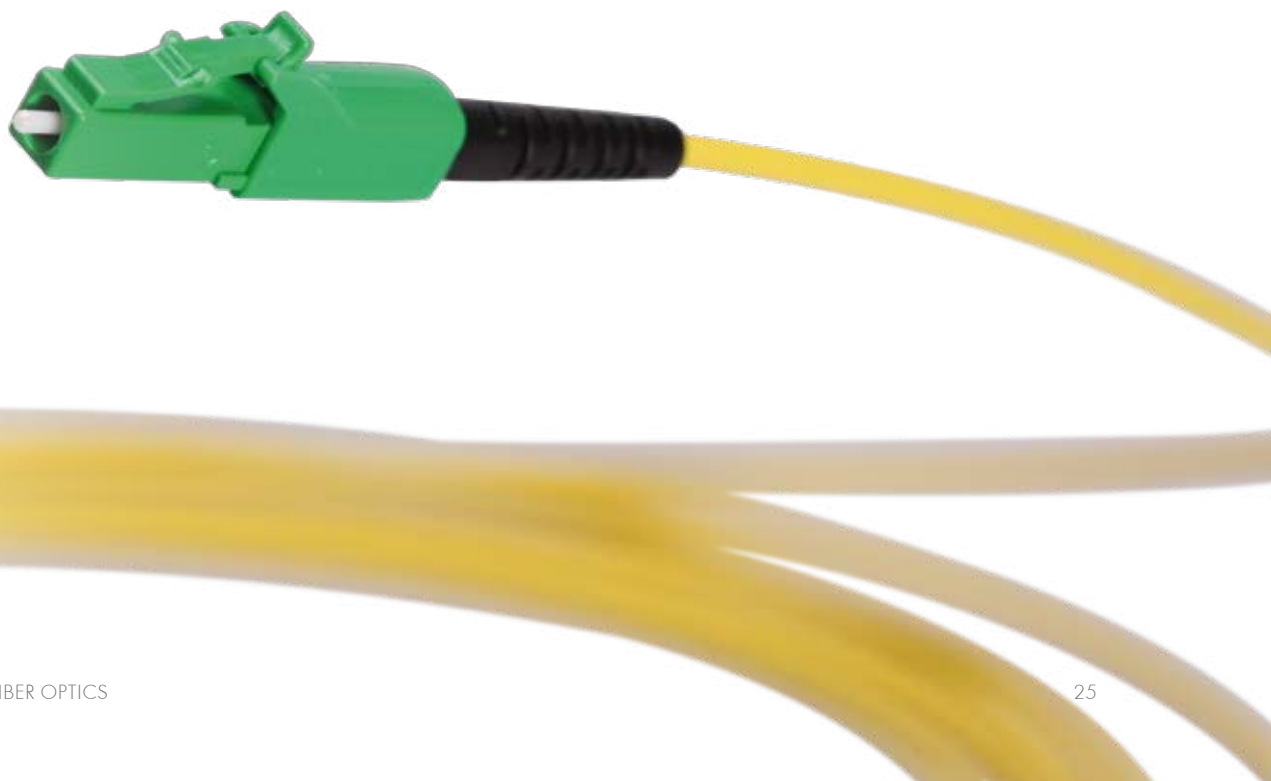
LC-HQ Push-Pull – the revolutionary Innovation

HUBER+SUHNER present the revolutionary innovation to the industry standard LC connector. LC is the connector of choice for many FTTH operators because of its compact size and high packing density, however due to its locking key design; handling is always compromised in applications where LC adapters are side by side. This problem is particularly apparent with duplex SC shape adapters where access to the key of the connector is often obstructed by adjacent connectors and adapters.

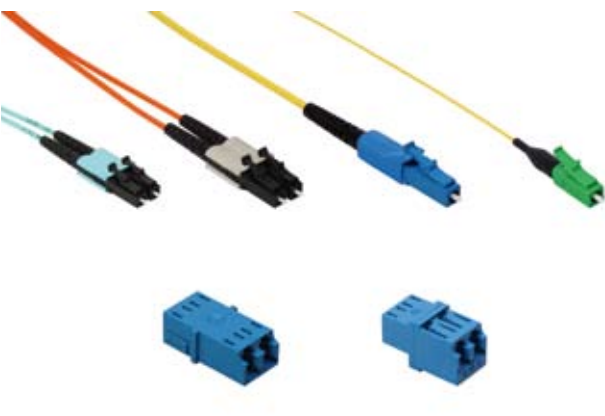
In contrast; Push-Pull-connectors like SC have a much better design in terms of mating because they rely on a mechanism which is accessible on all four sides of the connector shroud.

HUBER+SUHNER recognized these shortfalls and set about producing the «LC-HQ Push-Pull», a user friendly LC connector which conforms to industry standards but exceeds the packing density performance of its rivals.

With this innovative step, operators and equipment manufacturers are no longer constrained by the limits of installer accessibility. New boundaries can be set for high-density transmission equipment and optical distribution products throughout the network. This will offer significant benefits in terms of cost against footprint and will improve the handling aspect of the world's most popular fiber optic connector.



LC-HQ

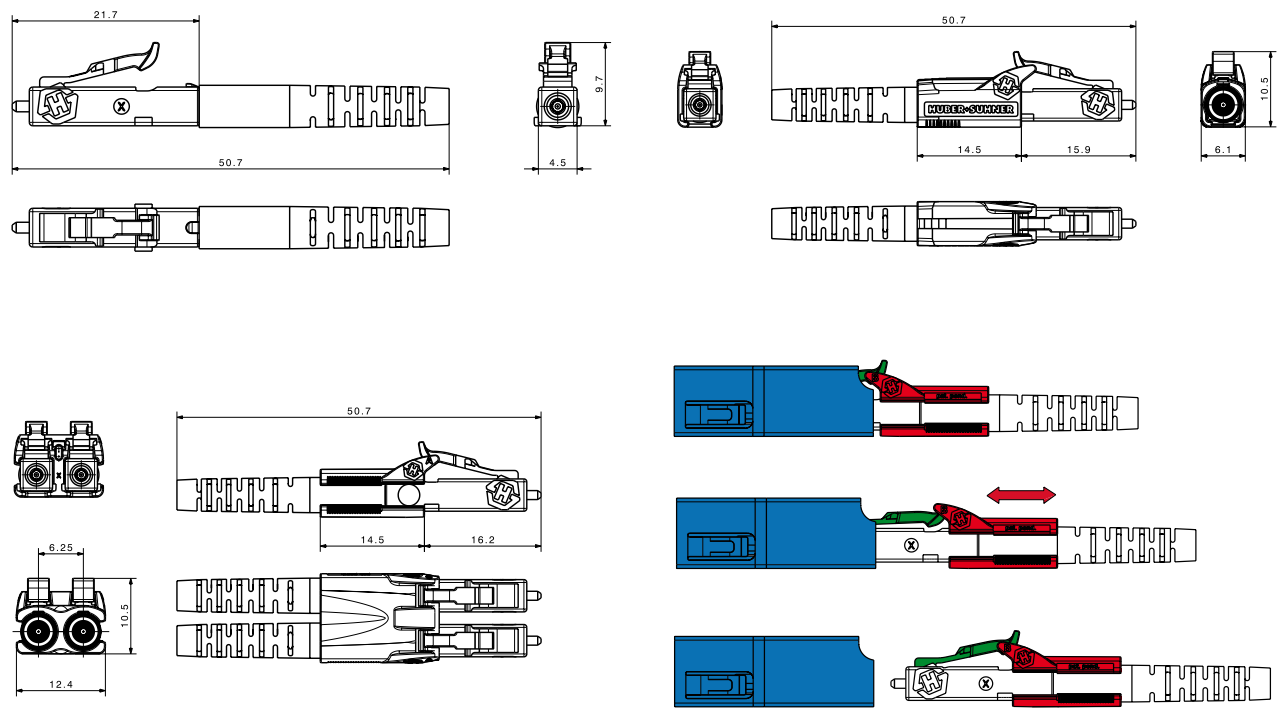


Features

- Push-Pull mechanism for best handling and highest packing density (Patent pending)
- Two connections in one SC shaped adapter
- One-piece design for easy termination
- Short rigid length of pigtail-connector
- Switchable duplex-connectors


Specifications

Compliance	IEC 61754-20, TIA 604-10-A
Technology	full ceramic ferrule (1.25 mm) and sleeve
Tuning	in 45° steps
Mechanical resistance	100 N tensile load
Operating temperature	-40 °C to +85 °C
Flammability	UL 94 V-0
Durability	min. 1000 mating cycles
Connector types	singlemode PC singlemode APC multimode/OM3




LC-HQ

Ordering information:
LC connector for cable diameter ≤ 1.0 mm

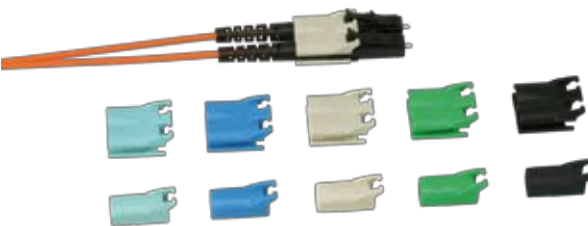
	Connector type	Polishing	Colour	IL	Type
	SM	PC/UPC	blue	0.12/0.25	FLC-Z/K-A005
	SM	APC	green	0.12/0.25	FLC-Z/K-A600
	SM premium	PC/UPC	blue	0.06/0.15	FLC-Z/K-H001
	SM premium	APC	green	0.06/0.15	FLC-Z/K-H600
	G50/125, G62.5/125	PC	beige	0.20/0.50	FLC-Z/K-B004
	OM3	PC	aqua	0.20/0.50	FLC-Z/K-L100

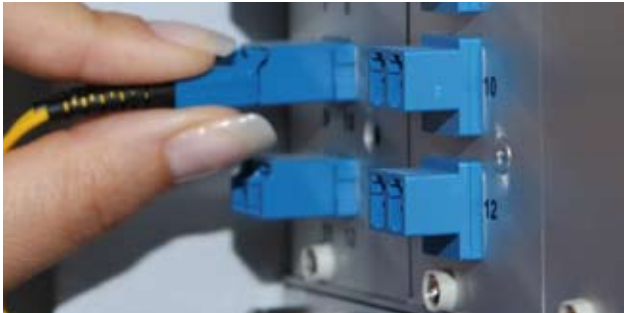
LC-HQ connector for cable diameter ≤ 2.8 mm

	Connector type	Polishing	Colour	IL	Type
	SM	PC/UPC	blue	0.12/0.25	FLC-Z/K-A007
	SM	APC	green	0.12/0.25	FLC-Z/K-A607
	SM premium	PC/UPC	blue	0.06/0.15	FLC-Z/K-H007
	SM premium	APC	green	0.06/0.15	FLC-Z/K-H607
	G50/125, G62.5/125, OM3	PC	black*	0.20/0.50	FLC-Z/K-B007

*MM and OM3 are identified by beige or aqua clips.

Push-Pull clips for LC-HQ connectors

	Connections	Colour	Type
	simplex	blue	FLC-CLP-HQ-BU
	simplex	green	FLC-CLP-HQ-GR
	simplex	beige	FLC-CLP-HQ-BG
	simplex	black	FLC-CLP-HQ-BK
	simplex	aqua	FLC-CLP-HQ-TQ
	duplex	blue	FLC-CLP-HQ-BU-02
	duplex	green	FLC-CLP-HQ-GR-02
	duplex	beige	FLC-CLP-HQ-BG-02
	duplex	black	FLC-CLP-HQ-BK-02
	duplex	aqua	FLC-CLP-HQ-TQ-02



Mating in a confined space

LC-HQ

Ordering information: LC adapter

Duplex, integrated fixing springs, zirconia ceramic sleeves

	Adapter type	Colour	Type
	SM	blue	FLC-FLC-A100-02
	SM APC	green	FLC-FLC-A600-02
	MM	beige	FLC-FLC-A200-02


Duplex, SC footprint, integrated fixing springs, zirconia ceramic sleeves

	Adapter type	Colour	Type
	SM	blue	FLC-FLC-A102-02
	SM APC	green	FLC-FLC-A602-02
	MM	beige	FLC-FLC-A202-02
	OM3	aqua	FLC-FLC-A302-02


Duplex, SC footprint, 2-hole-flange, zirconia ceramic sleeves

	Adapter type	Colour	Type
	SM	blue	FLC-FLC-D101-02
	SM APC	green	FLC-FLC-D601-02
	MM	beige	FLC-FLC-D201-02
	OM3	aqua	FLC-FLC-D301-02

Simplex, integrated fixing springs

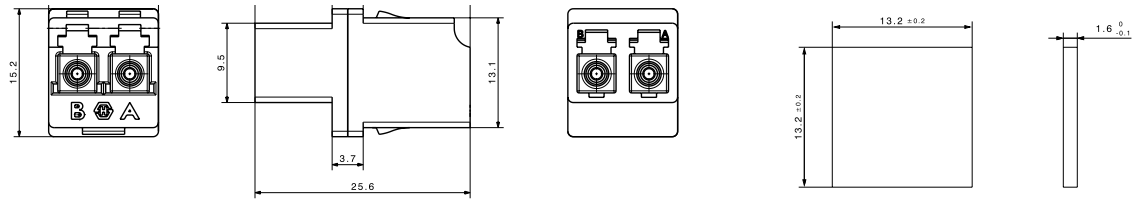
	Adapter type	Sleeve material	Colour	Type
	SM	zirconia ceramic	blue	FLC-FLC-A100
	SM APC	zirconia ceramic	green	FLC-FLC-A600
	MM	phosphor bronze	beige	FLC-FLC-A200

Quad, integrated fixing springs

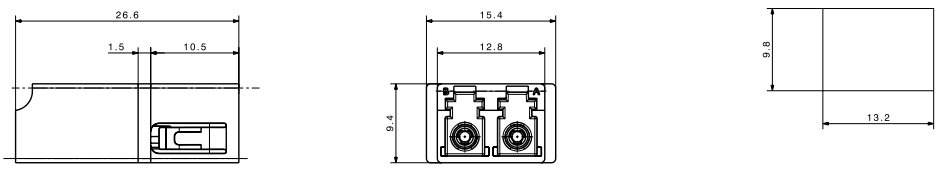
	Adapter type	Sleeve material	Colour	Type
	SM	zirconia ceramic	blue	FLC-FLC-A100-04
	SM APC	zirconia ceramic	green	FLC-FLC-A600-04
	MM	phosphor bronze	beige	FLC-FLC-A200-04
	OM3	zirconia ceramic	aqua	FLC-FLC-A300-04

LC-HQ

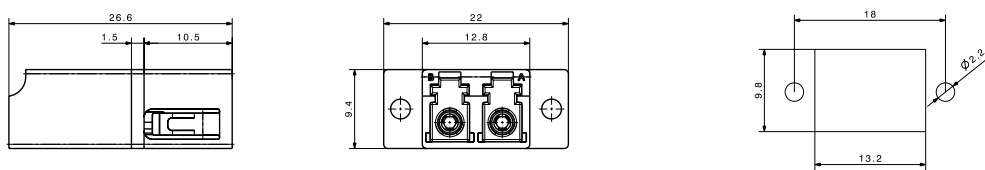
Duplex, integrated fixing springs



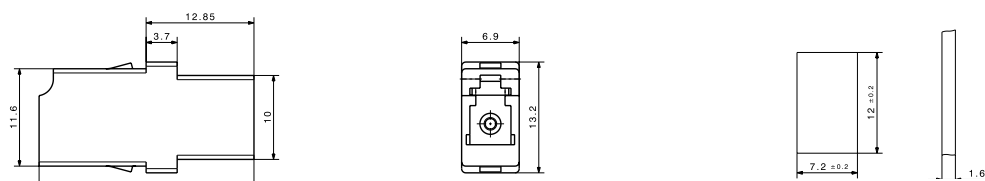
Duplex, SC footprint, integrated fixing springs



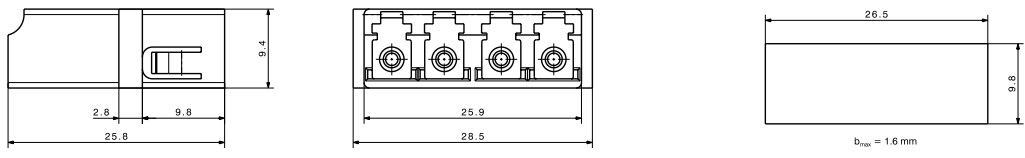
Duplex, SC footprint, 2-hole-flange



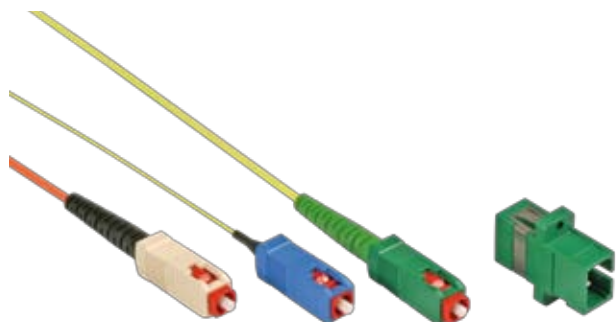
Simplex, integrated fixing springs



Quad, integrated fixing springs



SC

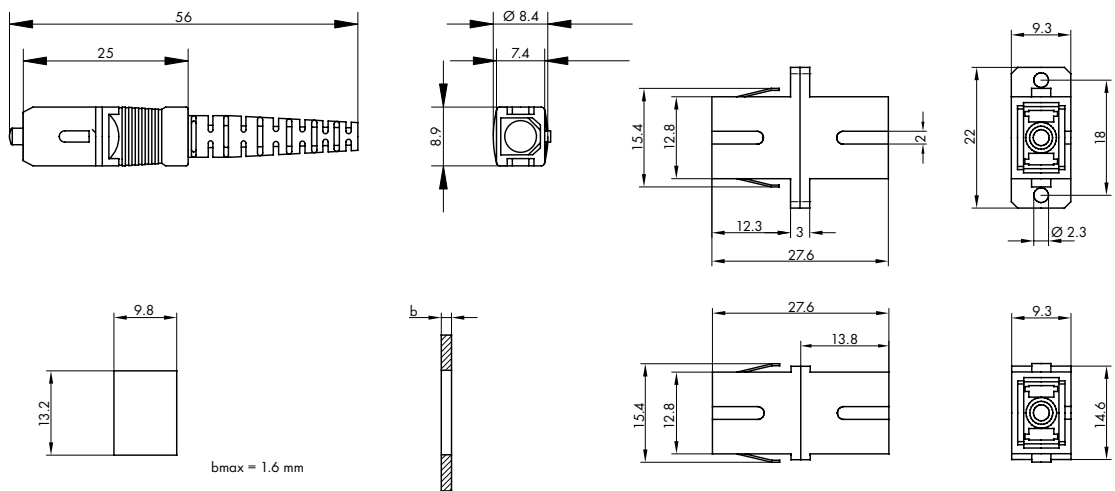


Features

- Push-pull connector
- One-piece design for easy termination
- High mechanical and thermal resistance according to Telcordia GR-326-CORE
- IEC 60874-14 series

Specifications

Compliance	IEC 61754-4, TIA 604-3		
Technology	full ceramic ferrule (2.5 mm) and sleeve (SM)		
Tuning	in 45° steps		
Mechanical resistance	100 N tensile load		
Operating temperature	-40 °C to +85 °C		
Flammability	UL 94 V-0		
Durability	min. 1000 mating cycles		
Colour of housing	singlemode PC	blue	
	singlemode (APC 8°/9°)	green	
	multimode	beige	
	OM3	aqua	



SC

Ordering information: SC connector

Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
SM High-End	PC/UPC	0.12/0.25	≤ 3.5	FSC-CMAX-A101
SM High-End	APC 8° / 9°	0.12/0.25	≤ 3.5	FSC-CMAX-A600
SM premium	PC/UPC	0.06/0.15	≤ 3.5	FSC-CMAX-H101
SM premium	APC	0.06/0.15	≤ 3.5	FSC-CMAX-H600
G50/125, G62.5/125	PC	0.20/0.50	≤ 3.5	FSC-CMAX-B101
OM3	PC	0.20/0.50	≤ 3.5	FSC-CMAX-L100
HCS200/230	PC	0.30/0.75	≤ 3.5	FSC-CMAX-D101

¹⁾ Each-to-each IEC 61300-3-34 method 2

SC-QXA connectors see page 85

Ordering information: SC adapter

Adapter type	Mounting	Sleeve material	Colour	Type
SM	with 2-hole flange	zirconia ceramic	blue	FSC-FSC-D100
SM APC	with 2-hole flange	zirconia ceramic	green	FSC-FSC-D600
MM/OM3	with 2-hole flange	phosphor-bronze	beige	FSC-FSC-D200
Flangeless SM	integrated fixing spring	zirconia ceramic	blue	FSC-FSC-A100
Flangeless SM	integrated fixing spring	zirconia ceramic	black	FSC-FSC-A101
Flangeless APC	integrated fixing spring	zirconia ceramic	green	FSC-FSC-A600
Flangeless MM	integrated fixing spring	phosphor-bronze	beige	FSC-FSC-A200
Flangeless OM3	integrated fixing spring	zirconia ceramic	aqua	FSC-FSC-A300

SC DUPLEX

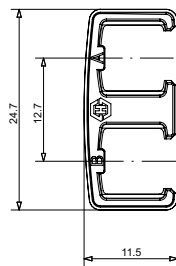
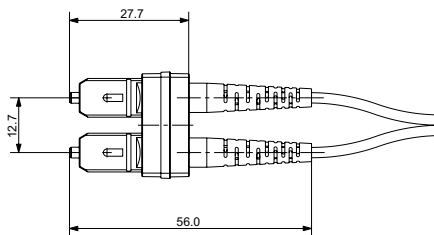


Features

- High mechanical and thermal resistance according to Telcordia GR-326-CORE
- Channel identification (A-B)
- IEC 60874-19 series

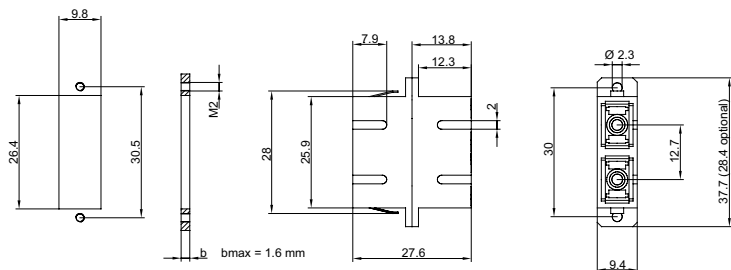
Ordering information: SC duplex clip

Ordering code	Package content
FSC-DUP-CLIP	100 duplexing clips, transparent



Ordering information: SC duplex adapter

Adapter type	Mounting	Sleeve material	Color	Type
Duplex SM	with 2-hole flange	zirconia ceramic	blue	FSC-FSC-D100-02
Duplex SM APC	with 2-hole flange	zirconia ceramic	green	FSC-FSC-D600-02
Duplex MM	with 2-hole flange	phosphor-bronze	beige	FSC-FSC-D200-02
Duplex SM flangeless	integrated fixing spring	zirconia ceramic	blue	FSC-FSC-A102-02
Duplex SM APC flangeless	integrated fixing spring	zirconia ceramic	green	FSC-FSC-A600-02
Duplex MM flangeless	integrated fixing spring	phosphor-bronze	beige	FSC-FSC-A202-02



MU

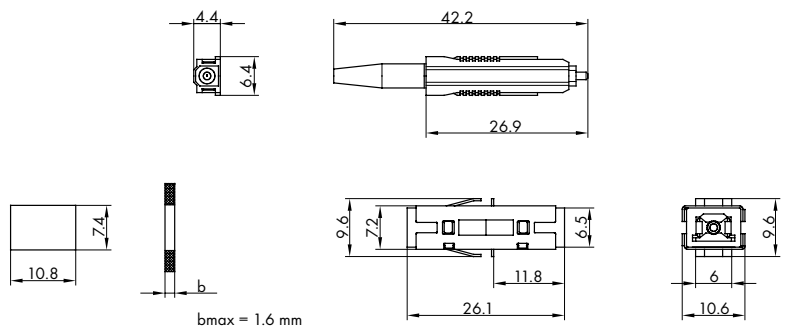


Features

- Push-pull connector
- Small form factor connector for high packing density

Specifications

Compliance	IEC 61754-6		
Technology	full ceramic ferrule (1.25 mm) and sleeve		
Tuning	in 90° steps		
Mechanical resistance	70 N tensile load		
Operating temperature	-40 °C to +85 °C		
Flammability	UL 94 V-0		
Durability	min. 1000 mating cycles		
Colour of housing	singlemode	PC	brown
	multimode		brown



Ordering information: MU connector including crimpset

Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
E9/125	PC/UPC	0.12/0.25	< 1.0	FMU-Z/K-A001 ²⁾
E9/125	PC/UPC	0.12/0.25	2.0	FMU-Z/K-A002 ²⁾

1) IEC 61300-3-34 method 2

2) including crimpset

Ordering information: MU adapter

Adapter type	Mounting	Sleeve material	Type
SM	with integrated fixing springs	zirconia ceramic	FMU-FMU-A001-01

FCPC

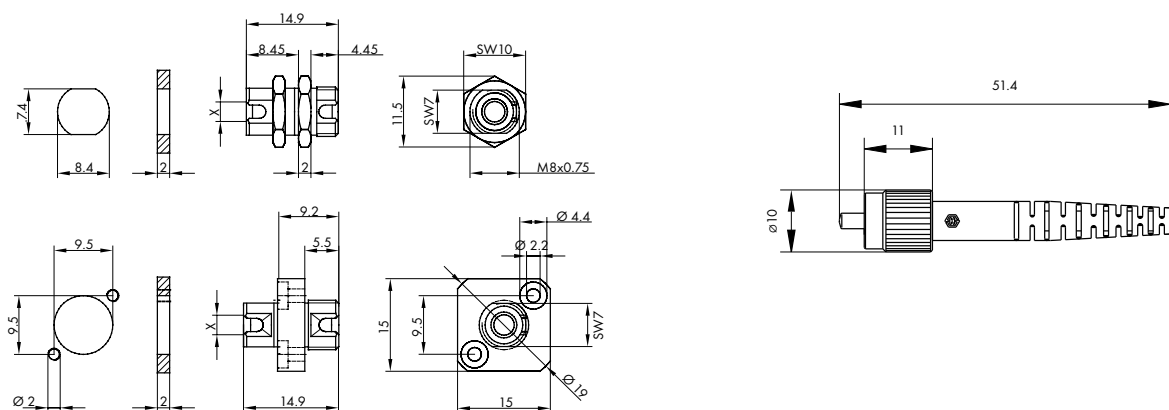


Features

- Threaded nut connector
- One-piece design for easy termination
- Very short rigid length
- High mechanical and thermal resistance according to Telcordia GR-326-CORE

Specifications

Compliance	IEC 61754-13, TIA 604-4-A
Technology	full ceramic ferrule (2.5 mm) and sleeve
Tuning	PC continuously
	APC in 60° steps
Mechanical resistance	100 N tensile load
Operating temperature	-40 °C to +85 °C
Durability	min. 1000 mating cycles
Material	brass nickel-plated



FCPC

Ordering information: FCPC connector

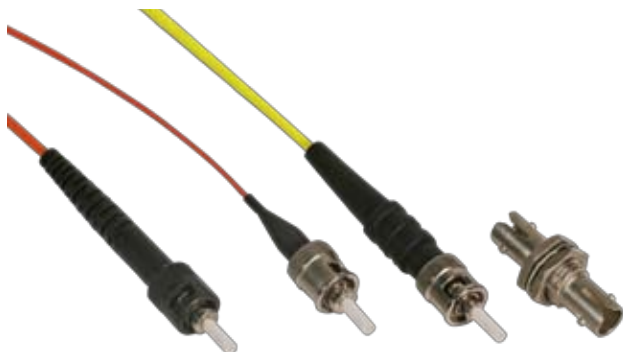
Connector type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
SM wide key	PC/UPC	0.12/0.25	≤ 3.5	FCPC-Z/M-A101
SM small key	APC	0.12/0.25	≤ 3.5	FCPC-Z/M-A601
SM wide key	APC	0.12/0.25	≤ 3.5	FCPC-Z/M-A602
SM wide key premium	PC/UPC	0.06/0.15	≤ 3.5	FCPC-Z/M-H101
SM small key premium	APC	0.06/0.15	≤ 3.5	FCPC-Z/M-H601
SM wide key premium	APC	0.06/0.15	≤ 3.5	FCPC-Z/M-H602
G50/125, G62.5/125 wide key	PC	0.20/0.50	≤ 3.5	FCPC-Z/M-B101
HCS200/230	PC	0.30/0.75	≤ 3.5	FCPC-Z/M-D101

¹⁾ IEC 61300-3-34 method 2

Ordering information: FCPC adapter

Adapter type	Mounting	Sleeve material	Type
SM PC (wide key)	with loose and fixed nut for D-hole mounting key width: 2.15 mm	zirconia ceramic	FCPC-FCPC-C100
	with 2-hole flange, 4 mm thick key width: 2.15 mm	zirconia ceramic	FCPC-FCPC-D100
SM APC (small key)	with loose and fixed nut for D-hole mounting key width: 2.03 mm	zirconia ceramic	FCPC-FCPC-C600
	with 2-hole flange, 4 mm thick key width: 2.03 mm	zirconia ceramic	FCPC-FCPC-D600

ST-LEAN, ST-HQ (BFOC), ST-SECURITY

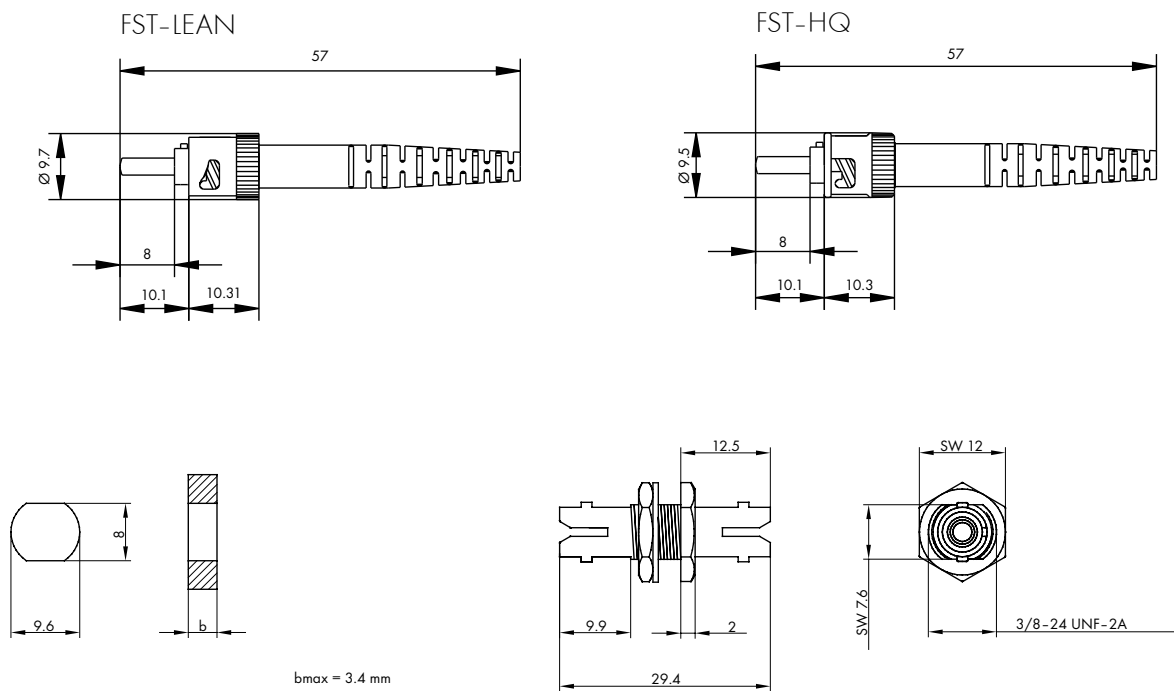


Features

- Bayonet nut connector
- One-piece design for easy and quick termination
- ST-SECURITY with integrated strain relief

Specifications

Compliance	IEC 61754-2, TIA 604-2
Technology	full ceramic ferrule 2.5 mm
Mechanical resistance	100 N tensile load
Operating temperature	-40 °C to +85 °C
Durability	min. 1000 mating cycles
Material	brass nickel-plated



ST-LEAN, ST-HQ, ST-SECURITY

Ordering information: ST connector

Fiber type	Connector	Bayonet	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
G50/125, G62.5/125	LEAN	plastic, black	PC	0.25/0.70	≤ 3.5	FST-LEAN-B103
G50/125, G62.5/125	LEAN	metal	PC	0.25/0.70	≤ 3.5	FST-LEAN-B106
SM	HQ	metal	PC/UPC	0.20/0.45	≤ 3.5	FST-Z/M-A101
G50/125, G62.5/125	HQ	metal	PC	0.20/0.50	≤ 3.5	FST-Z/M-B101
HCS200/230	HQ	metal	PC	0.40/0.75	≤ 3.5	FST-Z/M-D101
SM	SECURITY	metal	PC/UPC	0.20 /0.45	≤ 3.5	FST-SEC-A101
G50/125, G62.5/125	SECURITY	metal	PC	0.20/0.50	≤ 3.5	FST-SEC-B101

¹⁾ IEC 61300-3-34

Ordering information: ST adapter

Adapter type	Mounting	Sleeve material	Type
SM	with loose and fixed nut, washer for D-hole mounting	zirconia ceramic	FST-FST-C100
MM	with loose and fixed nut, washer for D-hole mounting	phosphor-bronze	FST-FST-C200

LSA (DIN)

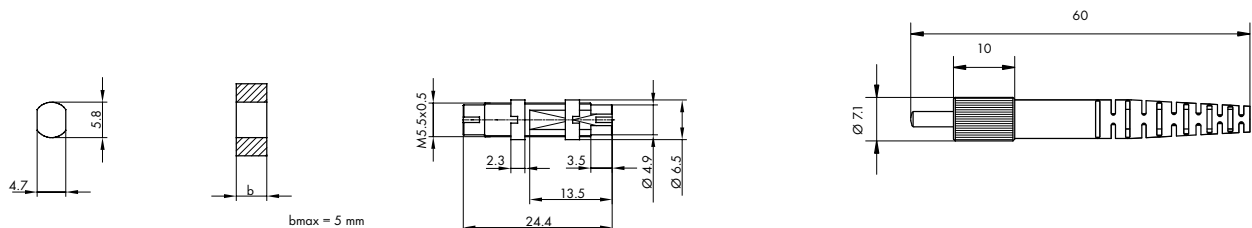


Features

- Threaded nut connector
- One-piece design for easy and quick termination
- Long ferrule according to DIN

Specifications

Compliance	IEC 61754-3, DIN 47256
Technology	full ceramic ferrule (2.5 mm)
Tuning	in 60° steps
Mechanical resistance	100 N tensile load
Operating temperature	-40 °C to +85 °C
Durability	min. 1000 mating cycles
Material	brass nickel-plated



Ordering information: LSA connector

Fiber type	Polishing	Insertion loss ¹⁾ [dB] (mean/97%)	Cable Ø [mm]	Type
SM	PC/UPC	0.12/0.25	≤ 3.5	FLSA-Z/M-A001
SM	APC 8°	0.12/0.25	≤ 3.5	FLSA-Z/M-A600
G50/125, G62.5/125	PC	0.20/0.50	≤ 3.5	FLSA-Z/M-B001

¹⁾ IEC 61300-3-34 method 2

Ordering information: LSA adapter

Adapter type	Mounting	Sleeve material	Type
Standard	with 2 loose nuts for D-hole mounting	zirconia ceramic	FLSA-FLSA-B100

FSMA

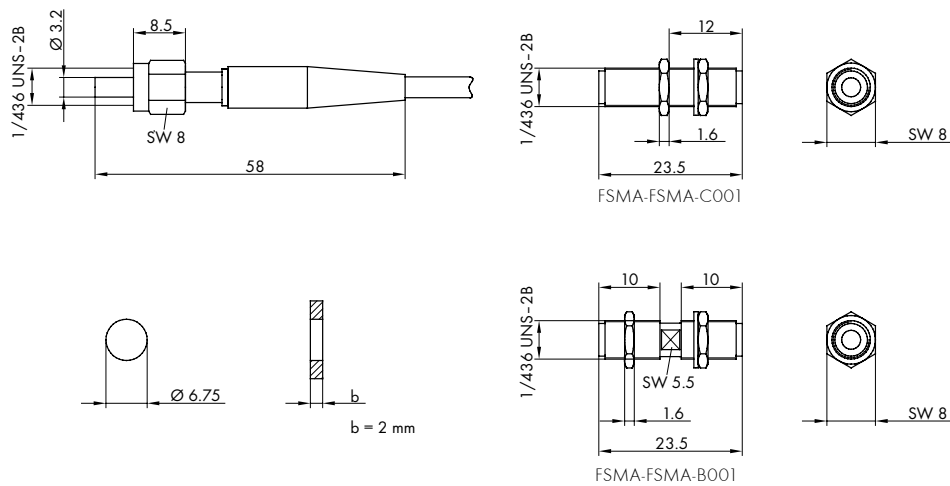


Features

- Threaded nut connector
- One-piece design for easy and quick termination
- O-ring seal
- Connector without PC (physical contact)

Specifications

Compliance	IEC 61754-22
Technology	metal ferrule and sleeve
Mechanical resistance	100 N tensile load
Operating temperature	-40 °C to +85 °C
Durability	min. 1000 mating cycles
Material	brass nickel-plated



Ordering information: FSMA connector (type 905)

Fiber type	Ferrule material	Insertion loss [dB] (mean/97%)	Cable Ø [mm]	Type
G50/125, G62.5/125	metal	1.00/1.50	≤ 4.5	FSMA-M/M-B001
HCS200/230	metal	1.00/1.50	≤ 4.5	FSMA-M/M-D001

Ordering information: FSMA adapter

Adapter type	Mounting	Type
Standard	continuous thread with 2 loose nuts and washer	FSMA-FSMA-B001
	with loose and fixed nut, washer	FSMA-FSMA-C001

MT-RJ

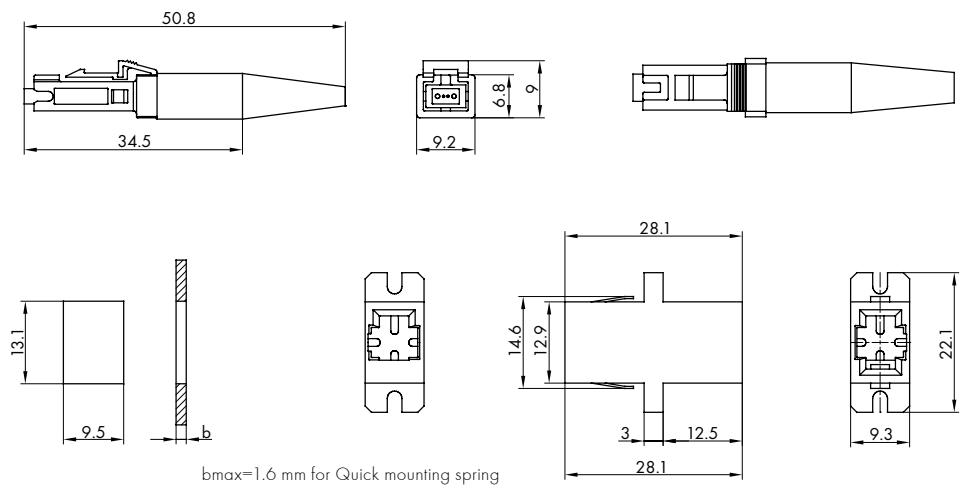


Features

- Latched push-pull connector
- Small form factor connector for high packing density.
Two connections in SC shape adapter
- Two fibers in one ferrule

Specifications

Compliance	IEC 61754-18, TIA 604-12		
Technology	plastic ferrule		
Mechanical resistance	70 N tensile load		
Operating temperature	-25 °C to +70 °C		
Durability	min. 500 mating cycles		
Material	plastic		
Colour of housing	connector	black	(SM and MM)
	adapter	beige	(SM and MM)



Ordering information: MT-RJ adapter

Adapter type	Mounting	Colour	Type
MT-RJ adapter	with 2-hole flange	beige	FMTJ-FMTJ-D100

Please note: MT-RJ connectors are available as patchcord or pigtail cables only

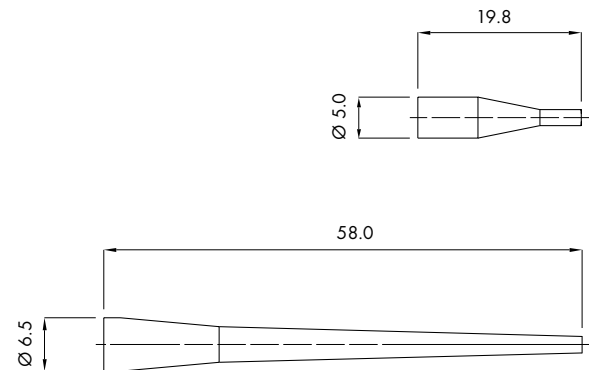
Boots for Cable Diameter < 1.0 mm

Boots for LSH, FCPC, SC, LSA, FSMA, ST connectors



Features

- Material is halogen free and flame retardant according to UL 94 HB
- For large form factor connectors (2.5 mm ferrule)



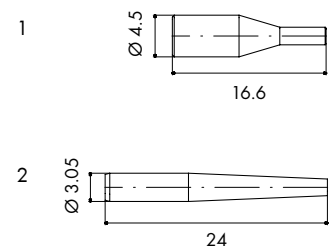
Boot	Max. cable-Ø	Black boot	Green boot	Red boot	Yellow boot	Blue boot	Packing unit
1	<1.0 mm	84057583	84057584	84057585	84057586	84057587	1000
2	<1.0 mm	84057551	84057595	84057596	84057598	84057599	100

Boots for LX.5 and LC connectors



Features

- Material is halogen free and flame retardant according to UL 94 V-0
- For small form factor connectors (1.25 mm ferrule)



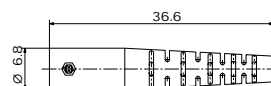
Boot	Max. cable-Ø	Black boot	Green boot	Red boot	Yellow boot	Blue boot	Packing unit
1	<1.0 mm LC	84057600	84057601	84057604	84057605	84057606	1000
2	<1.0 mm LX.5	84057607	84057608	84057609	84057611	84057616	1000

Crimp Sets for Cable Diameter > 1.6 mm

Crimp sets for LSH, FCPC, SC, LSA, FSMA, ST (except ST security) connectors

Features

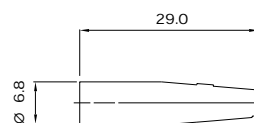
- Material is halogen free and flame retardant according to UL 94 HB



Cable Ø (min. – max.)	Crimp sleeve	Boot					Packing unit
		Black	Green	Red	Yellow	Blue	
1.6 – 1.9 mm	84057556	84041053	84041055	84041058	84041060	84041061	1000
2.0 mm	84041153						
2.1 – 2.3 mm	84057554						
2.4 – 2.6 mm	84057553						
2.7 – 2.9 mm	84057547	84041062	84041064	84041065	84041066	84041067	
3.0 – 3.2 mm	84057555						

Cable Ø (min. – max.)	Crimp sleeve	Boot		Packing unit
		Black	Green	
3.3 – 3.5 mm	84057545 ¹⁾	84057623	84057625	100

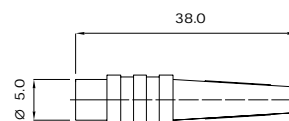
¹⁾ Packing unit 1000 pcs. only



Crimp sets for ST SECURITY connector

Cable Ø (min. – max.)	Crimp sleeve	Boot Black	Packing unit
<1.0 mm ¹⁾	–	84057551	100
2.0 – 2.3 mm	23232995	84057626	
2.4 – 2.8 mm	23231084		
2.9 – 3.5 mm	23231085	84057627	
3.6 – 4.5 mm	23231086	84057629	

¹⁾ picture left page top (no. 2)

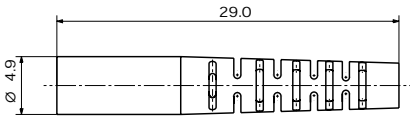


Crimp Sets for Cable Diameter > 1.6 mm

Crimp sets for LX.5 and LC connectors

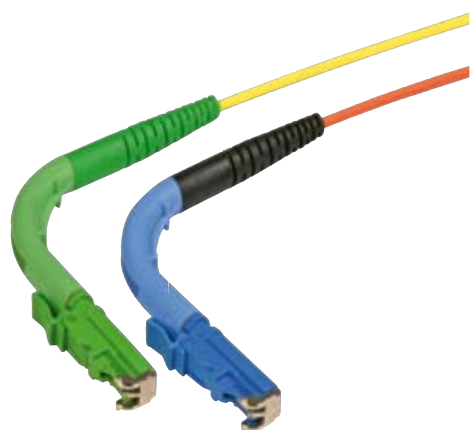
Features

- Material is halogen free and flame retardant according to UL 94 HB



Cable Ø (min. – max.)	Crimp sleeve	Boot					Packing unit
		Black	Green	Red	Yellow	Blue	
1.6 – 1.7 mm	84057562	84034687	84041094	84041097	84041098	84041099	1000
1.8 – 1.9 mm	84057569						
2.0 mm	84057568						
2.1 – 2.2 mm	84057564						
2.3 – 2.5 mm	84057566	84041107	84042731	84042729	84042727	84042725	100
2.6 – 2.8 mm	84057567						

Angled Boots for LSH (E-2000™), SC, FCPC, LSA, ST, FSMA



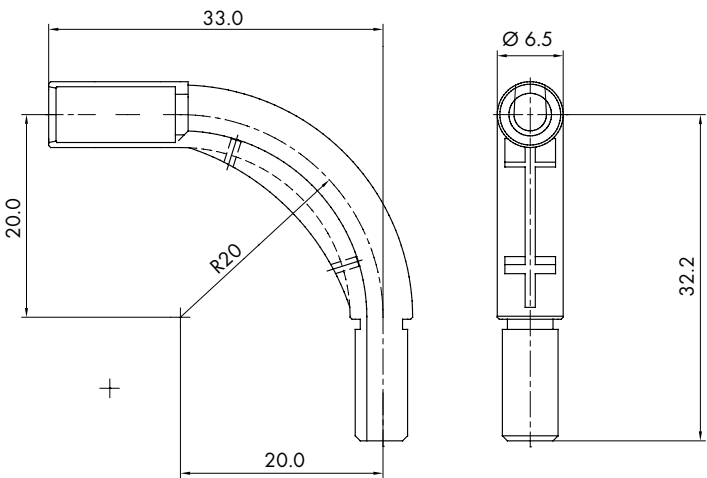
Designed to install E-2000™, SC, FCPC, LSA, ST and FSMA connectors into racks with tight space conditions. The 90° boot is used in addition to a standard crimpset and guarantees the minimal bending radius.

Specifications

Cable diameter	up to 2.9 mm
Minimal bending radius	30 mm
Material	halogen free and flame retardant according to UL 94 V-0
Colour	green/blue/beige

Ordering information

Cable Ø (min. – max.)	Crimp sleeve	Packing unit crimp sleeves	Boot			Packing unit boots
			Green	Blue	Beige	
1.6 – 1.9 mm	84057556	1000	63128300	63128301	63128302	100
2.0 mm	84041153					
2.1 – 2.3 mm	84057554					
2.4 – 2.6 mm	84057553					
2.7 – 2.9 mm	84057547					



E-2000™ is manufactured under licence of DIAMOND SA, CH LOSONE

Crimp Sets with angled Boots for LX.5 and LC



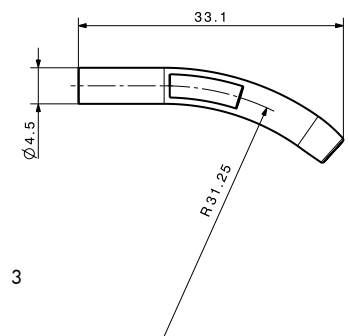
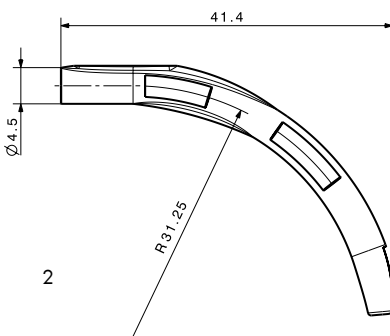
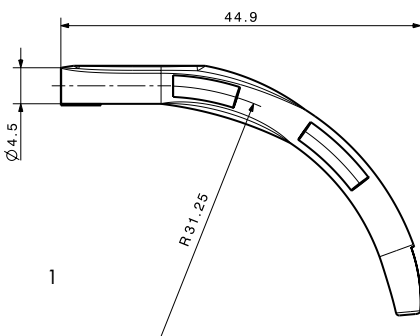
These angled boots are designed to install LX.5 and LC connectors into racks with tight space conditions.

Specifications

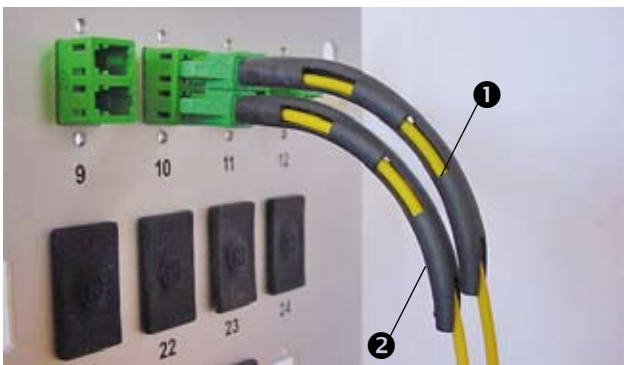
Cable diameter	1.6 mm to 2.5 mm
Side load resistance	20 N (also for 1.7 mm cable)
Minimal bending radius	30 mm
Material	halogen free and flame retardant according to UL 94 V-0
Colour	black

Ordering information

Cable Ø (min. – max.)	Crimp sleeve	Packing unit crimp sleeves	1 = 90° angled boot, long	2 = 90° angled boot, standard	3 = 45° angled boot	Packing unit boots
1.6 – 1.7 mm	84057562	1000	84034664	84034663	84034662	100
1.8 – 1.9 mm	84057569					
2.0 mm	84057568					
2.1 – 2.2 mm	84057564					
2.3 – 2.5 mm	84057566					
2.6 – 2.7 mm	84057567		–	–		



90° boot in horizontally mounted duplex adapters



90° boot in vertically mounted duplex adapters

Universal Dust Cap Strap



Features

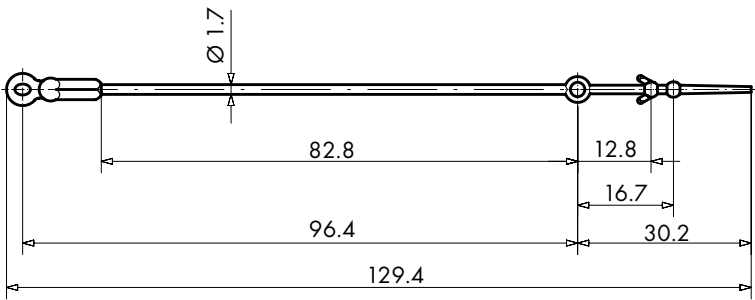
- For all HUBER+SUHNER connector dust caps
- For cable diameters up to 3.5 mm
- Flexible and universally applicable
- Mountable after connector termination

Specifications

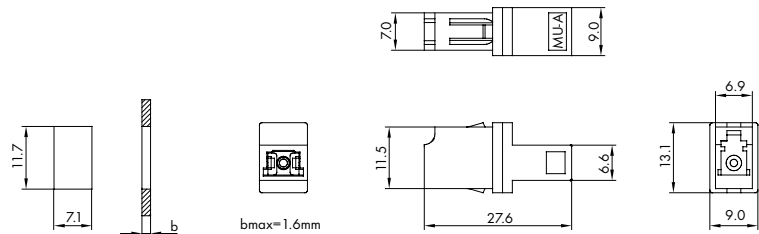
Material	TPE halogen free and flame retardant acc. to UL 94 V-0
Temperature range	-60 °C to +85 °C
Colour	black

Ordering information

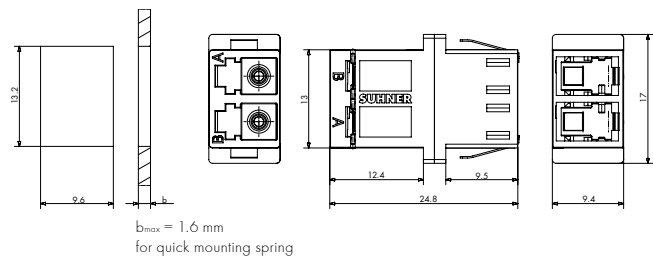
Item no.	Type	Packing unit
84020776	ACC-STR-001 100_P	100
84019782	ACC-STR-001 1000_P	1000



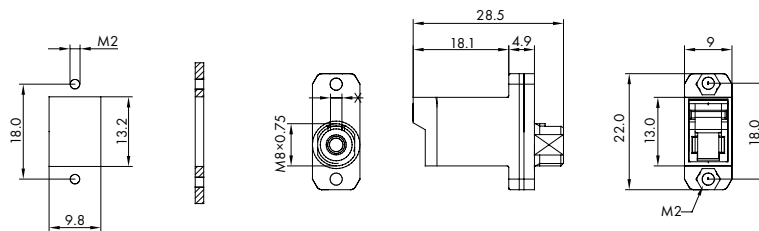
Hybrid Adapters



Hybrid adapter	Features	Type
LC-MU	zirconia ceramic sleeve, blue/brown	FLC-FMU-A100

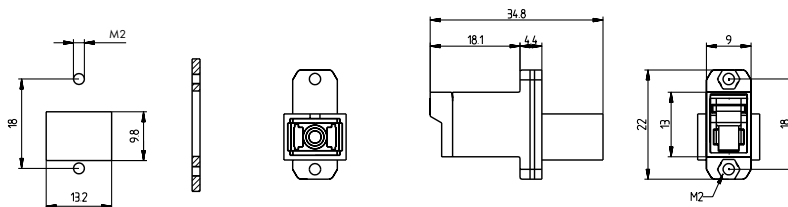


Hybrid adapter	Features	Type
LX.5-LC (SM)	zirconia ceramic sleeve, duplex, blue	FLX5-FLC-A100-02
LX.5-LC (APC)	zirconia ceramic sleeve, duplex, green	FLX5-FLC-A600-02
LX.5-LC (MM)	zirconia ceramic sleeve, duplex, beige	FLX5-FLC-A200-02

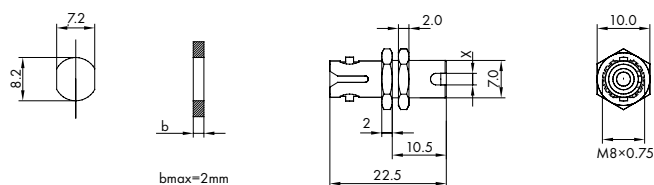


Hybrid adapter	Features	Type
LSH-FCPC (PC)	zirconia ceramic sleeve, wide key, blue	FLSH-FCPC-D101
LSH-FCPC (APC)	zirconia ceramic sleeve, wide key, green	FLSH-FCPC-D601
LSH-FCPC (APC)	zirconia ceramic sleeve, small key, green	FLSH-FCPC-D602

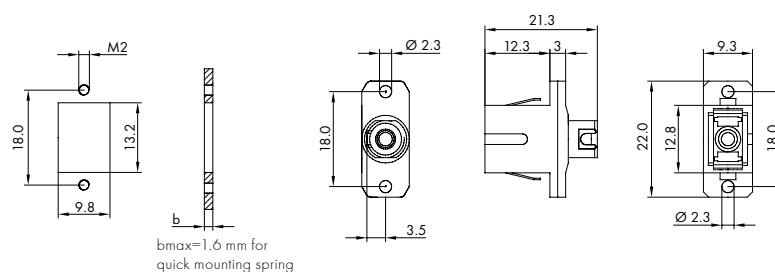
Hybrid Adapters



Hybrid adapter	Features	Type
LSH-SC (PC)	zirconia ceramic sleeve, blue	FLSH-FSC-D101
LSH-SC (APC)	zirconia ceramic sleeve, green	FLSH-FSC-D601

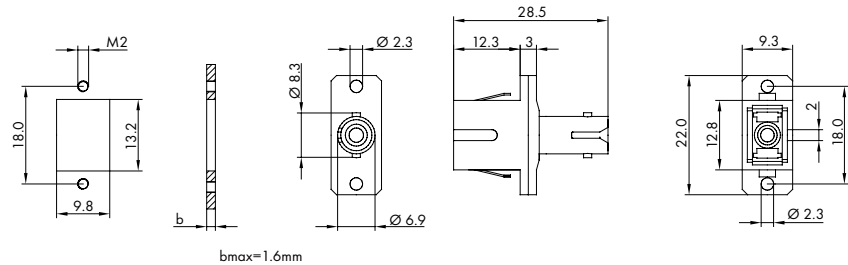


Hybrid adapter	Features	Type
ST-FCPC	zirconia ceramic sleeve, PC and APC, wide key	FST-FCPC-C100

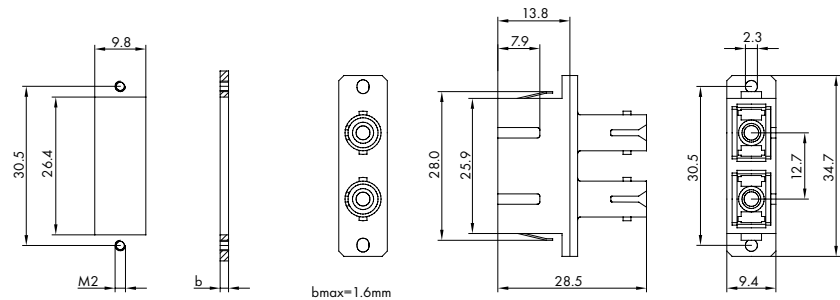


Hybrid adapter	Features	Type
SC-FCPC	zirconia ceramic sleeve, PC and APC, wide key	FSC-FCPC-D101

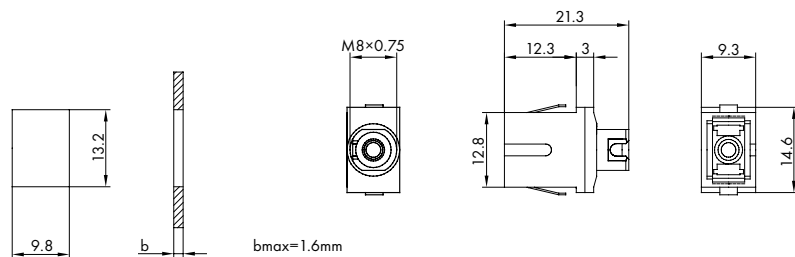
Hybrid Adapters



Hybrid adapter	Features	Type
SC-ST	zirconia ceramic sleeve	FSC-FST-D100

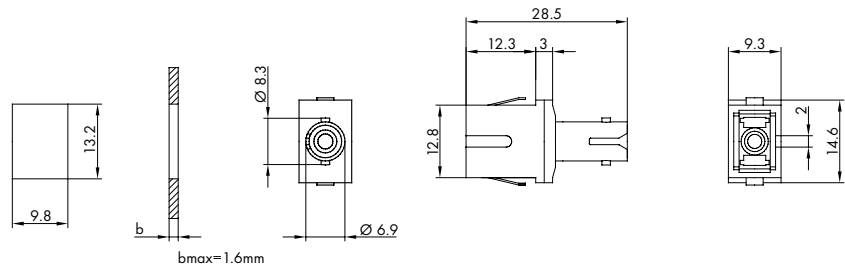


Hybrid adapter	Features	Type
SC duplex-ST	phosphor-bronze sleeve	FSC-FST-D200-02
SC duplex-ST	zirconia ceramic sleeve	FSC-FST-D100-02



Hybrid adapter	Features	Type
SC-FCPC	zirconia ceramic sleeve, blue	FSC-FCPC-A100
SC-FCPC	zirconia ceramic sleeve, black	FSC-FCPC-A101

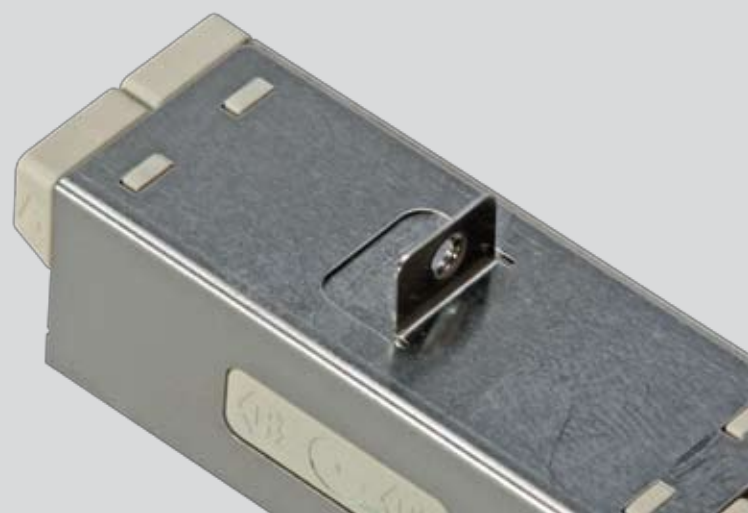
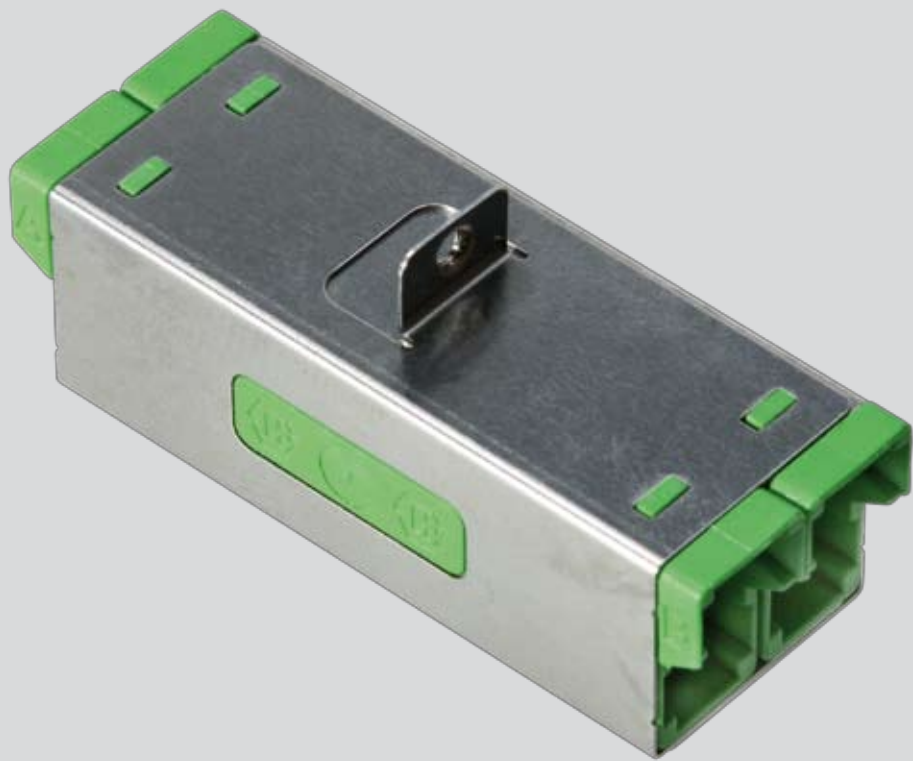
Hybrid Adapters

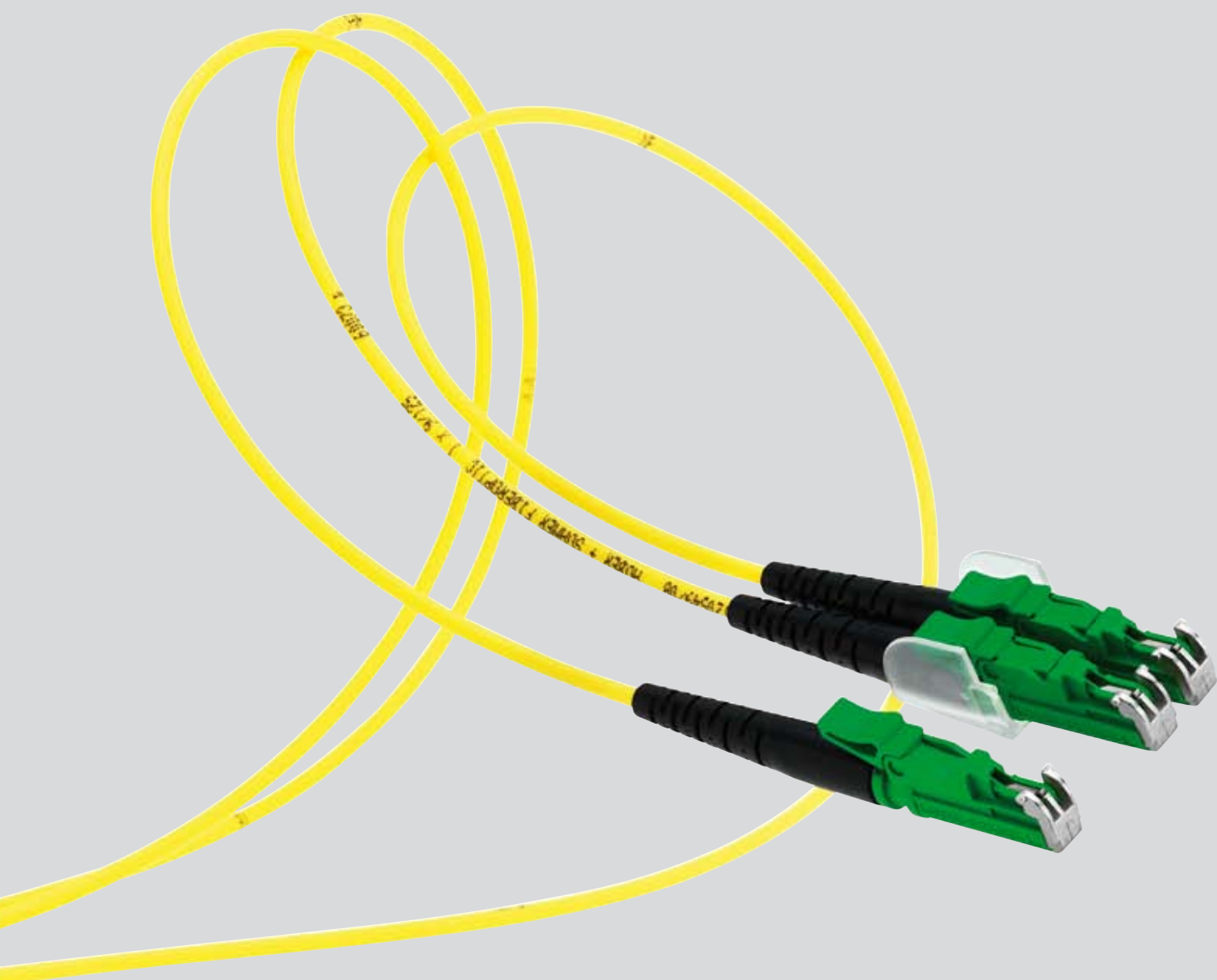


Hybrid adapter	Features	Type
SC-ST	zirconia ceramic sleeve, blue	FSC-FST-A100

LSA hybrid adapters

Hybrid adapter	Features	Type
LSA-ST	zirconia ceramic sleeve	FST-FLSA-C100
LSA-ST	zirconia ceramic sleeve	FST-FLSA-B100
LSA-FCPC	zirconia ceramic sleeve	FCPC-FLSA-C100
LSA-FCPC	zirconia ceramic sleeve	FCPC-FLSA-E100
LSA-SC	zirconia ceramic sleeve	FSC-FLSA-D100
LSA-LSH	zirconia ceramic sleeve	FLSH-FLSA-D101
LSA-LSH	zirconia ceramic sleeve	FLSH-FLSA-D601





Cable Assemblies

Assembly code	54
Assembly classes	56
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Polarization Maintaining (PM) assemblies	60

Assembly Code

Description	
cable type	
27H01CD0-	see cable code definition (see next page)
fiber type	
09-	singlemode 9/125 µm
LB	singlemode 9/125 low bend
LE-	singlemode LEAF NZDS-fiber
50-	multimode G50/125 µm
53-	multimode G50/125 µm OM3
54-	multimode G50/125 µm OM3+/OM4
62-	multimode G62.5/125 µm
20-	multimode H200/230 µm
connector type	
20/	connector left side
20-	connector right side
total number of connectors	
1 -	1 connector (pigtail)
4 -	e.g.: duplex patchcord with 4 simplex connectors
length of assembly	
2.5-	length in meters (ferrule tip to ferrule tip)
optical performance level	
1 st letter = connector left side	
2 nd letter = connector right side	
A	A singlemode LAN-eco APC
B	B singlemode high-end APC
C	C singlemode 0.1 dB APC
D	D singlemode high-end UPC
E	E singlemode high power (APC/UPC)
F	F singlemode 0.1 dB UPC
M	M multimode
N	N singlemode LAN-ECO UPC
P	P singlemode MT
K	no connector right side (pigtail)

Connector code type		Performance level									
x = upon request		A	B	C	D	E	F	M	N	P	
00	no connector										
10	FSMA							•			
20	ST-HQ							•	•		
22	ST-Security							•	•		
24	ST-LEAN							•			
30	FCPC				•		•	•	•		
33	FCPC APC wide key		•	•							
34	FCPC APC small key		•	•							
40	LSA				•			•			
43	LSA APC		•								
45	MU				•			•	•		
50	MT-RJ without pins							•		•	
51	MT-RJ with pins							•		•	
70	SC				•	x	•	•	•		
73	SC APC 8°		•	•		x					
74	SC APC 9°		•	•		x					
77	SC duplex				•	x		•	•		

Connector code type		Performance level									
x = upon request		A	B	C	D	E	F	M	N		
78	SC APC duplex		•	x		x					
79	SC APC 9° duplex		•	x		x					
80	IX.5				•	•	•	•			
81	IX.5 duplex				•	•	•	•			
83	IX.5 APC		•	•		•					
84	IX.5 APC duplex		•	•		•					
85	LC				•	x	•	•	•		
8P	LC push-pull				•	x	•	•	•		
86	LC APC		•	•		x					
8Q	LC APC push-pull		•	•		x					
8R	LC duplex push-pull	•	•	•	•	x	•	•	•		
8S	LC APC duplex push-pull		•	•		x					
90	LSH				•	•	•	•			
93	LSH APC		•	•		•					
97	LSH duplex				•	•	•	•			
98	LSH APC duplex		•	•		•					

Cable Code Definition for Assemblies

Description	
09	connector termination relevant diameter
	0.9 mm for example, the following diameters are available: 0.6/ 0.9/ 1.7/ 1.8/ 1.9/ 2.0/ 2.1/ 2.4/ 2.6/ 2.7/ 3.0 mm
	cable jacket material
	A no outer jacket (e.g. 0.9 mm tube only)
	H LSFH™
	T PVC
	Y PE
	U PUR-FR
	Z PUR
	X other
	cable design
	01 simplex, one fiber
	D8 duplex figure "8" (for LSFH™ and PVC only)
	D0 duplex figure "0"
	?? number of fibers for multifiber cable with ≥ 2 fibers
	XX other
	secondary coating
	V V
	F F
	C CW
	D CH
	S SW
	T SH
	X other
	jacket / tube colour
	A red
	B green
	C blue
	D orange
	E yellow
	F white
	G black
	H grey
	I brown
	K violet (blue-purple)
	L pink
	M turquoise
	T transparent
	U nature
	X other
	fiber coating colour
	O not colored
	A red
	B green
	C blue
	D orange
	E yellow
	F white
	G black
	H grey
	I brown
	K violet (blue-purple)
	L pink
	M turquoise
	X other

Assembly Classes

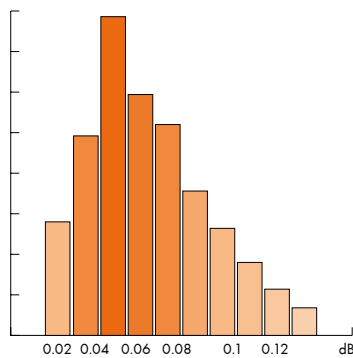
HUBER+SUHNER cable assemblies stand for PERFORMANCE and RELIABILITY

Features

- Available in 3 singlemode attenuation classes to meet different customer requirements
- Full ceramic ferrules as a base for highest performance and reliability
- Optimized products and assembling processes due to HUBER+SUHNER in-house connector and cable development and manufacturing
- Outstanding mechanical and thermal strengths exceeding requirements of international standards

Singlemode 0.1 dB class

Connector quantity



Applications

- Long haul transmissions, saving costs for signal amplification
- Low loss budget transmissions
- Transmissions where uniform channel losses are required
- Splice alternative

Compatibility

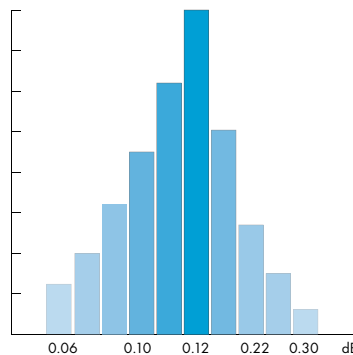
- All connectors are tuned
- Fiber according to ITU-T G.652-D IEC 60793-2-50
- Premium ferrule

Attenuation

	each-to-each measuring		against reference measuring	
IL ¹⁾	IEC 6100-3-34 97% mean	0.15 dB 0.06 dB	IEC 61300-3-4 max.	0.15 dB
RL	IEC 61300-3-6 UPC APC	> 50 dB > 85 dB ²⁾		

Singlemode high-end class

Connector quantity



Applications

- CATV / Video
- Passive Optical Networks PON
- WDM /DWDM

Compatibility

- All connectors are tuned acc. to IEC 61755-3-1/2, Grade B
- Fiber according to ITU-T G.652-D IEC 60793-2-50

Attenuation

	each-to-each measuring		against reference measuring	
IL ¹⁾	IEC 61300-3-34 97% mean	0.25 dB 0.12 dB	IEC 61300-3-4 max.	0.35 dB
RL	IEC 61300-3-6 UPC APC	> 50 dB > 85 dB ²⁾		

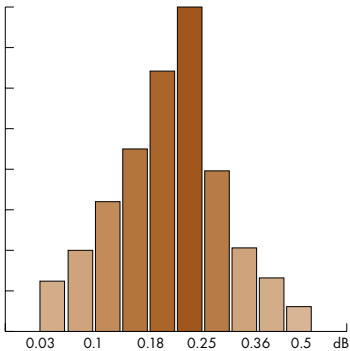
Please note: 0.1dB Assemblies have max. losses lower than today's measurement accuracy in the field. Measurement equipment (power meter/OTDR) and measurement set-up, reference cables and adapters, environmental conditions and dirt easily cause measurement uncertainties of > 0.2 dB. Reliable and reproducible measurements at accuracies below 0.1 dB are feasible under laboratory conditions only.

¹⁾ at 1310 nm
²⁾ measurement method 3 (OLCR)

Assembly Classes

Singlemode LAN-Eco Class

Connector quantity



Applications

- Universal premises cabling according to IS 11801, EN 50173-1, EIA/TIA 568
- Cost effective connections in PON
- FTTX, Data center

Compatibility

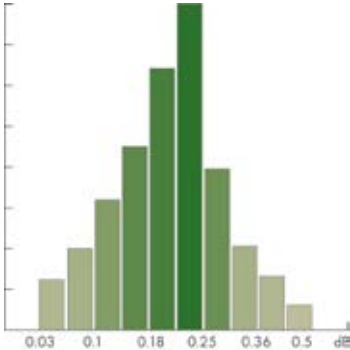
- Connectors are not tuned
- Fiber according to ITU-T G.652-D IEC 60793-2-50

Attenuation

	each-to-each measuring		against reference measuring	
IL ¹⁾	IEC 61300-3-34 97% mean	0.45 dB 0.20 dB	IEC 61300-3-4 max.	0.35 dB
RL	IEC 61300-3-6 UPC APC	> 50 dB > 85 dB ²⁾		

Multimode HQ

Connector quantity



Applications

- Universal premises cabling according to IS 11801, EN 50173-1, EIA/TIA 568
- FTTX, Data center

Compatibility

- Fiber according to ITU-T G.651 IEC 60793-2-10

Attenuation

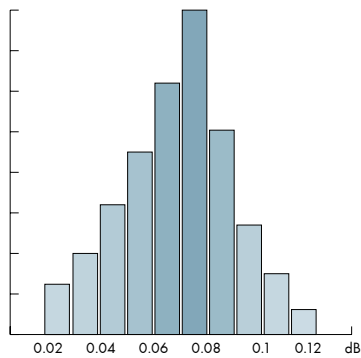
	each-to-each measuring		against reference measuring	
IL ³⁾	IEC 61300-3-34 97% mean	0.50 dB 0.20 dB	IEC 61300-3-4 max.	0.35 dB
RL	IEC 61300-3-6	> 35 dB		

¹⁾ at 1310 nm
²⁾ measurement method 3(OLCR)
³⁾ at 1300 nm, Launch conditions acc. IEC 61300-1

Assembly Classes

HighPower assemblies

Connector quantity



Applications

- DWDM / CWDM
- Raman, EDFA amplifications
- Long haul transmissions saving costs for signal amplification

Compatibility

- All connectors are tuned
- Fiber according to ITU-T G.652
- Premium ferrule IEC 60793-2-50

Attenuation

	each-to-each		against ref.
IL ¹⁾	IEC 61300-3-34 97% mean	0.15 dB 0.06 dB	IEC 61300-3-4 max. 0.15 dB
RL	IEC 61300-3-6 > 50 dB > 85 dB		UPC APC

¹⁾ at 1310 nm

The HighPower concept

HighPower Assemblies are HUBER+SUHNER's answer to the ever-increasing transmission requirements of high-performance networks.

Amplifiers used in DWDM applications can easily reach power levels of one Watt (30dBm). The optical power is concentrated on the fiber core of 10 µm diameter which corresponds to power densities larger than 1.3MW/cm². Slightest impurities or defects on the fiber end-face can thermally destroy the ferrule.

The HighPower manufacturing process is characterized by stringent cleanliness, premium polishing procedures, and special cleaning before packing. HUBER+SUHNER's HighPower assemblies guarantee maximal operational safety with their proven long term performance at average power levels up to 2 W and power peaks up to 5 W.

List of hazard levels (IEC 60825-2) at different power levels in singlemode fibers at 1310 nm wavelength

Level	Optical power		Hazard
1	15.6 mW	12 dBm	safe under all foreseeable conditions
1M	42.8 mW	16 dBm	safe, but might be hazardous if magnifying instrument is used
3R	80.0 mW	19 dBm	low risk to eyes and skin
3B	500 mW	27 dBm	medium risk to eyes and low risk to skin
4	> 500 mW		high risk to eyes and skin, even for stray reflected light beams

The high-performance LSH (E-2000™) and LX.5 connectors meet the most stringent handling and functional safety standards. The full metal protection cap guarantees maximum eye safety and no environmental laser hazard under unplugged and plugged conditions. The special locking and mechanical coding system avoids unintended or unauthorized plugging.

Upon request SC and LC HighPower assemblies can be supplied. However these two connectors do not offer eye and laser safety as they have no shutter.

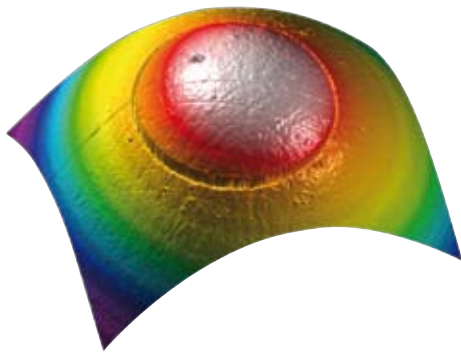
Assembly Classes



Full ceramic ferrule

HUBER+SUHNER connectors feature full ceramic ferrules. Only high precision full ceramic ferrules with tightest dimensional tolerances can ensure best possible optical performances as well as

- Reliability
- Stability (chemical, thermal, mechanical)
- Reproducibility
- Compatibility



Endface geometry

Tight endface geometry tolerances guarantees the customer a reliable and reproducible quality and long term behaviour. Interferometric ferrule endface inspection is mandatory for controlled and mastered manufacturing processes. Upon request a Quality Control Report can be issued for each assembled connector.

(Illustration offered by Data-Pixel, France)

Assembly length tolerances							
Up to [m]	0.5	1	2	5	10	20	> 20
Tolerance 0 cm / +	4 cm	6 cm	10 cm	20 cm	30 cm	40 cm	2 %

Polarisation-Maintaining (PM) premium Assemblies

Polarisation-Maintaining (PM) fibers

PM fibers are designed to maintain the state of polarization of light as it travels along the transmission line. To achieve the control over the state of polarization, a desired birefringence is induced into the fiber during the fabrication drawing process using well-defined stress structures within the core and cladding. Fiber birefringence defines two principal optical axes, the slow and fast axes, representing the different propagation constants and subsequent optical transmission speeds. Disadvantage of using PM fiber are that a very precise alignment of the polarization direction is required and that they generally exhibit higher insertion losses than standard fibers.

HUBER+SUHNER solution

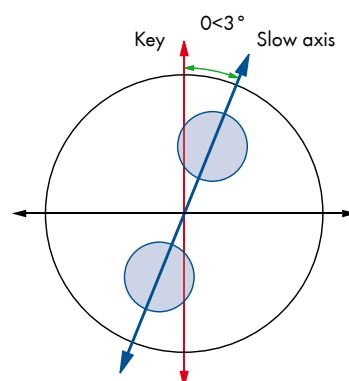
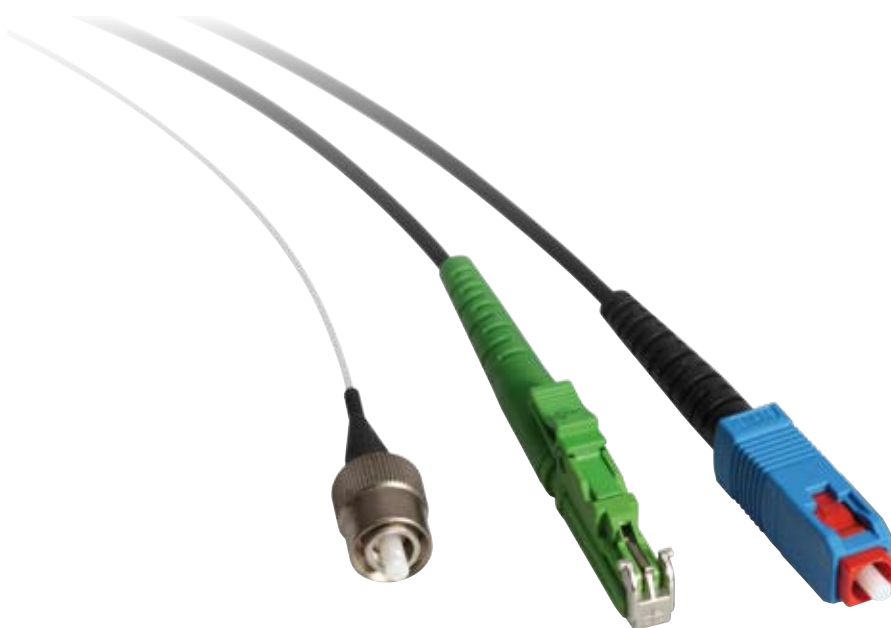
The premium PM assemblies of HUBER+SUHNER use a special connector design and an improved innovative tuning method to achieve simultaneously excellent insertion loss, return loss and Extinction Ratio (ER) performances. We realize exact alignment of the polarization direction in respect to the connector body optimizing the ER using proprietary active alignment processes. Thereby ER ratios of well above 23dB are reached, which corresponds to a misalignment of the slow axis to the connector key of smaller than ± 3 degree.

Application

Fiber optic links that have the capability to manage the state of the polarization have been usefully applied in many areas of the industry. For example, PM fiber links are usefully employed in high speed optical networks where many of the optical components are polarization sensitive.

HUBER+SUHNER polarization maintaining premium assemblies can be used in a range of application including:

- Connectivity between polarization sensitive in-line optical components such as lasers, modulators and amplifiers
- Fiber optic sensors, interferometers, probes and other test and measurement equipment
- Fiber Optic based Gyroscopes (FOG)
- Raman gain amplifier and high power fiber lasers for optical links, key components in ultra-long haul and 40 Gb/s systems
- PM passive components such as splitters and couplers
- PMD compensator



Polarisation-Maintaining (PM) premium Assemblies

Technical premium class specifications: LSH (E-2000), SC and FCPC

	PC	APC
Insertion loss IL ¹⁾ [dB] max	0.4	0.4
Return loss RL [dB]	> 50	> 85
Extinction Ratio ER [dB]	> 23 (typ. 28)	> 23 (typ. 28)
Temperature range ²⁾ [°C]	-40 to +85	-40 to +85
Min. mating cycles	1000	1000

¹⁾ To reference connector; Panda fiber for 1550nm

²⁾ Might be further limited by cable construction

Features

- Dedicated labeling including IL, RL, and ER measurement records.
- Exact core position record (concentricity and angle deviation) upon request.
- Standard assemblies are based on Panda fiber for 1550nm, other fiber types and wavelengths upon request

Ordering information

						Description
						cable type
04A01VX0-						fiber
09A01DT0-						0.9 mm tube, transparent
21H01DG0-						2.1 mm LSFH™ cable, black
27H01DG0-						2.7 mm LSFH™ cable, black
						fiber type
P1 -						PM 1550 with UV/UV 400 µm (standard)
						connector type 1st side/2nd side
30/						FCPC (wide key)
33/						FCPC APC 8° (wide key)
34/						FCPC APC 8° (small key)
70/						SC
73/						SC APC 8°
90/						E-2000™ (LSH)
93/						E-2000™ (LSH) APC 8°
						total number of connectors
2-						terminated on both ends
						length of assembly
1 -						1 meter
						ER performance
23						extinction ratio 23 dB (standard)
09A01DT0-	P1 -	30/30-	2-	1 -	23	example

E-2000™ is manufactured under licence of DIAMOND SA, CH LOSONE



Connectors for harsh Environment

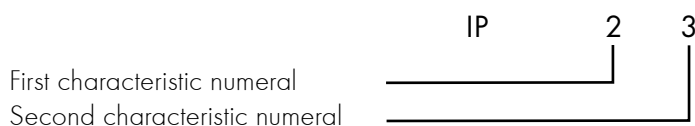
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Solutions for harsh Environment

HUBER+SUHNER fiber optic products for harsh environment are designed to withstand severe mechanical loads and vibrations, high thermal exposure, and demanding environments like rain, salt and splash water.

Optical cable assemblies provide highest bandwidths and transmit reliably data over long distances under severe environmental conditions. Further, optical links guarantee immunity against electromagnetic interference and voltage surges which are essential advantages for antenna feeder lines of mobile communication systems. The total electrical isolation makes optical fibers also a safer, spark-free media for use in hazardous mining or oil platform environments. All these advantages come at reduced weight and size compared to conventional copper or RF cable links.

The following table lists the environmental protection classes according to IEC 60529 (DIN 40050).



First numeral	Against ingress of solid foreign objects	Second numeral	Against ingress of water with harmful effects
0	non-protected	0	non-protected
1	≥ 50 mm	1	vertical dripping (1 mm/min., 10 min. duration)
2	≥ 12.5 mm	2	dripping (15° tilted, 3 mm/min., 2.5 min. for each position of tilt)
3	≥ 2.5 mm	3	spraying (nozzle ± 60° from vertical, 10 l/min., 5 min.)
4	≥ 1 mm	4	splashing (nozzle ± 180° from vertical, 10 l/min., 5 min.)
5	dust-protected	5	powerful jetting (from all directions 12.5 l/min., 3 min.)
6	dust-tight	6	powerful jetting (from all directions 100 l/min., 3 min.)
		7	temporary immersion (1 m during 30 min.)
		8	Continuous immersion (by agreement or specification)

Environment and performance categories according to IEC 61753-1

Category	Description	Operating temperature	Relative humidity
C	controlled environment (typically within an office or building)	-10 °C to +60 °C	5% to 85%
U	uncontrolled environment (typically outdoors but enclosed or covered)	-25 °C to +70 °C	10% to 100%
E	extreme environment (typically outdoors but not covered)	-40 °C to +85 °C	0% to 100%

Solutions for harsh Environment – Application Examples



Fiber-to-the-Antenna

Third generation systems for mobile communications (UMTS, CDMA2000, TD-SCDMA) and WIMAX deploy fiber optical feeder up the antenna poles. Outdoor assemblies with the compact and robust ODC connector exactly fulfil all needs of these applications. Two or four 1.25 mm ceramic ferrules provide reliable low-loss contacts for the uplink and downlink. All assemblies are fully tested according to IEC 61753 Cat. E extreme environment.

Wind mills and surveillance systems

The ODC which is available with up to 4-fibers in singlemode and multimode fulfills highest requirements at a compact size. The robust mechanical design and its high optical performance make ODC an ideal industrial connector for wind mills, mining, surveillance systems (cameras), etc.

Ground defence

Shock, vibration, salt mist, mud, etc. are typical challenges for these types of applications. The expanded beam connector EBC guarantees fast, easy, and reliable connections even under worst conditions. Harsh environment connectors can be terminated on mobile cables and reels being suitable for temporary cable installations.



Transportation and Railway



With its compact design and the high mechanical and thermal resilience, the Push-Pull connector Q-ODC sets a new standard in harsh environment connectivity. The vibration safe locking mechanism combined with high corrosion resistance and IP68 protection class, make the Q-ODC the ideal connector for transportation and railway applications.

Broadcast and mobile systems

HUBER+SUHNER offers a range of mobile cabling systems and assemblies for temporary cable installations as needed for broadcasting of sport events, car racings, etc. and for temporary connections in case of natural hazards.

Picture left © SBB

Overview Connectors for harsh Environment

Technical data	Q-ODC®	ODC®-2
		
Technology	full ceramic 1.25 mm ferrule and sleeve	full ceramic 1.25 mm ferrule and sleeve
Number of fibers	2	2
Protection class	IP68	IP68
Fiber types	singlemode and multimode	singlemode and multimode
Operating temperature ¹⁾	-40 °C up to +85 °C	-40 °C up to +85 °C
Mating durability	200 ²⁾	1000 ²⁾
Compatible cable types ³⁾	02-.../FSN(ZN)Z-G55 02-.../FSN(ZNG)H-G55 02-.../FSN(ZNG)H-G70 02-.../FJ(ZN)Z-G17 2x 01-.../FJU-...19	02-.../FSN(ZN)Z-G55 02-.../FSN(ZNG)H-G55 02-.../FSN(ZNG)H-G70 02-.../FJ(ZN)Z-G17 2x 01-.../FJU-...19
Mechanical performance	tensile load 450 N plug 30 N socket	tensile load 800 N plug 30 N socket
Protection cap	snap-on	screwed
Insertion loss	singlemode typ. ≤ 0.20 dB 97% ≤ 0.45 dB multimode typ. ≤ 0.20 dB 97% ≤ 0.50 dB	singlemode typ. ≤ 0.20 dB 97% ≤ 0.45 dB multimode typ. ≤ 0.20 dB 97% ≤ 0.50 dB
Return loss	singlemode ≥ 50 dB	singlemode ≥ 50 dB

¹⁾ depending on cable type

²⁾ with repeated cleaning

³⁾ further cable types are available

Overview Connectors for harsh Environment

ODC®-4	XCO	EBC
		
full ceramic 1.25 mm ferrule and sleeve	LC with full ceramic ferrules	hermaphroditic expanded beam
4	2	2 and 4
IP68	IP67	IP67
singlemode and multimode	singlemode und multimode	singlemode and multimode
-40 °C up to +85 °C	- 40 °C up to + 85 °C	-40 °C up to +85 °C
1000 ²⁾	500	2000
04-.../FSN(ZN)Z-G55 04-.../FSN(ZNG)H-G55 4x 01-.../FJU-...19	02-.../FSN(ZN)Z-G55 02-.../FSN(ZNG)H-G55 02-.../FSN(ZNG)H-G70	02-.../FSN(ZN)Z-G56 04-.../FSN(ZN)Z-G56
tensile load 800 N plug 30 N socket	tensile load 500 N	tensile load 1500 N 500 free falls from 1.2 m height
screwed	screwed	screwed
singlemode typ. ≤ 0.20 dB 97% ≤ 0.45 dB	singlemode typ. ≤ 0.20 dB 97% ≤ 0.45 dB	singlemode max. 2.0 dB
multimode typ. ≤ 0.20 dB 97% ≤ 0.50 dB	multimode typ. ≤ 0.20 dB 97% ≤ 0.50 dB	multimode max. 1.5 dB
singlemode ≥ 50 dB	singlemode ≥ 50 dB	singlemode typ. 25 dB

Q-ODC® outdoor Connector Plug/Socket



Features

- 2 fibers, singlemode or multimode
- Compact design with 2 × 1.25 mm ferrules
- Built-in socket with square flange
- Extension connector for cable chaining
- Robust push-pull coupling mechanism - two clearly defined mating states
- Highest outdoor installation safety
- Waterproof, dust proof and corrosion resistant
- Waterproof protection caps available
- EMI protected
- RoHs compliant
- Fulfills performance Standard IEC 61753-1 Cat. E

Specifications

Technology		full ceramic ferrule and sleeve
Housing material		nickel-plated brass
Mating mechanism		push-pull with two clearly defined states
Mechanical performance	Q-ODC plug	≤ 450 N tensile load ≤ 30 N static side load
	Q-ODC socket	≤ 30 N tensile load
Operating temperature ¹⁾	IEC 61300-2-22	-40°C up to + 85 °C
Mating durability	IEC 61300-2-2	200 cycles ²⁾
Ingress protection (mated)	IEC 60529	IP68
Salt mist	IEC 61300-2-26	30 days passed
Vibration	IEC 61300-2-1 IEC 61373	passed 10 Hz - 500 Hz / 10 g passed category 1A/B, 2, 3
Shock	IEC 61300-2-9 IEC 61373	passed 50 g passed category 1, 2

¹⁾ depending on cable type

²⁾ with repeated cleaning

Optical performance

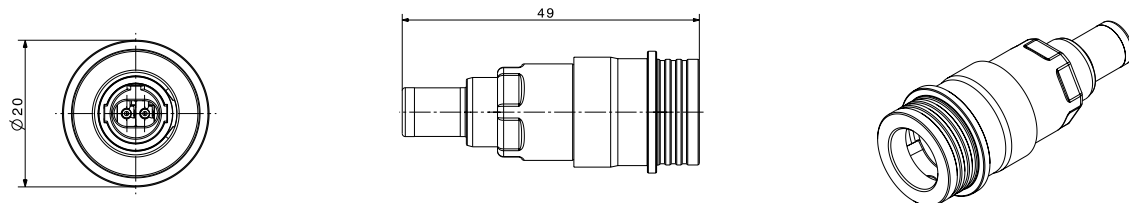
Insertion loss / IEC 61300-3-34	singlemode	typ. ≤ 0.20 dB	97% ≤ 0.45 dB
	multimode	typ. ≤ 0.20 dB	97% ≤ 0.50 dB
Return loss	singlemode	≥ 50 dB	

Mating sequence

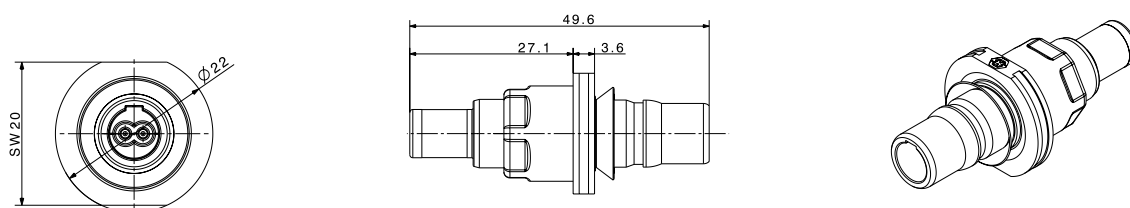


Q-ODC® outdoor Connector Plug/Socket

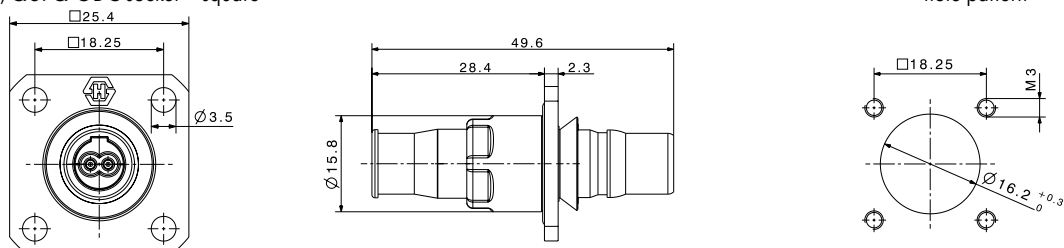
Type QA, QB, QC: Q-ODC plug



Type QE, QF, QG: Q-ODC extension connector



Type QS, QT, QU: Q-ODC socket – square



Overview of Q-ODC connector types

Type	Connector	Dust cap
QA		push-on  IP 54
QC		snap-on  IP 68
QB		snap-on with chain  IP 68
QE		push-on  IP 65
QF		snap-on  IP68
QG		snap-on with chain  IP68
QS		push-on  IP 65
QT		snap-on  IP68
QU		snap-on with chain  IP68

ODC[®]-2 outdoor Connector Plug/Socket



New enhanced version

Features

- 2 fibers, singlemode or multimode
- Compact design with 2 × 1.25 mm ferrules
- Built-in socket with square or hexagonal flange
- Extension connector for cable chaining
- Screwed locking mechanism
- Easy and safe installation
- Waterproof, dust proof and corrosion resistant
- Waterproof protection caps
- EMI protected
- RoHs compliant
- Full compatibility to previous version
- Fulfills performance Standard IEC 61753-1 Cat. E

Specifications

Technology		full ceramic ferrule and sleeve
Housing material		nickel-plated brass
Mechanical performance	ODC plug	≤ 800 N tensile load ≤ 30 N static side load
	ODC socket	≤ 30 N tensile load
Installation torque force	min. 1 Nm	max. 2 Nm
Operating temperature ¹⁾	IEC 61300-2-22	-40°C up to + 85 °C
Mating durability		1000 cycles ²⁾
Ingress protection (mated)	IEC 60529	IP68
Salt mist	IEC 61300-2-26	30 days passed
Vibration	IEC 61300-2-1	passed 10 – 500 Hz / 10g
Shock	IEC 61300-2-9	passed 100 g

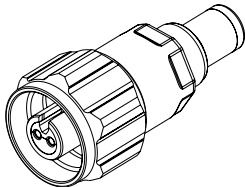
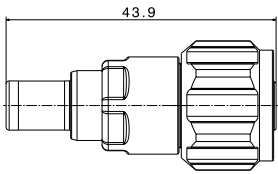
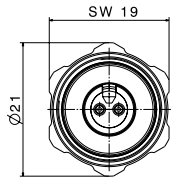
¹⁾ depending on cable type

²⁾ with repeated cleaning

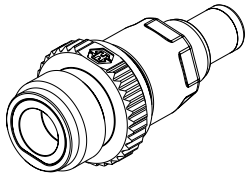
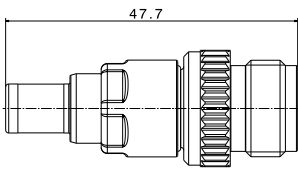
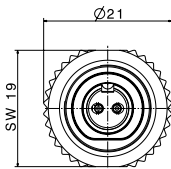
Optical performance

Insertion loss IEC 61300-3-34	singlemode	typ. ≤ 0.20 dB	97% ≤ 0.45 dB
	multimode	typ. ≤ 0.20 dB	97% ≤ 0.50 dB
Return loss	singlemode	≥ 50 dB	

Standard type A1, A4: ODC-2 plug

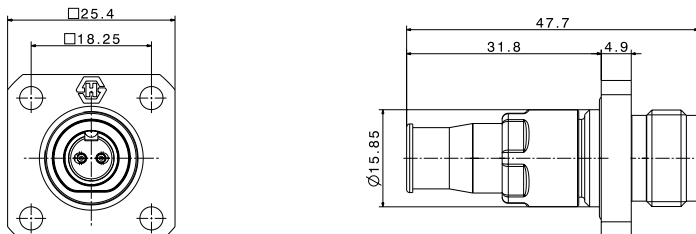


Standard type E1, E3: ODC-2 extension

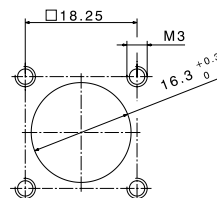


ODC[®]-2 outdoor Connector Plug/Socket

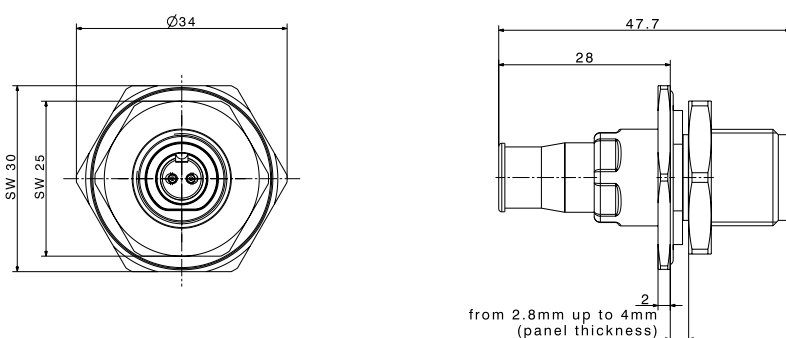
Standard type C1, C3: ODC-2 socket – square small



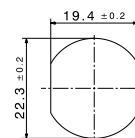
hole pattern



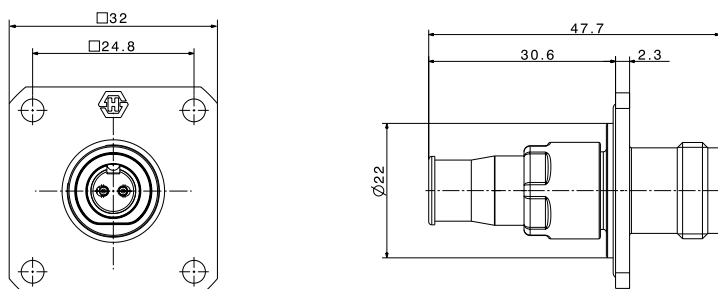
Standard type B3, B4: ODC-2 socket – hexagonal, mounted from the rear



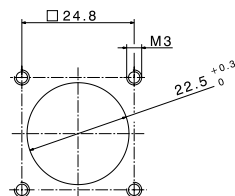
hole pattern



NON-standard type C6, C8: ODC-2 socket – square large

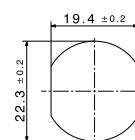
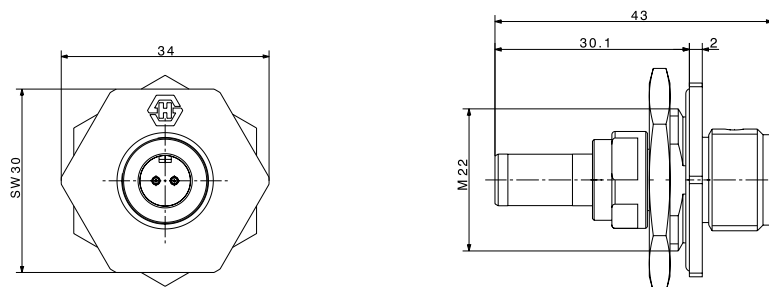


hole pattern



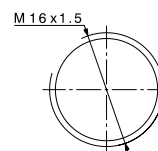
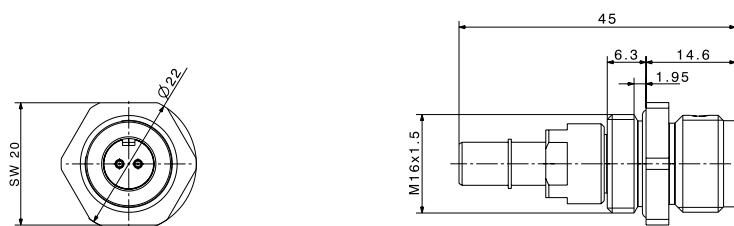
NON-standard type B5, B6: ODC-2 socket – hexagonal, mounted from the front, previous version (will be phased out)

hole pattern



NON-standard type B8, B9: ODC-2 socket (previous version)






















hole pattern



ODC[®]-2 outdoor Connector Plug/Socket

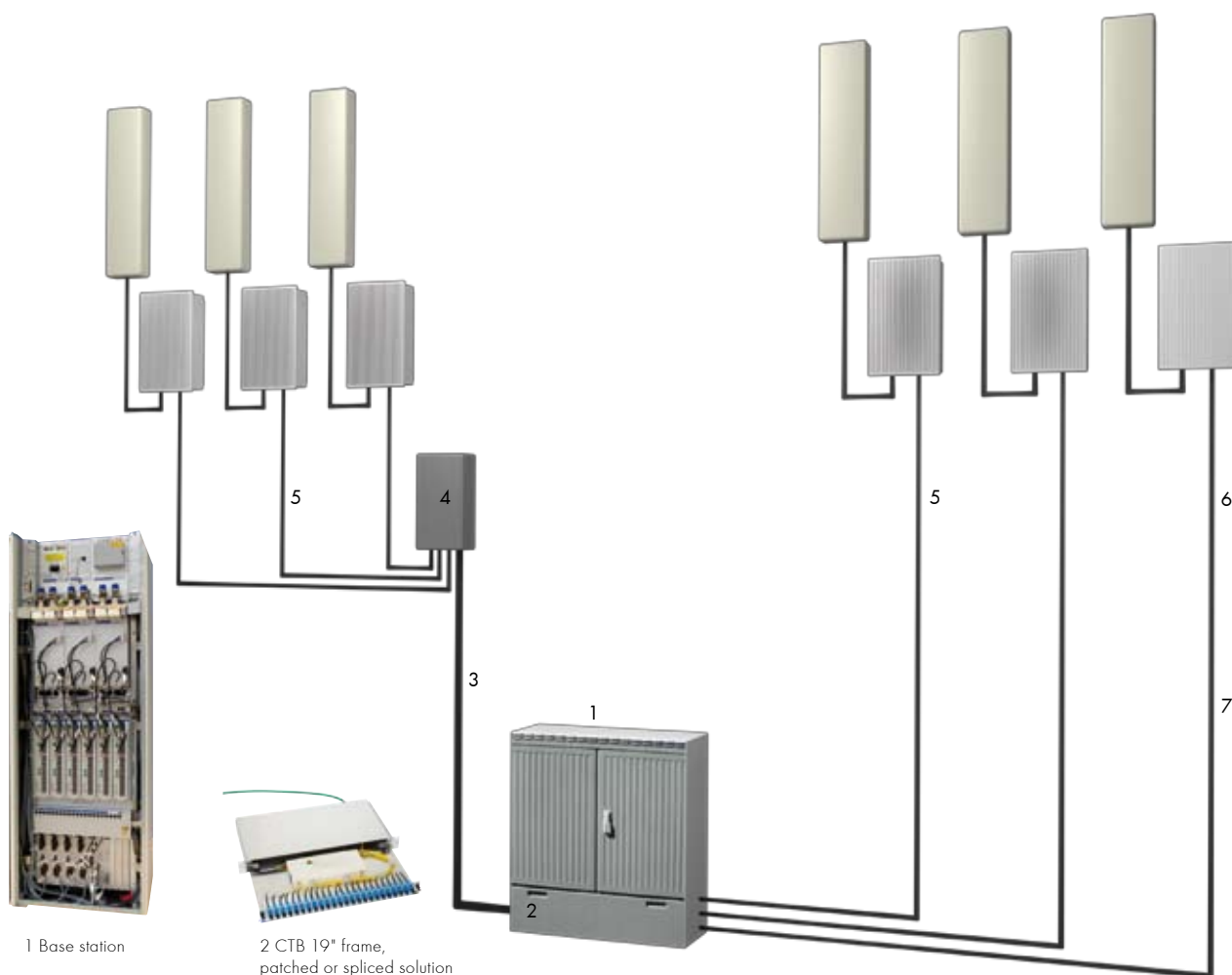


Overview of ODC-2 connector types

Type	Connector	Dust cap
A1	ODC-2 plug 	screwed cap with chain 
A4		screwed cap with pulling feature 
E1	ODC-2 extension (socket type) 	screwed cap 
E3		screwed cap with chain 
C1	ODC-2 socket, square small 	screwed cap 
C3		screwed cap with chain 
C6	ODC-2 socket, square large 	screwed cap 
C8		screwed cap with chain 
B3	ODC-2 socket, hexagonal, mounted from rear 	screwed cap 
B4		screwed cap with chain 
B5	ODC-2 socket, hexagonal, mounted from front  will be phased out	screwed cap 
B6		screwed cap with chain 
B8	ODC-2 socket screwed mounting 	screwed cap 
B9		screwed cap with chain 

Fiber-to-the-Antenna (FTTA) Installation for mobile Communication Systems

Next generation mobile communication systems (3G, Wimax, LTE) using remote radio heads yield considerable savings on operational costs (up to 40%) and reduction of capital expenditure for new network roll-outs and upgrades. The financial advantages for operators are the reasons for the rapid technology shift from conventional systems (using corrugated copper cable links) towards FTTA systems using fiber-optic links between the base station and the remote radio head. HUBER+SUHNER is a global expert for FTTA installations and provides complete solutions ranging from planning, product definition, volume production, logistics to installation services. We directly support OEMs, global and local operators, and installers.



ODC[®]-4 outdoor Connector Plug/Socket



New enhanced version

Features

- 4 fibers, singlemode or multimode
- Compact design with 2 × 1.25 mm ferrules
- Built-in socket with square or hexagonal flange
- Extension connector for cable chaining
- Screwed locking mechanism
- Easy and safe installation
- Waterproof, dust proof and corrosion resistant
- Waterproof protection caps
- EMI protected
- RoHs compliant
- Full compatibility with previous version
- Fulfills performance Standard IEC 61753-1 Cat. E

Specifications

Technology		full ceramic ferrule and sleeve
Housing material		nickel-plated brass
Mechanical performance	ODC-4 plug	≤ 800 N tensile load ≤ 30 N static side load
	ODC-4 socket	≤ 30 N tensile load
Installation torque force	min. 1 Nm	max. 2 Nm
Operating temperature ¹⁾	IEC 61300-2-22	-40°C up to + 85 °C
Mating durability		1000 cycles ²⁾
Ingress protection (mated)	IEC 60529	IP68
Salt mist	IEC 61300-2-26	30 days passed
Vibration	IEC 61300-2-1	passed 10 – 500 Hz / 10g
Shock	IEC 61300-2-9	passed 100 g

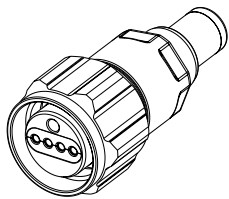
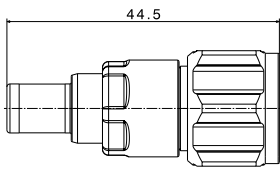
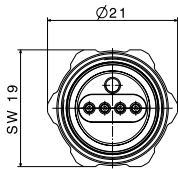
¹⁾ depending on cable type

²⁾ with repeated cleaning

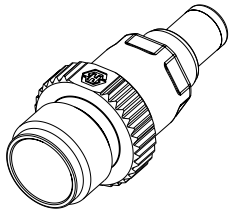
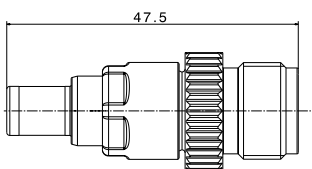
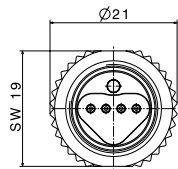
Optical performance

Insertion loss IEC 61300-3-34	singlemode	typ. ≤ 0.20 dB	97% ≤ 0.45 dB
	multimode	typ. ≤ 0.20 dB	97% ≤ 0.50 dB
Return loss	singlemode	≥ 50 dB	

Type J2, J3: ODC-4 plug

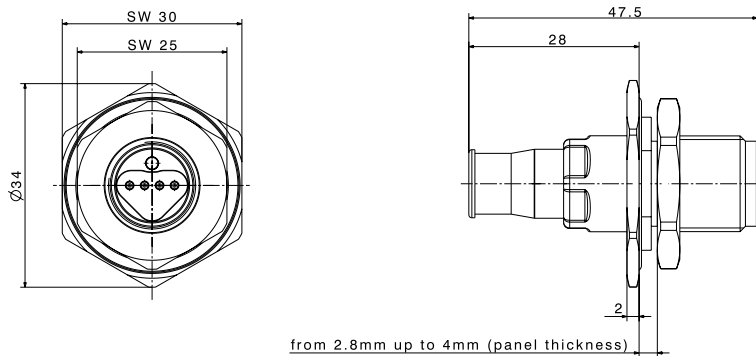


Type E4, E6: ODC-4 extension

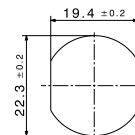


ODC[®]-4 outdoor Connector Plug/Socket

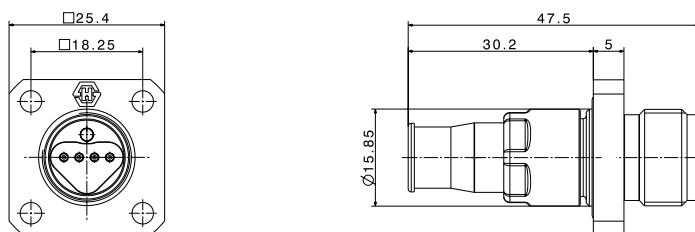
Standard type K2, K3: ODC-4 socket - hexagonal



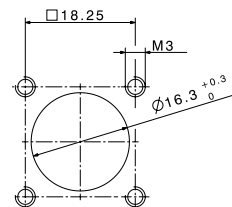
hole pattern



Standard type K6, K7: ODC-4 socket - square small



hole pattern



Overview of ODC-4 connector types

Type	Connector	Dust cap
J2		screwed cap with pulling feature 
J3		screwed cap with chain 
E4		screwed cap 
E6		screwed cap with chain 
K2		screwed cap 
K3		screwed cap with chain 
K6		screwed cap 
K7		screwed cap with chain 



Features

- ODC-2, ODC-4, Q-ODC
- Robust minicord-breakout or field cable
- Broad range of additional cables
- Halogen free and low smoke
- UL OFNR rated cables available
- Highest mechanical resistance
- All cable assemblies factory tested
- RoHs compliant

Cable code for assemblies	Connector type	Cable type	Operating temperature
09Z02FG0	ODC-2, Q-ODC plug and extension	02-.../FSN(ZN)Z-G55	-40 °C up to +85 °C
09H02FGX ¹⁾		02-.../FSN(ZNG)H-G55 ³⁾	-40 °C up to +75 °C
09H02FGX		02-.../FSN(ZNG)H-G70 ²⁾	-40 °C up to +75 °C
17Z02FG0		02-.../FJ(ZN)Z-G17	-40 °C up to +80 °C
09HZ02FG0 ⁴⁾		02-.../FSN(ZN)HZ-G70	-40 °C up to +85 °C
09Z04FG0	ODC-4 plug and extension	04-.../FSN(ZN)Z-G55	-40 °C up to +85 °C
09Z04FG0 ¹⁾		04-.../FSN(ZNG)H-G55 ³⁾	-40 °C up to +75 °C
09HZ04FG0		04-.../FSN(ZN)HZ-G70	-40 °C up to +85 °C
19U02FE0 or 19U02FD0	ODC-2 socket	2 × 01-.../FJU...	-40 °C up to +85 °C
19U04FE0 or 19U04FD0	ODC-4 socket	4 × 01-.../FJU...	-40 °C up to +85 °C

1) X to be replaced with G in case of singlemode and with O for multimode

2) UL OFNR rated cables

3) Fulfills UL1666 requirements



4) Cable type 02-E9/FSN(ZN)HZ-G70-L for singlemode. Specified temperature range at 1310 nm.

Ordering information

09Z02FG0-	cable type	see table above
09-	fiber type	singlemode E9/125 µm
50-		multimode G50/125 µm
62-		multimode G62.5/125 µm
A4/88-	connector left side/connector right side	
	A1, A4	ODC-2 plug
	C1, C3	ODC-2 socket - square small
	C6, C8	ODC-2 socket - square large
	B5, B6	ODC-2 socket - hexagonal
	E1, E3	ODC-2 extension
	J2, J3	ODC-4 plug
	K2, K3	ODC-4 socket - hexagonal
	K6, K7	ODC-4 socket - square small
	E4, E6	ODC-4 extension
	QA, QB, QC	Q-ODC plug
	QS, QT, QU	Q-ODC socket
	QE, QF, QG	Q-ODC extension
	88	LC duplex
	X1	XCO connector
	XX	other connector type see connector code
x-	total number of connectors	
x	length of assembly [m]	
xx	performance level (left/right)	
	MM	multimode
	NN	singlemode

ODC® Mating, Cleaning and Installation


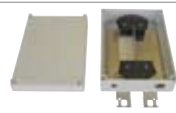




ODC installation and cleaning kit

	Description	Type	Item number	
1	installation and cleaning kit. content 1a, 1b, 1c (2x), 1d (2x25 pcs.)	FIBER OPTIC CLEANING KIT	84038056	
1a	red bag	QbE FO cleaning system	—	
1b	QbE cube cleaning system	FW2150 Electro-Wash MX	84041085	
1c	MX cleaning pen	Pen	84041105	
1d	fiber optic cleaning swabs	51121 Cleaning Swab	84041108	
2	IBC cleaner 1.25 mm ferrule	Cleaner, IBC, 1.25 mm	84064486	
3	IBC cleaner 2.50 mm ferrule	Cleaner, IBC, 2.5 mm	84095170	
4	torque wrench 1 Nm	74_Z-0-0-321	84016417	

ODC assembly check tool

Description	Type	Item number	
Fiber check tool for 2.5mm ferrule connectors	TOOL-MEAS-LIGT-CHECK	23032064	
ODC adapter for fiber check tool	TOOL-MEAS-LIGT-CHECK-ADA-1-25	84041807	

Installation accessories

Description	Features	Item number	
Excess length boxes	<ul style="list-style-type: none"> • outdoor installation • store up to 20 m cable excess length • easy mountable 	84063560	
FTTA box	<ul style="list-style-type: none"> • IP66 outdoor installation • with patched or spliced solution • multi-cable entry and exit 	84074085	
Quick hose clamp for FTTA box (stainless steel)	Clamping diameter 30 - 155 mm	84076411	
	Clamping diameter 60 - 500 mm	84076412	
3-fold cable gland for FTTA box	<ul style="list-style-type: none"> • cable diameter 5.5 mm • consisting of body, seal, locking dome nut and counter nut • M25 × 1.5 build-in dimensions 	84075503	
Cable mounting clamps	one cable, diameter 5 - 6 mm	84079464	
	one cable, diameter 6 - 7 mm	84079465	
	3 cables, diameter 5 - 6 mm	84079466	
	3 cables, diameter 6 - 7 mm	84079467	

XCO - ruggedized exchangeable SFP Connector



Features

- 2 fibers, singlemode or multimode
- Standard LC duplex interface
- Ruggedized outdoor connector for fiber-to-the-antenna and industrial applications
- Exchange and service of SFP module possible
- Easy manual installation - no tool required
- High installation safety due to reliable snap-in strain relief system (patent pending)
- Waterproof protection cap with pulling eye
- EMI protected
- RoHs compliant

Specifications

Technology		LC with full ceramic ferrules
Housing material		nickel-plated brass
Mating mechanism		snap-in strain relief system
Mechanical performance		≤ 500 N tensile load ≤ 30 N static side load
Operating temperature ¹⁾		-40 °C up to +85 °C
Mating durability	IEC 61300-2-2	500 cycles
Ingress protection (mated)	IEC 60529	IP67
Salt mist	IEC 61300-2-26	30 days passed
Vibration	IEC 61300-2-1	passed 10 Hz - 500 Hz / 10 g
Shock	IEC 61300-2-9	passed 50 g

¹⁾ depending on cable type

Optical performance

Insertion loss	singlemode	typ. ≤ 0.20 dB	97% ≤ 0.45 dB
	multimode	typ. ≤ 0.20 dB	97% ≤ 0.50 dB
Return loss	singlemode	≥ 50 dB	

Mating sequence



Remove protection cap and slide back connector housing



Snap connector into flange - full strain relief



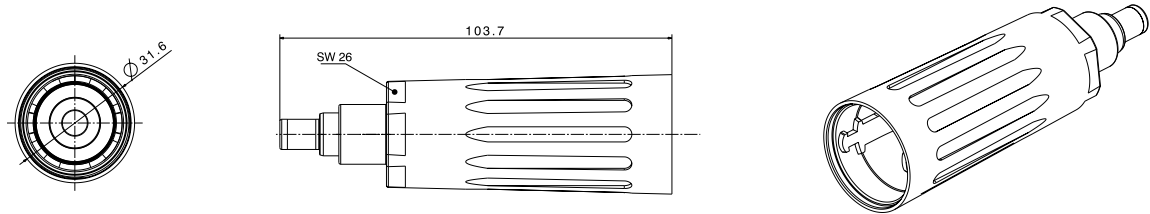
Remove LC dust caps and plug LC duplex connectors into SFP module



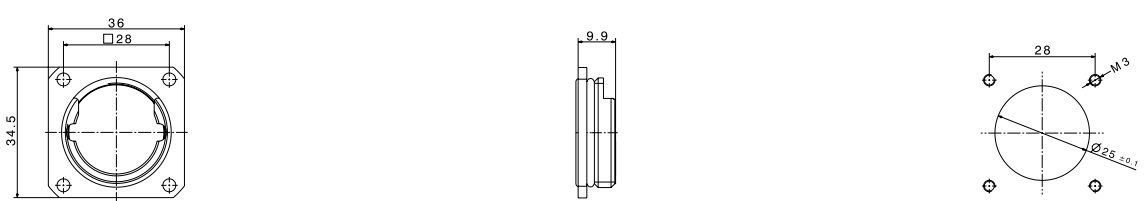
Screw-on housing to seal connector

XCO - ruggedized exchangeable SFP Connector

Type X1: XCO connector plug

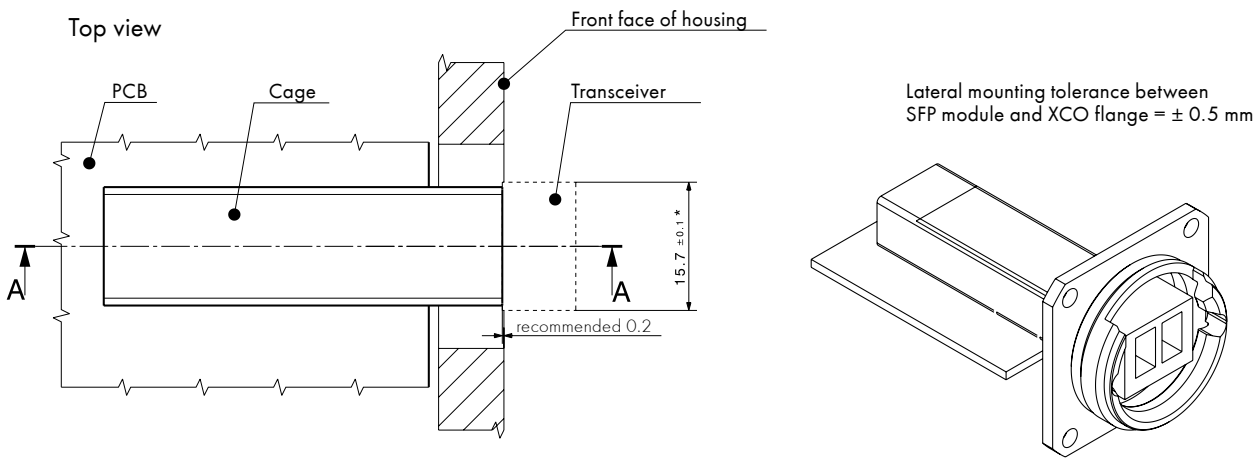


Type: XCO build-in flange



Description	Connector	Dust cap
X1	XCO connector 	 IP67
Item number 84074439	XCO build-in flange 	 IP67

Positioning dimensions of SFP module



Hermaphroditic Expanded Beam Connector EBC



Features

- 2 or 4 fibers, singlemode or multimode
- Expanded beam system
- Easy cable chaining possible due to hermaphroditic connector design
- Waterproof and dust proof
- Screwed locking mechanism
- Easy cleaning and no maintenance required
- Available as patchcords and pigtailed bulkheads

Specifications

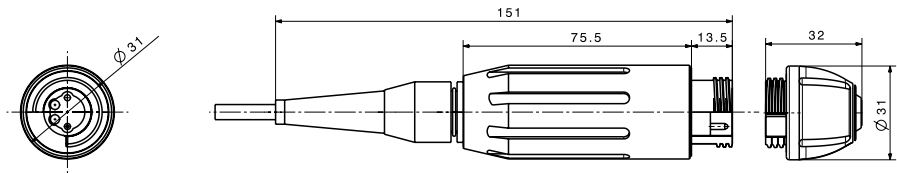
Technology		hermaphroditic expanded beam system
Mechanical performance ¹⁾		1500 N tensile load
Free fall resistance		500 drops from 1.2 m height
Operating temperature ¹⁾	IEC 61300-2-22	-40 °C up to +85 °C
Storage temperature ¹⁾		-55 °C up to +85 °C
Mating durability		min. 2000 cycles
Ingress protection (mated)	IEC 60529	IP67

¹⁾ depending on cable type

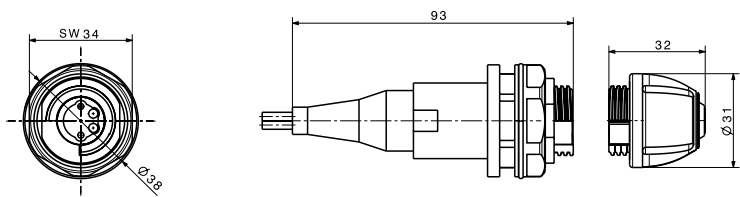
Optical performance

Insertion loss	singlemode	(1310 nm / 1550 nm)	max. ≤ 2.0 dB
	multimode	(850 nm / 1300 nm)	max. ≤ 1.5 dB
Return loss	singlemode		typ. 25 dB

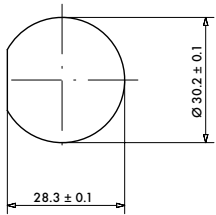
EBC plug



EBC bulkhead



hole pattern



Note: Some of the dimensions of EBC for singlemode vary slightly from the given values.

Expanded Beam Connector EBC – Cable Assemblies

Ordering information

09Z02FG0- 09Z04FG0- 27HD8CEO- 27HD8CDO-	cable type	mobile field cable (2 fibers) for plug assembly mobile field cable (4 fibers) for plug assembly duplex cable (2 fibers, singlemode) for bulkhead duplex cable (2 fibers, multimode) for bulkhead
09- 50- 62-	fiber type	singlemode E9/125 µm multimode G50/125 µm multimode G62.5/125 µm
P1/P1-	connector left side/connector right side	
	P1	EBC plug/2 channels
	P2	EBC plug/4 channels
	P5	EBC bulkhead/2 channels
	P6	EBC bulkhead/4 channels
	XX	other connector type see connector code
x-	total number of connectors	
x	length of assembly [m]	
xx	performance level (left/right)	
	QQ	multimode
	RR	singlemode

Please note: different types of expanded beam connectors are available on request.



Application example

The EBC cable assemblies can be coiled on mobile cable reels or on mobile military backpacks used for ground defence. The backpack system withstands hardest environmental conditions and is tested for outstanding shock and vibration conditions

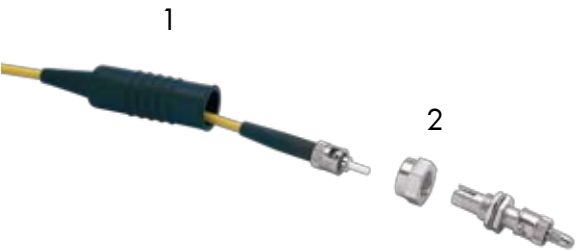
Features

- Mobile systems available with ODC, Q-ODC and EBC
- Easy unlocking mechanism for removal of cable reel

Specifications

Weight	empty cable reel and frame	11.0 kg
	700 m cable Ø 6 mm	19.6 kg
Outer diameter of cable reel	410 mm	
Maximal cable assembly length	700 m	
Mechanical resistance	shock	30 g, 11 ms
	vibration	according to MIL-STD 810D method 514.3

Protection Boot



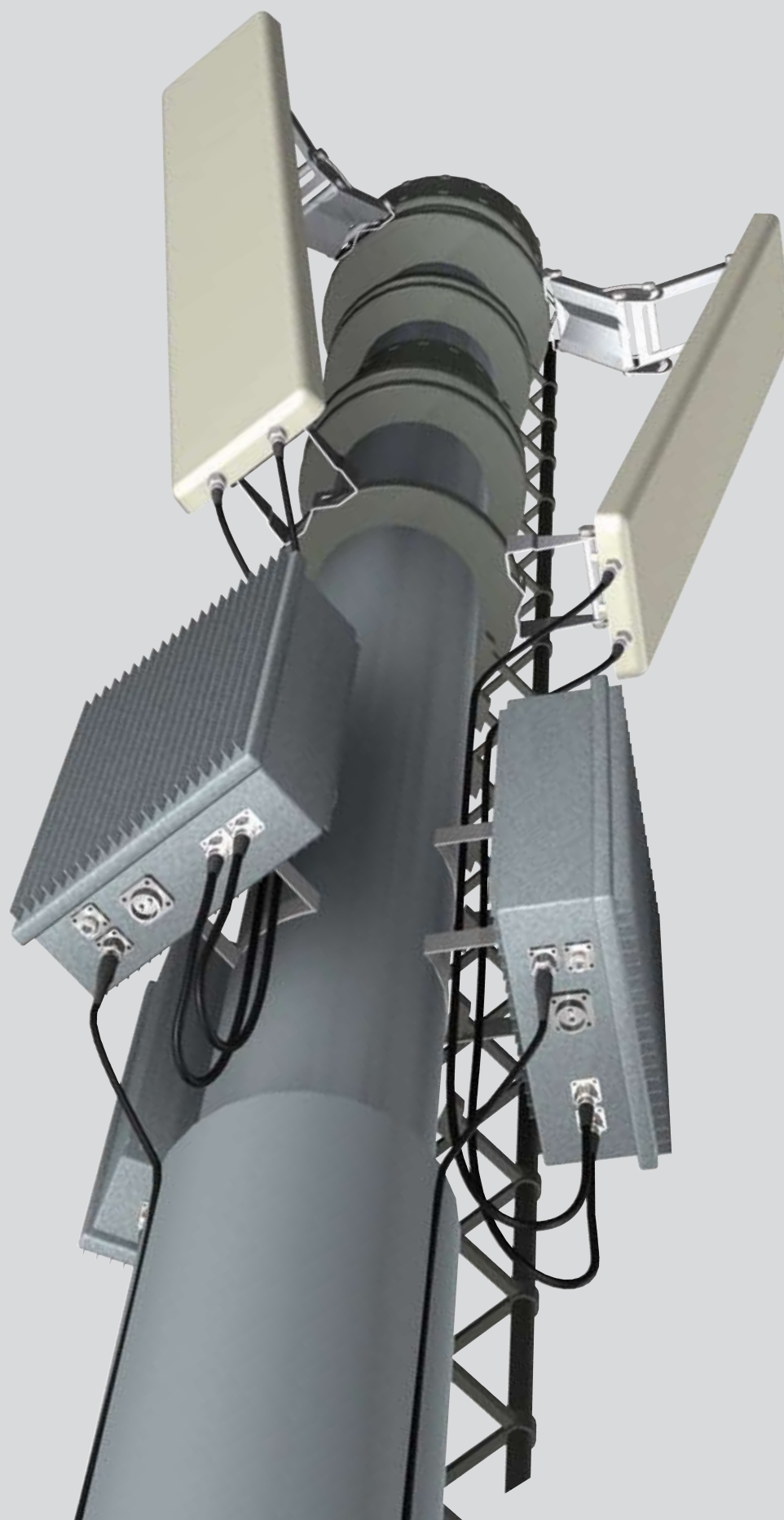
Protection class IP65 for fiber optic connectors

The use of fiber optic connectors with boot (1) and adapter seal (2), allow a detachable fiber optic connection with IP 65 protection class. This combination is specially suitable for outdoor connections. The boot can be used with cables of diameters ≥ 2.1 mm only.

Ordering information:

	Description	Type
1	Boot for SC, LSH (E-2000™), LX.5 duplex, LC duplex	MOB-SYS-007
	Boot for ST, FCPC, FSMA	MOB-SYS-008
	Adapter seal ST	MOB-SYS-001
2	Adapter seal FCPC	MOB-SYS-002
	Adapter seal FSMA	MOB-SYS-004

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Field Termination

Quick assembly™ QXA	86
QXA basic components	88
Spare parts, accessories and consumables	89
Tool kit	92

Quick Assembly™ – QXA Field Termination System

The field termination revolution

HUBER+SUHNER's QXA process offers you the quickest way to provide a reliable fiber optic field termination while keeping maximum mobility and flexibility.



Features

- Spliceless termination for long term reliable performance
- Quick termination process in 90 seconds, no set-up time
- Termination with "just two hands", even in unfriendly working conditions
- Termination of 0.9 mm tubes and ruggedized cables
- Reliability and durability equal to factory termination
- Termination processes adapted to all fiber types and performance levels, including angled physical contact (APC)
- All-in-one multifunction tool
- Easy-to-carry tool box for maximum mobility
- Enhanced connector design for easy termination

Applications

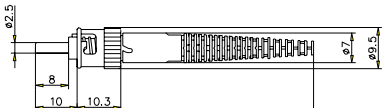
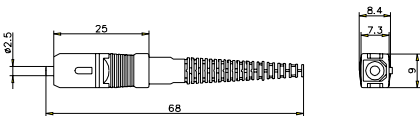
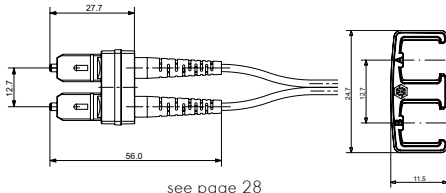
- Fiber-to-the-desk / fiber-to-the-office installations
- Fiber-to-the-home installations
- CATV networks
- Repair and maintenance of all kind networks
- Temporary joints in mobile point to point connections
- Joints inside industrial connectors





Specifications

QXA connectors	Connector type				
	ST MM	ST SM-PC	SC MM	SC SM-PC	SC SM-APC
Ferrule type	preradius	preradius	preradius	preradius	preradius
Fiber type	G50/125	E9/125	G50/125	E9/125	E9/125
	G62.5/125		G62.5/125		
Insertion loss mean ≤	0.30 dB	0.30 dB	0.30 dB	0.30 dB	0.30 dB
Insertion loss 97% ≤	0.50 dB	0.50 dB	0.50 dB	0.50 dB	0.50 dB
Typ. return loss	20 dB	26 dB	20 dB	26 dB	60 dB
Connector interface	IEC 61754-2/TIA 604-2		IEC 61754-4/TIA 604-3		
Attenuation measurement	IEC 61300-3-4				
Ferrule material	full ceramic				
Environmental category	IEC 61753 category C - controlled environment				
Wiring applications	EN50173 A - D, ESA/TIA568A				
Maximum optical power	150 mW				
Maximum cable diameter	2.8 mm				
Cable strain relief	70 N				
Operating temperature	-25° C to +70° C, depending on cable				
Minimum mating durability	1000 cycles				
Flammability	all materials comply with UL 94 V-0				

Quick Assembly™ – QXA Field Termination System

QXA Connectors ST, SC

QXA connectors	ST	SC
Simplex connector outline dimensions (mm)		
Duplex connector outline dimensions (mm)	not available	 see page 28

Ordering item	Package unit	Ordering code
ST MM connectors	25 connectors, boots	simplex
		FST-QXA-B001
ST SM-PC connectors	25 connectors, boots	
		FST-QXA-A001
SC MM connectors	25 connectors, boots	FSC-QXA-B001
		
SC SM-PC connectors	25 connectors, boots	FSC-QXA-A001
		
SC SM-APC connectors		FSC-QXA-H600
		

Quick Assembly™ – QXA Field Termination System

QXA basic components










The QXA components are packed in user friendly units. Accessories, spare parts and consumables are available as single items.

Get started with your QXA system! Take the **Starter's tool package**, choose the **Multifunction tool set** and **Connector head(s)** according to your needs.

Ordering item	Package content	Ordering information
Multi function tool set EU type (230 V)	basic tool, heating unit, fiber cleaver, adhesive cartridge, EU power line adaptor, operator's manual, termination instructions	 QXA-015-230-de/en
Multi function tool set US type (115 V)	basic tool, heating unit, fiber cleaver, adhesive cartridge, US power line adaptor, operator's manual, termination instructions	 QXA-015-115-de/en
Connector clamping head	connector specific clamping head	<div>  ST type QXA-001 </div> <div>  SC type QXA-002 </div>
Starter's tool package	QXA toolbox, cable stripper, aramid scissors, cleaning tissues, handheld microscope, fiber marker kit, fiber prepolishing kit and face polishing kit	 QXA-004



Quick Assembly™ – QXA Field Termination System

Spare parts, accessories and consumables

Ordering item	Package content	Ordering code
Fiber marker kit	marker pen, headpiece	 9801.48.C
Fiber prepolishing kit MM / SM-PC / SM-APC	50 gray films, flexible supporting sheet	 QXA-020
End face polishing kit MM / SM-PC / SM-APC	50 pink films, stiff supporting sheet, polishing aid ST-PC, polishing aid SC-PC	 QXA-021
SM-PC end face finishing kit	25 beige-green films, stiff supporting sheet, rubber sheet	 QXA-022
SM-APC end face finishing kit	polishing aid SC-APC	 QXA-023
QXA tool box	empty tool box, carrying belts	QXA-013
Cable stripper	combined tube & jacket stripper, self-adhesive stripping length scales	 9801.22.C
Aramid scissors	ridged scissors	 9801.24.C









Quick Assembly™ – QXA Field Termination System

Spare parts, accessories and consumables

Ordering item	Package content	Ordering code
Vehicle power supply	adaptor plug and cable	 QXA-005
Handheld microscope 100 fold for 2.5 mm connectors	microscope	 9801.80.G
Piece part boxes	12 piece dispenser boxes	 QXA-024
Fiber prepolishing films MM / SM-PC / SM-APC	50 gray polishing films	 9801.71.H
End face polishing films MM / SM-PC / SM-APC	50 pink polishing films	 9801.71.G
End face finishing films SM-PC / SM-APC	25 beige-green polishing films	 9801.76.G
Adhesive cartridge	adhesive cartridge, MSDS	 QXA-006
Cleaning tissues	set of 10 cleaning tissues	 9801.60.E

Quick Assembly™ – QXA Field Termination System

Spare parts, accessories and consumables

Ordering item	Ordering code	
	EU Type	US Type
Power line adaptor	 QXA-010	 QXA-011
Heating unit	 QXA-008	
Fiber scrap container	 QXA-007	
Fiber cleaver	 QXA-012	
Adhesive dispenser sealing cap	 QXA-018	
Termination instructions	 84018744	
Operator's manual	 23013987	

Tool Kit



Features

- Field termination set for all HUBER+SUHNER connectors
- Termination set individually configurable depending on connector types and personal needs
- Termination technology: epoxy glueing and thermal curing
- Efficient termination with 5-fold polishing jigs

Description	Type	Item no.
Field termination set including all standard tools	9801.90.P	22651699
Spare parts and tools		
Tool box (without content)	9801.95.A	22645536
Coating stripper to remove 125µm coating	TOOL-STRP-COAT-125	9801.10.E 22648937
Fiber cleaving tool (cleaver)	TOOL-CIVE-TOOL	9801.12.A 22642285
Universal knife	TOOL-CUT-KNIFE	9801.20.E 22646062
T-stripper small (strip and remove 0.9mm buffer)	TOOL-STRP-T-SM	9801.22.A 22642284
T-stripper large (strip and remove cable jacket)	TOOL-STRP-T-MED	9801.22.B 22645547
Cable cutter	TOOL-CUT-PLIERS	9801.24.B 22645538
Aramid scissors	TOOL-CUT-SCISS	9801.24.D 23020097
Ruler (measure stripping lengths)	TOOL-STRP-RULER	9801.32.A 22642282
Crimp tool for 4.95 mm / 3.3 mm / 2.0 mm crimp sleeve	TOOL-CRIMP-H+S	9801.35.H 84005604
Screwdriver	9801.41.A	22645537
Glue kit (5x Epotek 360 with cannula, 5 syringe and 5 needle)	TOOL-GLUE-KIT-5-P	9801.53 F 84024497
Cleaning tissues (content: 75 pcs.)	TOOL-CIN-TISSUES-6X6	9801.60.A 22644173
Bottle for spirit, empty	9801.62.B	22645749
Bottle for distilled water, empty	9801.62.C	22645750
Bottle for isopropanol, empty	9801.62.D	22651952
Polishing pad	TOOL-POL-RUBP-V/70-SHORE	9801.75.V 84006578
Polishing support plate (glass)	TOOL-TUN-REP-GLASS-PLATE	9801.70.C 22644172
Microscope	9801.80.A	22644165
Lamp for microscope	9801.81.A	22646352
Operating manual	52.23.0150.4	

Each item can be ordered separately.

Tool Kit

Polishing jigs

Description	Type	Item no.	
FCPC, for 5 connectors	9801.75.C	22645525	
FSMA, single connector pre-polish	9801.70.A	22643645	
FSMA, single connector polish	9801.70.B	22643646	
LC, for 5 connectors	9801.75.U	23012163	
LSA, for 5 connectors	9801.75.B	22645526	
LSH, for 5 connectors	9801.75.R	22651697	
LX.5, for 5 connectors	9801.75.H	23038101	
ST and ST SEC, for 5 connectors	9801.75.A	22645527	
SC, for 5 connectors	9801.75.P	22651564	

Curing adapters

Description	Type	Item no.	
FSMA (3.17 mm metallic ferrule)	TOOL-CURE-ADA-FSMA	9801.30.F	22649337
LX.5, LC (1.25 mm ceramic ferrule)	TOOL-CURE-ADA-1.25	9801.31.B	23016760
SC, ST, FCPC, LSA, LSH (2.5 mm ceramic ferrule)	TOOL-CURE-ADA-2.5	9801.30.O	22646869
ST-SECURITY (2.5 mm ceramic ferrule)	TOOL-CURE-ADA-FST-SEC	9801.30.P	22649101

Tool Kit

Field termination polishing films and polishing supports

For connector types:		Description	Type		Item no.
		Polishing films			
E-2000™, SC, FCPC, ST LSA	pre-radius 2.5 mm PC ferrule, zirconia	pre-polish (5µm sc5)	9801-71-H 50-PCE/SET	9801.71.H 50-p.	23011871
	flat 2.5 mm PC ferrule, zirconia	main polish (1µm d1)	TOOL-POL-PAPR-D1 15-PCE/SET	9801.76.F 15-p.	23020666
		finish (0.5µm sf5d)	9801-76-K 10-PCE/SET	9801.76.K 10-p.	22649508
		Polishing support			
LX.5, LC	flat 1.25 mm PC ferrule, zirconia	rubber support, shore A 70	TOOL-POL-RUBP-V/70-SHORE	9801.75.V	84006578

For connector types:		Description	Type		Item no.
FSMA	flat metallic ferrule, non-PC	Polishing films			
		pre-polish (9 µm)	9801-71-D 50-PCE/SET	9801.71.D 1-p.	22651693
		main polish (3 µm)	9801-71-E 50-PCE/SET	9801.71.E	22651692
		Polishing support			
		polishing plate, glass	TOOL-TUN-REP-GLASS-PLATE	9801.70.C	22644172

Please follow connector field termination instructions.




Tool Kit

Accessories and consumables

Description	Type		Item no.
Connector specific tools			
Press tool LSH connector housing; for pigtails	TOOL-SPEC-FLSH-PRESS-0.9	9801.36.G	23001406
Press tool LSH connector housing; for patchcords	TOOL-SPEC-FLSH-PRESS-CABLE	9801.36.F	23001405
Heating box			
Heating box, 24-fold (220/230 V)	TOOL-CURE-BOX-ROUND	9801.55 M	23011619
Polishing tools			
Universal polishing tool (plastic disc) for 2.5 mm ferrule connectors	TOOL-POL-HJIG-2.5	9801.75.Q	22648606
Universal polishing tool (metal disc) for 1.25 mm ferrule connectors	TOOL-POL-HJIG-1.25	9801.75.S	84013158
Microscope adapter for 9801.75.Q	9801.80.F	9801.80.F	22651004
Connector specific accessories			
E-2000™ service adapter	9801.36.K	9801.36.K	84024516
Glueing consumables			
Epotek 360 (25 packs with cannulas)	TOOL-GLUE-EPOTEK360	9801.50.L	84024504
Needle 50 pcs.	TOOL-GLUE-NEEDLE	9801.52.W	84024505
Syringe 25 pcs.	TOOL-GLUE-SYRINGE	9801.52.Y	84024506
Cannulas 25 pcs.	TOOL-GLUE-CANNULA	9801.52.2	84029277
Accessories			
Universal teflon adapter (10 pcs./bag)	TOOL-GLUE-ADAPTER	9801.52.V	23038417
Tube cutter (Miller) (remove tubes up to 270 µm)	TOOL-STRP-TUBE-CUT-270	9801.10.F	23017371
Cable divider mounting tools			
Circular cutter (cut outdoor cable-jackets 3–30 mm)		9801.20.B	22645535
Circular cutter for 3 mm loose tube outdoor cables		9801.20.C	22645747

Cleaning and Fiber Check

Connector cleaning

	Description	Type	Item number	
1	installation and cleaning kit. content 1a, 1b, 1c (2x), 1d (2x25 pcs.)	FIBER OPTIC CLEANING KIT	84038056	
1a	red bag		—	
1b	QbE cube cleaning system	QbE FO cleaning system	84041085	
1c	MX cleaning pen	FW2150 Electro-Wash MX Pen	84041105	
1d	fiber optic cleaning swabs	51121 Cleaning Swab	84041108	
2	IBC cleaner 1.25 mm ferrule	Cleaner, IBC, 1.25 mm	84064486	
3	IBC cleaner 2.50 mm ferrule	Cleaner, IBC, 2.5 mm	84095170	

Fiber check tool



The fiber check tool transmits red light into the fiber to visually detect any fiber breaks. Operation modes are CW and pulsed.

Technical specification

Wavelength		635 nm
Output power	9 µm singlemode fibers 50 µm multimode fibers	0.3 mW 0.7 mW

Ordering information

Description	Type		Item no.
Fiber check tool for 2.5 mm ferrule connectors incl. universal adapter for SC, E-2000™, ST, FCPC and DIN (not compatible with FSMA)	TOOL-MEAS-LIGT-CHECK	9801.86.A	23032064
Adapter for 1.25 mm ferrule	TOOL-MEAS-LIGT-CHECK-ADA-1.25	9801.86.C	84041807

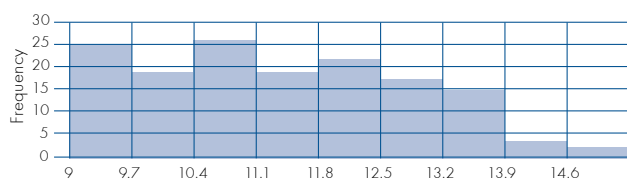
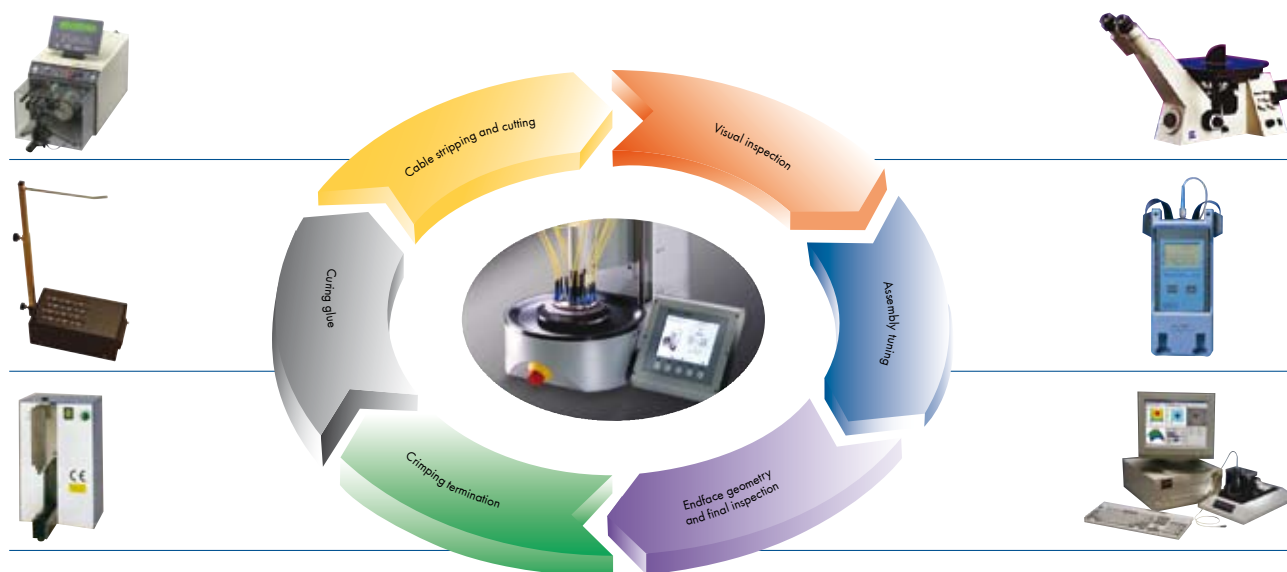




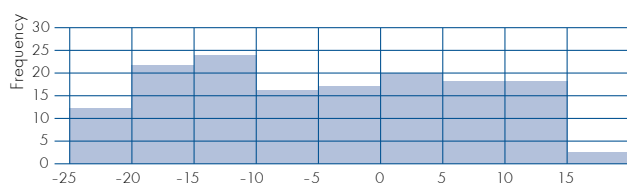
Equipment for Serial Production and Measurement

Equipment for serial production	100
Polishing machine	101
Measurement fiber box	102
Master cables	104

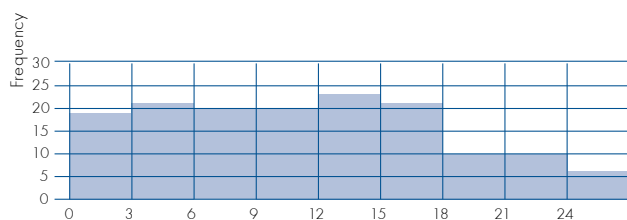
Equipment for Serial Production



Radius of curvature ROC (mm)



Fiber height (µm) refers to undercut



Apex offset (µm)

Complete solutions for local assembly shops

HUBER+SUHNER Fiber Optics is specialized in planning, installing, training and maintaining local assembly shops all over the world.

Permanent technology transfer to local assembly partners are the key to provide constantly high quality of HUBER+SUHNER products worldwide.

Polishing process performance

Fiber height, radius as well as apex offset are the most important parameters of a fiber optic connector end face geometry. The quality characteristics of the HUBER+SUHNER polishing machine HSP 03 are low apex offsets and stable radii together with constant fiber heights (see charts).

The permanent measurement and control of the pressure applied enables the machine to respond immediately to any production influence and to achieve highest yields. Our polishing processes comply with international standards like IEC and Belcore.

HSP 03 Polishing Machine



High performance

The quality of an assembled fiberoptic connector mainly depends on the polishing process applied.

This polishing machine is the result of 15 years of experience. It permanently controls polishing rotation, rotation speed, rotation direction, arm pressure and arm position.

Designed for mass production, with a user-friendly and programmable interface software all standard (1.25 mm and 2.5 mm ferrule) connectors can be polished such as LX.5, LC, FC, E-2000™, SC, ST, MU.

Features and benefits

- No compressed air supply required
- Permanently controlled polishing pressure
- Suitable for ceramic, metal, glass and plastic ferrules
- 200 Programmes with up to 10 steps per programme
- Wet and dry polishing

Easy handling

- LCD screen for easy programming and process management
- Pivoting arm for easy access and cleaning
- User-friendly and easy to adjust
- 100 programmes individually programmable

Economical criteria

- Maintenance-free
- No dummies needed due to fully adjustable pressure until 0.1 N per connector
- Short polishing times
- Automatic and precise polishing
- High yield with high quality of ferrule end face



Further features

- Programmes can be downloaded via interface RS 232 from PC or laptop
- 1.25 mm and 2.5 mm ferrules
- APC and PC polish
- Power supply =115 VAC/60HZ; 230 VAC/50 HZ
- Weight 28 kg
- Size: L=60 cm/W=52 cm (incl. keyboard)/H=36 cm
- Number of connectors min. 3; max. 16
- Base diameter 5 inches

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Measurement Fiber Box - Accessories for OTDR Test Equipment



Standard box for launch fiber 240 × 197 × 70 mm



Two-unit box for launch and tail fiber in one box
240 × 197 × 117 mm



Optional case for measurement fiber box
450 × 370 × 135 mm

Features

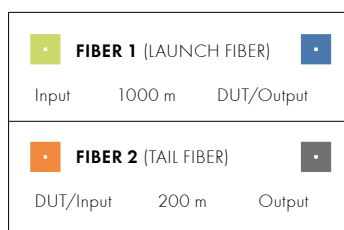
- Possible fiber types:
9 µm, singlemode, LEAF, 50 µm, 62.5 µm or 200 µm
other fiber types upon request
- Standard lengths:
100, 200, 500, 1000 and 2000 m
other lengths available (max. 4000 m per height unit or
max. 1000 m for H200 fiber)
- Connectors:
LC, LX.5, ST, LSA, FCPC, SC, E-2000™, FSMA

Same case for standard box and two-unit box
Type 9801.90.N
Item no. 23036601

Measurement Fiber Box Ordering Code

		Description
		Launch fiber type
09-		Singlemode 9/125 µm
LB-		Singlemode 9/125 µm low bend fiber
LE-		Singlemode leaf fiber
50-		Multimode 50/125 µm
53-		Multimode 50/125 µm OM3
54-		Multimode 50/125 µm OM4
62-		Multimode 62.5/125 µm
20-		Multimode H200/230 µm
		Length launch fiber
01-		100 m
02-		200 m
05-		500 m
10-		1000 m
20-		2000 m (not possible for H200)
		Connector type
XX/		Connector ¹⁾ side A - input launch fiber
XX-		Connector ¹⁾ side B - output launch fiber
		Cable type
	0	Without cable
	A	2.1 mm LSFH™, black
	B	3.4 mm PE, black
		Cable length
	00-	Without cable, only with adapters ²⁾
	15-	Standard length (1.5 m)
	10-	1 m (minimum length)
	20-	2 m
	50-	5 m (maximum length)
	00	No tail fiber (= 1 height unit)
		With tail fiber 2 height unit
		Tail fiber type
	09-	Singlemode 9/125 µm
	LB-	Singlemode 9/125 µm low bend fiber
	LE-	Singlemode LEAF fiber
	50-	Multimode 50/125 µm
	53-	Multimode 50/125 µm OM3
	54-	Multimode 50/125 µm OM4
	62-	Multimode 62.5/125 µm
	20-	Multimode H200/230 µm
		Length tail fiber
	01-	100 m
	02-	200 m
	05-	500 m
	10-	1000 m
	20-	2000 m (not possible for H200)
		Connector type
	XX/	Connector ¹⁾ side A - input tail fiber
	XX	Connector ¹⁾ side B - output tail fiber

Measurement fiber box



¹⁾ Connector code please refer to page 48

²⁾ not available for LC

Fiber Optic Master Cables



Master cables serve as reference cables with reference connector on each side of the cable. They are used for repeatable IL / RL measurements of assemblies and links. The reference cables are defined in the following standards:

Measurement method:

IEC 61300-3-4

Application of reference cables:

IEC 61280-4-1 / IEC 61280-4-2 / IS 14763-3

Specifications of reference connectors and adapters:

IEC 60874-14 series / IEC 60874-19 series / EN 50377 series

Items included

- Master cable, length 3 m
- Label with serial number guarantees for traceability
- Test certificate

HUBER+SUHNER fiber optic master cables can be returned to repolish the ferrules and to update test parameters. However, master connectors can only be repolished as long as the ferrule length does not fall below the minimum length indicated in the appropriate connector standard.

Technical specification of reference connectors		
Ferrule outer diameter tolerance		± 0.5 µm
Dome offset of spherically polished ferrule endface	for all reference connectors	≤ 30 µm
Undercut / protrusion	for all reference connectors	± 50 nm
Eccentricity of fiber core centre to ferrule centre		≤ 0.3 µm
Deviation of axis of fiber to axis of ferrule		< 0.2°
Attenuation between two reference connectors at 1310 nm		≤ 0.1 dB
Return loss between two reference connectors at 1310 nm	PC	> 58 dB
	APC	> 85 dB ¹⁾
Visual examination		every 50 matings

¹⁾ IEC 61300-3-6, method 3 (OLCR)

Notes

Notes

Additional catalogues



Cables Item no. 84019826

Indoor cables
Universal cables
Outdoor cables
Special cables



System LiSA Item no. 84101814

Optical distribution racks
Fiber containment
Outdoor cabinets
Optical closures
Wall cabinets
Subracks and modules
Fiber management accessories
Cable system solutions



Cabling Systems Item no. 23029084

Pre-terminated cabling systems
Masterline
Smartline
Mobile cabling system



Passive Components Item no. 84019859

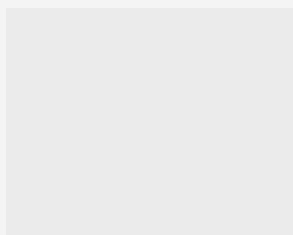
Couplers and splitters
Multiplexers (WDM)
Attenuators

PDF version available only.

HUBER+SUHNER is certified according to
ISO 9001, ISO 14001, ISO/TS 16949 and IRIS.

WAIVER

It is exclusively in written agreements that we provide our customers with warrants and representations as to the technical specifications and/or the fitness for any particular purpose. The facts and figures contained herein are carefully compiled to the best of our knowledge, but they are intended for general informational purposes only.



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