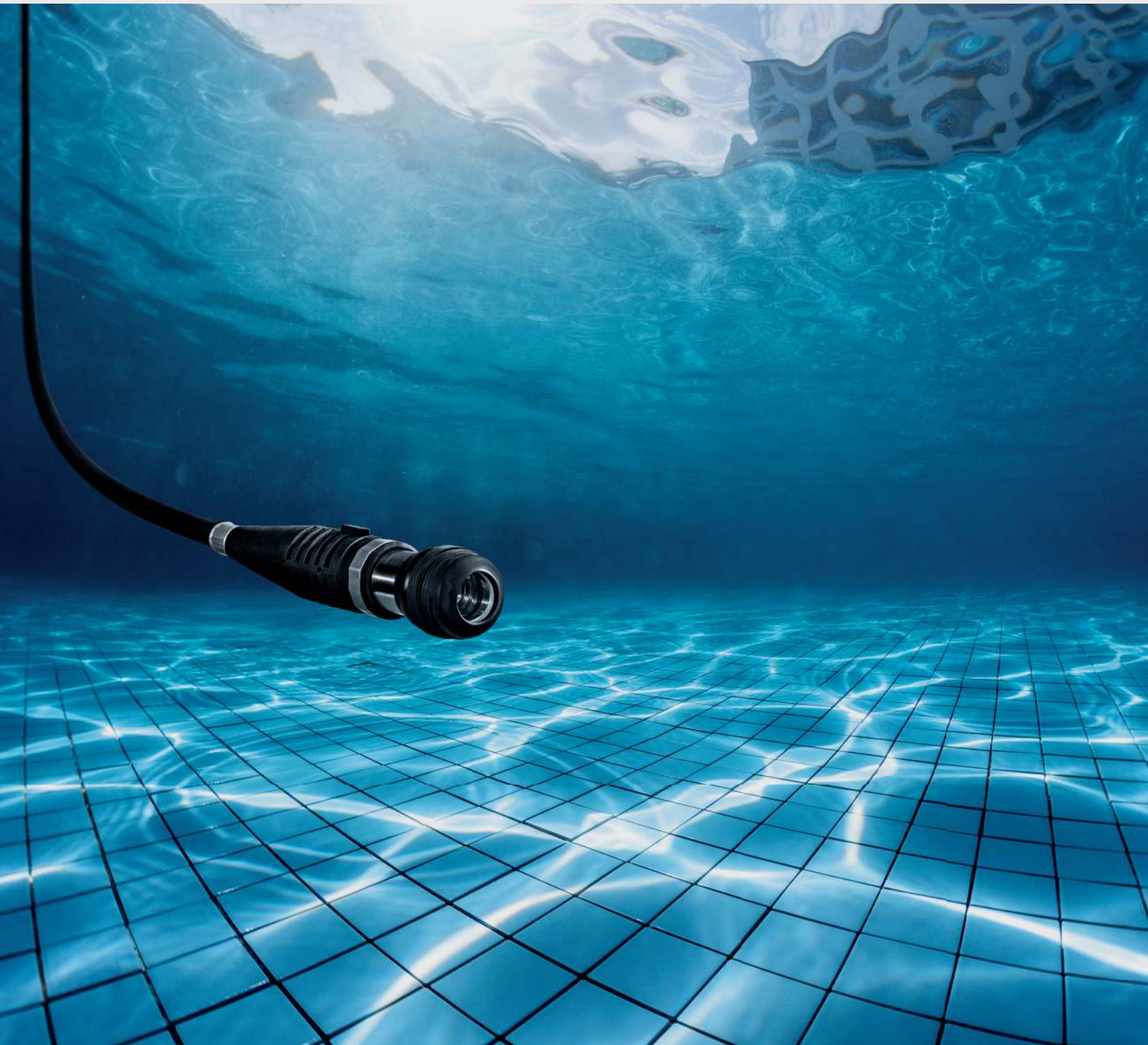


Harsh environment

Connectors and assemblies

Edition 2017



Fitting all environmental conditions





Market segments	4
Overview connectors for harsh environment	6
Overview fiber optic cables for harsh environment assemblies	8
Assembly code	10
Q-ODC-2 assemblies	12
Q-ODC-12 assemblies	24
ODC®-2 assemblies	32
ODC®-4 assemblies	44
Q-XCO assemblies	54
FullAXS assemblies	59
Hermaphroditic expanded beam connector EBC	62
Cleaning of fiber optic connectors	64
Find out more about our products	70

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.

Market segments

Railway

HUBER+SUHNER is the leading supplier of modern communication infrastructures for trainborne, train-to-ground and ground networks.

- Copper cable technology
- Radio frequency antennas and components
- Fiber optic cabling solutions
- Engineering services



Defense

High quality connectivity in

- Airborne defence systems
Avionics, airborne radar and electronic warfare
- Land-based defence systems
Radar and electronic warfare, simulation and training systems, air traffic control radar, ILS
- Naval defence systems
Sonar, radar and electronic warfare, underwater warfare system



Automotive

HUBER+SUHNER offers a wide spectrum of RADOX® products for the automotive industry

- Wide range of RADOX cables
- Customised cable systems for
High-voltage distribution
High-voltage connection





Wind/power energy

HUBER+SUHNER supplies specific connectivity solutions for applications in

- Solar technology
- Wind turbines and wind parks
- Conventional power generators



Ship building

HUBER+SUHNER offers an extensive range of components and systems adapted to the requirements of the shipbuilding industry. These include solutions for:

- Cruise liners and naval vessels
- Ferries and yachts
- Port installations



Communication equipment

HUBER+SUHNER products are used globally in

- Mobile communication systems such as 2G, 2.5G, 3G, LTE (Long-Term Evolution), GSM-R, PMR networks
- Wireless fixed network connections
- Wireless LANs (WLANs)
- Broadband communication systems

Overview connectors for harsh environment

Technical data	Q-ODC	Q-ODC-12	ODC®-2	ODC®-4	
					
Technology	full ceramic 1.25 mm ferrule and sleeve	plastic ferrule (PPS)	full ceramic 1.25 mm ferrule and sleeve	full ceramic 1.25 mm ferrule and sleeve	
Number of fibers	2	≤ 12	2	4	
Protection class	IP67	IP68	IP68	IP68	
Fiber types	single-mode and multi-mode	single-mode and multi-mode	single-mode and multi-mode	single-mode and multi-mode	
Operating temperature ¹⁾	-40 to +85 °C	-40 to +85 °C	-40 to +85 °C	-40 to +85 °C	
Mating durability	200 ²⁾	100 ²⁾	1000 ²⁾	1000 ²⁾	
Mechanical performance	tensile load 450 N plug ≤ 30 N socket	tensile load 500 N plug ≤ 30 N socket	tensile load 800 N plug ≤ 30 N socket	tensile load 800 N plug ≤ 30 N socket	
Protection cap	snap-on	snap-on	screwed	screwed	

¹⁾ depending on cable type

²⁾ with repeated cleaning

³⁾ further cable types are available

	Q-XCO	XCO	FullAXS	EBC
				
	LC with full ceramic 1.25 mm ferrule	LC with full ceramic 1.25mm ferrules	LC with full ceramic 1.25mm ferrules	hermaphroditic expanded beam
	2	2	2	2 and 4
	IP67	IP68	IP 65	IP67
	single-mode and multi-mode	single-mode and multi-mode	single-mode and multi-mode	single-mode and multi-mode
	-40 to +85 °C	-40 to +85 °C	-40 to +70 °C	-46 to +85 °C
	100	500	100	3000
	tensile load ≤ 450 N plug 30 N socket	tensile load ≤ 500 N plug 30 N socket	tensile load 150 N plug 30 N socket	tensile load 1500 N 500 free falls from 1.2 m height
	bayonet	screwed	bayonet	screwed

Overview fiber optic cables for harsh environment assemblies

	Cable type	Ordering key	Weight kg/km	Number of fibers	
	Mobile field cables	02-.../FJSN(ZNG)H-...22	24	2	
	Rugged minicord breakout cables	02-.../FJ(ZN)Z...17	28	2	
	Simplex cables with tight tube	01-.../FJZ...19	3	1	
	Jellyfree - dry block glass-armoured multi-fiber loose tube cables 7.0 mm	12-.../H(ZNG)H-G70-UR	96	2 to 24	
	OptiPack cable	12-.../(CH)H-M30-F OM3	8.3	12	
	Glass-armoured riser cables with 2 tubes	02-.../FSN(ZNG)H-G48 02-.../FSN(ZNG)H-G55	26 35	2 2	
	Glass-armoured riser cables with 4 fibers	04-.../FSN(ZNG)H-G55	33	4	
	Rolling stock fiber optic cable RADOX® with 2 fibers	02-.../CH(ZN)R-G70-12	53	2	

P = passed

	Tube Ø mm	Ø single fiber cable mm	Jacket Ø mm	Jacket material	Tensile strength N	Crush resistance N/dm	Fire propagation IEC 60332-1-2	Fire propagation IEC 60332-3
	0.9		5.6	TPU	4000	21 000		
	0.9	1.7	6.0	TPU	2000	6000		P
	0.9		0.6	TPU	180	10 000		
			7.0	LSFH	2000	5000	P	P
			3.0	LSFH	500	5000	P	P
0.9 0.9			4.8 5.5	LSFH LSFH	1000 1000	20 000 20 000	P P	P P
0.9			5.5	LSFH	1000	20 000	P	P
0.9			7.0	LSFH	600	4000	P	P

Assembly code

1	2	3	4	5	6	7	*
---	---	---	---	---	---	---	---

1 Assembly type		
PTxx	pigtail (BTW)	xx: fiber count (e.g. 01)
PSxx	pigtail set	Dx: for duplex zip cord (fig. 8)
PCxx	patch cord	Rx: for ruggedized/round duplex/duplex (fig. 0)
MRxx	multi-fiber riser	xS: straight polarity A-B/B-A (standard)
MOxx	multi-fiber breakout	xF: flipped polarity A-A/B-B
Myxx	MTP based assembly	y: polarity A: crossed B: straight C: pairwise crossed D: level flip (MT 24) E: straight (MT 24)

2 Connector, left side		
3 Connector, right side		
LCxy	LC	x: U: UPC A: APC 8° 9: APC 9° M: PC
SCxy	SC	
FCxy	FCPC	
LHxy	FLSH	y: S: simplex D: duplex E: simplex push-pull * P: duplex push-pull * H: duplex high density * G: simplex high density * U: Uniboot * X: XD (extreme density) * F: female (MTP specific) M: male (MTP specific)
LXxy	LX.5	
STxy	ST	
MUxy	MU	
CKxy	CLIK	
BKxy	BLINK	
FSxy	FSMA	
LSxy	LSA	
MTxy	MTP	*only applicable for LC
0000	w/o connector on the right side	

Harsh environment connectors according to the HE catalogue.
Standard connectors according to the catalogue.

4 Cable type		
SMxxy	SM-Standard, G.652.D	xx: cable Ø (1/10 mm)
A1xxy	SM-LowBend r10, G.657.A1	y: T: tight tube (incl. 600 µm tube) E: easy strip tube R: UL conform A: ANATEL conformity
A2xxy	SM-LowBend r7.5, G.657.A2	
A3xxy	SM-LowBend r5, G.657.A3	
O1xxy	MM, G62.5, OM1	
O2xxy	MM, G50, OM2	
O3xxy	MM, G50, OM3	
O4xxy	MM, G50, OM4	
H2xxy	MM, H200	

5 Length	
xx.x	length in m (ferrule tip to ferrule tip/03.5 = 3.5 m)
xxxx	length in m if > 99 m (ferrule tip to ferrule tip/1000 = 1000 m)

6 Assembly class, left side	
7 Assembly class, right side	
S	SM standard
B	SM grade B/ SM elite for MTP
A	SM 0.1 dB
H	SM 0.1 dB HighPower
M	MM standard
L	MM low loss/ MM elite for MTP
O	w/o connector on the right side

Examples

PT01_LCUS_0000_SM09E_02.0_S0

Pigtail one fiber, LC UPC simplex connector on the left, without connector on the right, SM G.652.D, 0.9 mm fiber, 2 m length, SM standard performance

PCDS_LCMD_LCMD_O420E_05.5_LL

Patch cord duplex zip cord (fig. 8), LC MM standard duplex left and right, OM4 duplex zip cord 2.0 mm, 5.5 m length, MM low loss performance



Q-ODC-2 assemblies

Q-ODC-2 outdoor connector



Features

- 2 fibers, single-mode or multi-mode
- 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 to +85 °C
Mating durability	IEC 61300-2-2	200 cycles ²⁾
Ingress protection (mated)	IEC 60529	IP67
Salt mist	IEC 61300-2-26	30 days passed
Vibration	IEC 61300-2-1 IEC 61373	passed 10 to 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	single-mode	typ. ≤ 0.20 dB	97 % ≤ 0.45 dB
	multi-mode	typ. ≤ 0.20 dB	97 % ≤ 0.50 dB
Return loss	single-mode	≥ 50 dB	

Mating/un-mating sequences



Push plug connector slightly into extension connector, rotate to find keying position, push connector to mate.



Mated – connector snaps in and is fully strain relieved.



Pull coupling ring to un-mate.

Overview of Q-ODC connector types

Type	Type new	Connector	Dust cap
QA	QOP1		push-on IP67 
	QOP2		push-on IP67 
QC	QOP3		snap-on IP67 
QB	QOP4		snap-on with chain IP67 
QE	QOE1		push-on IP67 
	QOE2		push-on IP67 
QF	QOE3		snap-on IP67 
QG	QOE4		snap-on with chain IP67 
QS	QOS1		push-on IP67 
	QOS2		push-on IP67 
QT	QOS3		snap-on IP67 
QU	QOS4		snap-on with chain IP67 
	QOR1		push-on IP67 
	QOR2		push-on IP67 
QI	QOR3		snap-on IP67 
QJ	QOR4		snap-on with chain IP67 



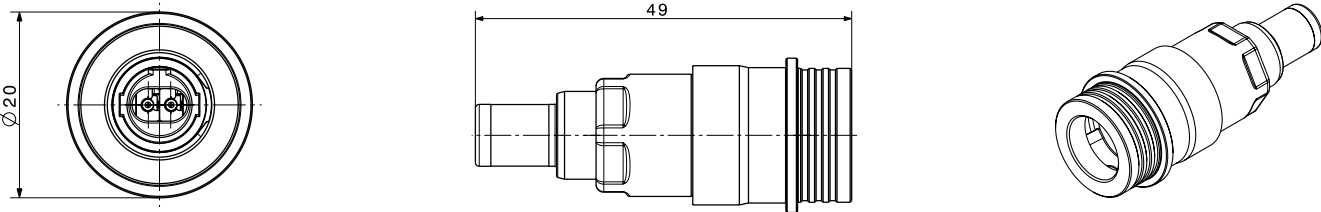
Q-ODC – push-pull connector for modular cell site installations

Q-ODC is used by a growing number of operators who build a modular and flexible cell site cable infrastructure. The push-pull connectors allows for quick and reliable cable connections, e.g. for top-mast boxes or jumpers.

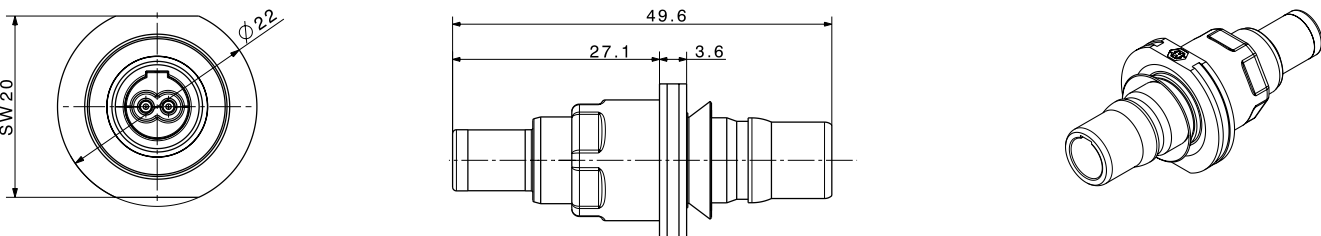
Additionally, the interface is designed that it is either mated or unmated – nothing in between. This makes each installation of cell site infrastructure safe.

Q-ODC-2 assemblies

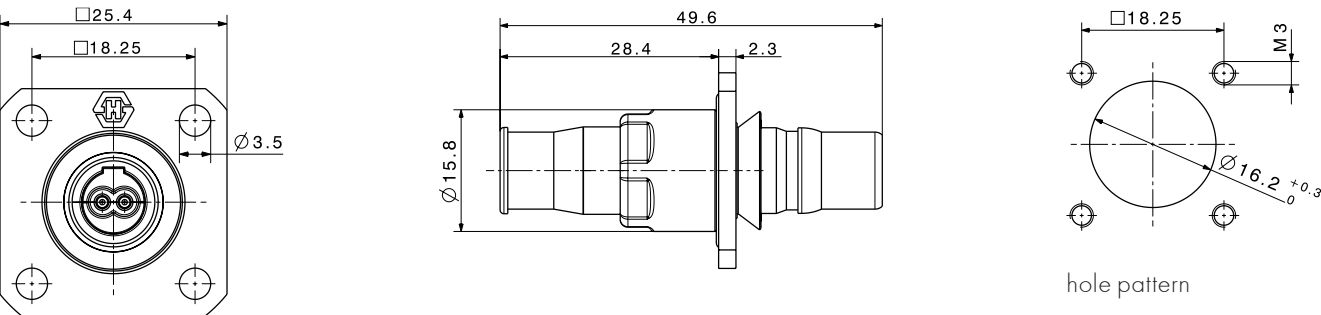
Type QOP1, QOP2, QOP3, QOP4: Q-ODC plug



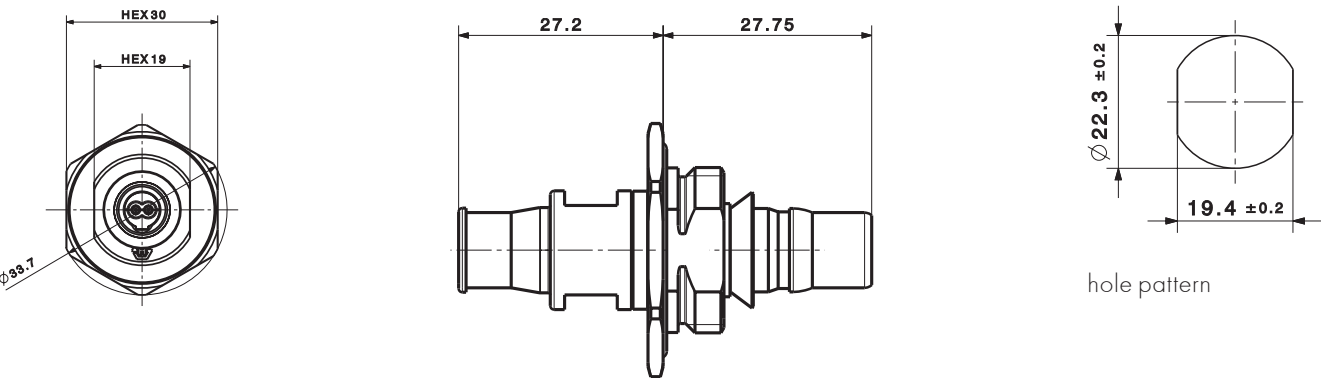
Type QOE1, QOE2, QOE3, QOE4: Q-ODC extension connector



Type QOS1, QOS2, QOS3, QOS4: Q-ODC socket – square



Type QOR1, QOR2, QOR3, QOR4: socket hexagonal



Q-ODC-2 plug to Q-ODC-2 plug, multi-mode OM2 fiber



Length	Item no.	Assembly code
5 m	85066094	MR02_QOP2_QOP2_O256T_05.0_MM
10 m	85066095	MR02_QOP2_QOP2_O256T_10.0_MM
20 m	85066096	MR02_QOP2_QOP2_O256T_20.0_MM
30 m	85066097	MR02_QOP2_QOP2_O256T_30.0_MM
40 m	85066098	MR02_QOP2_QOP2_O256T_40.0_MM
50 m	85066099	MR02_QOP2_QOP2_O256T_50.0_MM
60 m	85066100	MR02_QOP2_QOP2_O256T_60.0_MM
70 m	85066101	MR02_QOP2_QOP2_O256T_70.0_MM
80 m	85066102	MR02_QOP2_QOP2_O256T_80.0_MM
90 m	85066103	MR02_QOP2_QOP2_O256T_90.0_MM
100 m	85066104	MR02_QOP2_QOP2_O256T_0100_MM
150 m	85066105	MR02_QOP2_QOP2_O256T_0150_MM
200 m	85066107	MR02_QOP2_QOP2_O256T_0200_MM

Connector left Q-ODC-2 plug

Type	Connector	Dust cap
QOP2	Q-ODC-2 plug 	push-on IP67 

Connector right Q-ODC-2 plug

Type	Connector	Dust cap
QOP2	Q-ODC-2 plug 	push-on IP67 

Used cable

Mobile field cables



Item no.	Cable type	Description
84096494	02-G50/FSN(ZN)Z-G56	2-fiber, 50/125 µm OM2, Ø 5.6 mm, jacket PUR black

Q-ODC-2 assemblies

Q-ODC-2 plug to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
2 m	85066108	MR02_QOP2_ICMP_O260T_02.0_MM
4 m	85066109	MR02_QOP2_ICMP_O260T_04.0_MM
6 m	85066110	MR02_QOP2_ICMP_O260T_06.0_MM
8 m	85066112	MR02_QOP2_ICMP_O260T_08.0_MM
10 m	85066113	MR02_QOP2_ICMP_O260T_10.0_MM

Connector left Q-ODC-2 plug

Type	Connector	Dust cap
QOP2	Q-ODC-2 plug 	push-on IP67 

Connector right LC connector

Type	Connector
ICMP	LC duplex 

Used cable
Rugged minicord breakout cables



Item no.	Cable type	Description
23037747	02-G50/FJ ZN Z-G17	2-fiber, 50/125 µm OM2, Ø 6.0 mm, jacket PUR black

Q-ODC-2 plug to LC connector, multi-mode OM3 fiber



Length	Item no.	Assembly code
2 m	85002965	MR02_QOP4_ICMD_O355T_02.0_MM
5 m	85002966	MR02_QOP4_ICMD_O355T_05.0_MM
10 m	85002967	MR02_QOP4_ICMD_O355T_10.0_MM

Connector left Q-ODC-2 plug

Type	Connector	Dust cap
QOP4	Q-ODC-2 plug 	snap-on with chain IP67 

Connector right LC connector

Type	Connector
ICMD	LC duplex 

Used cable
Glass-armoured riser cables with 2 fibers



Item no.	Cable type	Description
84106966	02-G50/F(ZNG)H-G55-F	2-fiber, 50/125 µm OM3, Ø 5.5 mm, jacket LSFH black

Q-ODC-2 assemblies

Q-ODC-2 plug to SC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
2 m	85066114	MR02_QOP2_SCMD_O260T_02.0_MM
4 m	85066115	MR02_QOP2_SCMD_O260T_04.0_MM
6 m	85066116	MR02_QOP2_SCMD_O260T_06.0_MM
8 m	85066117	MR02_QOP2_SCMD_O260T_08.0_MM
10 m	85066118	MR02_QOP2_SCMD_O260T_10.0_MM

Connector left Q-ODC-2 plug

Type	Connector	Dust cap
QOP2	Q-ODC-2 plug 	push-on IP67 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Rugged minicord breakout cables



Item no.	Cable type	Description
23037747	02-G50/FJ ZN Z-G17	2-fiber, 50/125 µm OM2, Ø 6.0 mm, jacket PUR black

Q-ODC-2 socket to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85066119	PC02_QOS4_ICMD_O219T_0.30_MM
0.50 m	85066121	PC02_QOS4_ICMD_O219T_0.50_MM
1.00 m	85066122	PC02_QOS4_ICMD_O219T_01.0_MM

Connector left Q-ODC-2 socket

Type	Connector	Dust cap
QOS4	Q-ODC-2 socket, square 	snap-on with chain IP67 

Connector right LC connector

Type	Connector
ICMD	LC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

Q-ODC-2 assemblies

Q-ODC-2 socket to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85066126	PC02_QOR2_LCMD_O219T_0.30_MM
0.50 m	85066127	PC02_QOR2_LCMD_O219T_0.50_MM
1.00 m	85066128	PC02_QOR2_LCMD_O219T_01.0_MM

Connector left Q-ODC-2 socket

Type	Connector	Dust cap
QOR2	Q-ODC 2 socket, hexagonal 	push-on IP67 

Connector right LC connector

Type	Connector
LCMD	LC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

Q-ODC-2 socket to SC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85066123	PC02_QOS4_SCMD_O219T_0.30_MM
0.50 m	85066124	PC02_QOS4_SCMD_O219T_0.50_MM
1.00 m	85066125	PC02_QOS4_SCMD_O219T_01.0_MM

Connector left Q-ODC-2 socket

Type	Connector	Dust cap
QOS4	Q-ODC-2 socket, square 	snap-on with chain IP67 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

Q-ODC-2 assemblies

Q-ODC-2 socket to SC connector, multi-mode OM2 fiber

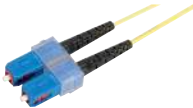


Length	Item no.	Assembly code
0.30 m	85066129	PC02_QOR2_SCMD_O219T_0.30_MM
0.50 m	85066131	PC02_QOR2_SCMD_O219T_0.50_MM
1.00 m	85066132	PC02_QOR2_SCMD_O219T_01.0_MM

Connector left Q-ODC-2 socket

Type	Connector	Dust cap
QOR2	Q-ODC 2 socket, hexagonal 	push-on IP67 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange



Q-ODC-12 / Q-ODC-24 outdoor connector plug/socket



Features

- Up to 24 fibers, singlemode or multimode
- Compact design with MT ferrules
- Built-in socket with square flange/hexagonal 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
- RoHs compliant

Specifications

Technology		plastic ferrule (PPS)
Housing material		nickel-plated brass
Mating mechanism		push-pull with two clearly defined states
Mechanical performance	Q-ODC plug	≤ 500 N tensile load
	Q-ODC socket	≤ 30 N static side load
Operating temperature ¹⁾	IEC 61300-2-22	−40 up to +85 °C
Mating durability	IEC 61300-2-2	100 cycles ²⁾
Ingress protection (mated)	IEC 60529	IP68 (3 m/30 days)
Salt mist	IEC 61300-2-26	30 days passed
Vibration	IEC 61300-2-1	passed 10 to 500 Hz/10 g
Shock	IEC 61300-2-9	passed 50 g
	IEC 61373	passed category 1, 2

¹⁾ depending on cable type

²⁾ with repeated cleaning

Optical performance – MTP performance by fiber type/grade

Fiber type/grade	Typical IL dB	Maximum IL dB	RL
Low loss single-mode (SM MT Elite)	0.15	0.35	≥ 60 dB
Low loss multi-mode (MM MT Elite)	0.15	0.35	

Mating/un-mating sequences



Push plug connector slightly into extension connector, rotate to find keying position, push connector to mate. Use arrows on a boot for pre-alignment.



Mated – connector snaps in and is fully strain relieved.



Pull coupling ring to un-mate.

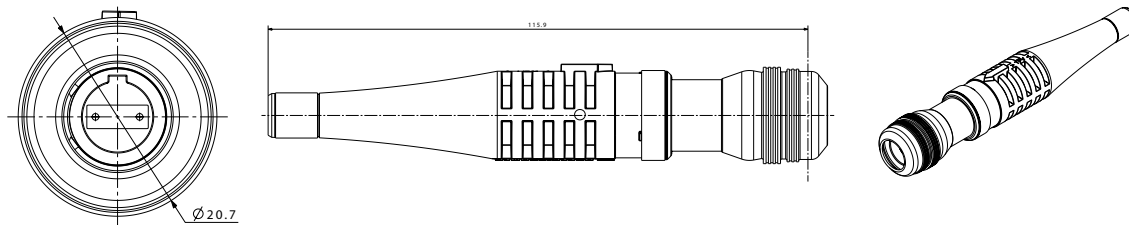
Overview of Q-ODC connector types

Type old	Type new	Connector	Dust cap	IP
QX	QOP1	Q-ODC-12 / Q-ODC-24 plug 	push-on 	IP67
	QOP2		push-on 	IP67
	QOP3		snap-on 	IP68
	QOP4		snap-on with chain 	IP68
QY	QOE1	Q-ODC-12 / Q-ODC-24 extension 	push-on 	IP67
	QOE2		push-on 	IP67
	QOE3		snap-on 	IP68
	QOE4		snap-on with chain 	IP68
QZ	QOS1	Q-ODC-12 / Q-ODC-24 socket square 	push-on 	IP67
	QOS2		push-on 	IP67
	QOS3		snap-on 	IP68
	QOS4		snap-on with chain 	IP68
QW	QOR1	Q-ODC-12 / Q-ODC-24 socket hexagonal, mounted from the rear, simplex cable 	push-on 	IP67
	QOR2		push-on 	IP67
	QOR3		snap-on 	IP68
	QOR4		snap-on with chain 	IP68

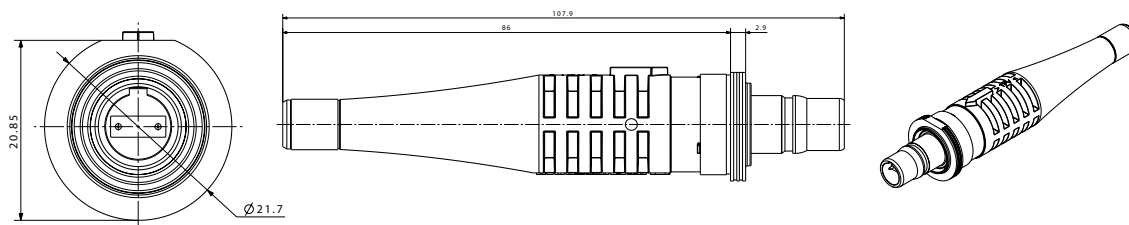
Q-ODC-12 / Q-ODC-24 assemblies

Q-ODC-12 / Q-ODC-24 outdoor connector plug / socket

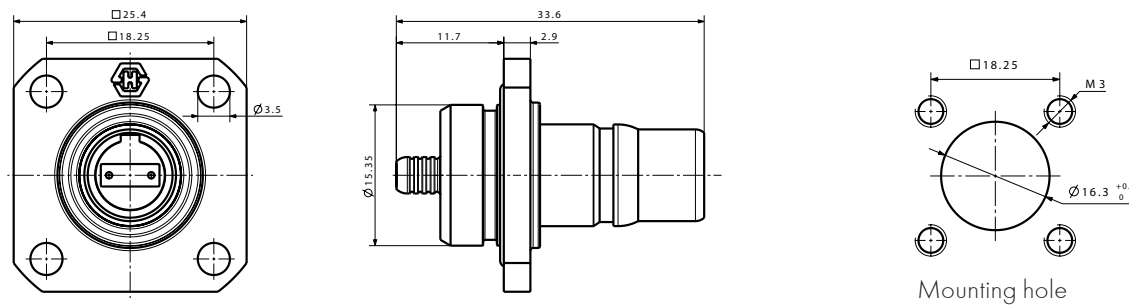
Standard type QOP1, QOP2, QOP3, QOP4: Q-ODC-12 / Q-ODC-24 plug



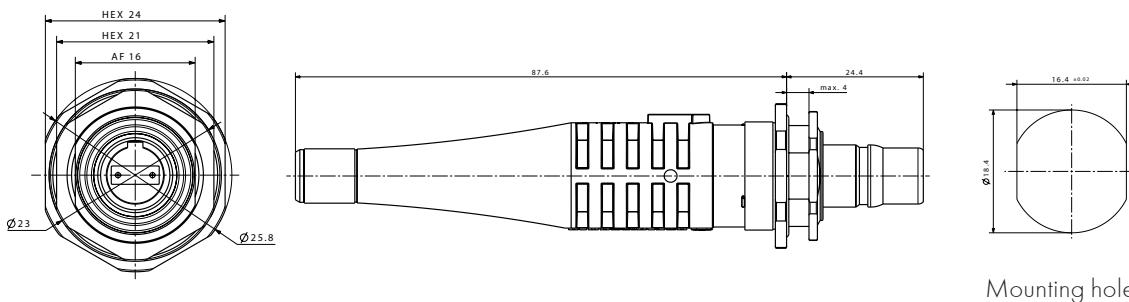
Standard type QOE1, QOE2, QOE3, QOE4: Q-ODC-12 / Q-ODC-24 extension



Standard type QOS1, QOS2, QOS3, QOS4: Q-ODC-12 / Q-ODC-24 socket square



Standard type QOR1, QOR2, QOR3, QOR4: Q-ODC-12 / Q-ODC-24 socket hexagonal, mounted from the rear



Q-ODC-12 plug to Q-ODC-12 extension, multi-mode OM2 fiber



Length	Item no.	Assembly code
10 m	85026180	MB12_QOP2_QOE2_O270R_10.0_LL
20 m	85015744	MB12_QOP2_QOE2_O270R_20.0_LL
30 m	85026245	MB12_QOP2_QOE2_O270R_30.0_LL
40 m	85026246	MB12_QOP2_QOE2_O270R_40.0_LL
50 m	85026247	MB12_QOP2_QOE2_O270R_50.0_LL
60 m	85026248	MB12_QOP2_QOE2_O270R_60.0_LL
70 m	85026249	MB12_QOP2_QOE2_O270R_70.0_LL
80 m	85026250	MB12_QOP2_QOE2_O270R_80.0_LL
90 m	85026251	MB12_QOP2_QOE2_O270R_90.0_LL
100 m	85026252	MB12_QOP2_QOE2_O270R_0100_LL
150 m	85026257	MB12_QOP2_QOE2_O270R_0150_LL

Connector left Q-ODC-12 plug

Type	Connector	Dust cap
QOP2	Q-ODC-12 plug 	push-on IP67 

Connector right Q-ODC-12 extension

Type	Connector	Dust cap
QOE2	Q-ODC-12 extension 	push-on IP67 

Used cable

Jellyfree – dry block glass-armoured multi-fiber loose tube cables 7.0 mm



Item no.	Cable type	Description
85026737	12-12G50/H(ZNG)H-G70-UR	12-fiber, 50/125 µm OM2, Ø 7.0 mm, jacket LSFH black UL rating acc. OFN/OFNG

Q-ODC-12 assemblies

Q-ODC-12 socket to LC connector, multi-mode OM3 fiber



Length	Item no.	Assembly code
5 m	85015759	PC312-X0005A-S00000G045ZQZ88LM

Connector left Q-ODC-12 socket

Type	Connector	Dust cap
QOS2	Q-ODC-12 socket, square 	push-on IP67 

Connector right LC connector

Type	Connector
LCMD	6 × LC duplex 

Used cable
OptiPack 12 – 3.0 mm multi-fiber patch cable



Item no.	Cable type	Description
84150817	12-12G50/(CH)H-M30-F OM3	12-fiber, 50/125 µm OM3 BendOptimized, Ø 3.0 mm, jacket LSFH turquoise

Q-ODC-12 plug to Q-ODC-12 socket, multi-mode OM2 fiber



Length	Item no.	Assembly code
20 m	85020914	70HRCG-50-QX/QW-020-TT-B

Connector left Q-ODC-12 plug

Type	Connector	Dust cap
QOP2	Q-ODC-12 plug 	push-on IP67 

Connector right Q-ODC-12 socket

Type	Connector	Dust cap
QOR1	Q-ODC-12 socket, hexagonal 	push-on IP67 

Used cable
Jellyfree glass-armoured multi-fiber loose tube cables



Item no.	Cable type	Description
85008097	12-12G50/H(ZNG)H-G70	12-fiber, 50/125 µm OM2, Ø 7.0 mm, jacket LSFH black

Q-ODC-12 assemblies

Glass-armoured 12 fiber loose-tube cable with Q-ODC-12 extension and LC uniboot connectors



Length	Item no. fiber type single-mode	
	Cable type LSFH, not UL listed	Cable type LSFH, UL listed
20 m	85032143	85032158
30 m	85032144	85032159
40 m	85032145	85032160
50 m	85032146	85032161
60 m	85032147	85032162
70 m	85032148	85032163
80 m	85032149	85032164
90 m	85032150	85032165
100 m	85032151	85032166
125 m	85032152	85032167
150 m	85032154	85032169
200 m	85032155	85032170

Connector left Q-ODC-12 extension

Type	Connector	Dust cap
QOE2	Q-ODC-12 extension 	push-on IP67 

Connector right LC uniboot

Type	Connector
ICMU	6 × LC uniboot 

Used cable

Jellyfree glass-armoured multi-fiber loose tube cables



Item no.	Cable type	Description
85008097	12-12G50/H(ZNG)H-G70	12-fiber, 50/125 µm OM2, Ø 7.0 mm, jacket LSFH black

Q-ODC-12 multi-branch RRH jumper with 6 LC duplex

Ruggedised break-out 85 mm long and cable Ø 5.0 mm (Ø 7.0 mm at the RRH prechamber entry position), single-mode fiber



Total length	Branch break-out length	Item no.
3 m	2 m	85032212
5 m	4 m	85032213

Connector left Q-ODC-12 plug

Type	Connector	Dust cap
QOP1	Q-ODC-12, plug 	push-on IP67 

Connector right LC duplex

Type	Connector
LCMD	6 × LC duplex 

Used cable

Jellyfree glass-armoured multi-fiber loose tube cables



Item no.	Cable type	Description
85008097	12-12G50/H(ZNG)H-G70	12-fiber, 50/125 µm OM2, Ø 7.0 mm, jacket LSFH black

ODC[®]-2 assemblies

ODC-2 outdoor connector



Features

- 2 fibers, single-mode or multi-mode
- 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-2 plug	≤ 800 N tensile load ≤ 30 N static side load
	ODC-2 socket	≤ 30 N tensile load
Installation torque force	min. 1 Nm	max. 2 Nm
Operating temperature ¹⁾	IEC 61300-2-22	−40 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 to 500 Hz/10 g
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	single-mode	typ. ≤ 0.20 dB	97 % ≤ 0.45 dB
	multi-mode	typ. ≤ 0.20 dB	97 % ≤ 0.50 dB
Return loss	single-mode	≥ 50 dB	

Overview of ODC-2 connector types

Type	Type new	Connector	Dust cap		
A1	ODP1	ODC-2 plug 	screwed cap with pulling feature	IP68	
A4	ODP2		screwed cap with chain	IP68	
E1	ODE1	ODC-2 extension (socket type) 	screwed cap	IP68	
E3	ODE2		screwed cap with chain	IP68	
C1	ODS1	ODC-2 socket, square small 	screwed cap	IP68	
C3	ODS2		screwed cap with chain	IP68	
B3	ODR1	ODC-2 socket, hexagonal, mounted from rear 	screwed cap	IP68	
B4	ODR2		screwed cap with chain	IP68	



ODC – worldwide the most often installed remote radio interface

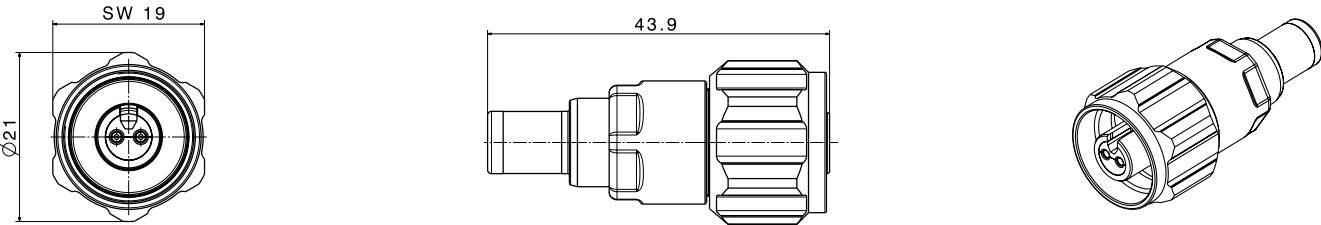
We believe there is no country in the world in which ODC assemblies have not been installed yet. There is no other RRH interface which is used more often and which was chosen by more system vendors.



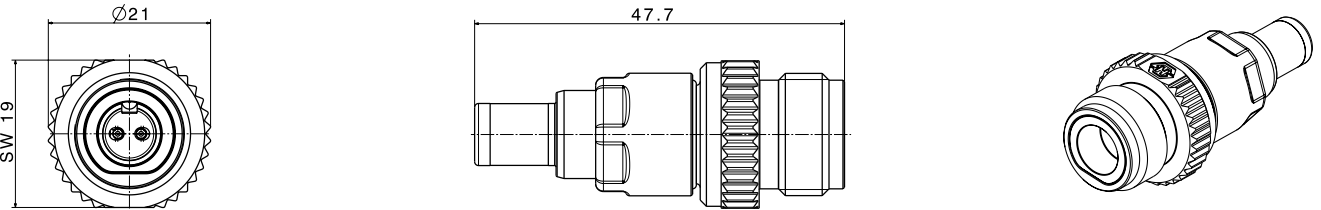
The success comes from the fact that ODC is an extremely robust outdoor connector which withstands all installation hazards – and most importantly – does not permit handling errors. ODC makes mobile networks more reliable and guarantees 100 % performance.

ODC[®]-2 assemblies

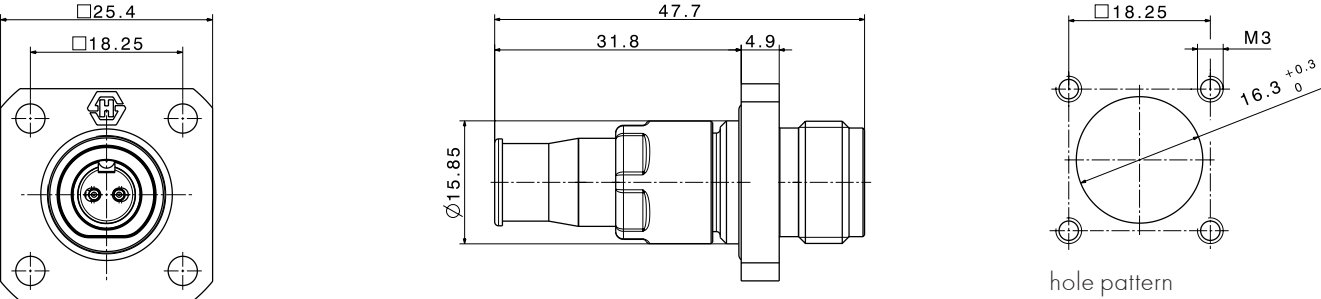
Standard type ODP1, ODP2: ODC-2 plug



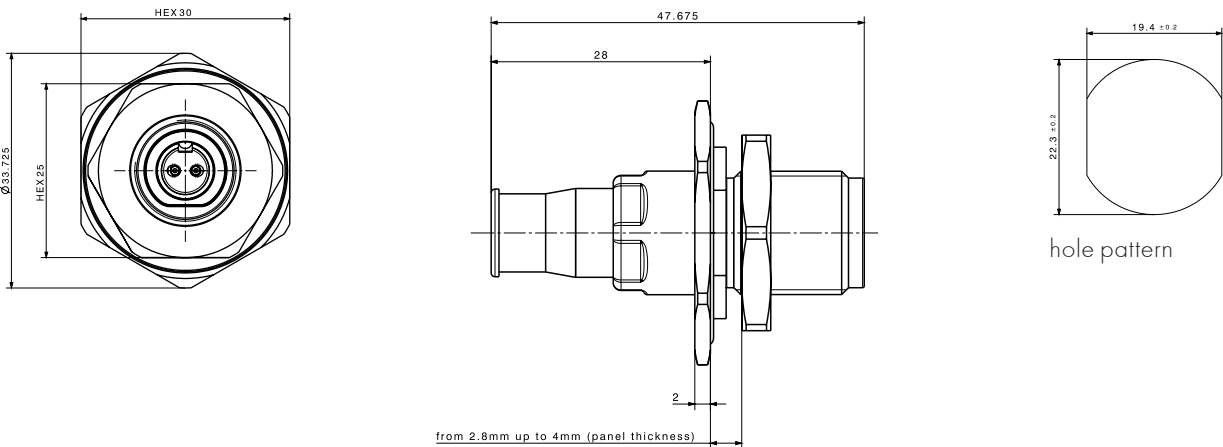
Standard type ODE1, ODE2: ODC-2 extension



Standard type ODS1, ODS2: ODC-2 socket – square small



NON-standard type ODR1, ODR2: ODC-2 socket hexagonal, mounted from the rear



ODC-2 plug to ODC-2 plug, multi-mode OM2 fiber



Length	Item no.	Assembly code
5 m	85003241	MR02_ODP2_ODP2_O256T_05.0_MM
10 m	85003242	MR02_ODP2_ODP2_O256T_10.0_MM
20 m	85016873	MR02_ODP2_ODP2_O256T_20.0_MM
30 m	85065892	MR02_ODP2_ODP2_O256T_30.0_MM
40 m	85065894	MR02_ODP2_ODP2_O256T_40.0_MM
50 m	85065897	MR02_ODP2_ODP2_O256T_50.0_MM
60 m	85065898	MR02_ODP2_ODP2_O256T_60.0_MM
70 m	85065899	MR02_ODP2_ODP2_O256T_70.0_MM
80 m	85065900	MR02_ODP2_ODP2_O256T_80.0_MM
90 m	85065901	MR02_ODP2_ODP2_O256T_90.0_MM
100 m	84133179	MR02_ODP2_ODP2_O256T_0100_MM
150 m	85065902	MR02_ODP2_ODP2_O256T_0150_MM
200 m	85065903	MR02_ODP2_ODP2_O256T_0200_MM

Connector left ODC-2 plug

Type	Connector	Dust cap
ODP2	ODC-2 plug 	screwed cap with chain IP68 

Connector right ODC-2 plug

Type	Connector	Dust cap
ODP2	ODC-2 plug 	screwed cap with chain IP68 

Used cable

Mobile field cables



Item no.	Cable type	Description
84096494	02-G50/FSN(ZN)Z-G56	2-fiber, 50/125 µm OM2, Ø 5.6 mm, jacket PUR black

ODC[®]-2 assemblies

ODC-2 plug to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
2 m	85002920	MR02_ODP2_LCMP_O260T_02.0_MM
4 m	85002159	MR02_ODP2_LCMP_O260T_04.0_MM
6 m	85004721	MR02_ODP2_LCMP_O260T_06.0_MM
8 m	85005832	MR02_ODP2_LCMP_O260T_08.0_MM
10 m	85065904	MR02_ODP2_LCMP_O260T_10.0_MM

Connector left ODC-2 plug

Type	Connector	Dust cap
ODP2	ODC-2 plug 	screwed cap with chain IP68 

Connector right LC connector

Type	Connector
LCMP	LC duplex 

Used cable

Rugged minicord breakout cables



Item no.	Cable type	Description
23037747	02-G50/FJ ZN Z-G17	2-fiber, 50/125 µm OM2, Ø 6.0 mm, jacket PUR black

ODC-2 plug to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
5 m	84078739	09H02FG0_50_A4/88_2_5 MM
10 m	84078740	09H02FG0_50_A4/88_2_10 MM
20 m	84078742	09H02FG0_50_A4/88_2_20 MM
30 m	84078743	09H02FG0_50_A4/88_2_30 MM
40 m	84078744	09H02FG0_50_A4/88_2_40 MM
50 m	84078745	09H02FG0_50_A4/88_2_50 MM
60 m	84078746	09H02FG0_50_A4/88_2_60 MM
70 m	84078747	09H02FG0_50_A4/88_2_70 MM
80 m	84078748	09H02FG0_50_A4/88_2_80 MM
90 m	84078749	09H02FG0_50_A4/88_2_90 MM
100 m	84078750	09H02FG0_50_A4/88_2_100 MM
150 m	84078752	09H02FG0_50_A4/88_2_150 MM

Connector left ODC-2 plug

Type	Connector	Dust cap
ODP2	ODC-2 plug 	screwed cap with pulling feature IP68 

Connector right LC connector

Type	Connector
LCMD	LC duplex 

Used cable

Glass-armoured riser cables with 2 fibers



Item no.	Cable type	Description
84066685	02-G50/FSN(ZNG)H-G55	2-fiber, 50/125 µm OM2, Ø 5.5 mm jacket LSFH black

ODC®-2 assemblies

ODC-2 plug to SC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
2 m	85002072	MR02_ODP2_SCMD_O260T_02.0_MM
4 m	85065940	MR02_ODP2_SCMD_O260T_04.0_MM
6 m	85065941	MR02_ODP2_SCMD_O260T_06.0_MM
8 m	85065942	MR02_ODP2_SCMD_O260T_08.0_MM
10 m	84150705	MR02_ODP2_SCMD_O260T_10.0_MM

Connector left ODC-2 plug

Type	Connector	Dust cap
ODP2	ODC-2 plug 	screwed cap with chain IP68 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Rugged minicord breakout cables



Item no.	Cable type	Description
23037747	02-G50/FJ ZN Z-G17	2-fiber, 50/125 µm OM2, jacket PUR black

ODC-2 socket to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.3 m	85065943	PC02_ODS2_ICMD_O219T_0.30_MM
0.5 m	85065944	PC02_ODS2_ICMD_O219T_0.50_MM
1 m	85065945	PC02_ODS2_ICMD_O219T_01.0_MM

Connector left ODC-2 socket

Type	Connector	Dust cap
ODS2	ODC-2 socket, square small 	screwed cap with chain IP68 

Connector right LC connector

Type	Connector
ICMD	LC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

ODC[®]-2 assemblies

ODC-2 socket to SC connector, multi-mode OM2 fiber

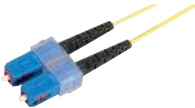


Length	Item no.	Assembly code
0.30 m	85065946	PC02_ODS2_SCMD_O219T_0.30_MM
0.50 m	85065947	PC02_ODS2_SCMD_O219T_0.50_MM
1.00 m	85065948	PC02_ODS2_SCMD_O219T_01.0_MM

Connector left ODC-2 socket

Type	Connector	Dust cap
ODS2	ODC-2 socket, square small 	screwed cap with chain IP68 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

ODC-2 socket to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	84150703	PC02_ODR2_LCMD_O219T_0.30_MM
0.50 m	85065949	PC02_ODR2_LCMD_O219T_0.50_MM
1.00 m	85065950	PC02_ODR2_LCMD_O219T_01.0_MM

Connector left ODC-2 socket

Type	Connector	Dust cap
ODR2	ODC-2 socket, hexagonal 	screwed cap with chain IP68 

Connector right LC connector

Type	Connector
LCMD	LC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

ODC[®]-2 assemblies

ODC-2 socket to SC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85065951	PC02_ODR2_SCMD_O219T_0.30_MM
0.50 m	85065952	PC02_ODR2_SCMD_O219T_0.50_MM
1.00 m	85065954	PC02_ODR2_SCMD_O219T_01.0_MM

Connector left ODC-2 socket

Type	Connector	Dust cap
ODR2	ODC-2 socket, hexagonal 	screwed cap with chain IP68 

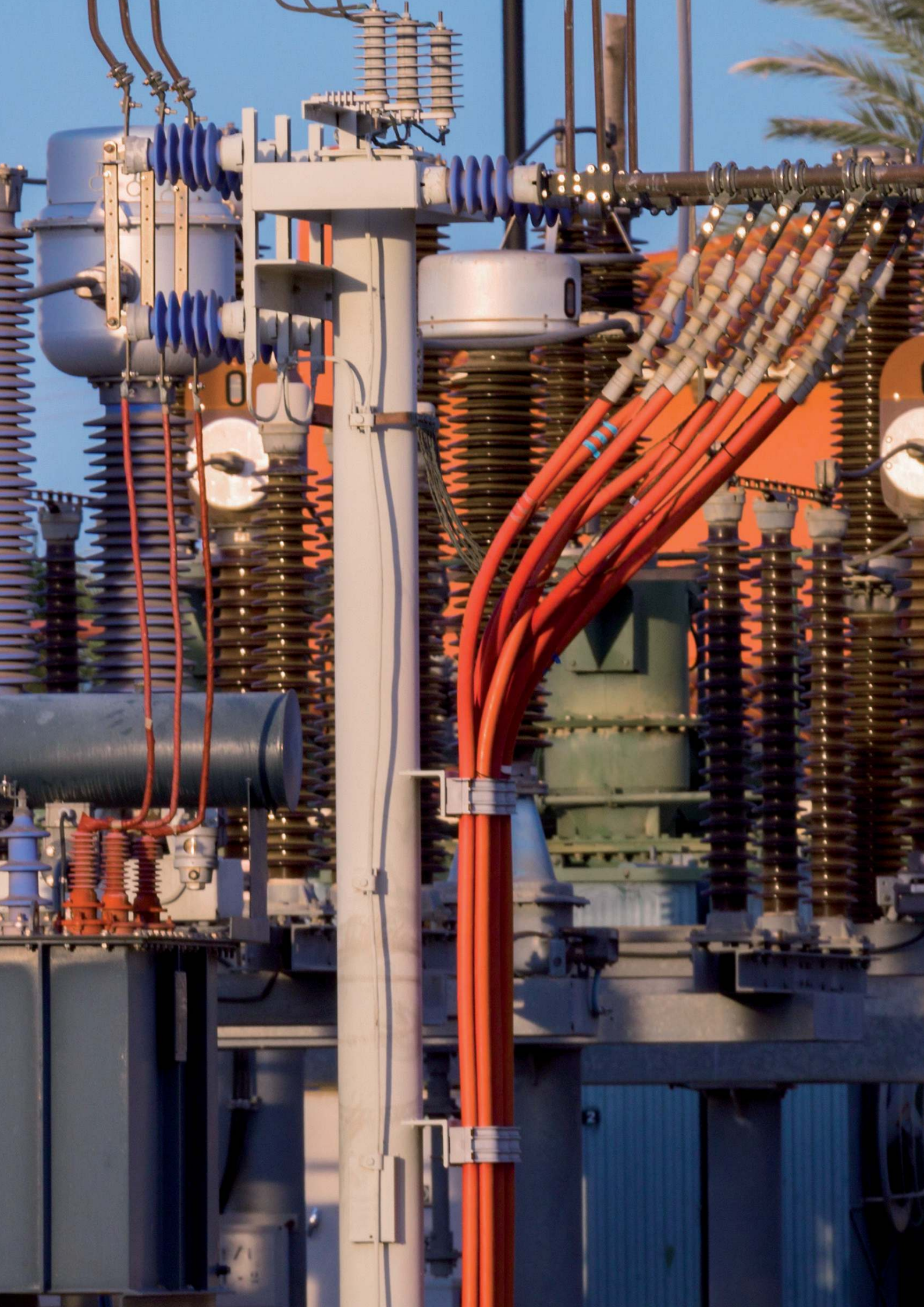
Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange



ODC[®]-4 assemblies

ODC-4 outdoor connector



Features

- 4 fibers, single-mode or multi-mode
- Compact design with 4 × 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 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 to 500 Hz/10 g
Shock	IEC 61300-2-9	passed 100 g

¹⁾ depending on cable type

²⁾ with repeated cleaning

Optical performance

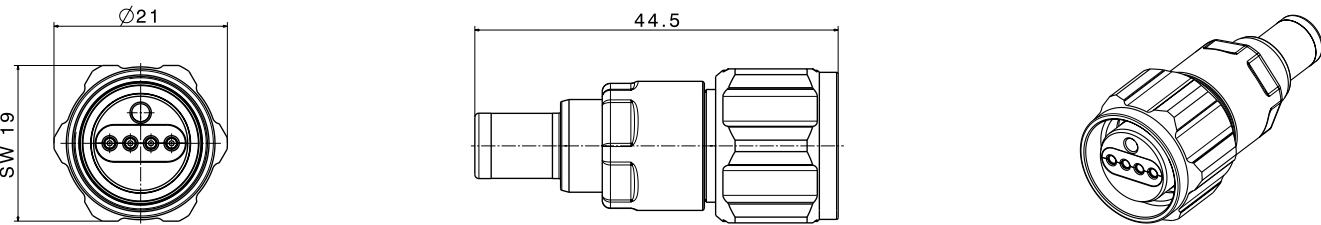
Insertion loss IEC 61300-3-34	single-mode	typ. ≤ 0.20 dB	97 % ≤ 0.45 dB
	multi-mode	typ. ≤ 0.20 dB	97 % ≤ 0.50 dB
Return loss	single-mode	≥ 50 dB	

Overview of ODC-4 connector types

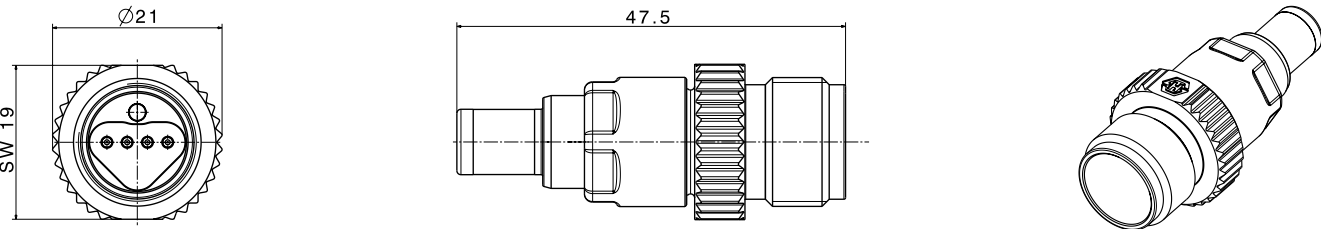
Type old	Type new	Connector	Dust cap	IP
J2	ODP1		screwed cap with pulling feature	IP68
J3	ODP2		screwed cap with chain	IP68
E4	ODE1		screwed cap	IP68
E6	ODE2		screwed cap with chain	IP68
K2	ODR1		screwed cap	IP68
K3	ODR2		screwed cap with chain	IP68
K6	ODS1		screwed cap	IP68
K7	ODS2		screwed cap with chain	IP68

ODC[®]-4 assemblies

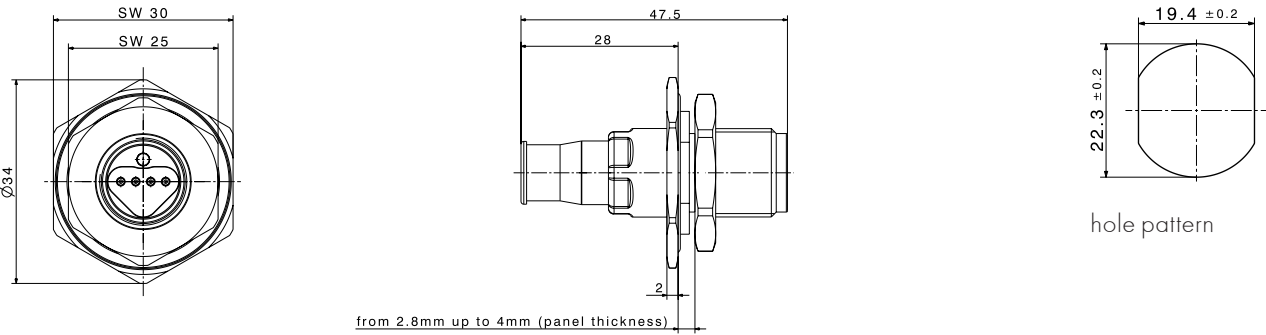
Type ODP1, ODP2: ODC-4 plug



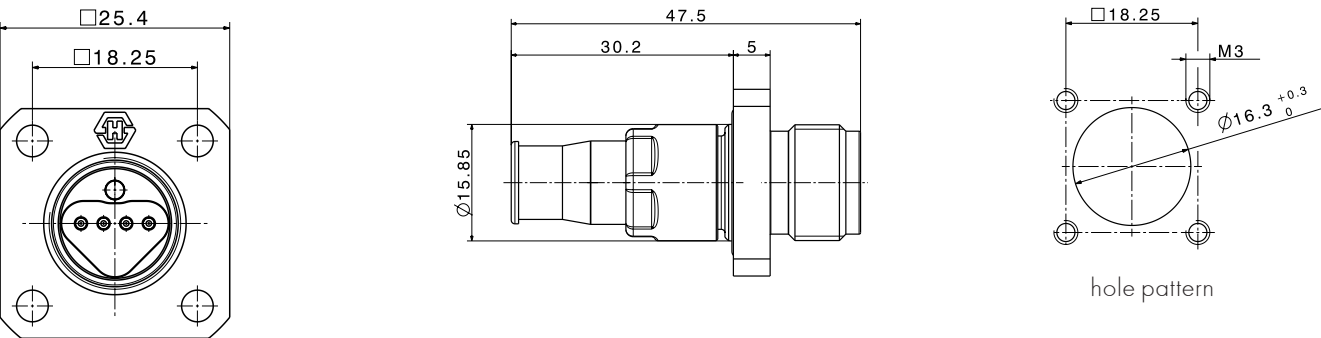
Type ODE1, ODE2: ODC-4 extension



Standard type ODR1, ODR2: ODC-4 socket – hexagonal



Standard type ODS1, ODS2: ODC-4 socket – square small



ODC-4 plug to ODC-4 plug, multi-mode OM2 fiber



Length	Item no.	Assembly code
5 m	85065970	MR04_ODP2_ODP2_O256T_05.0_MM
10 m	85065974	MR04_ODP2_ODP2_O256T_10.0_MM
20 m	85065977	MR04_ODP2_ODP2_O256T_20.0_MM
30 m	84138359	MR04_ODP2_ODP2_O256T_30.0_MM
40 m	85065978	MR04_ODP2_ODP2_O256T_40.0_MM
50 m	85065979	MR04_ODP2_ODP2_O256T_50.0_MM
60 m	84150210	MR04_ODP2_ODP2_O256T_60.0_MM
70 m	85065982	MR04_ODP2_ODP2_O256T_70.0_MM
80 m	85065984	MR04_ODP2_ODP2_O256T_80.0_MM
90 m	85065985	MR04_ODP2_ODP2_O256T_90.0_MM
100 m	85065986	MR04_ODP2_ODP2_O256T_0100_MM
150 m	85065999	MR04_ODP2_ODP2_O256T_0150_MM
200 m	85066000	MR04_ODP2_ODP2_O256T_0200_MM

Connector left ODC-4 plug

Type	Connector	Dust cap
ODP2	ODC-4 plug 	screwed cap with chain IP68 

Connector right ODC-4 plug

Type	Connector	Dust cap
ODP2	ODC-4 plug 	screwed cap with chain IP68 

Used cable

Glass-armoured riser cables with 4 fibers



Item no.	Cable type	Description
84075876	04-G50/FSN(ZNG)H-G55	4-fiber, 50/125 µm OM2, Ø 5.5 mm jacket LSFH black

ODC®-4 assemblies

ODC-4 plug to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
2 m	85066001	MR04_ODP2_ICMP_O256T_02.0_MM
4 m	85066002	MR04_ODP2_ICMP_O256T_04.0_MM
6 m	85066003	MR04_ODP2_ICMP_O256T_06.0_MM
8 m	85066004	MR04_ODP2_ICMP_O256T_08.0_MM
10 m	85066005	MR04_ODP2_ICMP_O256T_10.0_MM

Connector left ODC-4 plug

Type	Connector	Dust cap
ODP2	ODC-4 plug 	screwed cap with chain IP68 

Connector right LC connector

Type	Connector
ICMP	LC duplex 

Used cable

Glass-armoured riser cables with 4 fibers



Item no.	Cable type	Description
84075876	04-G50/FSN(ZNG)H-G55	4-fiber, 50/125 µm OM2, Ø 5.5 mm jacket LSFH black

ODC-4 plug to SC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
2 m	85066006	MR04_ODP2_SCMD_O256T_02.0_MM
4 m	85066007	MR04_ODP2_SCMD_O256T_04.0_MM
6 m	85066008	MR04_ODP2_SCMD_O256T_06.0_MM
8 m	85066009	MR04_ODP2_SCMD_O256T_08.0_MM
10 m	85066011	MR04_ODP2_SCMD_O256T_10.0_MM

Connector left ODC-4 plug

Type	Connector	Dust cap
ODP2	ODC-4 plug 	screwed cap with chain IP68 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable

Glass-armoured riser cables with 4 fibers



Item no.	Cable type	Description
84075876	04-G50/FSN(ZNG)H-G55	4-fiber, 50/125 µm OM2, Ø 5.5 mm jacket LSFH black

ODC[®]-4 assemblies

ODC-4 socket to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85066013	PC04_ODS2_LCMD_O219T_0.30_MM
0.50 m	85066014	PC04_ODS2_LCMD_O219T_0.50_MM
1.00 m	85066016	PC04_ODS2_LCMD_O219T_01.0_MM

Connector left ODC-4 socket

Type	Connector	Dust cap
ODS2	ODC-4 socket; square 	screwed cap with chain IP68 

Connector right LC connector

Type	Connector
LCMD	LC duplex 

Used cable

Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

ODC-4 socket to SC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85066017	PC04_ODS2_SCMD_O219T_0.30_MM
0.50 m	85066019	PC04_ODS2_SCMD_O219T_0.50_MM
1.00 m	85066020	PC04_ODS2_SCMD_O219T_01.0_MM

Connector left ODC-4 socket

Type	Connector	Dust cap
ODS2	ODC-4 socket, square 	screwed cap with chain IP68 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

ODC[®]-4 assemblies

ODC-4 socket to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85066021	PC04_ODR2_LCMD_O219T_0.30_MM
0.50 m	85066088	PC04_ODR2_LCMD_O219T_0.50_MM
1.00 m	85066089	PC04_ODR2_LCMD_O219T_01.0_MM

Connector left ODC-4 socket

Type	Connector	Dust cap
ODR2	ODC-4 socket, hexagonal 	screwed cap with chain IP68 

Connector right LC connector

Type	Connector
LCMD	LC duplex 

Used cable Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

ODC-4 socket to SC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
0.30 m	85066090	PC04_ODR2_SCMD_O219T_0.30_MM
0.50 m	85066091	PC04_ODR2_SCMD_O219T_0.50_MM
1.00 m	85066092	PC04_ODR2_SCMD_O219T_01.0_MM

Connector left ODC-4 socket

Type	Connector	Dust cap
ODR2	ODC-4 socket, hexagonal 	screwed cap with chain IP68 

Connector right SC connector

Type	Connector
SCMD	SC duplex 

Used cable
Simplex cables 1.9 mm



Item no.	Cable type	Description
84032683	01-G50/FJU-D19	1-fiber, 50/125 µm OM2, Ø 1.9 mm, jacket PUR orange

Q-XCO assemblies

Q-XCO – quick-lock ruggedised SFP connector



Features

- Quick-lock mating connector for remote radio head and industrial applications
- Ruggedised outdoor design with 2 × LC interface
- Plugs directly into SFP module, compatible with all standard SFP modules
- Full compensation of positioning tolerances and SFP module tolerances
- Bayonet, blind-mating mechanism and highest installation safety
- Full protection of optical interface during installation
- Access and exchange of SFP module possible
- RoHs compliant

Mating mechanism

Mating	1-step blind mating	bayonet
	mating references	visual and latch
Compensation of positioning tolerances of SFP module	z-axis	± 2.25 mm
	x, y-axis	± 0.4 mm (± 0.6 mm depending on SFP module)
Latching of LC connector	use of LC HQ technology	automating latching and unlatching
Mating durability	IEC 61300-2-2	100 cycles
Force on SFP module		no force in mated state

Specifications

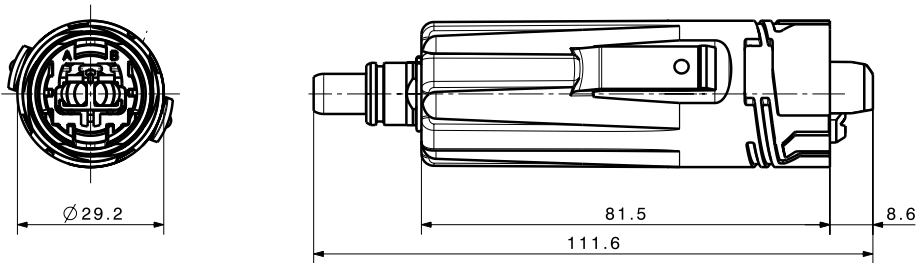
Technology		LC full ceramic ferrules
Housing material	connector	high-performance plastic
	socket	die-casting with zinc plating
Material flammability rating		UL 94-V0
Mechanical performance	IEC 61300-2-4	≤ 400 N tensile load
	IEC 61300-2-42	≤ 30 N static side load
	IEC 61300-2-5	180° cable torsion, passed
Thermal performance	operation, IEC 61300-2-22	–40 to +85 °C
	installation	–40 to +55 °C
Ingress protection	IEC 60529-20	IP67 (mated or with dust cap)
Salt mist	84108683 85006151	IEC 61300-2-26, MIL-STD-202G Method 101E IEC 61300-2-26
Vibration	IEC 61300-2-1, MIL-STD-202G, Method 204G	192 h 720 h
Shock	IEC 61300-3-3, MIL-STD-202G, Method 213B	passed 10 to 500 Hz/10 g
UV resistance	ISO 4982-2	passed 50 g
		passed 2000 h at 2000 MJ/m ²

Optical performance

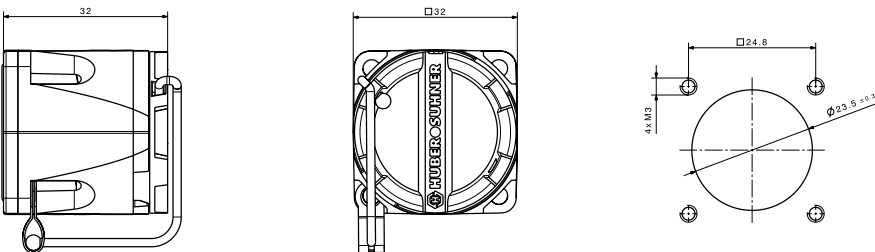
Insertion loss	single-mode	typ. ≤ 0.20 dB	97 % ≤ 0.45 dB
	multi-mode	typ. ≤ 0.20 dB	97 % ≤ 0.50 dB
Return loss	single-mode	≥ 50 dB	

Q-XCO – quick-lock ruggedised SFP connector

Q-XCO plug



Q-XCO flange small



hole pattern

Type old	Type new	Picture	Dust cap	IP
XA	QXP2	Q-XCO connector 		IP67
Item no. 84108683		Q-XCO flange small 		IP67
Item no. 85006151		Q-XCO flange small e-coating 		IP67

Q-XCO assemblies

Q-XCO to LC connector, multi-mode OM2 fiber



Length	Item no.	Assembly code
5 m	85008105	MR02_QXP2_LCMP_0255T_0.50_MM
25 m	85008107	MR02_QXP2_LCMP_0255T_25.0_MM
50 m	85008106	MR02_QXP2_LCMP_0255T_50.0_MM
80 m	85008108	MR02_QXP2_LCMP_0255T_80.0_MM
100 m	85008109	MR02_QXP2_LCMP_0255T_0100_MM
120 m	85008110	MR02_QXP2_LCMP_0255T_0120_MM
140 m	85008111	MR02_QXP2_LCMP_0255T_0140_MM
160 m	85008112	MR02_QXP2_LCMP_0255T_0160_MM
180 m	85008113	MR02_QXP2_LCMP_0255T_0180_MM
200 m	85008114	MR02_QXP2_LCMP_0255T_0200_MM

Connector left Q-XCO plug

Type	Connector	Dust cap
QXP2	Q-XCO 	IP67 

Connector right LC connector

Type	Connector
LCMP	LC duplex 

Used cable

Glass-armoured riser cables with 2 fibers



Item no.	Cable type	Description
84066685	02-G50/FSN(ZNG)H-G55	2-fiber, 50/125 µm OM2, Ø 5.5 mm, jacket LSFH black

Q-XCO – quick-lock ruggedised SFP connector



Installation safety for LTE and microwave links

Q-XCO is the most installation safe fiber optic interface on the market. The connector is designed for harsh outdoor applications and for installation in challenging environments such as high up on radio masts under any atmospheric condition.

Its "one-hand" blind mating performance in combination with full SFP tolerance compensation makes this connector the best in its class. For that reason, leading system vendors have chosen Q-XCO as the fiber optic interface for LTE remote radios and for state-of-the-art microwave backhaul systems – simply to have better connections.

Tolerance compensation



The connector compensates for all tolerances of SFP modules and for mounting tolerances



Exchange of SFP module
Release and pull SFP module



Mating sequences



Rotate to find correct keying position



Slide connector into flange and rotate 155° until snap-in position

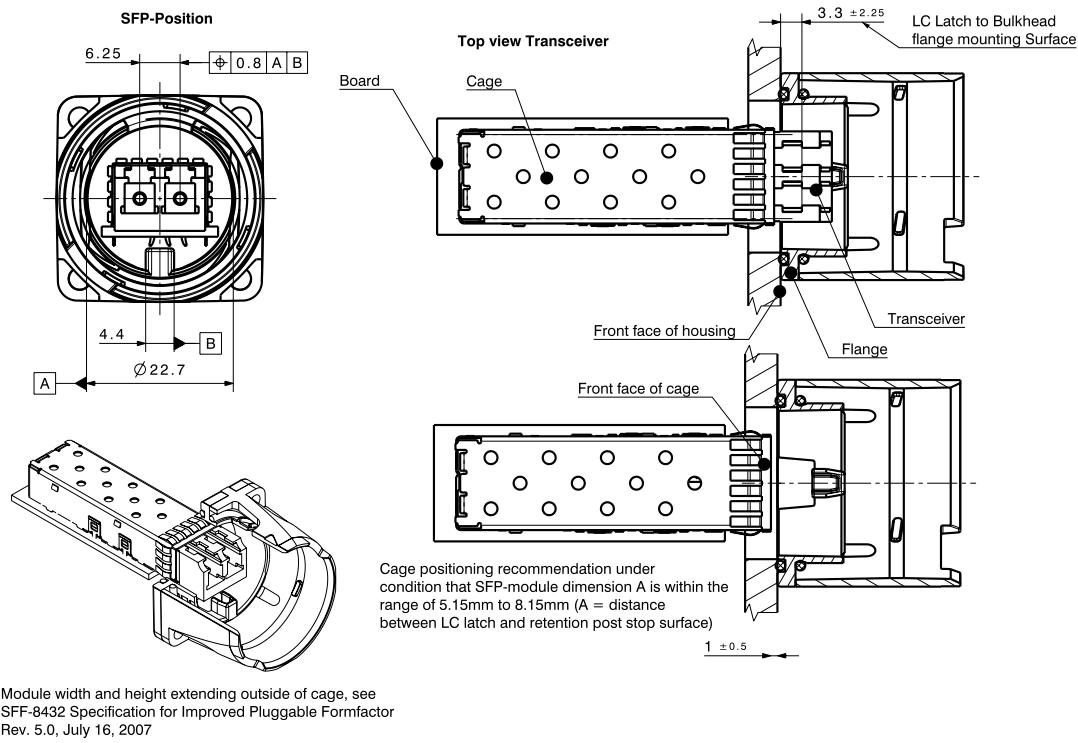


Connector mated with visual reference for correct installation

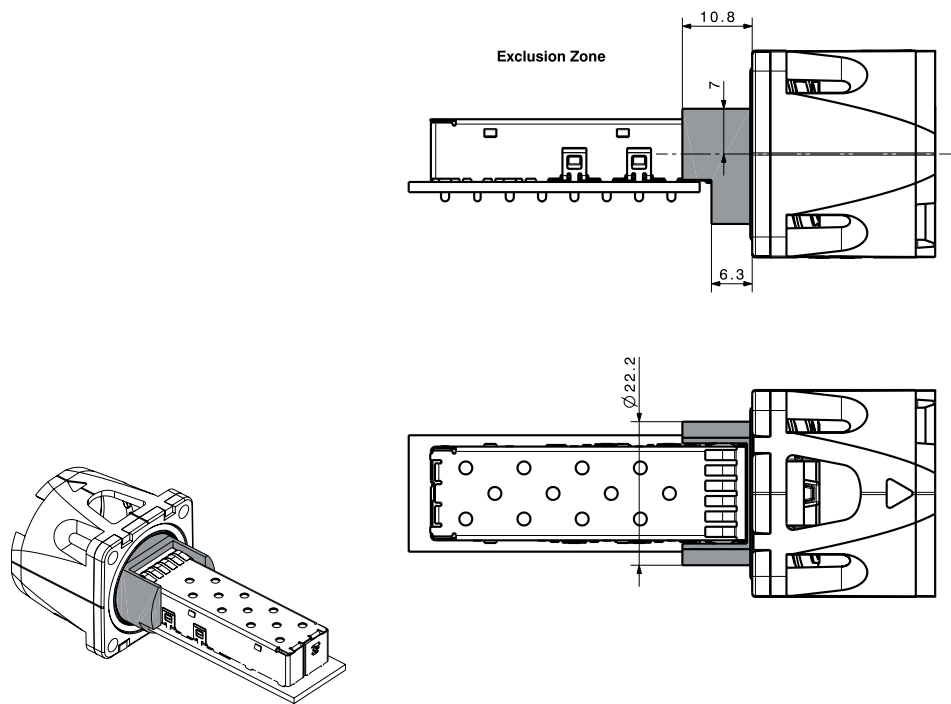
Q-XCO assemblies

Q-XCO – quick-lock ruggedised SFP connector

SFP cage positioning specification



Exclusion zone for connector mating



FullAXS assemblies

FullAXS – ruggedised sealing system



Features

- Ruggedised sealing system for fiber-to-the-antenna and industrial applications
- Open bulkhead for easy access to SFP
- Positive mechanical feedback to operator when fully mated
- Duplex LC interface
- Robust bayonet locking for easy, fast, and secure mating
- Waterproof, dust proof and corrosion resistant
- Expansion to RJ45 and power possible

Specifications

Mating mechanism		bayonet style locking
Housing material		high performance plastic
Technology		LC with full ceramic ferrules
Mechanical performance	tensile load	150 N
	static side load	30 N
Operating temperature		–40 to +70 °C
Mating durability	IEC 61300-2-2	100 cycles
Ingress protection (mated)	IEC 60529	IP67
Vibration	IEC 61300-2-1	passed 10 to 500 Hz/10 g
Performance standards	IEC 61753-1 cat. E	compliant
	Telcordia GR 3120	compliant

Optical performance

Insertion loss	single-mode	typ. ≤ 0.20 dB	97 % ≤ 0.45 dB
	multi-mode	typ. ≤ 0.20 dB	97 % ≤ 0.50 dB
Return loss	single-mode	≥ 50 dB	

Type old	Type new	Connector	Dust cap	IP
Z4	FAP2	FullAXS plug 		IP65
Item no. 84131095		FullAXS build-in flange 		IP65

FullAXS is a registered trademark of TE.

FullAXS assemblies

FullAXS to LC connector, single-mode bend intensive fiber



Length	Item no.	Assembly code
5 m	84137911	MRO2_FAP2_ICUD_A248T_05.0_SS
10 m	84137912	MRO2_FAP2_ICUD_A248T_10.0_SS
20 m	84137914	MRO2_FAP2_ICUD_A248T_20.0_SS
30 m	84137915	MRO2_FAP2_ICUD_A248T_30.0_SS
40 m	84137916	MRO2_FAP2_ICUD_A248T_40.0_SS
50 m	84137917	MRO2_FAP2_ICUD_A248T_50.0_SS
60 m	84137918	MRO2_FAP2_ICUD_A248T_60.0_SS
70 m	84137919	MRO2_FAP2_ICUD_A248T_70.0_SS
80 m	84137920	MRO2_FAP2_ICUD_A248T_80.0_SS
90 m	84137921	MRO2_FAP2_ICUD_A248T_90.0_SS
100 m	84137922	MRO2_FAP2_ICUD_A248T_0100_SS
125 m	84137923	MRO2_FAP2_ICUD_A248T_0125_SS
150 m	84137924	MRO2_FAP2_ICUD_A248T_0150_SS

Connector left FullAXS plug

Type	Connector	Dust cap
FAP2	FullAXS plug 	IP65 

Connector right LC connector

Type	Connector
ICUD	LC duplex 

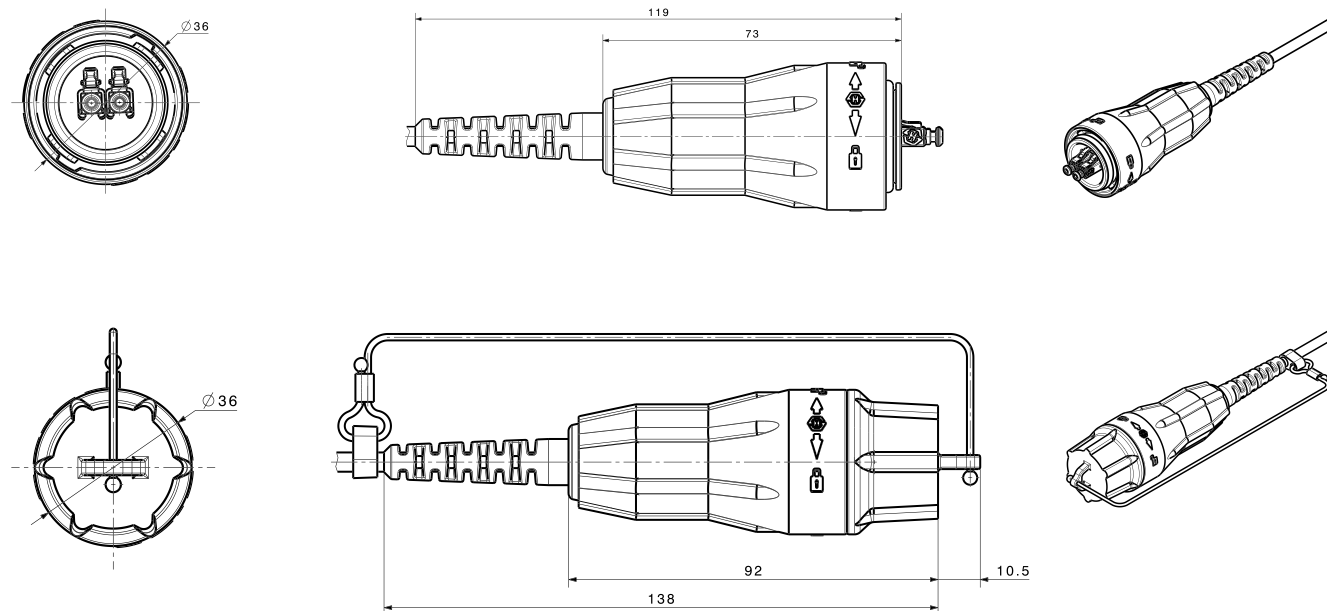
Used cable

Glass-armoured riser cables with 2 fibers

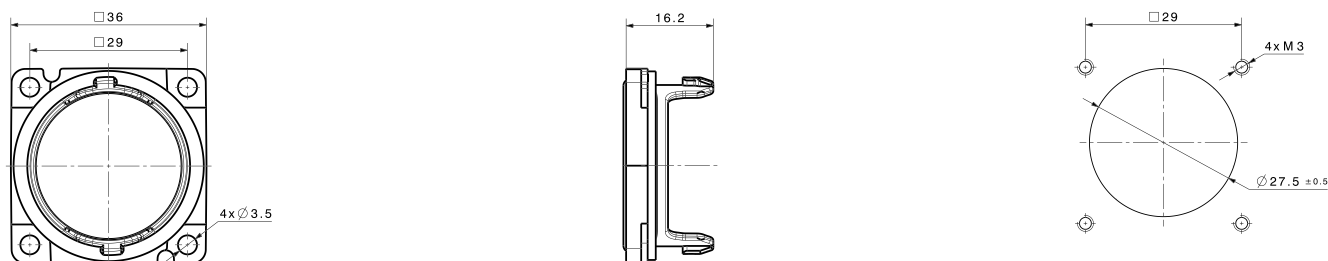


Item no.	Cable type	Description
84118844	O2-E9A2/F(ZNG)H-G48	2-fiber, 50/125 µm low bend acc. ITU-G.657-A2, Ø 4.8 mm, jacket LSFH black

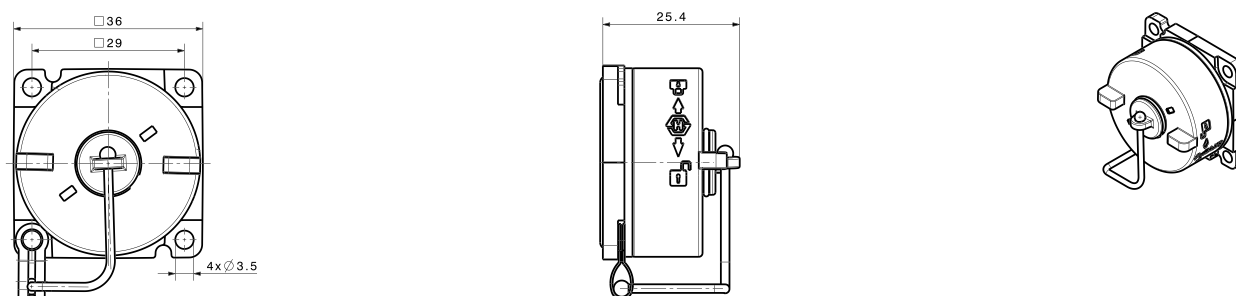
Type FAP2: FullAXS plug



Type: FullAXS build-in flange



Type: FullAXS build-in flange (with cap)



Hermaphroditic expanded beam connector EBC



- Features**
- 2 or 4 fibers, single-mode or multi-mode
 - Expanded beam system
 - Screwed locking mechanism
 - Easy cable chaining possible due to hermaphroditic connector design
 - Waterproof and dust proof
 - Low sensitivity of contamination of optical end faces
 - Easy cleaning and no maintenance required
 - Meets requirement of MIL-DTL-83526/20 and 21

Specifications

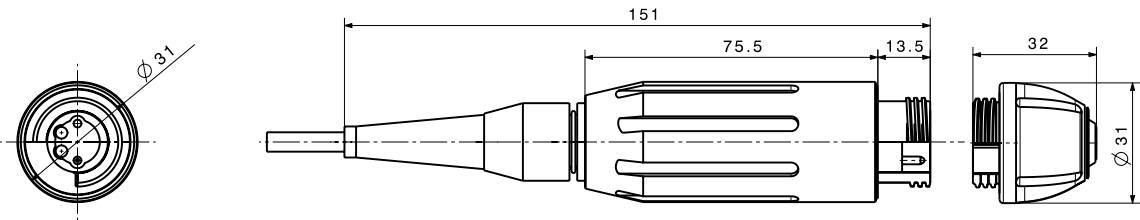
Technology	hermaphroditic expanded beam system		
Mechanical performance ¹⁾	1500 N tensile load		
Free fall resistance	500 drops from 1.2 m height		
Operating temperature ¹⁾	−46 to +85 °C		
Storage temperature ¹⁾	−55 to +85 °C		
Mating durability	min. 3000 cycles		
Ingress protection (mated)	IP67		

¹⁾ depending on cable type

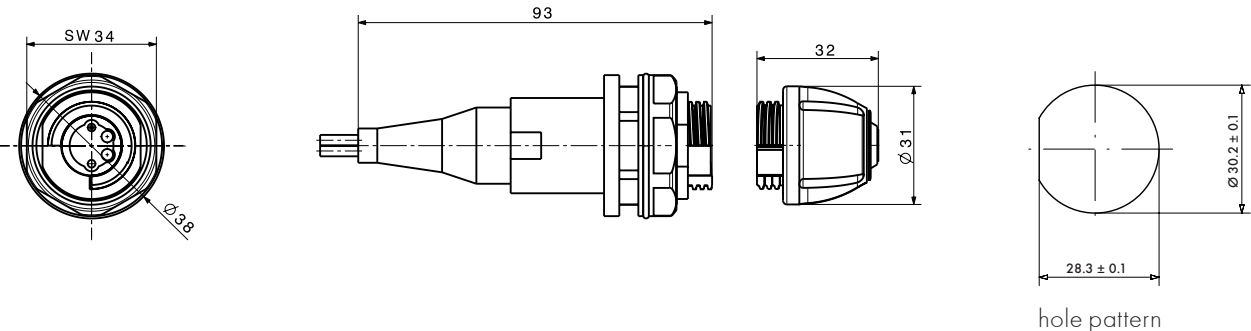
Optical performance

Insertion loss	single-mode	(1310 nm/1550 nm)	typ. 1.0 dB, max. 2.0 dB
	multi-mode	(850 nm/1300 nm)	typ. 0.8 dB, max. 1.5 dB
Return loss	single-mode		typ. 30 dB

EBC plug



EBC bulkhead



Ordering information

09Z02FG0- 09Z04FG0-	cable type	mobile field cable with 2 fibers mobile field cable with 4 fibers
09- 50- 62-	fiber type	single-mode E9/125 µm multi-mode G50/125 µm multi-mode 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	connector code of other connector typ (usually required for second side of bulkhead)
x-	total number of connectors	
x	length of assembly (m)	
xx	performance level (left/right)	
	Q	multi-mode
	R	single-mode

Please note: Other types of expanded beam connectors are available on request, also such types that meet MIL-DTL-83526/20, MIL-DTL-83526/21, VG 95319-100 and VG 95319-101.

Mobile transport systems for EBC assemblies

	Plastic drum	Metal drums	Drums with backpack
			
Size	max. 400 m (Ø 5.6 mm)	max. 1300 m (Ø 5.6 mm)	max. 700 m (Ø 5.6 mm)
Colour	black	army green or other colours	army green or other colours
Sizes	optional other sizes	different types and sizes	different types and sizes

Cleaning of fiber optic connectors

General guidelines

The optical performance (optical insertion loss and return loss) of fiber optic connectors is easily and adversely affected by contamination and scratching of the ferrule surfaces. Particles of dust, smears of grease caused by touching the ferrules, or the residue from cleaning agents, can increase insertion losses and, in extreme cases, can culminate in loss of signal. During an installation it is therefore necessary to ensure that ferrule end surfaces are clean which means

- Stock fiber optic assemblies only in original packaging
- Do not remove dust caps until immediately before mating
- Connectors should never left lying around without protective caps in place
- Never touch the end surfaces or "wipe them down" and
- Always work very carefully and cleanliness is essential

LC connectors tend to be much more prone to contamination and scratching than, for example, robust ODC or Q-ODC connectors on which the ferrules are protected mechanically from physical contact.

All quality manufacturers of fiber-optic assemblies conduct a 100 % inspection of insertion losses and of the cleanliness of ferrule end face in an industrial environment governed by controlled processes. Factory-terminated fiber optic connectors supplied to the market are cleaned and are ready for direct installation.

Do NOT CLEAN factory terminated connectors before FIRST installation!



A misplaced intention to clean and inspect in the field with uncontrolled processes under usual installation conditions generally gives rise to contamination and to problems in the network. Various statistical investigations and many years of experience within the landline sector confirm this. Experience from many installations shows that contamination problems disappeared overnight when field cleaning work (before first mating) was ceased during installation work.

Disregarding initial installation, field cleaning is however an important process and one that needs to be handled effectively by the installation teams. It can arise that ferrules get dirty during installation work (e.g. through physical contact) and in such cases, cleaning is urgently advised. During a network service or expansion, in many cases existing fiber-optic connections are disconnected and then get reconnected – here too, cleaning is advisable.

Cleaning of ODC®/Q-ODC connectors

Q-ODC	ODC-2	ODC-4
1.25 mm ferrule	1.25 mm ferrule	1.25 mm ferrule
		
Cleaning tools for ODC connectors	Item no.	Picture
IBC cleaner for 1.25 mm ferrules	84064486	

Comments

- Same IBC cleaner of all types of ODC connectors
- Wet cleaning for ODC connectors not recommended

Dry cleaning of endface

ODC plug cleaning	
• Remove the purple guide cap from the device • Extend the tip of the cleaner approx. 1 to 2 mm and insert it into the plug straight forward • Risk of tip breakage	
• Push device up to the stop twice. A "click" sound indicates the end of each cleaning cycle	

ODC socket cleaning	
• Open the guide cap from the device • Insert the guide into the socket over the ferrule • Push the device up to the stop stop twice. - A "click" sound indicates the end of each cleaning cycle	
Identification of remaining cleaning yarn • The window indicates if there is still cleaning yarn available. - When the cleaning yarn is used up the indicator is completely red. • Can be used for about 500 cleaning cycles	

Fiber optic interfaces for remote radio heads

Cleaning and inspection tools Harsh Environment connector

Cleaning

Description	Item no.	Picture
Cleaner, 1.25 mm ferrule for ODC, Q-ODC, LC, FullAXS, Q-XCO	84108852	
Cleaning brush, pin holes cleaning (Q-ODC-12 plug)	85066833	
Brushes for 85066833	84139206	
Swab, pins cleaning (Q-ODC-12 socket/extension/rearmount)	84139207	
IBC cleaner for Q-ODC-12	85017030	
Plug adapter for IBC cleaner (85017030)	85025275	
Socket/extension/rearmount adapter for IBC cleaner (85017030)	85025276	

ODC torque wrench

Description	Item no.	Picture
74_Z-0-0-321	22651994	

Inspection

Description	Item no.	Picture
Adapter for ODC-2 (plug and socket) inspection (JDSU 5000i probe)	85026607	
Adapter for ODC-4 (plug and socket) inspection (JDSU 5000i probe)	85026608	
Adapter for Q-ODC-2 (plug and socket) inspection (JDSU 5000i probe)	85083464	
Adapter for Q-ODC 12/Q-ODC 24 inspection (JDSU 5000i probe)	85068197	
Plug adapter multi-mode (UPC) for 85068197	85068173	
Plug adapter single-mode (APC) for 85068197	85068172	
Socket adapter multi-mode (UPC) for 85068197	85068170	
Socket adapter single-mode (APC) for 85068197	85068171	

Cleaning of endface

Important notice

- If the Q-ODC-12 is connected to an active laser during cleaning, then the use of laser protection glasses is mandatory.
- The fibers must not point towards the eyes.



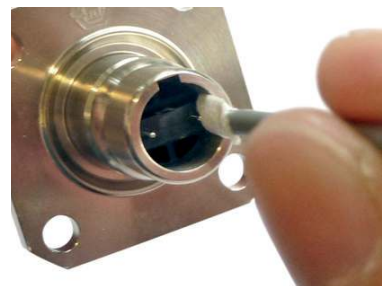
Plug pin holes cleaning

- Wet the cleaning brush with isopropyl alcohol and dab it onto a cleaning tissue. Insert the cleaning brush into the pin hole and move it back and forward twice.
- The metal of the brush must not come into contact with the ferrule. Avoid any damage to the holes, ferrule and fibers.



Socket/extension/rear mount pins cleaning

- Wet the cleaning brush with isopropyl alcohol and dab it onto a cleaning tissue.
- Clean the pins on all sides.
- Avoid any damage to the ferrule and fibers.



Ferrule/fibers end-face cleaning

- Note the key and the keyway orientation of the connector and the cleaning adaptor.
- Insert the IBC cleaner with mounted Q-ODC-12 adaptor into the connector.



Cleaning of Q-XCO/XCO and FullAXS

Q-XCO	XCO	FullAXS
LC with 1.25 mm ferrule	LC with 1.25 mm ferrule	LC with 1.25 mm ferrule
		

Cleaning tools for dry cleaning	Item no.	Picture
IBC cleaner for 1.25 mm ferrules	84064486	

Q-XCO cleaning

- Open the guide cap from the device and insert the LC ferrule into the guide
- Push the device up to the stop stop **twice**. A "click" sound indicates the end of each cleaning cycle



FullAXS cleaning

- Open the guide cap from the device and insert the LC ferrule into the guide
- Push the device up to the stop stop **twice**. A "click" sound indicates the end of each cleaning cycle



Ordering information from other suppliers

Cleaning tools for EBC connectors	Supplier	Supplier item no.
Large swab	ITW Texwipe	TX759B MicroAbsorbant™
Small swab	ITW Texwipe	TX770E MicroAbsorbant™
Isopropyl alcohol	diverse	-
Electro-wash PX	ITW Chemtronics	ES810, ES1210

Supplier information

Supplier	Contact information
ITW Texwipe	Please check the supplier website for the local office at www.texwipe.com

Cleaning of expanded beam connectors

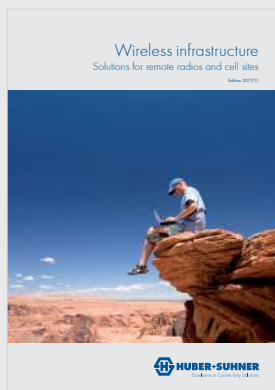
EBC with lenses	Other types e.g. ProBeam Jr.
	

EBC cleaning

1. Wash connector or front of bulkhead with mounted protective cap with fresh and clean water, if they are covered with excessive dirt.
2. IMPORTANT: Clean insert surfaces and lenses only when they are touched or otherwise contaminated.
3. Remove the protective cap. Turn grip of connector and protective cap in opposite directions, until threads are completely free.
4. Blow away dirt particles from the alignment pin, ball lenses and insert surface with clean dry air.
5. Moisten a large swab with isopropyl alcohol, electro-wash PX or equivalent. Using a back-and-forth or swirling motion, wipe the alignment pin, ball lenses, insert surface and mating surface. Use only light pressure on the ball lenses to avoid scratches.
6. If seal of grip or insert, connector threads, protective cap threads and front surfaces are dirty, then these should also be cleaned with a moistend large swab. Use again isopropyl alcohol, electro-wash PX or equivalent.
7. Moisten a small swab with isopropyl alcohol, electro-wash PX or equivalent. Using a back-and-forth or swirling motion, wipe the alignment pin hole.
8. Blow clean dry air over the lenses until remaining solvent and stray particles are removed.
9. Inspect the ball lenses to make sure any contamination is removed. If necessary, repeat steps 4 to 8 until the surfaces are clean.
10. Re-install the protective cap by turing grip of connector and protective cap in opposite directions and tighten them properly.



Additional catalogues



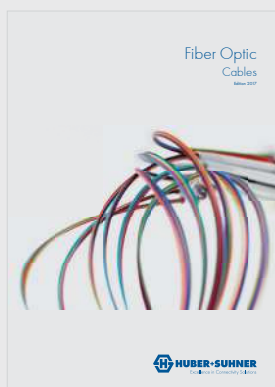
Wireless infrastructure Item no. 84126953

Solutions for remote radios
and cell site



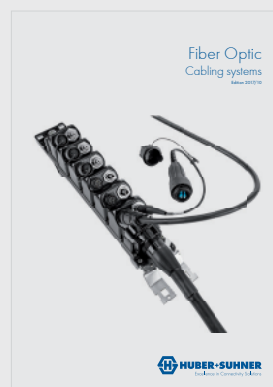
Remote radio installation Item no. 84118113

Best practice guide:
How to install remote radio
systems



Fiber optic cables Item no. 84019826

Indoor cables
Universal cables
Outdoor cables
Special cables



Fiber optic cabling systems Item no. 23029084

Pre-terminated cabling
systems
MASTERLINE
SMARTLINE
Mobile cabling system

HUBER+SUHNER AG
Fiber Optics
Degersheimerstrasse 14
9100 Herisau
Switzerland
Phone +41 71 353 4111
hubersuhner.com

HUBER+SUHNER is certified according to EN 9100, ISO 9001, ISO 14001, ISO/TS 16949 and IRIS.

Waiver

Fact and figures herein are for information only and do not represent any warranty of any kind.