ODU MEDI-SNAP®

A perfect alliance.

Miniature Circular Connectors with Push-Pull Locking Made of Plastic or Metal

www.odu.de

Miniature Circular Connectors with Push-Pull Locking for Medical Applications

Applications

– Medical
– Test and measure equipment
– Industrial

Features

– Versatile coding possibilities (colour-coordinated and mechanical)
– Low weight
– Very high chemical resistance
– 2,000 mating cycles and more
– Simplest assembly
– Autoclaveable, sterilisable

All shown connectors are according to DIN EN 61984:2009 connectors without breaking capacity (COC).

All dimensions in mm. Most of the pictures are illustrations. All data and specifications subject to change without notice.

ODU MEDI-SNAP is UL-listed under File E110586 00RT03566.

Issue: 2014-08

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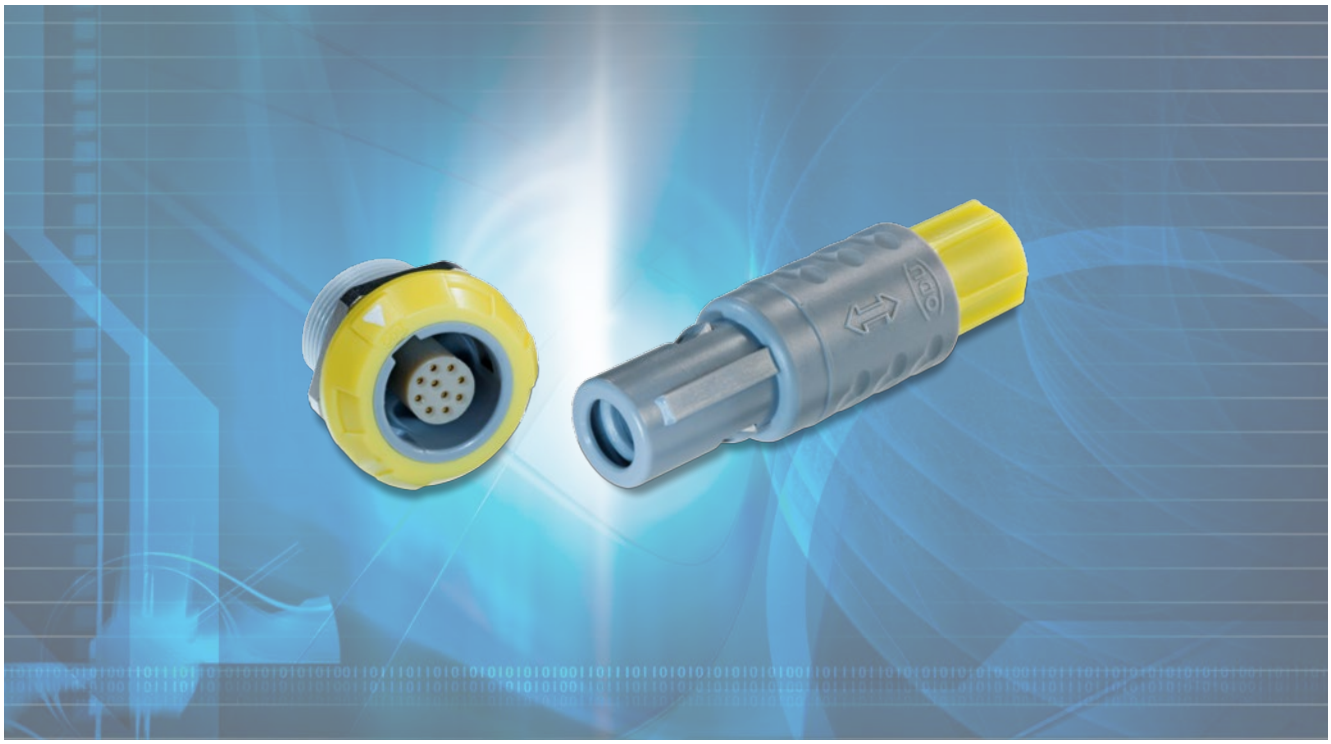
Product Description



The ODU MEDI-SNAP® Family of Miniature Circular Connectors with Push-Pull Locking

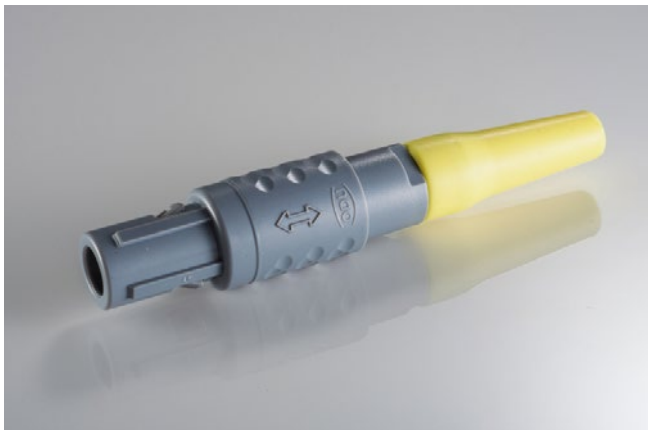
Circular connectors are generally available with several locking mechanisms.

The most frequently used are

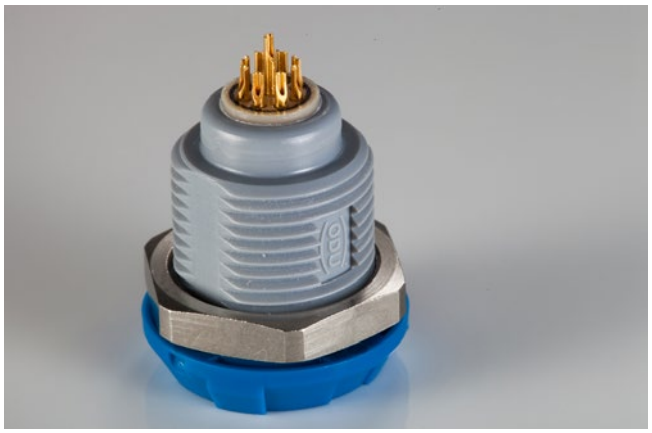
– Screw locking
– Bajonett locking
– Push-Pull locking

Push-Pull connectors have a very simple locking mechanism:

– As the plug is pushed into the receptacle, locking fingers on the plug snap into the receptacle creating a reliable connection between plug and receptacle.
– Pulling on the cable or the rear of plug causes the locking fingers to grab harder and a separation of plug and receptacle is almost impossible. Pulling on the outer plug housing causes the locking fingers to retract and the plug and receptacle separate easily.



Important Issues at a Glance



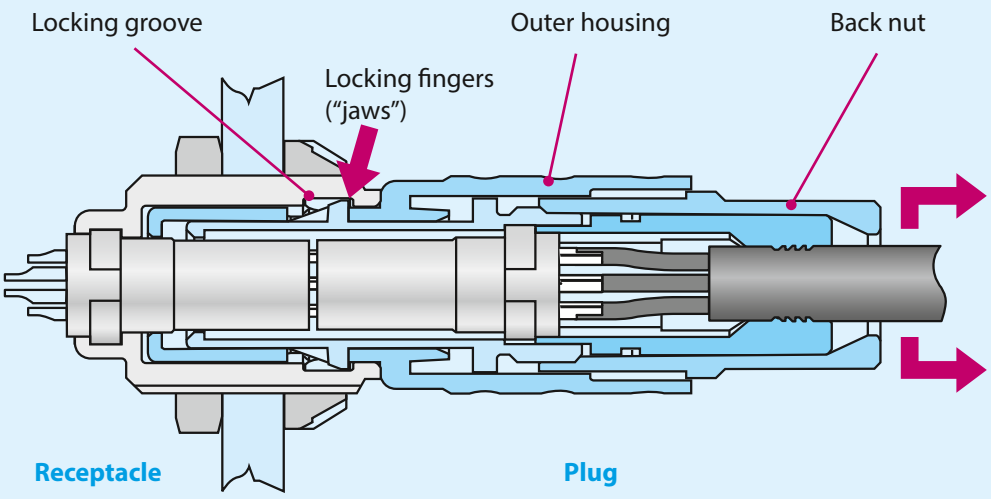
Advantages

- Push-Pull locking principle
- Keying with pin and groove
- Mating cycles: more than 2,000 possible
- Connection with plastic housing available in 2 sizes, outer diameter from 14 mm up to 18.5 mm
- Number of contacts 2 to 26 positions
- Special contact configurations such as fibre-optic and fluid possible
- Contacts with solder, crimp and print terminations
- Operation temperature: –50° C up to +120° C
  Short term (such as autoclaving) resistant up to +134° C
- High efficiency because of:
  - Simplest assembly of the plug (blind assembly)
  - Cost-effective solutions
  - Sterilisability: housing made of PEI: autoclaveable / steam sterilisation
- Plastic housing touch proof
- Lightweight
- Low insertion forces
- Housing non magnetic (plastic housing)
- Very high chemical resistance
- RoHS compliance

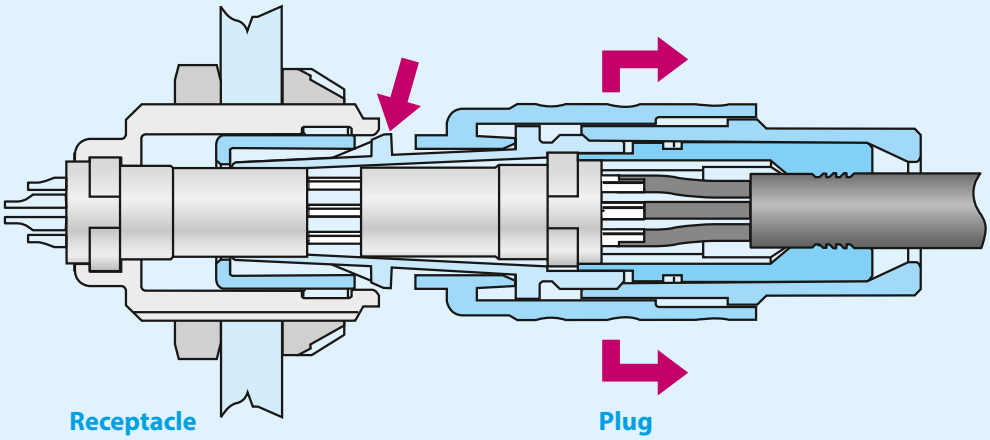
The connectors ODU MEDI-SNAP meet the requirements of the guide line 2002/95/EG.

The Push-Pull Locking Principle

Pulling on the cable or on the back nut causes the "jaws" to grip harder into the locking groove in the receptacle. A separation is virtually impossible.



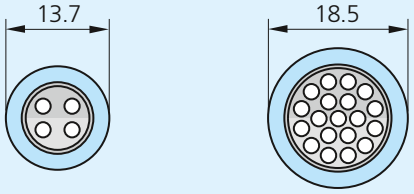
Pulling on the outer plug housing disengages the "jaws" from the locking groove and the connector separates easily.



Available Housing Sizes

Outer diameter (plug)

Scale 1 :1



Size 1 2

Materials and Termination Technologies

Applications

	Insulator material PEEK	Housing material PSU	Contact material Ms
General application requirements (–50° C to +170° C)	●	●	
Connectors which are autoclaveable (+134° C, see page 74)	●	●	●

Termination technologies

	Insulator material PEEK	Contact material Ms
Crimp termination	●	●
Solder termination	●	●
Printed circuit board (PCB) termination	●	●

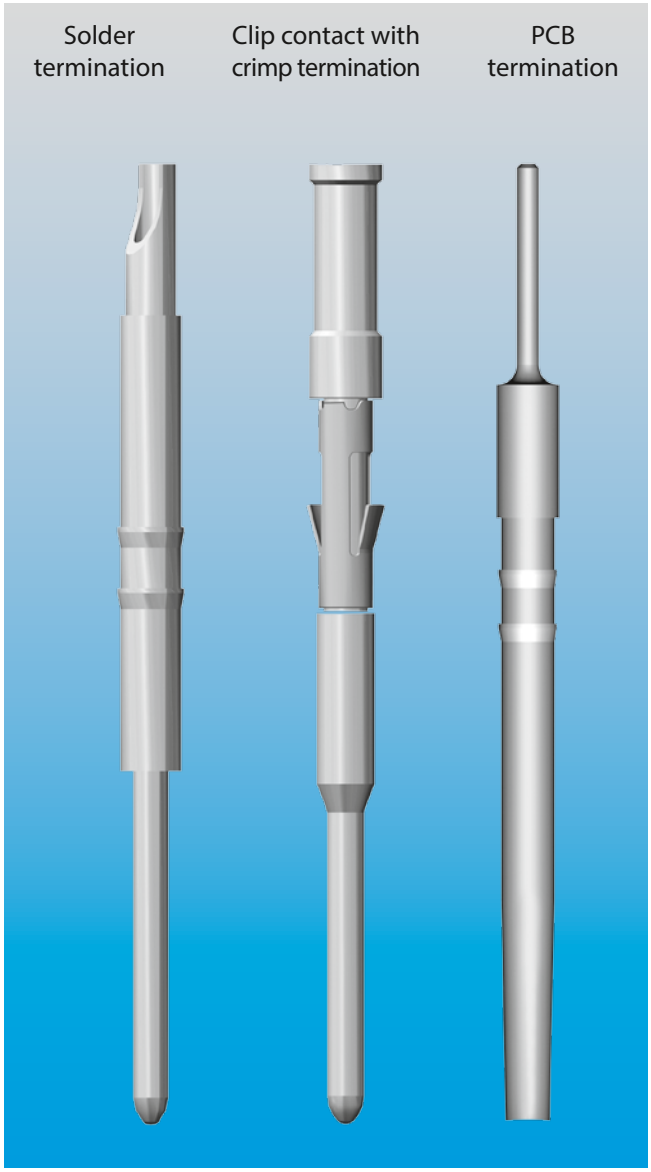
Turned Contact

Turned contacts are available in the diameters 0.5 mm to 2.0 mm. The contacts are available with following terminations: Solder, crimp and print.

Mating cycles	> 5,000 (Housing 2,000)
Material	Brass
Plating	Au

For information regarding diameter, termination styles and current carrying capacity please see inserts section.

Standard contacts



Plastic Housing, Size 1
IP 50, IP 64 and IP 67

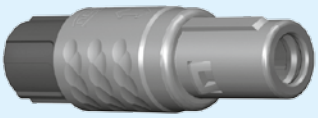
Part Number Key See Fold-Out Page Inside Back Cover

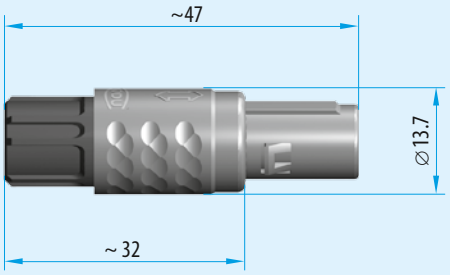
Straight Plug

Connector type

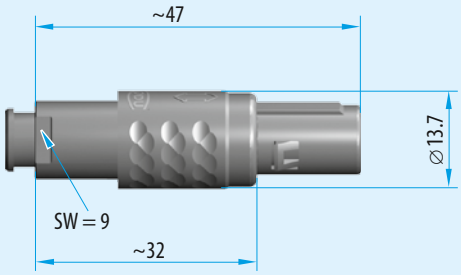
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–				

S 1 0 Style 1: IP 50, with standard back nut

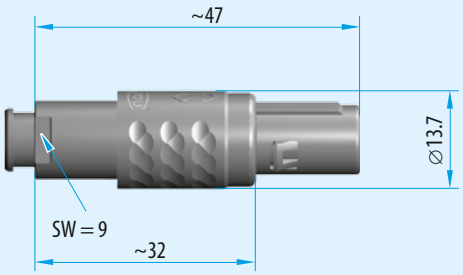




S 2 S Style 2: IP 50, with back nut for cable bend relief [1) 2)]



S 4 S Style 4: IP 64, with back nut for cable bend relief [1) 2)]



Technical data
– Contact inserts see from page 41
– Explanation to the protection classes see page 68
– S1 with colour coding

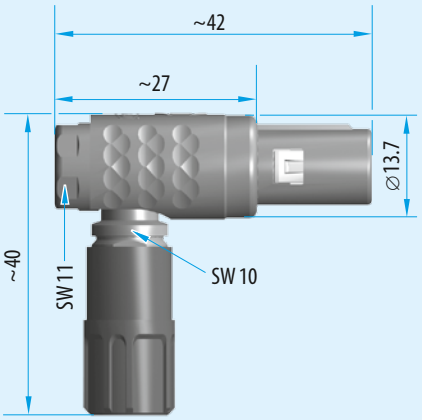
[1] Cable bend reliefs have to be ordered separately (see page 50).
[2] Back nuts for cable bend reliefs have to be ordered in the same colour as the connector housing. The colour coding is based on the cable bend relief.

Right-Angled Plug

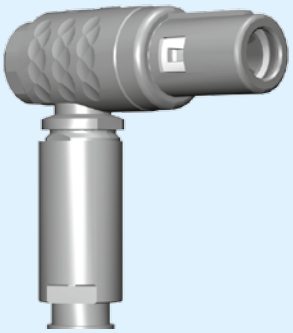
Connector type

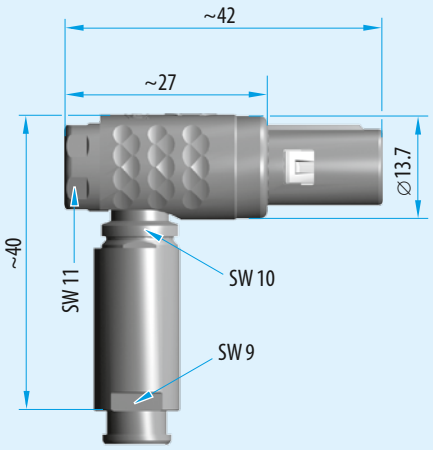
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–				

W 1 0 Style 1: IP 50, with standard back nut



W 2 S Style 2: IP 50, with back nut for cable bend relief[1) 2)]





Technical data

– Contact inserts see from page 41
– Explanation to the protection classes see page 68
– W1 with colour coding

[1] Cable bend reliefs have to be ordered separately (see page 50).
[2] Back nuts for cable bend reliefs have to be ordered in the same colour as the connector housing. The colour coding is based on the cable bend relief.

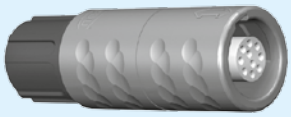
In-Line Receptacle

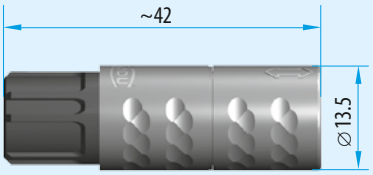
Connect to Plug for Cable to Cable Connection

Connector type

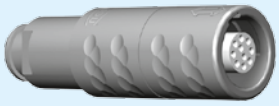
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–				

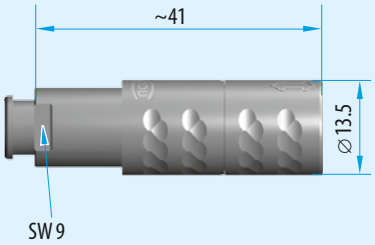
K 1 0 Style 1: IP 50, with standard back nut





K 2 S Style 2: IP 50, with back nut for cable bend relief[1) 2)]





Technical data

– Contact inserts see from page 41
– Explanation to the protection classes see page 68
– K1 with colour coding

[1] Cable bend reliefs have to be ordered separately (see page 50).
[2] Back nuts for cable bend reliefs have to be ordered in the same colour as the connector housing. The colour coding is based on the cable bend relief.

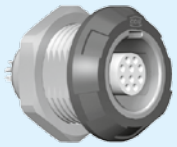
Receptacle

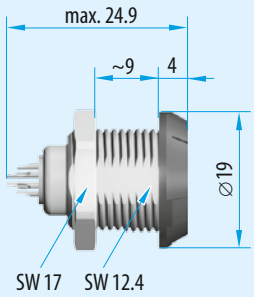
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–		0		0

G 1

Style 1: IP 50, installation from front of panel [1)]



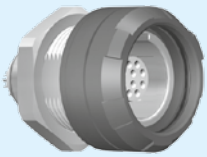


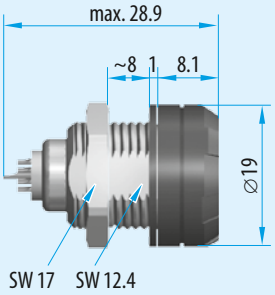
Technical data
– Contact inserts and PCB layouts see from page 41
– Explanation to the protection classes see page 68
– IP 50 to the panel
– Anti-rotation feature
– With colour coding

[1] Panel cut-out see next page.

G 4

Style 4: IP 64 / IP 67, installation from front of panel [1)]



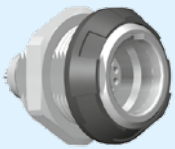


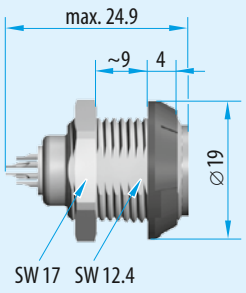
Technical data
– IP 64 in combination with plug style 4 in mated condition (page 12)
IP 67 in combination with plug style A5 in mated condition (page 63)
– Explanation to the protection classes see page 68
– Contact inserts and PCB layouts see from page 41
– Anti-rotation feature
– IP 50 to the panel in unmated condition
– With colour coding

[1] Panel cut-out see next page.

G 5

Style 5: IP 50, continuous thread, installation from front or rear of panel, front extension adjustable [1)]





Technical data
– Contact inserts and PCB layouts see from page 41
– Explanation to the protection classes see page 68
– IP 50 to the panel
– Anti-rotation feature
– With colour coding

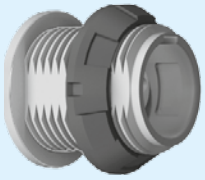
[1] Panel cut-out see next page.

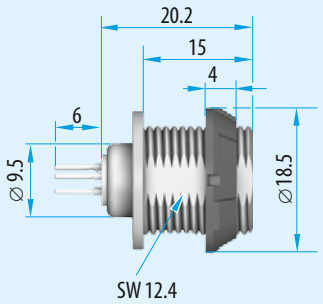
Receptacle

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–		0		0
G	8																	

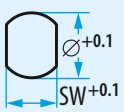
Style 8: IP 50, installation from rear of panel





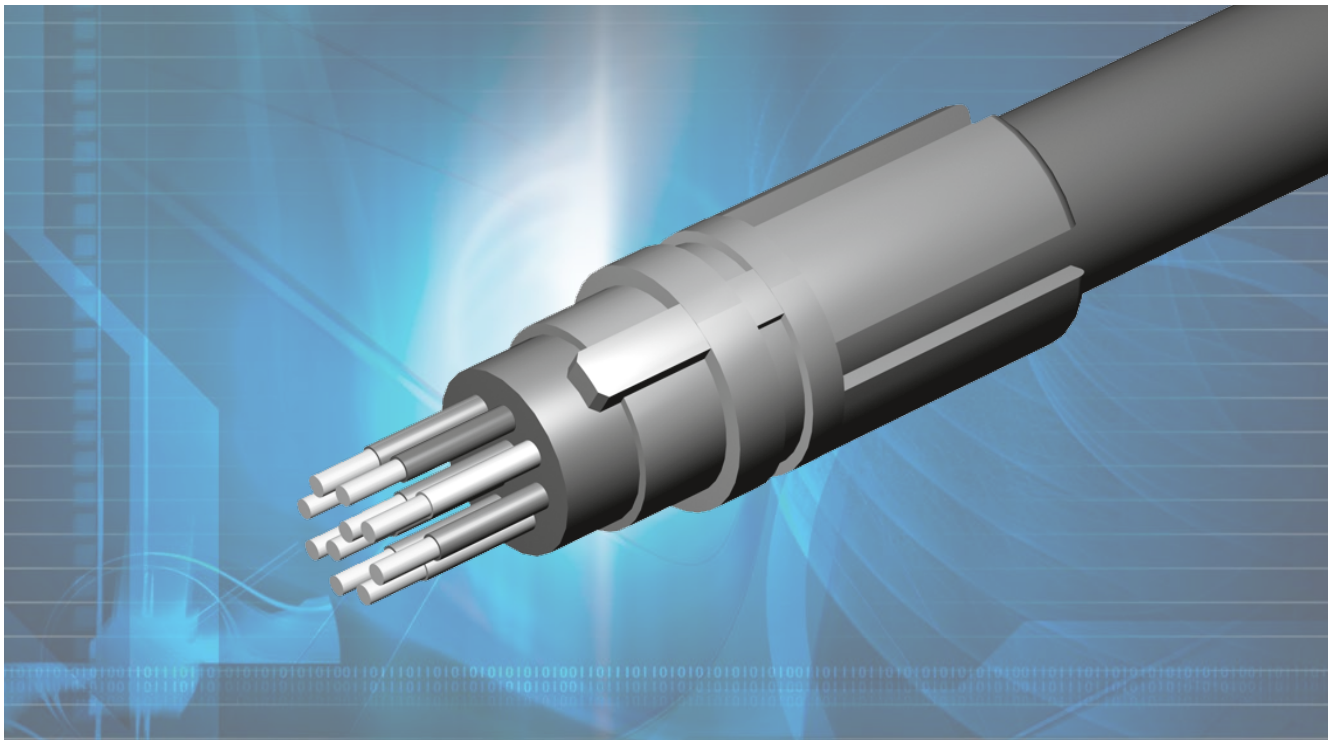
Technical data
- Contact inserts and PCB layouts see from page 41
- Explanation to the protection classes see page 68
- IP 50 to the panel
- Anti-rotation feature
- With colour coding

Panel cut-out (for all receptacles)



SW: 12.5 mm
Ø 14 mm

Details for the Part Number Key
Plastic Housing, Size 1



Keying
Housing Materials
Plastic Cable Collet
Colour Coding
Angled Print Contact in the Receptacle

Part Number Key See Fold-Out Page Inside Back Cover

Keying

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–				

Angle	Keying	Plug front view
0°	0	
40°	A	
60°	C	
80°	E	
170°	H	
205°	J	

Housing Materials

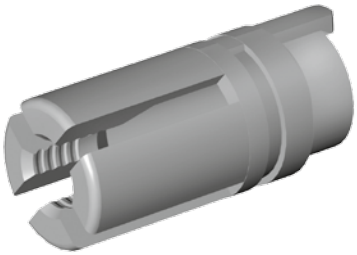
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–				

	Housing material	Housing material
	7	Plastic, grey (PSU)
	8	Plastic, black (PSU)
	S	Plastic, black (PEI), autoclaveable
On request	3	Plastic, white (PSU)
On request	G	Plastic, grey (PEI), autoclaveable

Plastic Cable Collet for Plugs, In-Line Receptacles and for Special Receptacles (Style 6)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–				

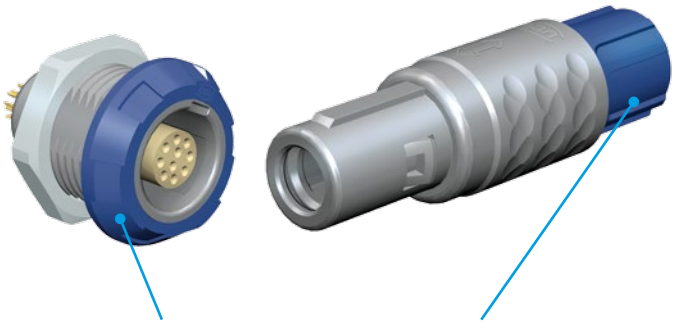
Cable diameter in mm		
> 2.7 to 3.9	3	9
> 4.0 to 5.2	5	2
> 5.3 to 6.5	6	5



Colour Coding

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–				

Colour	Similar RAL system		Material		Colour Coding	
	Design	Classic				
Red	030 40 40	3002	PSU (plastic)		2	
White	000 90 00	9003			3	
Yellow	090 90 60	1016			4	
Green	170 50 50	6032			5	
Blue	270 40 30	5019			6	
Grey	000 55 00	7045			7	
Black	000 25 00	9004			8	



Possibility of colour coding at the back nut (for plug, right-angled plug, in-line receptacle) and the front nut (for receptacles).

Back nuts for cable bend reliefs have to be ordered in the same colour as the connector housing. The colour coding is based on the cable bend relief.

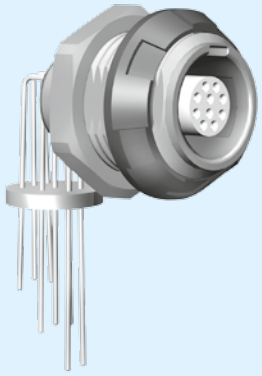
PEI is only available in black and grey.

Angled and Straight Print Contact in the Receptacle

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M			–	P							–		0		

G 5 A
G 8 A

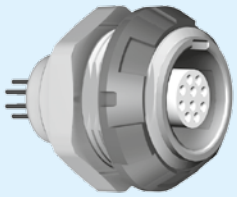
Angled print contact (only style G5 and G8)



PCB layouts see page 46

G 5 0
G 8 0

Straight print contact
(Solder/print contact, only style G5 and G8)



PCB layouts see page 46

Metal Housing, Size 1
IP 50, IP 64 and IP 68

Part Number Key See Fold-Out Page Inside Back Cover

Features Metal Finish

– Robust housing finish
– Compatible with plastic finish
– Almost any combinable
– Attractive design
– Available in size 1

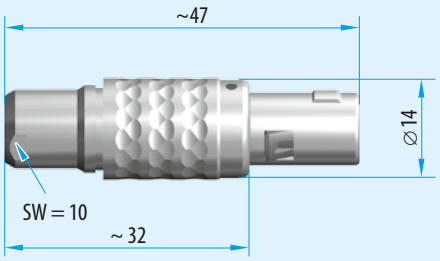
Reference:
Generally A51M is not mateable on metal receptacle.

Straight Plug

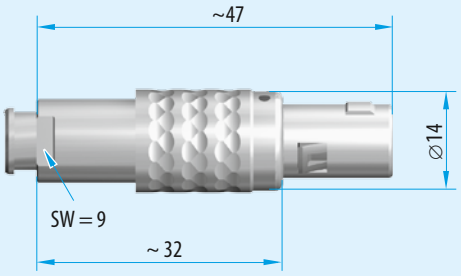
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M		C	–	P							–				

S 1 0 Style 1: IP 50, with standard back nut



S 2 S Style 2: IP 50, with back nut for cable bend relief [1) 2)]



Technical data
– Contact inserts see from page 41
– Explanation to the protection classes see page 68

[1] Cable bend reliefs have to be ordered separately (see page 50).
[2] Back nuts for cable bend reliefs have to be ordered in the same colour as the connector housing. The colour coding is based on the cable bend relief.

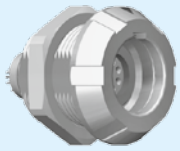
Receptacle

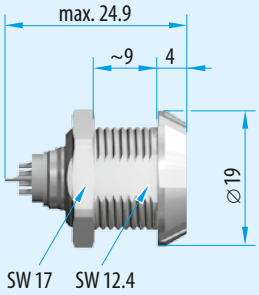
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M		C	–	P							–		0		0

G 1

Style 1: IP 50, installation from front of panel [1)]



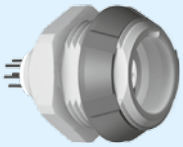


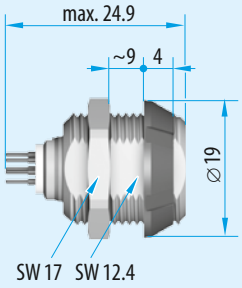
Technical data
- Explanation to the protection classes see page 68
- Contact inserts and PCB layouts see from page 41
- IP 50 to the panel
- Anti-rotation feature
- Front flange in colour of housing

[1] Panel cut-out see page 25.

G 5

Style 5: IP 50, continuous thread, installation from front and rear of panel, front extension adjustable [1)]





Technical data
- Explanation to the protection classes see page 68
- Contact inserts and PCB layouts see from page 41
- IP 50 to the panel
- Anti-rotation feature
- With colour coding

[1] Panel cut-out see page 25.

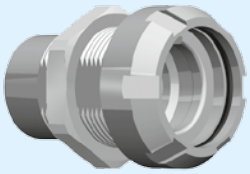
Receptacle

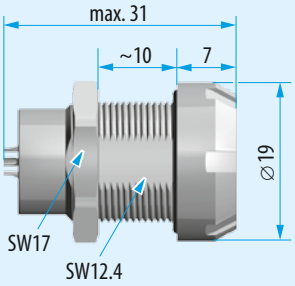
Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M		C	–	P							–		0		0

G **A**

Style A: IP 64 /IP 68, installation from front of panel

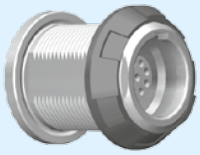


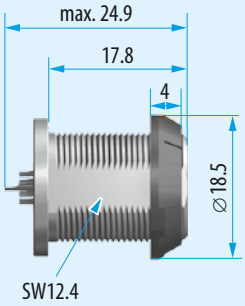


Technical data
– IP 64 in combination with plug style 4 in mated condition (page 12)
– IP 68 to the panel in unmated condition
– Anti-rotation feature
– Contact inserts and PCB layouts see from page 41
– Front flange in housing colour

G **K**

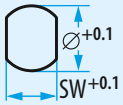
Style K: IP 50, installation from rear of panel





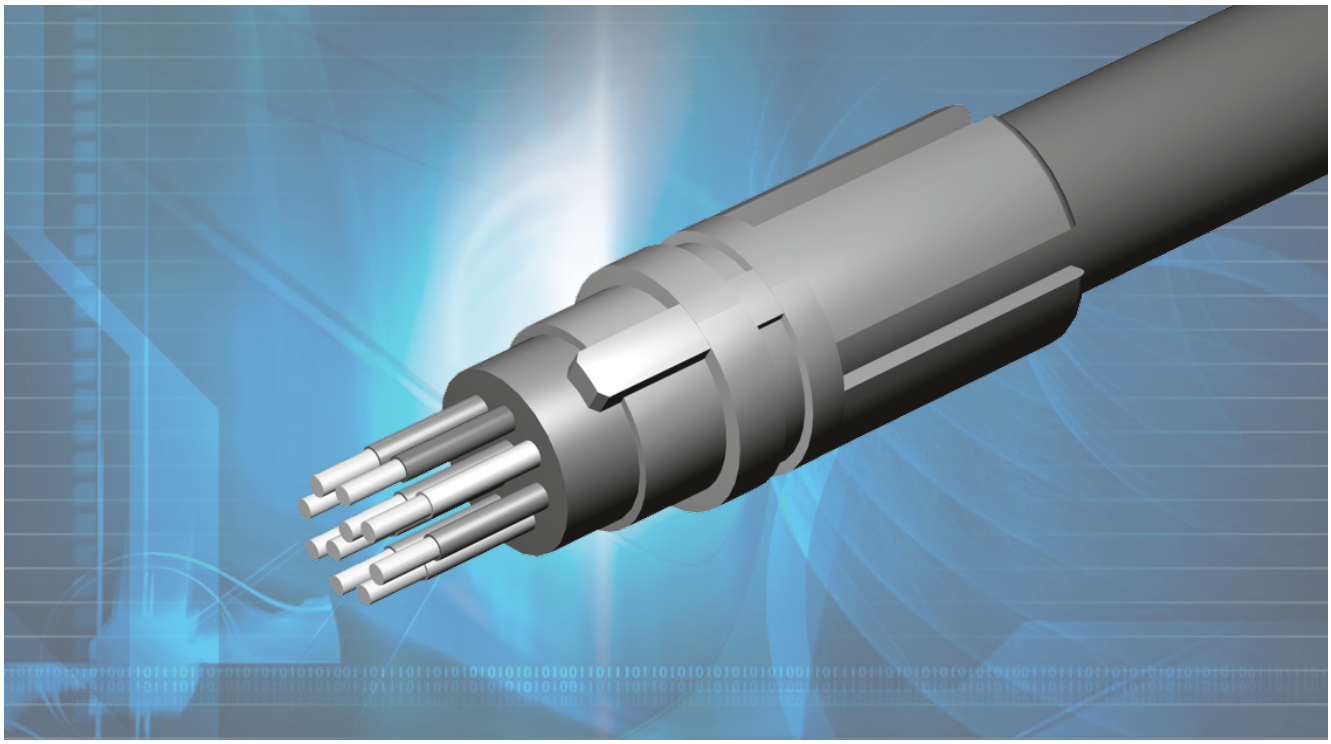
Technical data
– IP 50 to the panel
– Anti-rotation feature
– Contact inserts and PCB layouts see from page 41
– With colour coding

Panel cut-out (for all receptacles)



SW: 12.5 mm
Ø 14 mm

Details for the Part Number Key
Metal Housing, Size 1



Keying

Housing Materials

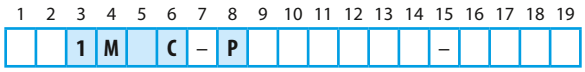
Plastic Cable Collet

Colour Coding

Angled Print Contact in the Receptacle

Part Number Key See Fold-Out Page Inside Back Cover

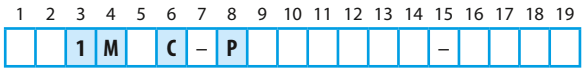
Keying



Angle	Keying	Plug front view
0°	0	
40°	A	
60°	C	

Further keyings on request.

Housing Material



Housing material	Housing material
C	Metal

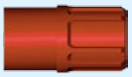
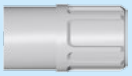
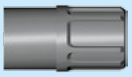
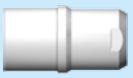
Plastic Cable Collet for Straight Plugs and In-Line Receptacles (Style 5 and 6, Receptacle Style G6)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M		C	–	P							–				

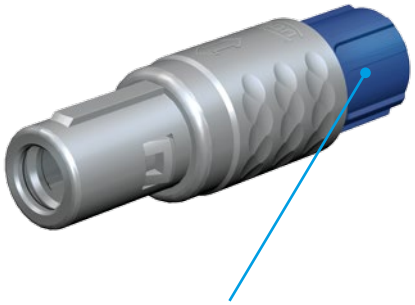
Cable diameter in mm		
> 2.7 bis 3.9	3	9
> 4.0 bis 5.2	5	2
> 5.3 bis 6.5	6	5

Colour Coding

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M		C	–	P							–				

Colour	Similar RAL system		Material		Colour coding	
	Design	Classic				
Red	030 40 40	3002	PSU (plastic)		2	
White	000 90 00	9003			3	
Yellow	090 90 60	1016			4	
Green	170 50 50	6032			5	
Blue	270 40 30	5019			6	
Grey	000 55 00	7045			7	
Black	000 25 00	9004			8	
Matt chromate	–	–	Brass		C	

Possibility of colour coding at the front nut:
Receptacle: G5 and GK



Possibility of colour coding at the back nut:
Straight plug: S1

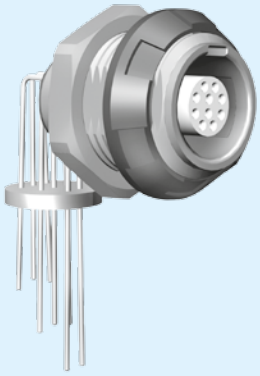
Back nuts for cable bend reliefs have to be ordered in the same colour as the connector housing. The colour coding is based on the cable bend relief.

Code C (Brass chromate) always at:
Straight plug S2 and receptacle G1 and GA.

Angled and Straight Print Contact in the Receptacle

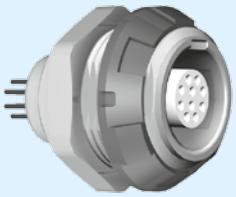
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1	M		C	–	P							–		0		

G 5 A / **G K A** — Angled print contact (only style G5 and GK)



PCB layouts see page 46

G 5 0 / **G K 0** — Straight print contact (solder/print contact, only style G5 and GK)



PCB layouts see page 46

Plastic Housing, Size 2
IP 50 and IP 64

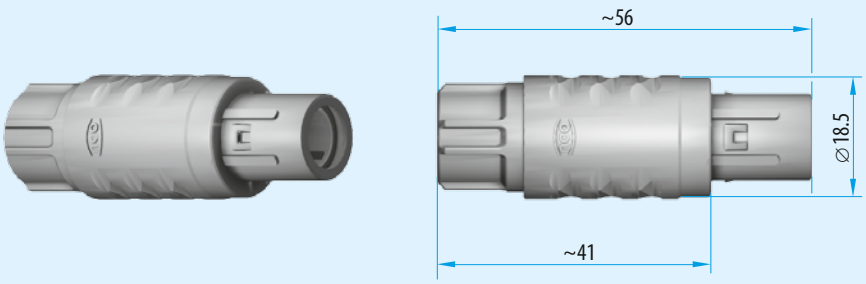
Part Number Key See Fold-Out Page Inside Back Cover

Straight Plug

Connector type

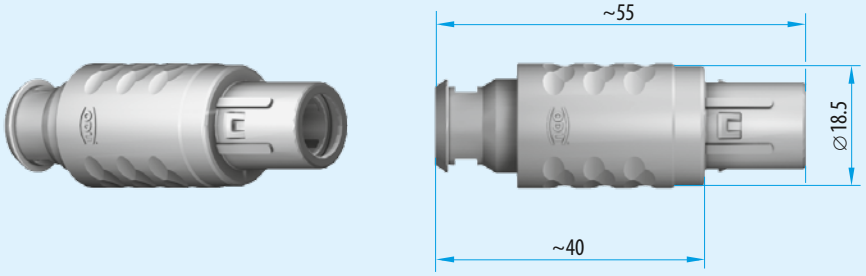
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2	M			–	P							–				

S 1 0 Style 1: IP 50, with standard back nut



Technical data
- Only available in grey
- Contact inserts see from page 41
- Explanation to the protection classes see page 68

S 4 S Style 4: IP 50 / IP 64, with back nut for cable bend relief[1) 2)]



Technical data
- IP 50 in combination with receptacle style 1 and 5 (in mated condition)
- IP 64 in combination with receptacle style 4 (in mated condition)
- Contact inserts see from page 41
- Explanation to the protection classes see page 68

[1] Cable bend reliefs have to be ordered separately (see page 50).
[2] Back nuts for cable bend reliefs have to be ordered in the same colour as the connector housing. The colour coding is based on the cable bend relief.

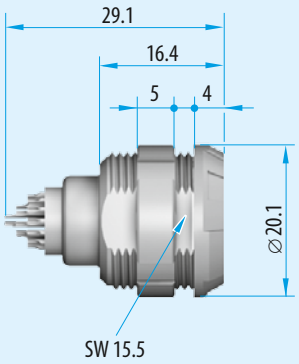
Receptacle

Connector type

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2	M			–	P							–		0		1

G 1

Style 1: IP 50, installation from front of panel [1)]

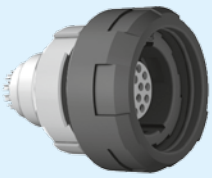


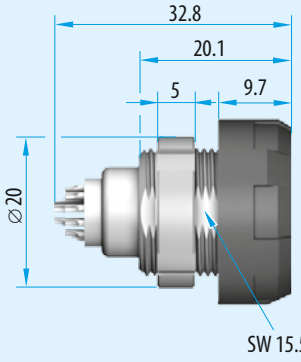
Technical data
– Explanation to the protection classes see page 68
– Contact inserts and PCB layouts see from page 41
– IP 50 to the panel
– Anti-rotation feature
– Front flange in housing colour
– Colour coding on request

[1] Panel cut-out see page 34.

G 4

Style 4: IP 64, installation from front of panel [1)]



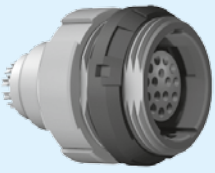


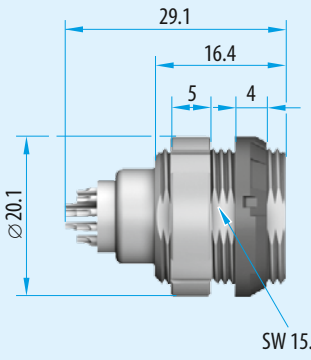
Technical data
– Explanation to the protection classes see page 68
– Contact inserts and PCB layouts see from page 41
– IP 64 in combination with plug style 4
– IP 50 to the panel
– With colour coding

[1] Panel cut-out see page 34.

G 5

Style 5: IP 50, installation from front or rear of panel [1)]

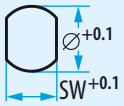




Technical data
– Explanation to the protection classes see page 68
– Contact inserts and PCB layouts see from page 41
– IP 50 to the panel
– Anti-rotation feature
– With colour coding

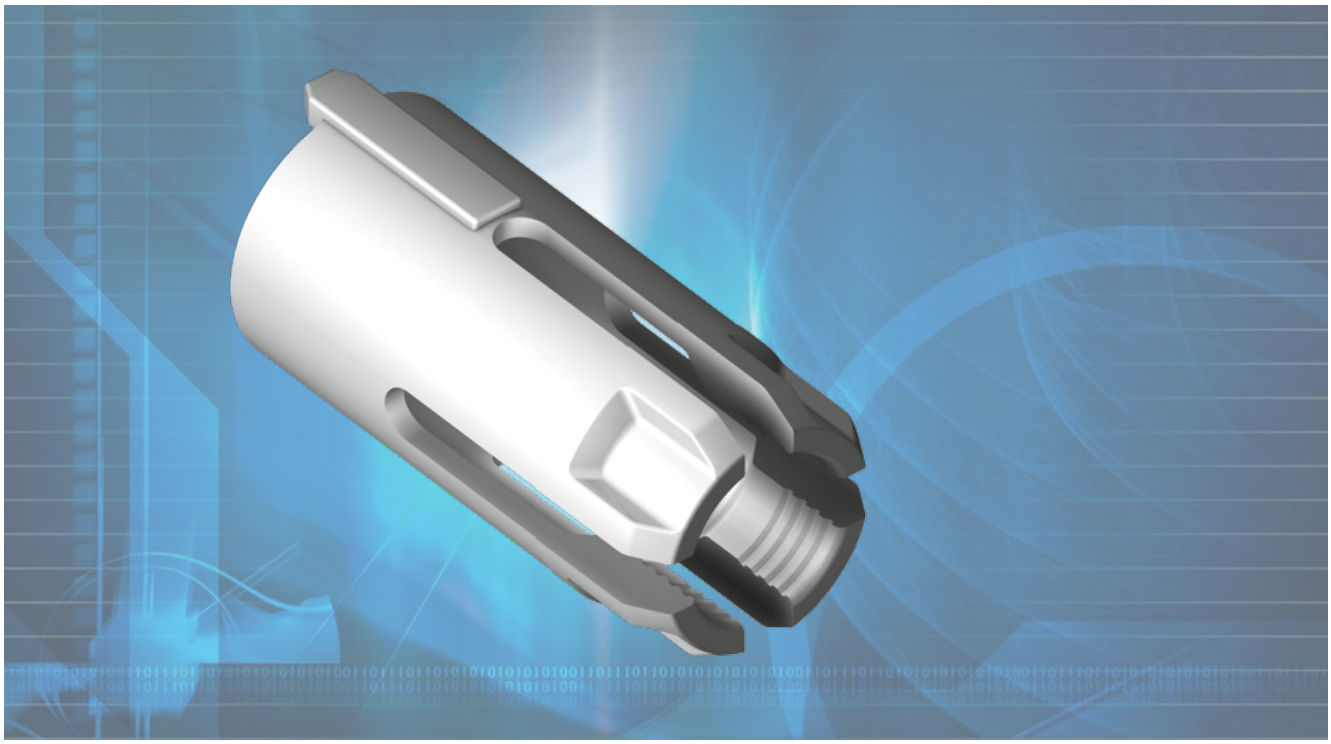
[1] Panel cut-out see page 34.

Panel cut-out (for all receptacles)



SW: 15.6 mm
∅ 17.1 mm

Details for the Part Number Key
Plastic Housing, Size 2



Keying
Housing Materials
Plastic Cable Collet
Colour Coding

Part Number Key See Fold-Out Page Inside Back Cover

Keying

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2	M	C		–	P							–				

Angle	Keying	Plug front view
60°	C	

Further keyings on request.

Housing Materials

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2	M		7	–	P							–				

	Housing material	Housing material
	7	Plastic, grey (PSU)

Plastic Cable Collet for Plug

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2	M			–	P							–				

Cable diameter in mm		
> 3.2 to 5.4	5	4
> 5.4 to 7.4	7	4
> 7.4 to 9.2	9	2

Colour Coding

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2	M			–	P							–				

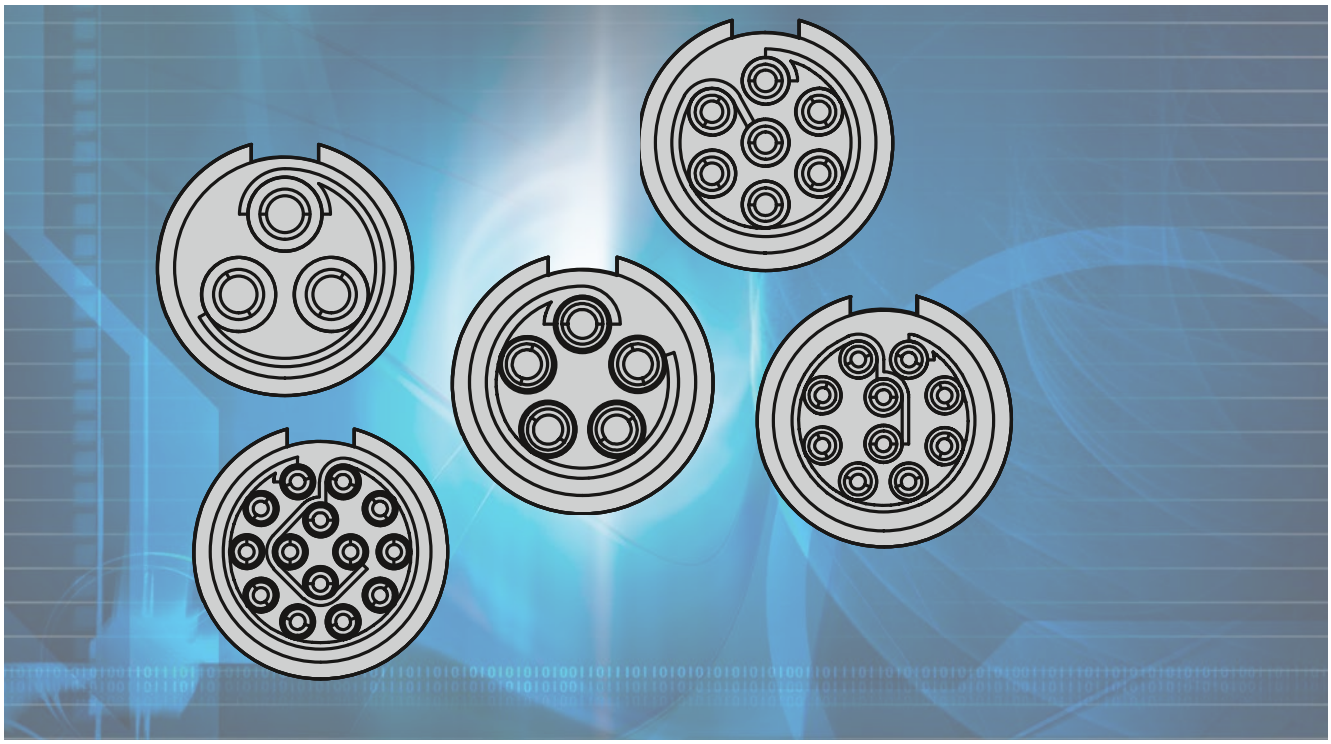
Colour	Similar RAL system		Material		Colour coding	
	Design	Classic				
Red	030 40 40	3002	PSU (plastic)		2	
White	000 90 00	9003			3	
Yellow	090 90 60	1016			4	
Green	170 50 50	6032			5	
Blue	270 40 30	5019			6	
Grey	000 55 00	7045			7	
Black	000 25 00	9004			8	

Possibility of colour coding at the front nut:
Receptacle: G4 and G5

Possibility of colour coding at the back nut:
Straight plug: S1

The colour coding of plug style 4 is based on the cable bend relief.

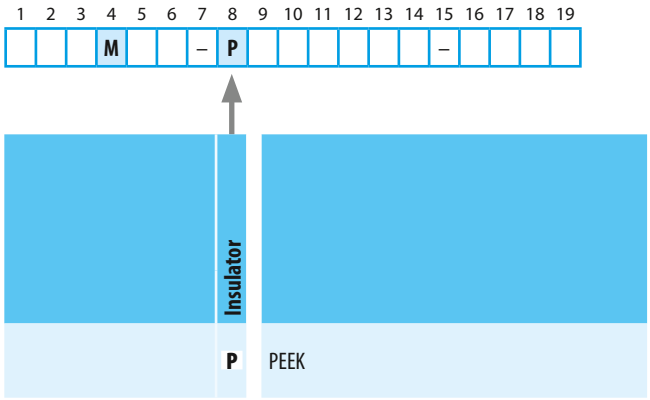
Contact Inserts



Pin inserts are in the plug respectively right-angled plug.
Socket inserts are in the receptacle respectively in-line receptacle.
Pin and socket can not be exchanged.

Part Number Key See Fold-Out Page Inside Back Cover

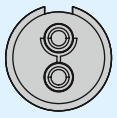
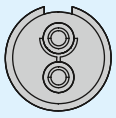
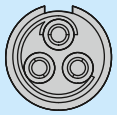
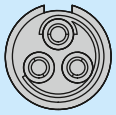
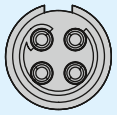
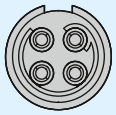
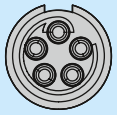
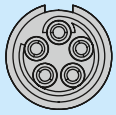
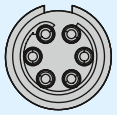
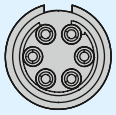
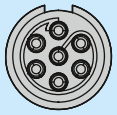
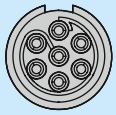
Insulator Material



Contact Inserts

Size 1, Plastic and Metal Housing

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			M			–	P							–				

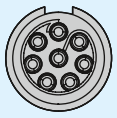
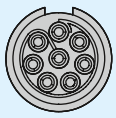
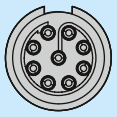
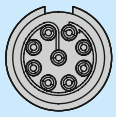
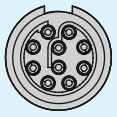
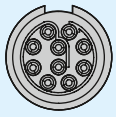
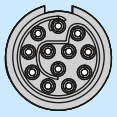
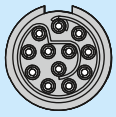
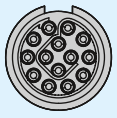
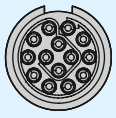
	Size	Insulator material	Insulator	Number of contacts		Insert arrangement	Contact diameter mm	Clearance and creepage distance Contact to contact in mm	Test voltage [2) 5)] Contact to contact in kVeff	Nominal current carrying capacity single connector [1)] Insert A	Termination type Solder	Crimp [3)]	Print [4)]	View on the termination side Pin piece	Socket piece
	1	PEEK	P	0	2	0	1.3	1.3	1.90	14.0 14.0 Print = 10.0	●		●		
	1	PEEK	P	0	3	9	1.3	1.2	1.90	14.0 14.0 Print = 10.0	●		●		
	1	PEEK	P	0	4	0	0.9	1.2	1.90	10.0 10.0	●	●	●		
	1	PEEK	P	0	5	0	0.9	0.8	1.60	10.0 7.5	●	●	●		
	1	PEEK	P	0	6	0	0.7	0.85	1.60	7.0 4.5	●	●	●		
	1	PEEK	P	0	7	0	0.7	0.85	1.60	7.0 4.5	●	●	●		

[1] Derating factor see page 72
[2] SAE AS 13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 56
[4] PCB-Layouts see from page 46
[5] Maximal operating voltage at sea level up to 2,000 m acc. to SAE 13441. More information on page 73.

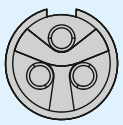
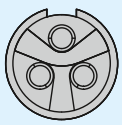
Contact Inserts

Size 1, Plastic and Metal Housing

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			M			–	P							–				

	Size	Insulator material	Insulator	Number of contacts		Insert arrangement	Contact diameter mm	Clearance and creepage distance Contact to contact in mm	Test voltage [2) 5)] Contact to contact in kVeff	Nominal current carrying capacity single connector [1)] Insert A	Termination type Solder	Crimp [3)]	Print [4)]	View on the termination side Pin piece	Socket piece
	1	PEEK	P	0	8	0	0.7	0.6	1.60	7 3.85	●	●	●		
	1	PEEK	P	0	9	0	0.5	0.65	1.35	5 2.75	●		●		
	1	PEEK	P	1	0	0	0.5	0.5	1.35	5 2.75	●		●		
	1	PEEK	P	1	2	9	0.5	0.5	1.20	5 2.75	●		●		
	1	PEEK	P	1	4	0	0.5	0.5	1.20	5 2.5	●		●		

[1] Derating factor see page 72
[2] SAE AS 13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 56
[4] PCB-Layouts see from page 46
[5] Maximal operating voltage at sea level up to 2,000 m acc. to SAE 13441. More information on page 73.

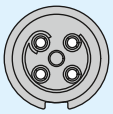
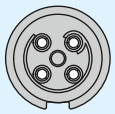
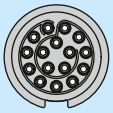
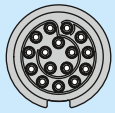
	Size	Insulator material	Insulator	Number of contacts		Insert arrangement	Contact diameter mm	Clearance and creepage distance contact to contact in mm Mated	Unmated	Voltages contact to contact Nominal voltage V AC	Test voltage mated in kV	Test voltage unmated in kV	Nominal current carrying capacity single connector Insert A	Termination type Solder	Crimp	Print	View on the termination side Pin piece	Socket piece
	1	PEEK	P	0	3	0	**0.9**	4.7	2.0	230[1)2)]	5.0[2)] 6.75[3)]	3.0[2)] 4.5[3)]	10.0 9.0	●				

[1] Voltage only permitted on pin pieces when inserted.
[2] acc. VDE 0110/DIN EN 60664-1; 2008-01
[3] acc. SAE 13441: 1998 method 3001,1

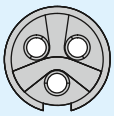
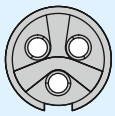
Contact Inserts

Size 2, Plastic Housing

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			M			–	P							–				

	Size	Insulator material	Insulator	Number of contacts		Insert arrangement	Contact diameter mm	Clearance and creepage distance Contact to contact in mm	Test voltage [2) 5)] Contact to contact in kVeff	Nominal current carrying capacity single connector [1)] Insert A	Termination type Solder	Crimp [3)]	Print [4)]	View on the termination side Pin piece	Socket piece
	2	PEEK	P	0	4	0	1.3	2.0	3,000 V	14 14	●		●		
	2	PEEK	P	1	6	0	0.7	0.7 mm²	1,600 V	7 3.15	●		●		
	2	PEEK	P	1	9	0	0.7	0.7 mm²	1,350 V	7 3.15	●		●		
	2	PEEK	P	2	6	0	0.5	0.5	1,350 V	5 2	●		●		

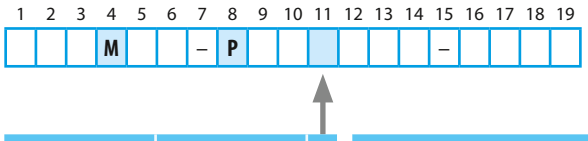
[1] Derating factor see page 72
[2] SAE AS 13441:1998 method 3001.1 (kVeff)
[3] Tools for assembling see page 56
[4] PCB-Layouts see from page 46
[5] Maximal operating voltage at sea level up to 2,000 m acc. to SAE 13441. More information on page 73.

	Size	Insulator material	Insulator	Number of contacts		Insert arrangement	Contact diameter mm	Creepage distance contact to contact in mm Mated	Unmated	Voltages contact to contact Nominal voltage V AC	Test voltage mated in kV	Test voltage unmated in kV	Nominal current carrying capacity single connector Insert A	Termination type Solder	Crimp	Print	View on the termination side Pin piece	Socket piece
	2	PEEK	P	0	3	0	**2.0**	4.7	2.0	230 [1)2)]	5.0 [2)] 6.75 [3)]	3.0 [2)] 4.5 [3)]	22 22	●				

[1] Voltage only permitted on pin pieces when inserted.
[2] acc. VDE 0110/DIN EN 60664-1; 2008-01
[3] acc. SAE 13441: 1998 method 3001,1

Contact Type / Contact Surface

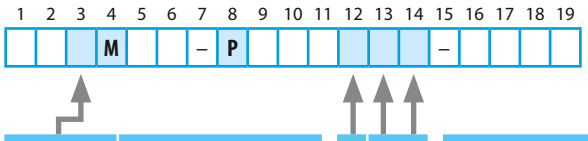
for all Sizes



Termination type	Contact type	Contact surface	Surface
Solder termination	Socket	L	galv. Au
	Pin	M	galv. Au
Crimp termination	Socket	N	galv. Au
	Pin	P	galv. Au
Print termination	Socket	Q	galv. Au

Termination Cross Sections for Size 1 and 2

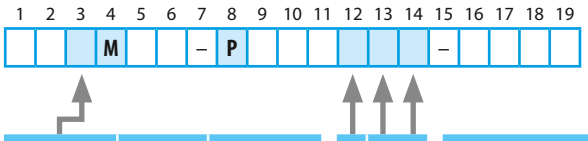
Crimp contact



Size	Contact diameter mm	Contact diameter	Termination cross section		Termination cross section AWG	Termination cross section mm²
1	0.7	F	G	0	22/26	0.38 / 0.15
	0.9	J	H	0	20/24	0.50 / 0.25

Tools for crimping and their adjustments see page 56

Solder contact



Size	Termination diameter mm	Contact diameter mm	Contact diameter		Termination cross section	Termination cross section AWG	Termination cross section mm²
1	0.45	0.5	C	C	0	28	0.08
	0.65	0.7	F	D	0	26	0.15
	0.85	0.9	J	G	0	22	0.38
	1.10	1.3	P	H	0	20	0.50
	1.40	1.3	P	N	0	18	1.00
2	0.45	0.5	C	C	0	28	0.08
	0.65	0.7	F	D	0	26	0.15
	0.85	0.9	J	G	0	22	0.38
	1.10	1.3	P	H	0	20	0.50
	1.40	1.3	P	N	0	18	1.00

Print contact straight

1	0.50	0.5	C	0	0
	0.50	0.7	F	0	0
	0.70	0.9	J	0	0
	0.70	1.3	P	0	0
2	0.70	1.3	P	0	0
	0.70	0.7	F	0	0
	0.50	0.5	C	0	0

Please see PCB layouts from page 46.

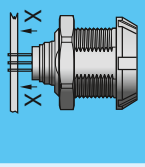
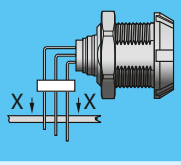
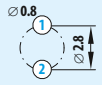
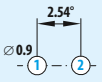
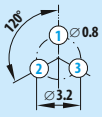
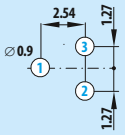
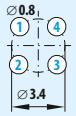
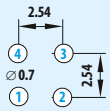
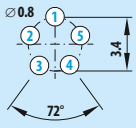
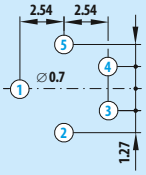
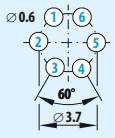
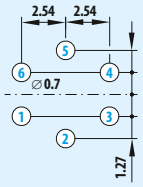
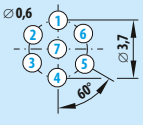
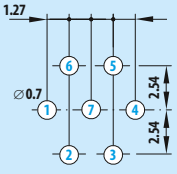
Print contact angled (only size 1)

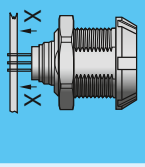
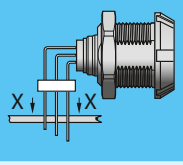
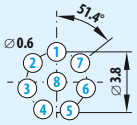
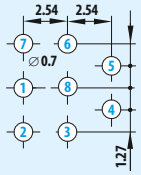
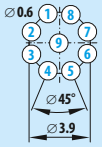
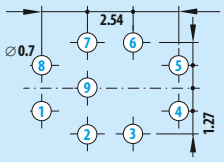
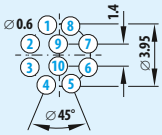
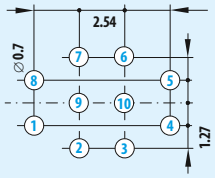
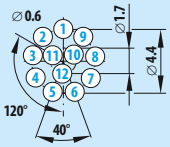
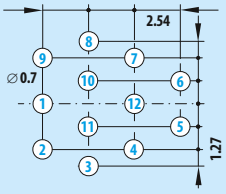
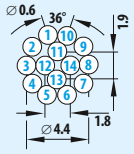
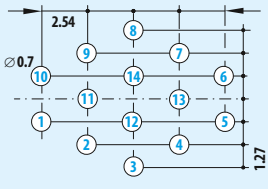
1	0.50	0.5	C	0	0
	0.60	0.7	F	0	0
	0.60	0.9	J	0	0
	0.80	1.3	P	0	0

Please see PCB layouts from page 46.

PCB Layouts for Print Contacts

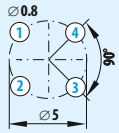
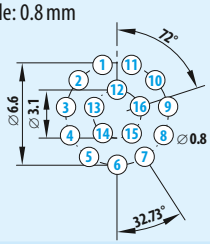
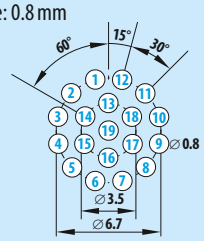
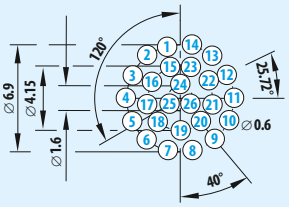
Size 1

Number of contacts	Straight	90° angled
		
2	Hole: 0.8 mm 	Hole: 0.9 mm 
3	Hole: 0.8 mm 	Hole: 0.9 mm 
4	Hole: 0.8 mm 	Hole: 0.7 mm 
5	Hole: 0.8 mm 	Hole: 0.7 mm 
6	Hole: 0.6 mm 	Hole: 0.7 mm 
7	Hole: 0.6 mm 	Hole: 0.7 mm 

Number of contacts	Straight	90° angled
		
8	Hole: 0.6 mm 	Hole: 0.7 mm 
9	Hole: 0.6 mm 	Hole: 0.7 mm 
10	Hole: 0.6 mm 	Hole: 0.7 mm 
12	Hole: 0.6 mm 	Hole: 0.7 mm 
14	Hole: 0.6 mm 	Hole: 0.7 mm 

PCB Layouts for Print Contacts

Size 2

Number of contacts	Straight	
4	Hole: 0.8 mm 	
16	Hole: 0.8 mm 	
19	Hole: 0.8 mm 	
26	Hole: 0.6 mm 	

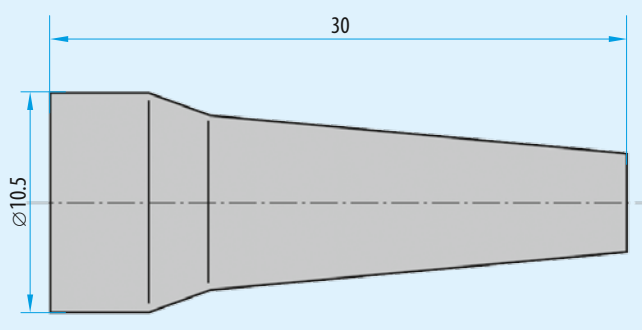
Accessories

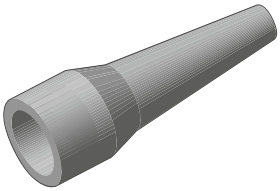
Part Number Key See Fold-Out Page Inside Back Cover

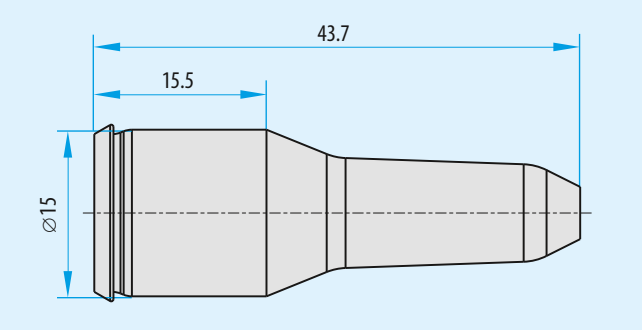
Silicone Cable Bend Relief for Size 1

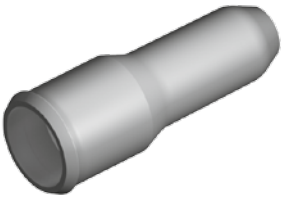
Silicone Cable Bend Relief for Size 2

The cable bend reliefs are autoclaveable. Attention: not mounting compatible with cable bend reliefs of the companies REDEL© and LEMO©. Due to the different raw materials the colours can differ slightly from RAL.
The cable bend reliefs always have to be ordered separately.
Temperature range: Silicone: –50°C up to +200°C, short-term up to +230°C.









Size	Part number	Cable jacket (outer diameter)	
		min.	max.
1	701.023 ._. 965.025	2.5	3.0
	701.023 ._. 965.030	3.0	3.5
	701.023 ._. 965.035	3.5	4.0
	701.023 ._. 965.040	4.0	5.0
	701.023 ._. 965.050	5.0	6.0
	701.023 ._. 965.060	6.0	6.5

Colours

Please indicate colour code.

Colour code	Colour	RAL-no. [1] (similar)
... 202 ...	Red	3020
... 203 ...	White	9010
... 204 ...	Yellow	1016
... 205 ...	Green	6029
... 206 ...	Blue	5002
... 207 ...	Grey	7005
... 208 ...	Black	9005

[1] Because of different raw materials the colours may slightly differ from RAL numbers.

Size	Part number	Cable jacket (outer diameter)	
		min.	max.
2	KM2.023 ._. 965.032	3.2	4.7
	KM2.023 ._. 965.047	4.7	6.2
	KM2.023 ._. 965.062	6.2	7.7
	KM2.023 ._. 965.077	7.7	9.2

Colours

Please indicate colour code.

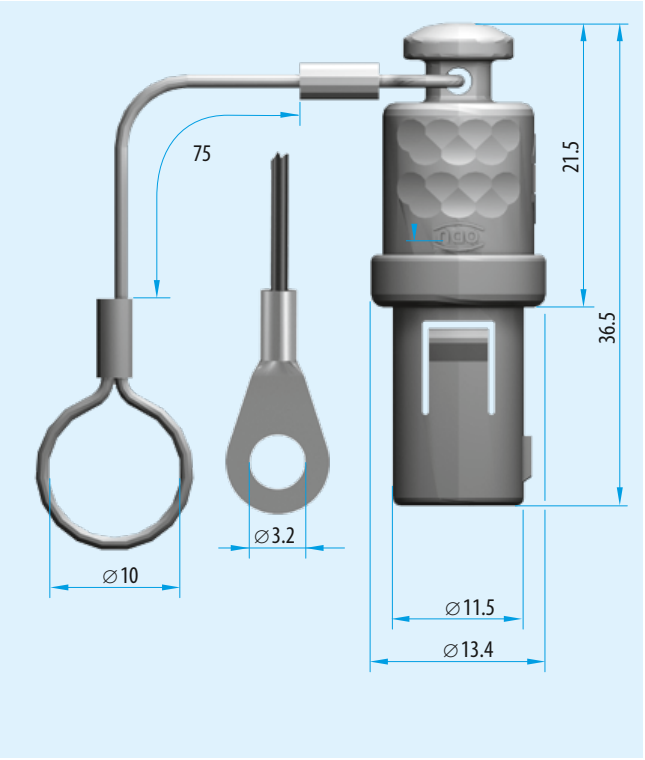
Colour code	Colour	RAL-no. [1] (similar)
... 207 ...	Grey	7005
... 208 ...	Black	9005

[1] Because of different raw materials the colours may slightly differ from RAL numbers.

Protective Cover for Receptacles and In-Line Receptacles with Plastic Housing Size 1

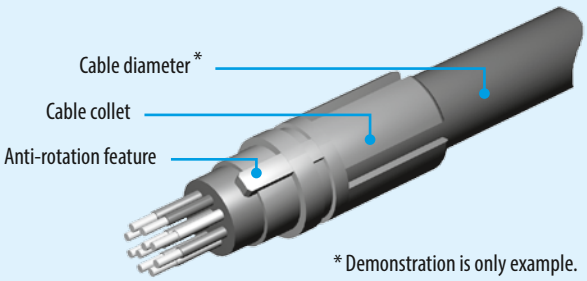
Part number [1)]	Material	Colour	
		Cover	Polyamide lanyard
KM1.097.0_6.934._02	PSU	Red	White
KM1.097.0_6.934._03	PSU	White	White
KM1.097.0_6.934._04	PSU	Yellow	White
KM1.097.0_6.934._05	PSU	Green	White
KM1.097.0_6.934._06	PSU	Blue	White
KM1.097.0_6.934._07	PSU	Grey	White
KM1.097.0_6.934._08	PSU	Black	Black
KM1.097.0_6.933._08	PEI	Black	Black

With _ please register desired lanyard material:
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with rope
2 = Polyamide lanyard with solder lug
3 = Stainless steel lanyard with solder lug



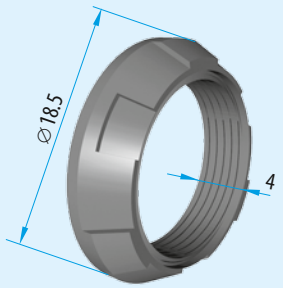
Cable Collets and Nuts Size 1

Cable collet



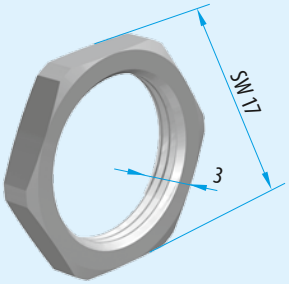
Material	Part number	Cable diameter in mm
PSU	KM1.020.121.934.007	2.7 to 3.9
	KM1.020.122.934.007	4.0 to 5.2
	KM1.020.123.934.007	5.3 to 6.5

Front nut for receptacle style 5



Material	Colour	Part number	Similar RAL system Design
PSU	Black	KM1.311.002.934.008	000 25 00
	Grey	KM1.311.002.934.007	000 55 00
	White	KM1.311.002.934.003	000 90 00
	Red	KM1.311.002.934.002	030 40 40
	Green	KM1.311.002.934.005	170 60 45
	Yellow	KM1.311.002.934.004	095 80 60
	Blue	KM1.311.002.934.006	270 40 30
PEI	Black	KM1.311.002.933.008	000 25 00

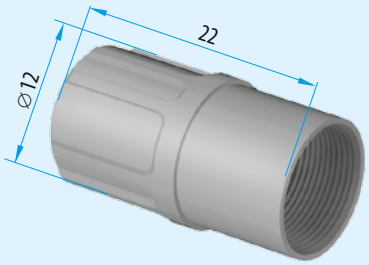
Hex nut for receptacle styles 1, 4 and 5



Material	Receptacle style	Colour	Part number	
Brass nickel plated	1, 5, A	–	021.310.115.304.000	

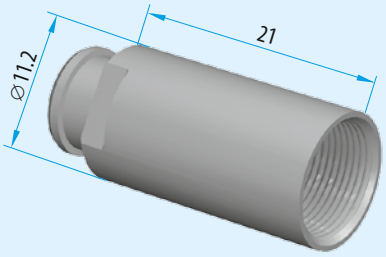
Back Nuts Size 1

Standard back nut



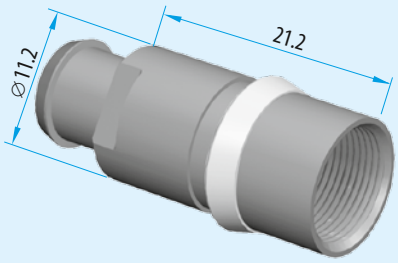
Material	Colour	Part number	Similar RAL system Design	Classic
PSU[1)]	Black	KM1.020.111.934.008	000 25 00	9004
	Grey	KM1.020.111.934.007	000 55 00	7045
	White	KM1.020.111.934.003	000 90 00	9003
	Red	KM1.020.111.934.002	030 40 40	3002
	Green	KM1.020.111.934.005	170 60 45	6032
	Yellow	KM1.020.111.934.004	095 80 60	1016
	Blue	KM1.020.111.934.006	270 40 30	5019
PEI	Black	KM1.020.111.933.008	000 25 00	9004

Standard back nut for cable bend relief



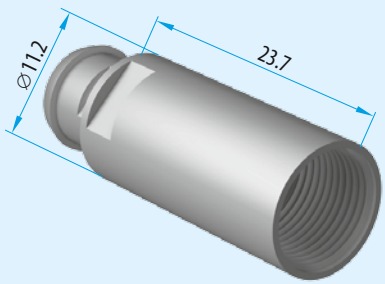
Material Back nut	Colour	Part number	Similar RAL system Design	Classic
PSU[1)]	Black	KM1.020.113.934.008	000 25 00	9004
	Grey	KM1.020.113.934.007	000 55 00	7045
PEI	Black	KM1.020.113.933.008	000 25 00	9004

Standard back nut for cable bend relief with plug IP 64



Material Back nut	Colour	Part number	Similar RAL system Design	Classic
PSU[1)]	Black	KM1.026.113.934.108	000 25 00	9004
	Grey	KM1.026.113.934.107	000 55 00	7045
PEI	Black	KM1.026.113.933.108	000 25 00	9004

Back nut for extrusion (on request)



[1] Further colours on request.

Tools

Part Number Key See Fold-Out Page Inside Back Cover

Crimping Tools / Assembly Tools

Part number crimping tool 080.000.051.000.000
Part number positioner see table

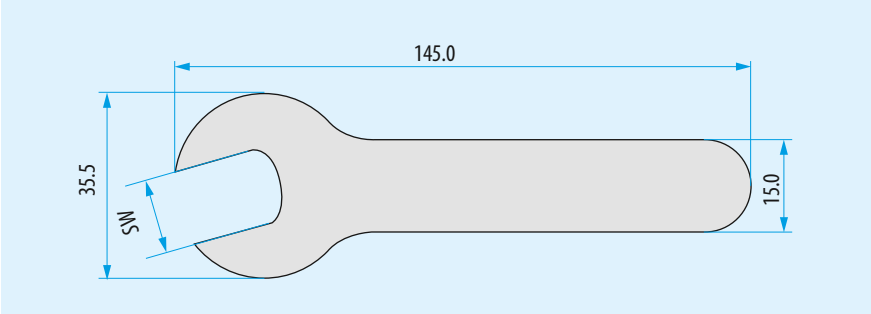
Processing Tools for Crimp Contacts

Size	Number of contacts	Contact diameter	Termination cross-section		Adjustment	Positioner	Position		Removal tool
		mm²	AWG	mm²			Pin	Socket	
1	6 to 8	0.7	22 to 26	0.38 / 0.15	0.67	080.000.051.109.000	9	3	087.7CC.070.001.000
	4 to 5	0.9	20 to 24	0.50 / 0.25	0.67	080.000.051.109.000	8	2	087.7CC.090.001.000
					0.67	080.000.051.109.000	8	2	087.7CC.090.001.000

Spanner Wrench

Spanner wrench size 1

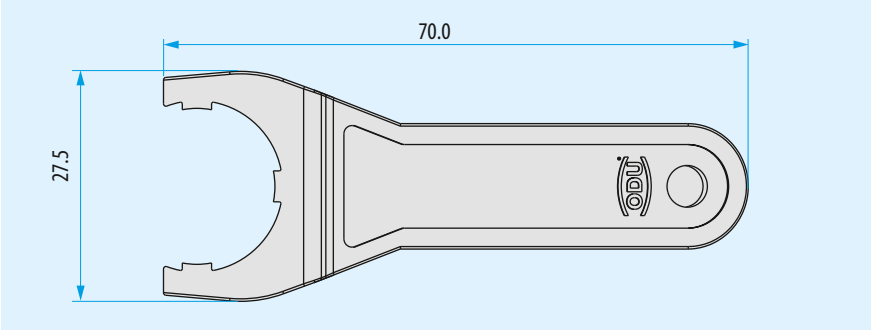
Part number	SW
598.700.001.022.000	9.0
598.700.001.002.000	10.0
598.700.001.012.000	11.0
598.700.001.017.000	12.4
598.700.001.008.000	17.0



Tightening torque of the hex nut receptacle (style 1 / 4 / 5 / 6): 1.5 Nm

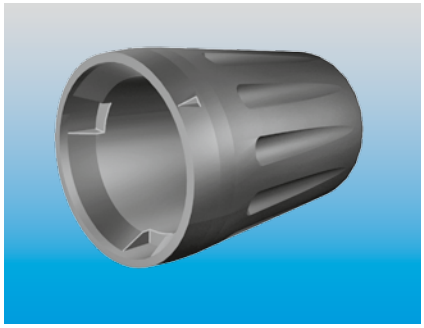
Spanner wrench size 2

For slotted mounting nuts receptacle
Style 1, 4, 5
Part number: KM2.098.002.923.008



Nutdriver for Receptacle Front Nuts

Part number	Size	Material front nut
KM1.098.001.923.008	1	Plastic
KM1.098.002.902.000	1	Metal
KM2.098.001.923.008	2	Plastic



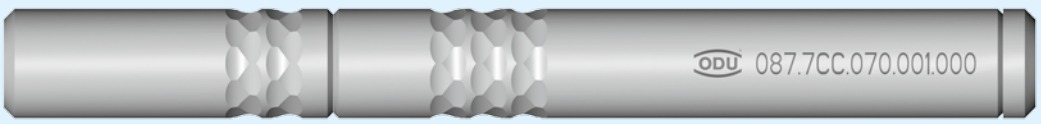
Nutdriver for front nut

Removal Tool for Crimp Clip Contacts (Size 1)

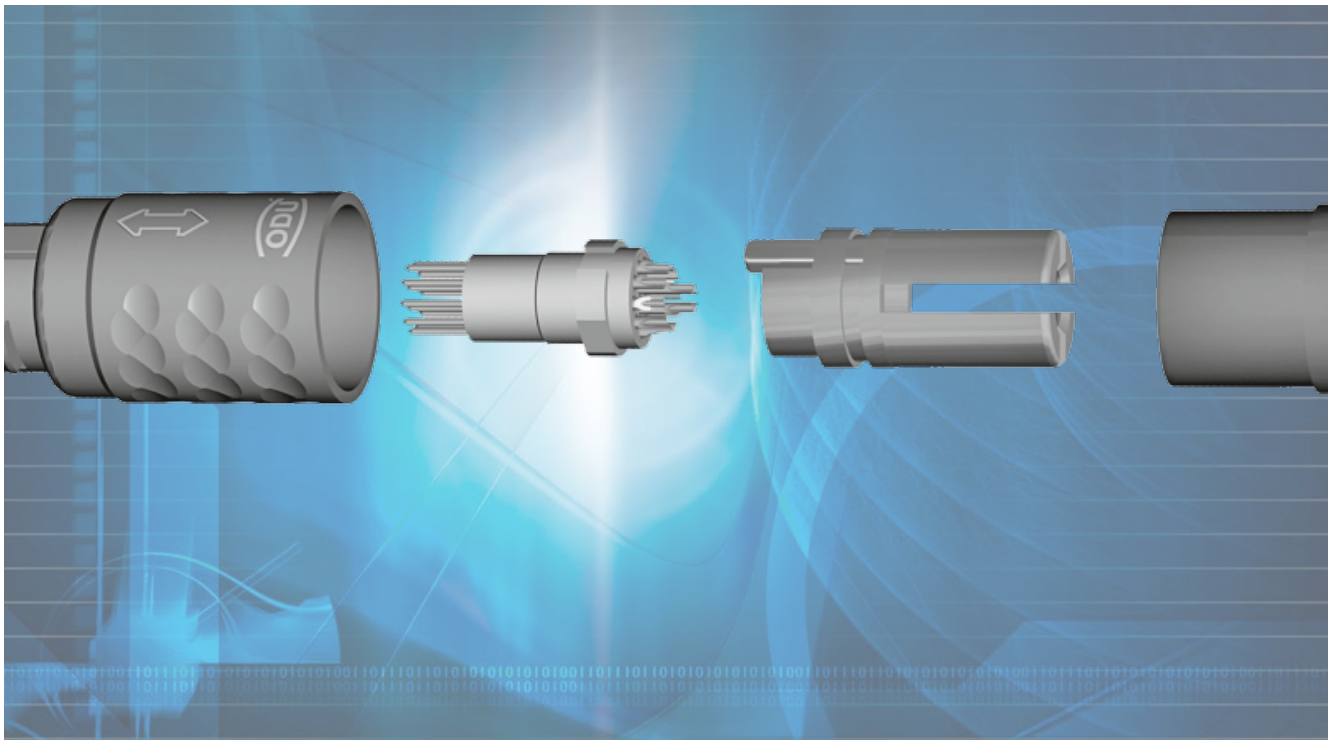
Part number	Contact diameter mm
087.7CC.070.001.000	0.7
087.7CC.090.001.000	0.9
087.7CC.130.001.000	1.3

Crimp Clip Contact

Removal tool



Assembly Instructions

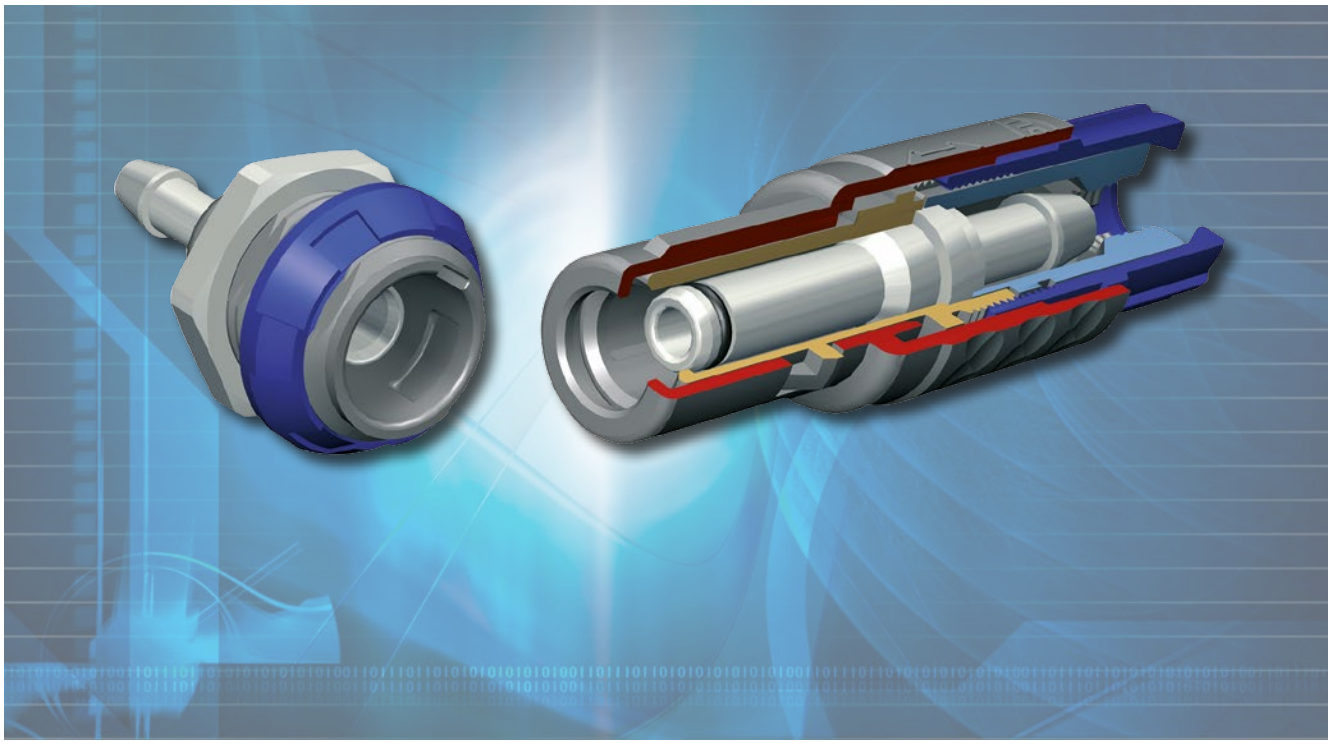


Assembly Instructions are Available for Download on Our Website:

www.odu.de/downloads

The assembly instructions of ODU MEDI-SNAP are available for download (www.odu.de/downloads):

Special Solutions



Application Specific Special Solutions Based on ODU MEDI-SNAP®

Are you operating in a dynamic market and looking to break new ground with your technology? Then you also need innovative connection systems in order to ensure the best possible way to bring your ideas to life in functionally reliable applications.
Standard connectors quickly reach their limits and prevent you from making new developments in the high-tech area.

ODU helps you to transcend these limits successfully: as a specialist for electrical connection systems, we develop solutions exactly according to your requirements and specifications. Working closely with you as partners, we develop exactly the connection system that you need for your application: a technically and economically optimal result.
Our specialists in the development and design teams look forward to this professional challenge.

Disposable Break-Away Connectors
Size 1

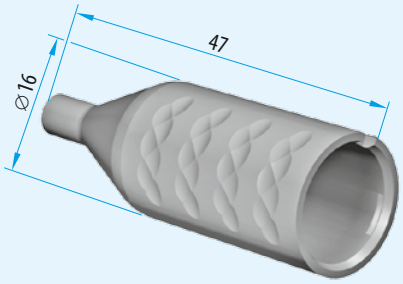
A51M, IP 67 – one-piece Break-Away connector, style 5

Technical data
– One-piece post made of plastic
– IP 67 with extrusion
– Not allowed for plugging on metal housing
– All numbers of contacts available
– IP 67 in combination with receptacle style 4

G21M, IP 50 – one-piece receptacle, style 2

Technical data
– One-piece post made of plastic
– IP 50 to the panel
– Anti-rotation feature
– Snap-in assembly

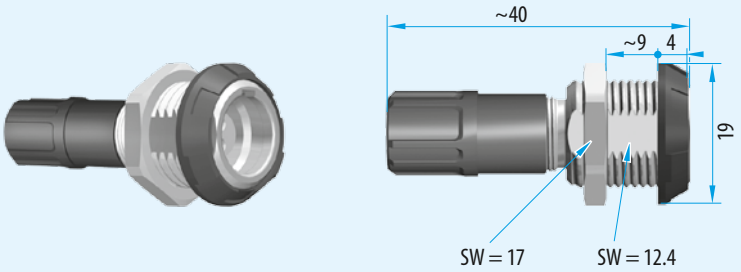
Protective cover for receptacle style G21M (disposable) and plug style A51M (disposable)



Break-Away connector mounted with protective cover, IP 50 (page 63)

Plastic Receptacle IP 50
Size 1

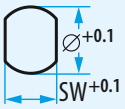
G61M, Style 6 – with strain relief, installation from front or rear of panel [1)]



Technical data
– IP 50 to the panel
– Anti-rotation feature
– Contact inserts and PCB layouts
see from page 41
– With colour coding

[1] Panel cut-out see below

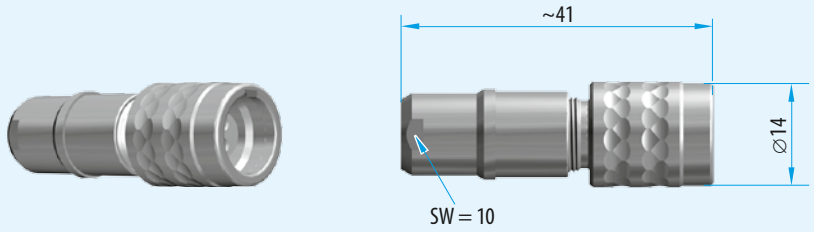
Panel cut-out (for all receptacles)



SW: 12.5 mm
∅ 14 mm

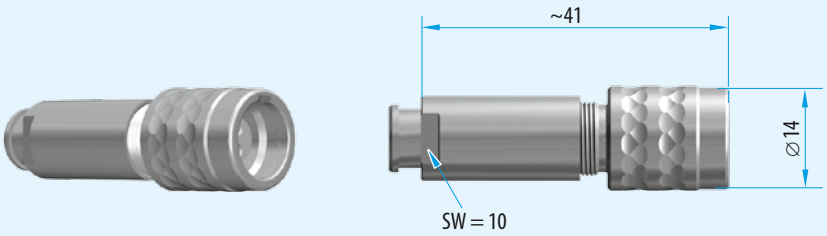
In-Line Receptacle Metal Housing
Size 1

Style 5: **IP 50, with standard back nut**



Technical data
– Contact inserts see from page 41
– Explanation to the protection classes see page 68
– Colour coding with back nut possible

Style 6: **IP 50, with back nut for cable bend relief** [1)]

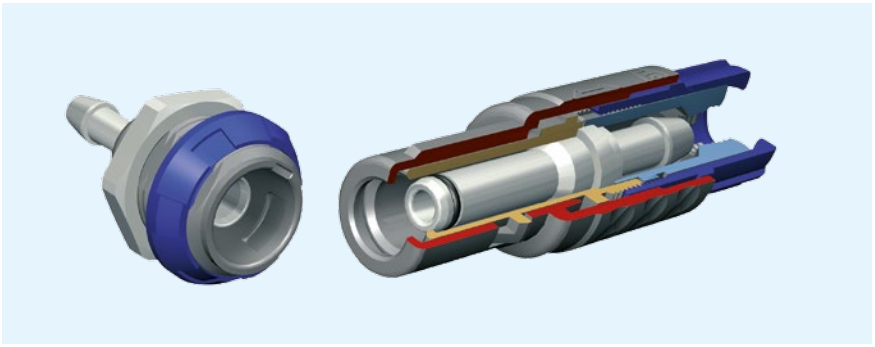


Technical data
– Contact inserts see from page 41
– Explanation to the protection classes see page 68

[1] Cable bend reliefs have to be ordered separately (see page 50).

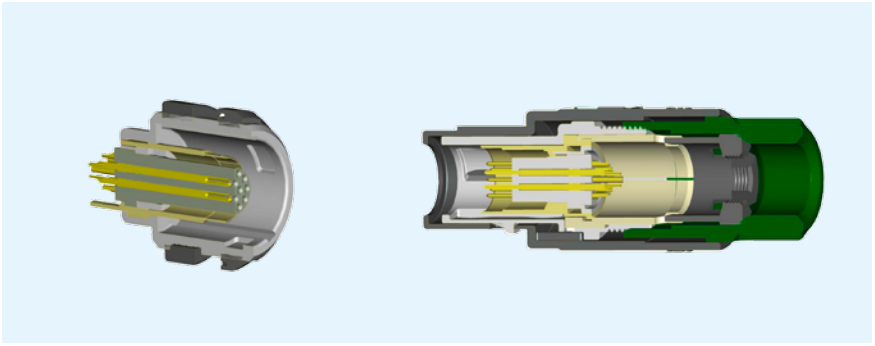
Application Specific Applications

ODU MEDI-SNAP for media feed through



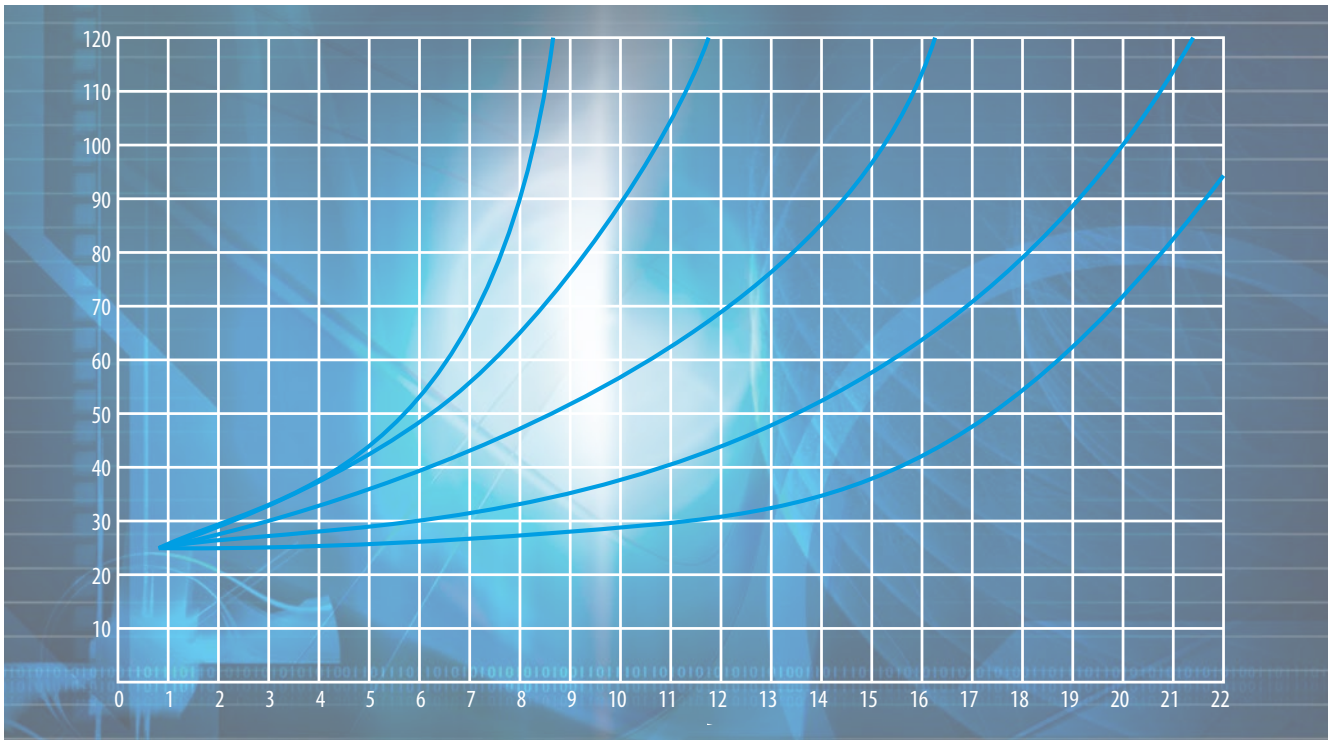
Technical data
– Size 1
– Working pressure: up to 2 bar
– Tube diameter (outside): up to 6.0 mm
– Locking and not locking version available
– Implementation 1.9 or 2.5 mm

ODU MEDI-SNAP as shielded plastic connector



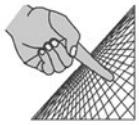
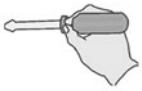
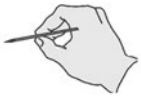
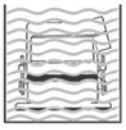
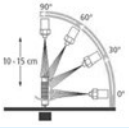
Technical data
– Housing size 2
– Insert size 1
– Straight plug

Technical Information



International Protection (IP) Classes in Accordance with DIN EN 60 529 (or IEC 529 / VDE 0470 T1, respectively)

Code letters (International Protection)	First code number (Protection against solid foreign bodies)	Second code number (Protection against water)
IP	**6**	**5**

Code number	Extent of protection			Code number	Extent of protection		
0	No protection		No protection against contact, no protection against solid foreign bodies	**0**	No protection against water		No protection against water
1	Protection against large foreign bodies		Protection against large-surface contact with the back of the hand, protection against foreign bodies ∅ ≥ 50 mm	**1**	Protection against dripping water		Protection against vertically falling water drops
2	Protection against medium-sized foreign bodies		Protection against contact with the fingers, protection against foreign bodies. ∅ ≥ 12 mm	**2**	Protection against dripping water when tilted		Protection against falling water drops when tilted (any angle up to 15° from the vertical)
3	Protection against small foreign bodies		Protection against contact with tools, wires, or the like with ∅ ≥ 2.5 mm, protection against foreign bodies ∅ ≥ 2.5 mm	**3**	Protected against spraying water		Protection against water spraying at any angle up to 60° from the vertical
4	Protection against granular foreign bodies		The same as 3, except ∅ ≥ 1 mm	**4**	Protection against splashing water		Protection against splashing water from all directions
5	Protection against dust deposits		Protection against contact, protection against harmful dust deposit in the interior	**5**	Protection against water jet		Protection against water jet (nozzle) from any angle
6	Protection against dust ingress		Protection against foreign bodies ∅ ≥ 1 mm, protection against dust ingress	**6**	Protection against powerful water jet		Protection against powerful water jet from any angle
				7	Protection against immersion		Protection against water ingress during temporary immersion
				8	Protection against continuous immersion		Protection against pressurized water during continuous immersion
				9k[1]	Protection against high pressure		Protection against water from high-pressure/ steam jet cleaners.

[1] IP x9k is not included in EN 60529 or IEC 60529, but is included in DIN 40 050-9.

Housing Materials / Surface Finish

Component parts	Material designation	Surface
Housing Back nut Cable collet Front nut Slotted mounting nut	PSU [1)] PEI [1)]	
Insulator	PEEK	
Hex nut	Brass	Ni
Contacts	Brass	Au

[1] With all plastic component parts (except insulator) from a complete plug, in-line receptacle or receptacle the material PSU or PEI is used corresponding to the version.

Material (RoHS 2011/65/EC recognized)

	Norm	Units	PSU	PEI	PEEK
Fire protection classification	UL94		V-0/4.5	V-0/0.41	V-0/1.5
Operating temperature range		°C	–50 to +170° C	–50 to +170° C	–50 to +250° C
Dielectric strength	D149/IEC60243-	kV/mm	17	27/1.6 (in oil)	19
Creep resistance CTI	IEC 60112		150	150	175
Water absorption	ASTMD570/ISO6	%	0.3	1.25	0.1
Sterilisation (autoclaving)	DIN EN13060	Quantity	~20	>200	>200

Termination Technologies

Contact blocks (insulators with contacts) are interchangeable between receptacle and plug. As a rule the socket contact blocks are mounted in the part under power.
ODU offers the following contact termination technologies:

– Solder
– Crimp
– PCB.

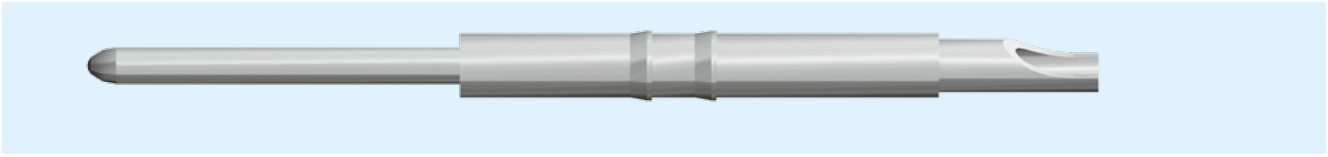
Termination technologies for turned contacts

Solder termination
The contacts come mounted by the factory. The insulator and the pre-assembled contacts are called a contact block.

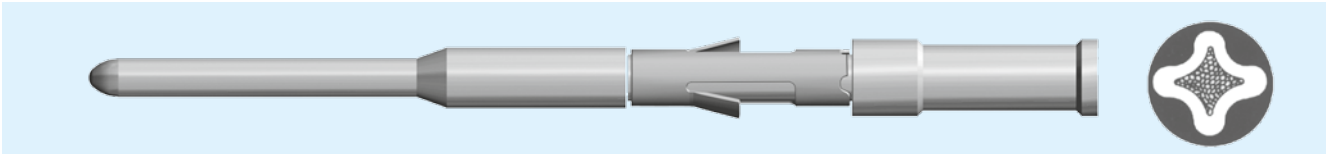
Crimp termination
A single contact is crimped to a single conductor. Subsequently, the crimped contact is pushed into the insulator. Crimp contacts and insulator are shipped separately. Crimping creates a reliable, corrosion-free and durable connection between the contact and the conductor. Crimping causes the crimp barrel of the contact and the conductor material to cold flow. It creates a gas-tight connection between contact and conductor.
The ODU MEDI-SNAP generally requires the industry-standard 8-point crimping tool .

Printed circuit board (PCB) termination
PCB pins are used only for receptacles which are mounted directly to the PCB. The contacts are permanently installed in the insulator.

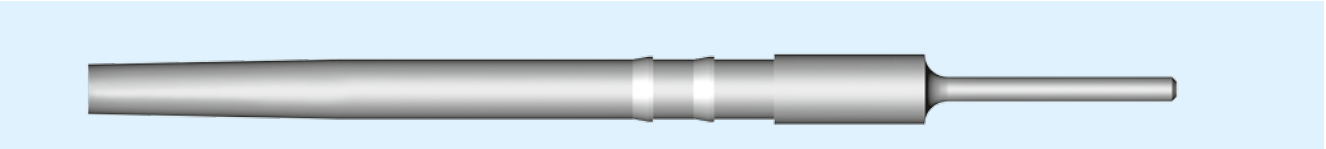
Solder termination



Crimp termination (Crimp-clip-contact for PEEK Insulator)



Printed circuit board (PCB) termination



Conversions AWG – Cross Section (AWG = American Wire Gauge)

The AWG system describes the cross section of a wire using a gauge number for every 26 % increase in conductor cross section. With larger wire diameters, the AWG gauge numbers decrease; as the wire sizes increase, the AWG gauge numbers decrease. **This is only valid for solid conductors.**

Most wires are made with **stranded conductors.** Compared to solid conductors stranded wires offer higher durability, higher flexibility and better performance under bending and vibration.

Stranded wires are made from wires with smaller gauge sizes (higher AWG gauge number). The AWG gauge number of the stranded wire is equal to that of a solid conductor of the same size wire. The cross section of the stranded conductor is the sum of cross sections of the single conductors.
For example, a AWG-20 stranded wire of 7 AWG-28 conductors has a cross section of 0.563 mm²; an AWG-20 stranded wire with 19 AWG-32 conductors has a cross section of 0.616 mm².

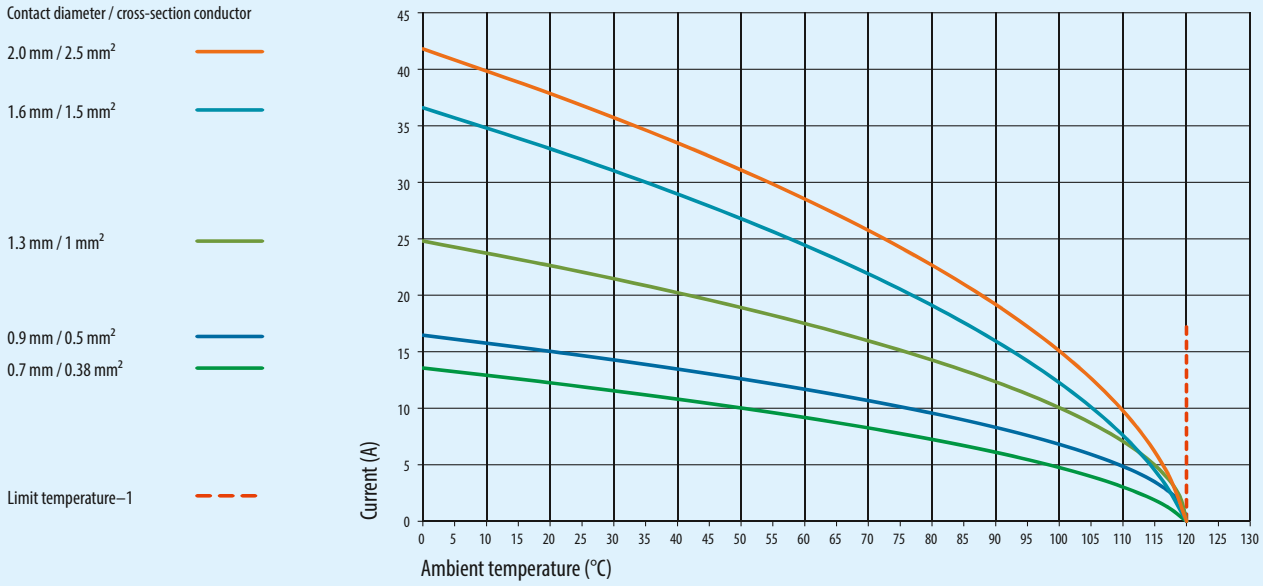
Source: Gore & Associates, Pleinfeld

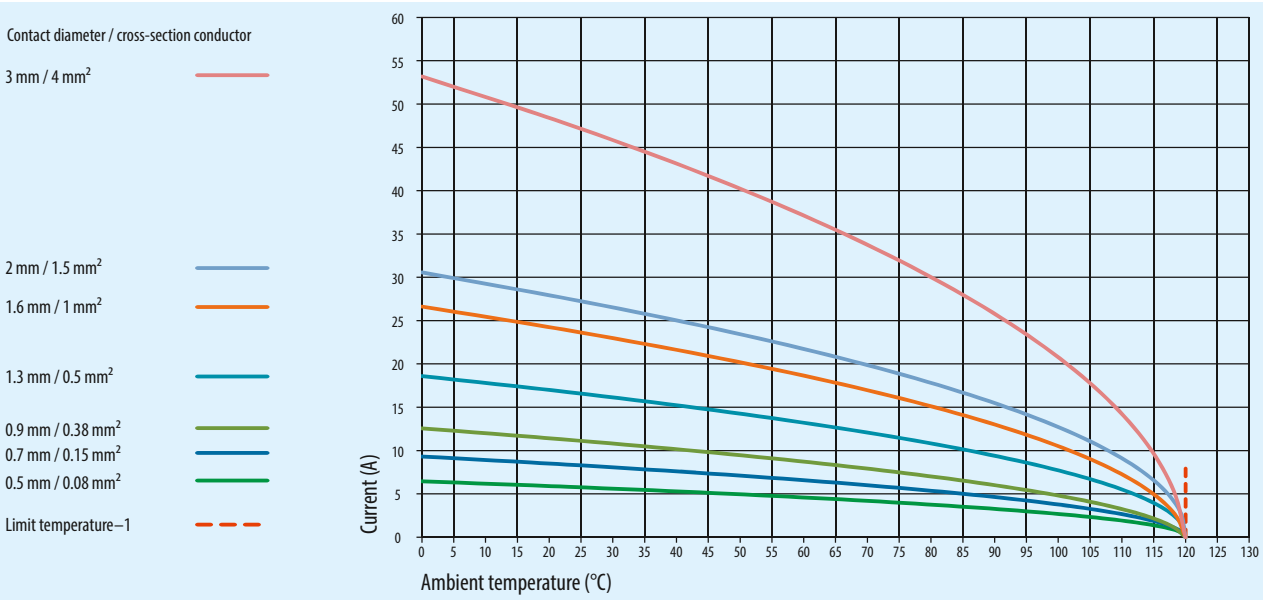
Conversion table AWG/mm²

Circular wire					
AWG	Diameter		Cross section	Weight	Max. resistance
	Inch	mm	mm²	kg/km	Ω/km
10 (1)	0.1020	2.5900	5.2700	47.000	3.45
10 (37/26)	1.1090	2.7500	4.5300	43.600	4.13
12 (1)	0.0808	2.0500	3.3100	29.500	5.45
12 (19/25)	0.0895	2.2500	3.0800	28.600	6.14
12 (37/28)	0.0858	2.1800	2.9700	26.300	6.36
14 (1)	0.0641	1.6300	2.0800	18.500	8.79
14 (19/27)	0.0670	1.7000	1.9400	18.000	9.94
14 (37/30)	0.0673	1.7100	1.8700	17.400	10.50
16 (1)	0.0508	1.2900	1.3100	11.600	13.94
16 (19/29)	0.0551	1.4000	1.2300	11.000	15.70
18 (1)	0.0403	1.0200	0.8200	7.320	22.18
18 (19/30)	0.0480	1.2200	0.9600	8.840	20.40
20 (1)	0.0320	0.8130	0.5200	4.610	35.10
20 (7/28)	0.0366	0.9300	0.5600	5.150	34.10
20 (19/32)	0.0384	0.9800	0.6200	5.450	32.00
22 (1)	0.0252	0.6400	0.3240	2.890	57.70
22 (7/30)	0.0288	0.7310	0.3540	3.240	54.80
22 (19/34)	0.0307	0.7800	0.3820	3.410	51.80
24 (1)	0.0197	0.5000	0.1960	1.830	91.20
24 (7/32)	0.0230	0.5850	0.2270	2.080	86.00
24 (19/36)	0.0252	0.6400	0.2400	2.160	83.30
26 (1)	0.1570	0.4000	0.1220	1.140	147.00
26 (7/34)	0.0189	0.4800	0.1400	1.290	140.00
26 (19/38)	0.0192	0.4870	0.1500	1.400	131.00
28 (1)	0.0126	0.3200	0.0800	0.716	231.00
28 (7/36)	0.0150	0.3810	0.0890	0.813	224.00
28 (19/40)	0.0151	0.3850	0.0950	0.931	207.00
30 (1)	0.0098	0.2500	0.0506	0.451	374.00
30 (7/38)	0.0115	0.2930	0.0550	0.519	354.00
30 (19/42)	0.0123	0.3120	0.0720	0.622	310.00
32 (1)	0.0080	0.2030	0.0320	0.289	561.00
32 (7/40)	0.0094	0.2400	0.0350	0.340	597.10
32 (19/44)	0.0100	0.2540	0.0440	0.356	492.00
34 (1)	0.0063	0.1600	0.0201	0.179	951.00
34 (7/42)	0.0083	0.2110	0.0266	0.113	1,491.00
36 (1)	0.0050	0.1270	0.0127	0.072	1,519.00
36 (7/44)	0.0064	0.1630	0.0161	0.130	1,322.00
38 (1)	0.0040	0.1000	0.0078	0.072	2,402.00
40 (1)	0.0031	0.0800	0.0050	0.043	3,878.60
42 (1)	0.0028	0.0700	0.0038	0.028	5,964.00
44 (1)	0.0021	0.0540	0.0023	0.018	8,660.00

Current Load – Contacts

Nominal single contact current load pin / slotted socket (nominal diameter 0.5 mm – 2.0 mm)





Maximum operating temperature for standard contacts: +120° C
Test contact was terminated to largest possible conductor.
Connectors or cables with more than one contact or conductor generate a higher heat than a single contact. Therefore, a derating factor must be applied.
For connectors the derating factor for multi-conductor cable is applied according to DIN 57 298 part 4 / VDE 0298 part 4.
The derating factor is used starting with 5 loaded wires (DIN 41 640 T 3).

Derating factor

Number of loaded wires	Derating factor
5	0.75
7	0.65
10	0.55
14	0.50
19	0.45
24	0.40

Operating Voltage acc. to SAE AS 13441-Method 3001.1 (1998)

The values acc. to SAE AS 13441-method 3001.1 (1998) comply with MIL-Std. 1344 – method 3001.
The chart values results are acc. to IEC 60512-2; Test 4a.
The inserts have been tested in mated condition and the test voltage was applied to the pin insert.

75 % of the measured break-down voltage is the basic for the further calculation. 1⁄3 of this value is the corresponding operating voltage.

All tests were performed at standard environment conditions (room temperature) and can be applied up to an altitude of 2,000 m.
For any deviations one has to consider the reduction factor acc. to the relevant standards.

Test voltage: **Break-down voltage × 0.75**
Operating voltage: **Break-down voltage × 0.75 × 0.33**

Caution
Electrical appliances: for various applications the safety requirements regarding the operating voltage is even more severe! The relevant datas in such cases for the operating voltage are the creepage and clearance distances.

For any advise how to choose the proper connector please consult us and indicate the safty standard which your product has to meet.

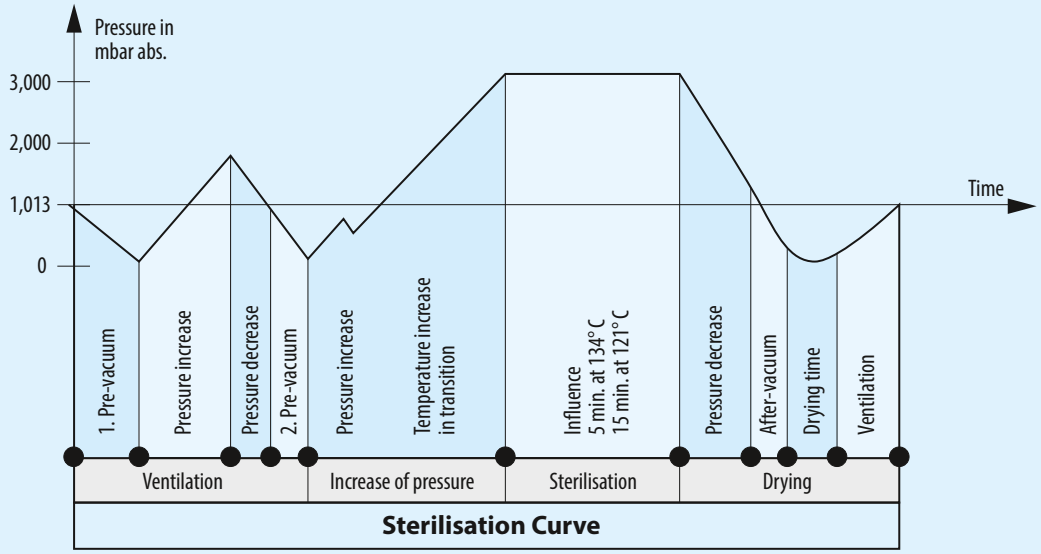
Autoclaving of the ODU MEDI-SNAP®

If required ODU can deliver ODU MEDI-SNAP connectors for the following sterilisation process:
Steam-sterilisation with pre-vacuum or gravitation-process. Connectors were tested with autoclave equipment with reference to DIN EN 13060 at 134° C and 200 cycles (housing elements made of PEI).

For other sterilisation-processes please contact the appropriate indoor service.

With PSU housing 20 autoclave cycles
With PEI housing 200 autoclave cycles

Sterilisation curve



Technical Terms / Definitions / Information

Autoclavability
See page 74

AWG
See page 71

Basis curve
Current carrying capacity curve for connectors as determined by measurement according to the measurement procedure described in DIN EN 60512-5-2:2002 depending on the permissible limit temperature of the materials.

Chemical resistance
Adhesives, cleaners, or other chemicals are used on our products in a large number of further processing steps. Inappropriate chemicals may chemically damage the material structure and result in material breakage of the plastic bodies. Please follow our processing recommendations and technical instructions in this catalog.

Clearance distance
Shortest distance between two conductive elements through the air.

Connector
A component which terminates conductors for the purpose of providing connection and disconnection to a suitable mating component. Depending on the fastening to a cabinet, panel, rack, etc. or a cable, they are classification.

Contact resistance
Total resistance from termination to termination. The contact resistance here is considerably less than the volume resistance. The values given are average values.

Creepage distances
Shortest distances between live parts on the surface of insulators. All elevations and depressions in the insulator are taken into account as far as specified minimum dimensions are available.

Crimp barrel
A hollow part of a contact which accepts one or more conductors and which may be crimped through the application of a crimping tool.

Crimp termination
The permanent attachment of a contact to a conductor by pressure deformation or by reshaping the crimp barrel around the conductor so that a good electrical and mechanical connection is established.

Crimping area
The part of a crimp barrel at which the crimp connection is achieved by pressure deformation or by reshaping the barrel around the conductor.

Current carrying capacity (nominal current and max. continuous current)
The information refers to sufficiently dimensioned connection cable in accordance with DIN VDE 0295 (DIN EN 60228) in class 5, so that no stronger temperature increase is caused from here. The specified temperature increase takes place through the contact. The information provided refers to average values.

Delivery
Delivery of the connectors usually as components (that means not assembled). Exception: Solder contacts are factory-installed in the insulator.

Derating curve
The corrected current carrying capacity curve, derived from the established basis curve (0.8 x measured current). It takes into consideration production spreads as well as uncertainties in the temperature measurement and the measurement setup.

Derating measurement procedure (DIN EN 60512-5-2)
Measurement procedure for determining the current carrying capacity of connectors, taking the maximum permissible limit temperature into consideration.

Fixed connectors
A connector for attachment to a rigid surface (panel).

Free connectors
A connector for attachment to the free end of a wire or cable.

Insertion or withdrawal force
The force required to fully mate or unmate a set of connectors without the effect of coupling, locking or similar devices. The insertion force is usually greater than the withdrawal force. Also called mating and unmating force.

Insulator
Part of a connector, usually identical to the contact carrier.

Keying (orientation)
System of projections and grooves on mating connectors which prevent otherwise identical connectors from being mated. This is useful when several connectors of the same style are used in the same application.

Lower limit temperature
The lowest permissible temperature which a connector or a plug-in device is allowed to be operated.
At ODU MEDI-SNAP –40°C.

Lubrication
The contacts are pre-lubricated at the factory.

Materials
The contacts are made of Cu-alloy and gold-plated. The standard housings are made of Cu-alloy with a matt chrome plated surface finish. All other materials and surfaces on special request (see also page 69).

Mating cycles
Mechanical operation of connectors and plug-in devices by insertion and withdrawal. One mating cycle comprises one insertion and one withdrawal operation. An empirical value for ODU MEDI-SNAP is 2,000 mating cycles.

Max. continuous current
The metrologically determined current intensity at room temperature (approx. 20° C) that leads to a rise in the contact temperature to the limit temperature.

Nominal current
See rated current

Nominal single contact current load
Current load, which can load every single contact.

Nominal voltage
The voltage stated for a connector by the manufacturer; this is used as a reference for the operating and performance characteristics.

Operating temperature for the ODU MEDI-SNAP
Range between upper and lower temperature limits.
–50°C to +120° C (see page 72).

Operating voltage
The nominal voltage of the current source for which the connector is intended for use. The operating voltage is not permitted to be greater than the connectors nominal voltage.

PCB (printed circuit board)
Boards, typically made of epoxy-filled glass fiber fabric, with conductive pattern on one or both sides, or in case of multilayer boards, also imbedded inside the board. They feature metallized holes for soldering wire-mounted components or for the insertion of resilient or rigid press-in pins or instead, pads for attaching components using surface mount technology (SMT).

PCB termination
See page 70

Plug device
Operating materials that are permitted to be inserted or separated during the intended use (when energized or electrically charged).

Rated current (IEC 61984)
The metrologically determined current intensity that leads to an increase of 45° Kelvin in the contact temperature. The current is determined according to the derating measurement procedure (DIN EN 60512-5-2:2002) and is derived from the basis curve.

Rated voltage
The voltage according to which the connectors are dimensioned and to which the particular operating properties are related.

Reference voltage
The standardized voltage (VDE 0110 or DIN EN 60664-1) for which a connectors insulation is dimensioned.

Solder termination
Termination technology in which a melted added metal (solder), whose melting temperature is less than that of the base metals to be connected, is used to join two metallic materials.

Surge current
One-time power pulse current with a load period of 10 ms.

Termination cross-section
The indicated cross-sections correspond to a flexible conductor design in accordance with EN 60228:2005 class 5 or to a flexible conductor design (7/19 strands) in accordance with AWG (ASTM B258-02).

Termination technologies
Methods for connecting a wire to an electro-mechanical component, e.g. solderless connection according to DIN EN 60352: respectively such as crimp, press-in, etc. or solder connections.

Test voltage
The voltage the connectors are tested, and are being referred on definite characteristics.

Upper limit temperature
Highest permissible temperature at which a connector or a plug-in device is allowed to operate. This temperature includes the self-heating and the ambient temperature.
At ODU MEDI-SNAP +120°C.

Watertightness (DIN EN 60529)
See page 68

Wire
Wires may be provided with an insulation cover, an electrical shielding. Cables or conductors may consist of one or more wires.

Care must be taken to assure that no person can come in contact with live conductors during installation or operation of the connectors.

All entries were reviewed with maximum care before this catalogue was printed. ODU reserves the right to change design and performance of any product to meet changing technical developments without prior notice. ODU reserves the right to discontinue any part in this catalog without prior notice and without obligation to continue production after the change.

Company Information

Quality Management

ODU has had a powerful quality management system in place for years. ODU has been successfully certified to ISO 9001 since 1994. In addition, the automotive sector of the company group is certified to ISO TS 16949.
The certification process was carried out by the internationally active BVQI (Bureau Veritas Quality International) company.

ODU is also certified according to the medical standard ISO 13485 : 2003 + AC : 2007.

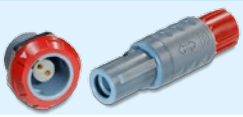
Additional to this ODU is certificated to DIN EN ISO 14001 : 2009 as well as to different certifications: VDE, UL, UL wiring harness, SCA, VG, MIL.

Your Partner in Many Application Areas

ODU stands for quality, flexibility and reliability. This is why customers working in many application areas rely on ODU products in markets such as the following:

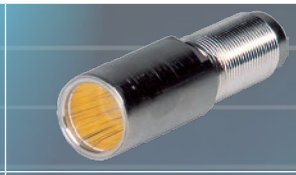
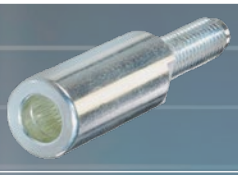
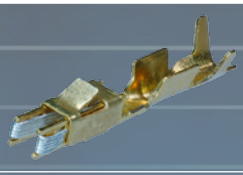
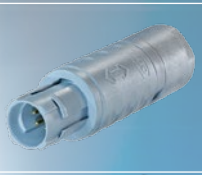
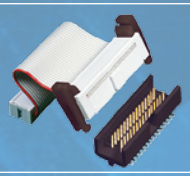
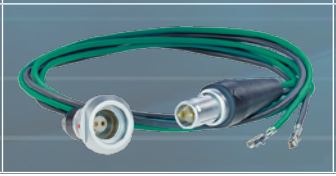
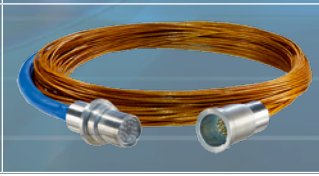
– Medical
– Industrial
– Measuring and testing
– Military and security
– Energy
– Automotive.

Overview – All Push-Pull Connector Series from ODU

	Push-Pull series	Coding	Sizes	No. of mechanical coding	Diameter plug (mm)	Max. cable ∅ (mm)	Max. no. of contacts	Solder	Crimp	Print	IP Protection Class A[1]	IP Protection Class B[2]
ODU MINI-SNAP L		Pin and groove	00	4	6.5	3.5	04	●	●	●	IP 50	up to IP 68
			0	6	9.5	5.6	10					
			1	7	12.0	7.7	16					
			2	8	15.0	9.9	26					
			3	7	18.0	11.9	30					
			4	1	25.0	16.0	40					
ODU MINI-SNAP K		Pin and groove	0	4	11.0	5.0	10	●	●	●	IP 68	up to IP 68
			1		13.0	7.0	16					
			2		16.0	9.0	26					
			3	1	19.0	10.5	30					
			4	1	25.0	14.0	40					
ODU MINI-SNAP B		Pin and groove	0	6	9.4	5.0	10	●	●	●	IP 68	up to IP 68
			1	8	12.0	7.0	16					
			2	9	15.0	9.0	26					
			3	10	18.0	10.5	30					
ODU MINI-SNAP S		Insulation body	0	1	9.4	5.0	04	●	●		up to IP 68	up to IP 68
			1		12.0	7.0	05					
			2		15.0	9.0	10					
ODU MINI-SNAP F		Half shell	0	3	9.4	5.0	09	●	●	●	up to IP 68	up to IP 68
			1	2	12.0	7.0	12					
			1.5	2	13.0	7.5	19					
			2	3	15.0	9.0	19					
			3	3	18.0	10.5	27					
ODU AMC		Pin and groove	0	4	14.0	5.5	10	●		●	up to IP 69K	IP 68
			1		15.9	6.5	16					
			1.5		16.5	8.0	19					
			2		19.6	10.0	26					
			3	4	23.9	11.5	37					
			4		33.0	17.5	55					
ODU MINI-SNAP PC		Half shell	1	3	12.5	6.0	14	●	●	●	up to IP 67	IP 50
			2	2	15.7	9.0	19					
			3	3	18.7	10.5	27					
ODU MEDI-SNAP		Pin and groove	1	6	13.7	6.5	14	●	●	●	up to IP 64	IP 50
			2	1	18.5	9.2	26					

[1] IP Protection Class in mated condition.
[2] IP Protection Class in unmated condition to the end device.

The Complete ODU Product Range

Single contacts (round or flat)			
High current connectors			
Circular connectors with Push-Pull locking			
Modular rectangular connectors			
PCB connectors			
Robust connectors			
Disposable Systems			
Application specific solutions			
AMC – Advanced Military Connector			
Cable assembly			

Everything From One Source

Each connection needs its individual cable. Make no compromises when it comes to the quality of the complete connection system. ODU gives you the complete system solution from one source, with no intermediary suppliers.

Cable assembly is a very complex subject. It requires equal measures of expertise in the areas of connectors, cables and assembly. ODU meets all these requirements in full.

Our competent assembly team tests the complete system according your specifications. Our assembly service promises you the same quality found in our connectors – without compromises.

ODU offers you all from one source

- 100 % final inspections
- Production in clean room acc. to EN ISO14644-1 possible
- Automatic processes (cutting, stripping, attaching)
- Extrusion possible with a hot-melt and high pressure/ temperature process
- Ultrasound welding
- EMC-compatible assembly
- Application specific labeling
- Widest range of potting possibilities for sealed systems
- Extruded cable crossovers.

Advantages for the customer

- Modern manufacturing facilities in Mühldorf (Germany), Shanghai (China) and Sibiu (Romania)
- Reliability thanks to our company-wide quality strategy
- Products with durability and functional reliability
- Production according to UL (file: E333666) possible
- Inspections, such as crimp force monitoring, during production.

Application Specific Connectors

Innovative, dynamic markets call for innovative connectors.

As an expert for special applications and requirements, we develop forward-looking, appropriate connectors attuned to your needs!

In spite of the global trend toward standardized connectors, there are always applications that call for an application specific solution. We accept this challenge and develop innovative products for our customers based on our many years of extensive know-how, our creativity and, not least, our high level of vertical integration. Technology access and technology mastery, combined with intensive cooperation with the user, form the basis for achieving success together.

Design-to-cost is joined by design-for-application for the customer's benefit.

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Order by online generator:
www.odu.de

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GERMANY

Company: .....

Name: .....

Department: .....

Street: .....

City: .....

Phone: ..... Date: .....

ODU MEDI-SNAP® Summary of Technical Requirements

1) Connector application _____

_____

2) Environment _____

3) Connector type ❑ Plug ❑ Receptacle ❑ In-line receptacle
❑ 90° plug ❑ 90° receptacle

4) Special version / variation _____

5) Style _____

6) Size ❑ 1 (metal/plastic) ❑ 2 (plastic)

7) Coding _____

8) Number of contacts _____

9) Termination type ❑ Solder ❑ Crimp ❑ PCB

10) Termination cross-section _____ mm^2 _____ AWG

11) Cable diameter _____ mm

12) Cable bend relief (colour) _____ ❑ PUR ❑ Silicone

13) Protection class acc. DIN EN 60 529 ❑ IP 50 (standard) ❑ IP 64 ❑ IP 67 ❑ other

14) Requirement: operating temperature _____ °C max. _____ °C min.

15) Electrical specs:

Rated Voltage _____ V AC _____ V DC

Rated current _____ A (constant) _____ A (short-term) _____ sec.

16) Chemical resistance against _____

17) Other requirements _____

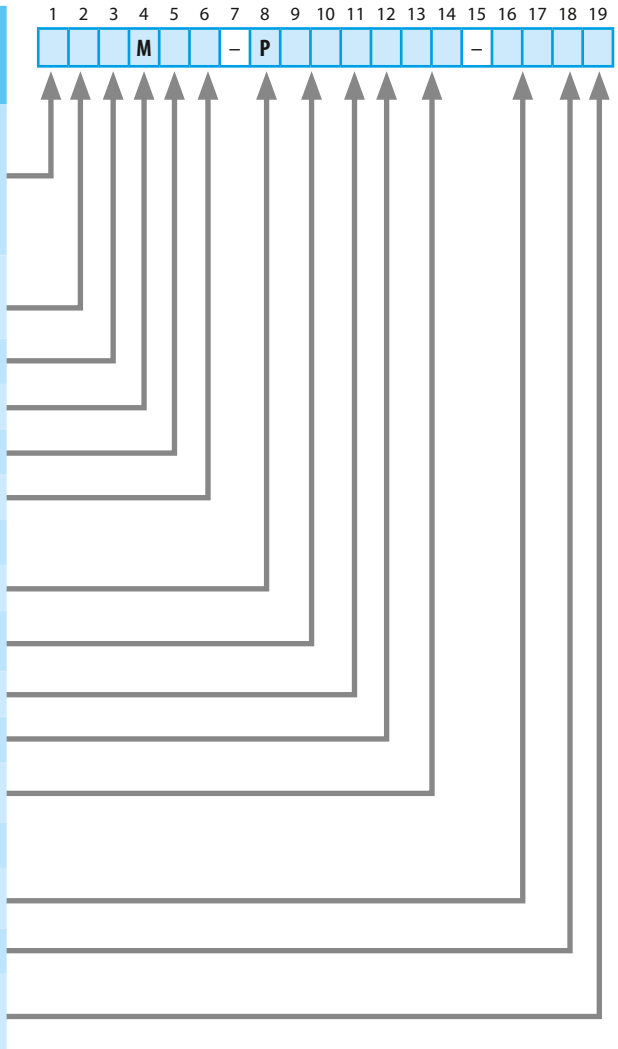
18) Autoclaveable, 134° C ❑ Yes ❑ No

→ Required quantity _____

→ Production quantity _____

The Part Number Key

No.	Description	Coding	Page
1	Type: Plug Receptacle In-line receptacle Right-angled plug Break-Away connector	S G K W A	12, 23, 32 15, 16, 24, 25, 33 14 13 63
2	Style	1, 2, 4 and 5 G, K, S, W	12 – 16, 23 – 25, 32 – 33
3	Size	1 or 2	41 – 43, 45
4	Series	M	
5	Coding		18, 28, 36
6	Housing material / colour		18, 28, 36
8	Material insulator	P = PEEK	40, 41, 42, 43
9 10	Contact insert (2 positions)		41 – 43
11	Contact type / surface		44
12	Contact diameter		45
13 14	Termination cross-section (2 positions)		45
16 17	Cable collet system (2 positions)		19, 20, 29, 30, 37
18	Colour coding		19, 29, 37
19	Back nut		12 – 14, 23, 32



Order example receptacle

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	1	1	M	A	7	–	P	0	6	L	F	D	0	–	0	0	6	0

1 = Plug
2 = Style 1
3 = Size 1
4 = Series ODU MEDI-SNAP
5 = Coding 40°
6 = Plastic housing PSU grey

8 = Insulator PEEK
9/10 = 6 positions
11 = Socket contact in solder termination
12 = Contact diameter 0.7 mm
13/14 = AWG 26

16/17 = No cable collet system required at the receptacle
18 = Colour coding blue
19 = No back nut required at the receptacle

Please open

ODU Worldwide

A perfect alliance.

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Other qualified representatives shown on our website:
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