



ODU MINI-SNAP PC

Miniature Cylindrical Connectors with
Push-Pull-Locking
in Plastic





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UL-File E110586 01RT07175

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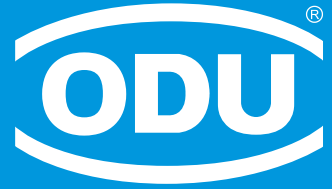
**All shown connectors are according to DIN EN
61984:2009 connectors without breaking capacity (COC).**

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ODU MINI-SNAP PC



Product Description



Important issues at a glance:

- ▶ **Push-pull locking principle**
- ▶ **Keying with half-shells**
- ▶ **The series is certificated for **
- ▶ **5,000 mating cycles**
- ▶ **Connector with plastic housing available in 3 sizes**
Outside diameter between 12.5 mm and 19 mm.
Number of contact positions: 2 to 27 positions
- ▶ **Contacts with solder-, crimp- and print termination available**
- ▶ **Operating temperature: –40 °C to +120 °C**
- ▶ **Intermates with metal version ODU MINI-SNAP Series F**
- ▶ **High economy**
 - automatic crimping possible
 - easy mounting of the contacts because of the clip-technology
 - easy mounting of the connector
 - economical solution
- ▶ **Further advantages:**
 - housing with 100 % touch proof
 - low weight
 - low mating forces
 - housing non-magnetic
 - high chemical resistance
- ▶ **RoHs conform**
 - the connector ODU MINI-SNAP PC meets the demands of the 2002/95/EG guideline



Advantages of ODU MINI-SNAP PC with push-pull locking

Cylindrical connectors are generally available with several locking mechanisms.

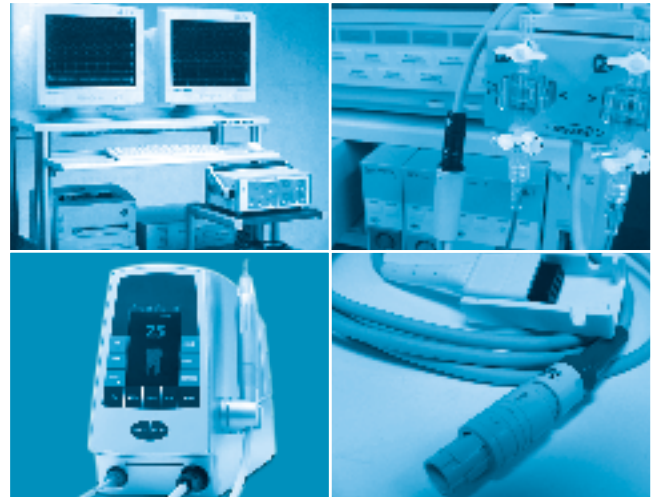
The most frequently used are:

- ▶ screw locking
- ▶ bayonet locking
- ▶ push-pull locking

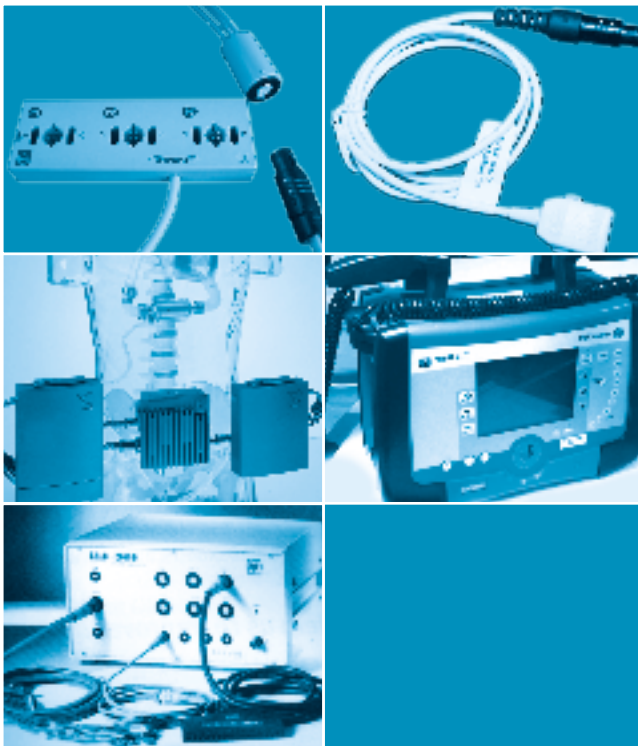
Push-pull connectors have a very simple locking mechanism:

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.



The advantages of push-pull connectors:

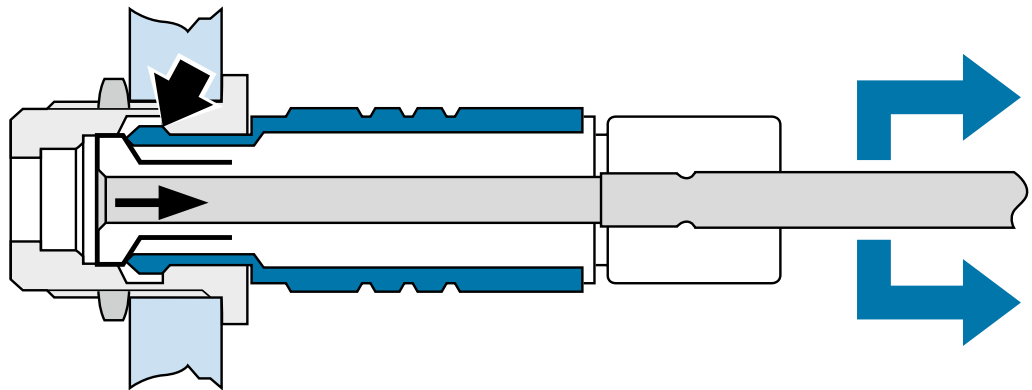
- ▶ quick and easy mating and demating
- ▶ quick and easy separating
- ▶ easy blind mating in difficult-to-reach places
- ▶ less panel space required
- ▶ definite and secure locking condition
- ▶ less mating force required
- ▶ easy cleaning of the housing possible

Important applications for push-pull connectors:

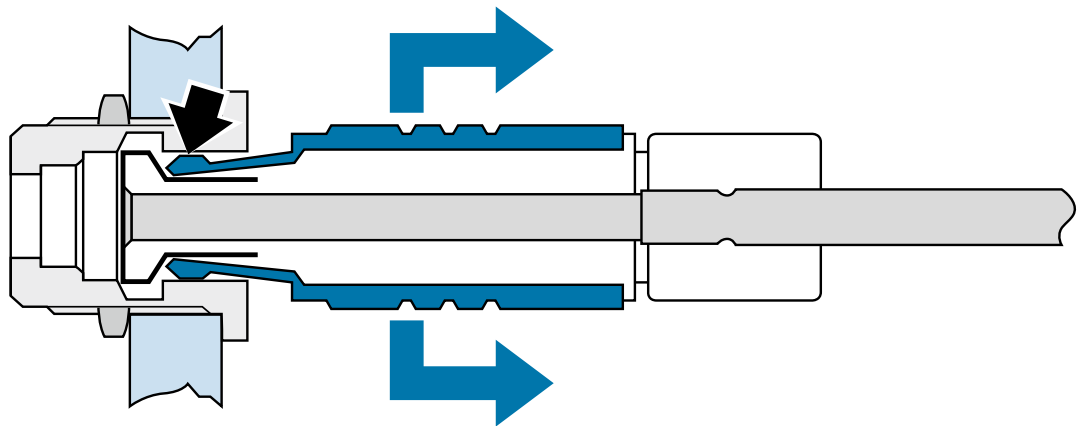
- ▶ medical electronics
- ▶ test and laboratory
- ▶ measurement instrumentation
- ▶ data and telecom systems
- ▶ audio and video applications
- ▶ military and aerospace
- ▶ industrial controls

Push-pull locking principle

Pulling on the cable or on the back nut causes the locking fingers to grip tighter into the groove inside receptacle. A separation is virtually impossible.



Pulling on the outer plug housing disengages the locking fingers from the receptacle groove and the connector separates easily.



Contact technologies

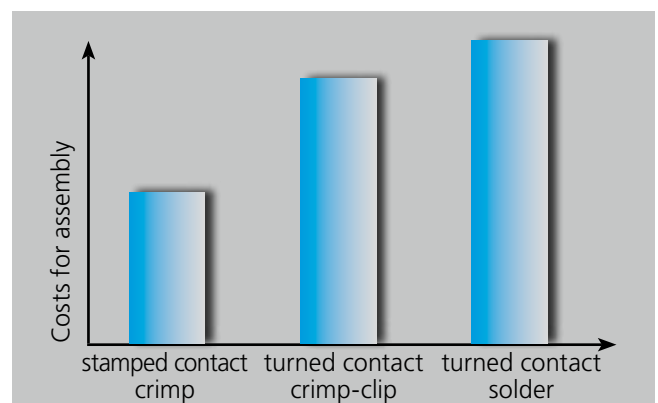
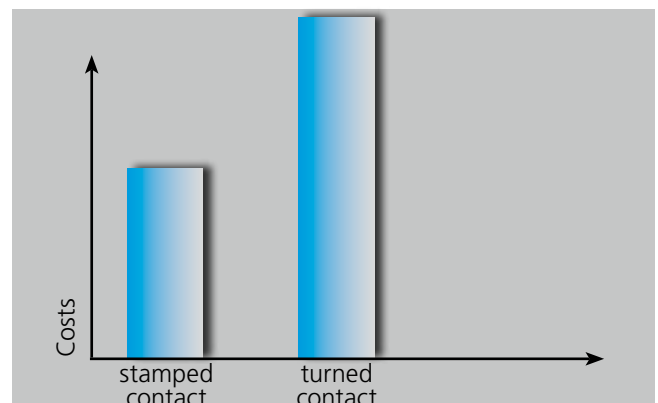
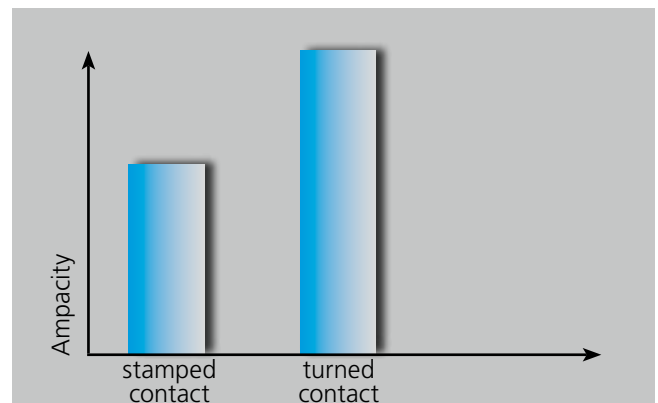
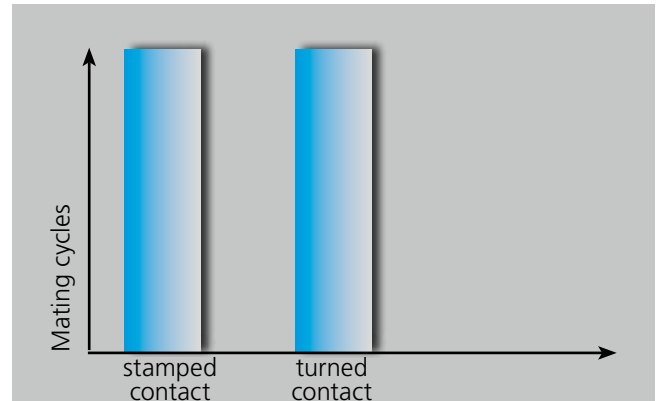
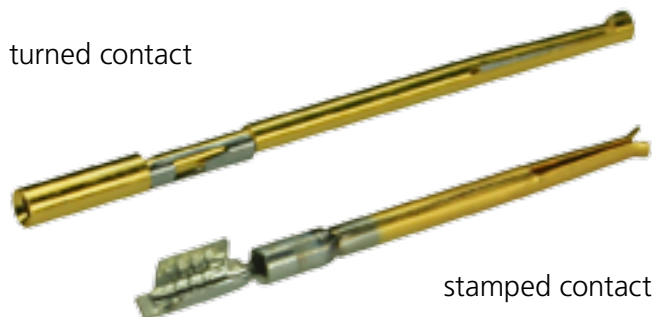
With ODU MINI-SNAP PC, it is possible to use stamped as well as turned contacts in the insulator.

Stamped contacts particularly offer economic advantages with regard to both the part price and the total costs for the packaging. Stamped contacts are delivered as coiled stamped strips, and so can be economically and semi-automatically packaged.

The advantages of the turned contacts can be seen in the processing of small lot sizes (e.g. by means of soldering) and the greater current-carrying capacity of the single contacts.

Subsequent extrusion of the connector is also possible only with solid contacts.

The diagrams show a comparison of the contact technologies.



Overview product series

Compatibility

Protection class IP 50



[page 13](#)

Protection class IP 50 and EMI protected



[page 19](#)

Protection class IP 67



[page 25](#)

Protection class IP 67 and EMI protected



[page 31](#)

Compatibility

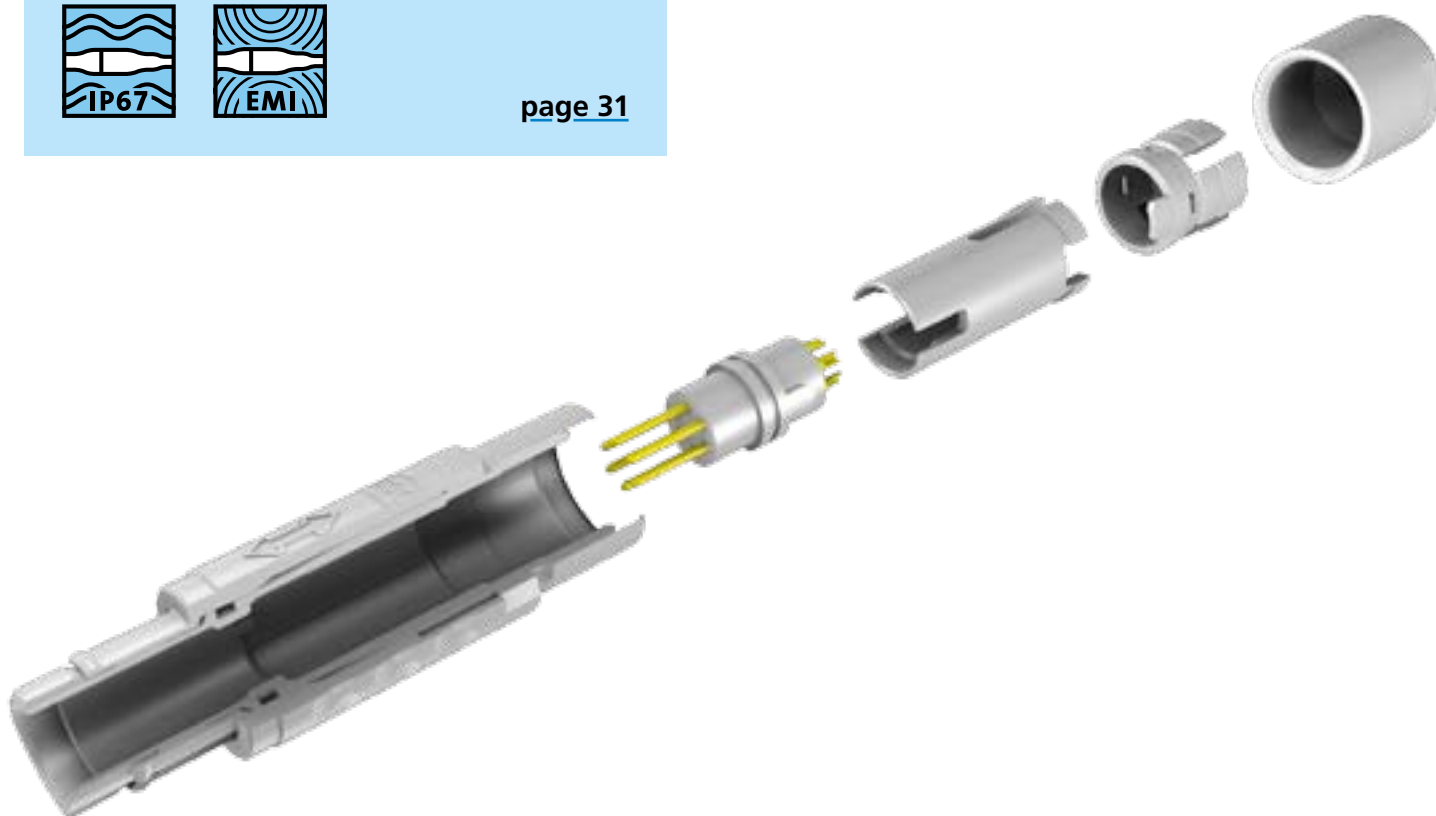
ODU MINI-SNAP PC is intermateable with the metal version Series F.

Tightness between ODU MINI-SNAP PC Series IP 67 and MINI-SNAP Series F (IP 68) are not given.

Exchangeability of the inserts

ODU MINI-SNAP PC has been developed on the basis of the metal version ODU MINI-SNAP. Accordingly a lot of inserts of the series F and series B from the metal version in sizes 1, 2 and 3 can be inserted into the ODU MINI-SNAP PC.

Approximately 100 different contact configurations are available right now.



Everything from one source – ODU the System Supplier

Every connection also needs its cable. Make no compromises here 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.

Benefits for the customer

- ▶ **ODU handles the complete processing**, from procuring the cable to procuring connectors from other companies and assembly up to individual extrusion or potting
- ▶ **No one knows our products better than we do** – no one knows how our products have to be processed better than we do
- ▶ **Close cooperation and experience** with well-know cable manufacturers
- ▶ Assembly of all **standard lines**, as well as special lines such as **hybrid cable**
- ▶ Assembly of extruded cable crossovers
- ▶ **100 % inspection** – systems can be used at the customer without testing
- ▶ Various **potting options** for a water-tight or vacuum-tight system
- ▶ **UL Approval** (File E333666) for cable assembly
- ▶ **Production in Cleanroom** acc. EN ISO 14644-1 possible
- ▶ Production acc. to **Medical Certification ISO 13485** : 2003 + AC : 2007 possible
- ▶ **State-of-the-art production facilities** in Mühl-dorf, Shanghai (China), Camarillo (USA) and Sibiu (Romania).



The part number key

No.	Description	Coding	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
									-								-			0	
1	Type	S = Plug G = Receptacle K = In-line receptacle																			
2	Style	1 – 9 and A – Z																			
3	Size	1, 2, 3																			
4	Typ	A, C																			
5	Coding																				
6	Material/surface of housing																				
8	Material insulator																				
9	Contact insert	e.g. 27 =																			
10	(2 positions)	27 positions																			
11	Contact type/surface																				
12	Contact diameter																				
13	Termination cross section	Special																			
14	(2 positions)	inserts = 09																			
16	Collet system																				
17	(2 positions)																				
18																					
19	Back nut type																				

Example receptacle

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

- 1 = Receptacle
- 2 = Style E = IP 67
- 3 = Size 1
- 4 = Type A
- 5 = Coding 1
- 6 = Plastic housing, PEI grey
- 8 = PEEK Insulator
- 9, 10 = 7 positions
- 11 = Stamped sockets with solder termination
- 12 = Contact diameter 0.7 mm
- 13, 14 = Cross Section AWG 22
- 16, 17, 18, 19 = Free by receptable

Example plug

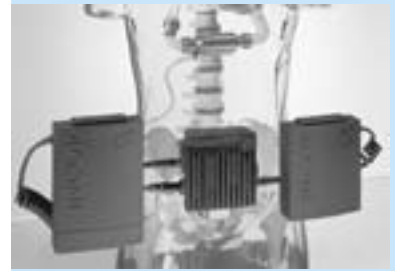
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	4	1	A	1	G	-	P	0	7	4	F	Z	0	-	4	5	0	S

- 1 = Plug
- 2 = Style 4 = IP 67
- 3 = Size 1
- 4 = Typ A
- 5 = Coding 1
- 6 = Plastic housing, PEI grey
- 8 = PEEK Insulator
- 9, 10 = 7 positions
- 11 = Stamped pin with Crimp termination
- 12 = contact diameter 0.7 mm
- 13, 14 = Cross Section AWG 28–26
- 16, 17 = Cable diameter 3.1–4.5 mm
- 19 = For cable bend relief (silicone)

ODU MINI-SNAP PC



Protection Class IP 50



Straight plug – protection class IP 50



Protection Class IP 50

Type, style

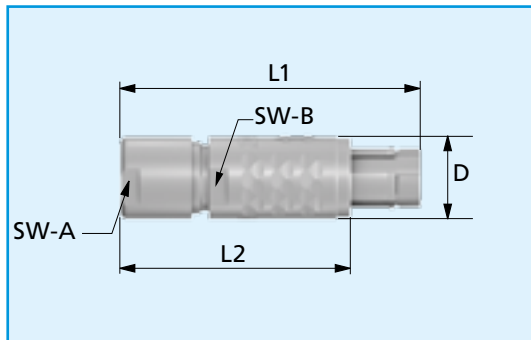
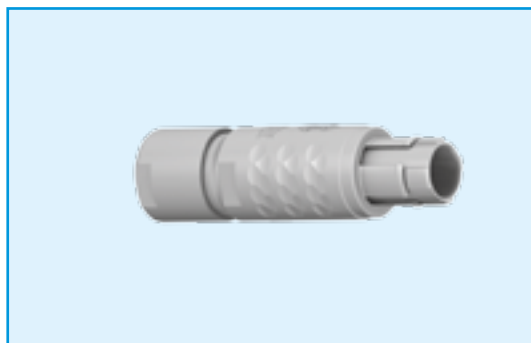
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Size

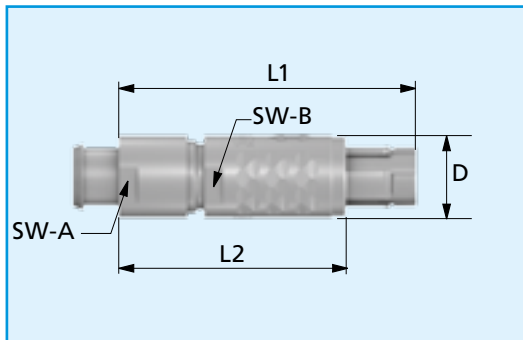
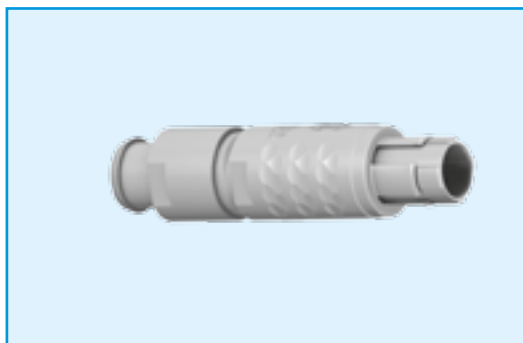
	Dimensions in mm				
	L1	L2	D	SW-A	SW-B
1	~ 46	~ 35	12.5	11	11
2	~ 52	~ 40	15.7	14	14
3	~ 60	~ 45	18.7	16	17

Cable bend relief must be ordered separately (See page 62)

Style 1 – standard back nut



Style 2 – back nut for cable bend relief



Receptacle – protection class IP 50 – style 1



Type, style

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Connector type	Style	Type																
G	1	A																
for installation from front of panel																		

Size for style 1

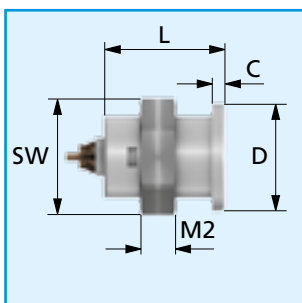
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Size	Dimensions in mm					Panel cut-out												
	L	D	C	M2	SW													
1	18.5	16.5	2.0	5.5	16.0	SW 12.6 / Ø13.6												
2	20.5	21.0	2.0	5.5	19.0	SW 15.6 / Ø16.6												
3	25.0	24.5	2.0	5.5	24.0	SW 19.1 / Ø21.1												

Style 1 – installation from front of panel



Technical data:

- IP 50 in reference to the tightness of the end device
- anti-rotation feature
- contact configuration [see page 37](#)
- minimal wall-thickness 1 mm



Receptacle – protection class IP 50 – style 5



Protection Class IP 50

Type, style

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

Connector type

Style

Type

G 5 A

with continuous thread, installation from rear or front of panel, optimal distance adjustment

Size for style 5

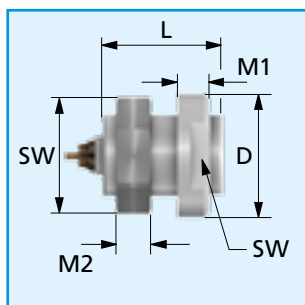
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				

Size	Dimensions in mm					Panel cut-out
	L	D	M1	M2	SW	
1	18.5	19.0	5.0	5.5	16.0	SW 12.6 / Ø13.6
2	20.5	21.5	5.0	5.5	19.0	SW 15.6 / Ø16.6
3	25.0	28.0	5.0	5.5	24.0	SW 19.1 / Ø21.1

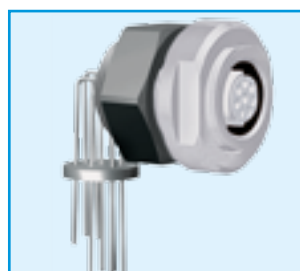
Style 5 – installation from rear or front of panel



- Technical data:
- IP 50 in reference to the tightness of the end device
 - anti-rotation feature
 - contact configuration see [page 37](#)



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



Right-angled
PCB Contacts

A

- only available in style 5
- only with turned contacts

In-line receptacle – protection class IP 50



Protection Class IP 50

Type, style

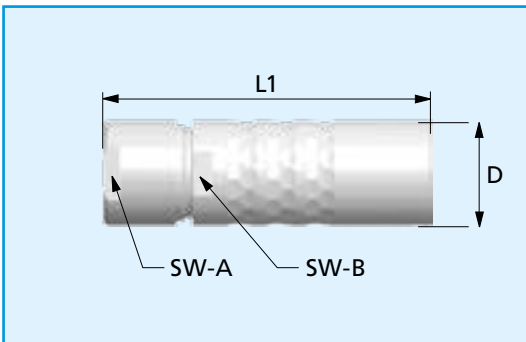
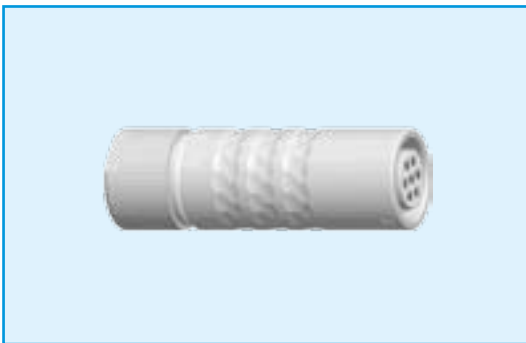
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Size

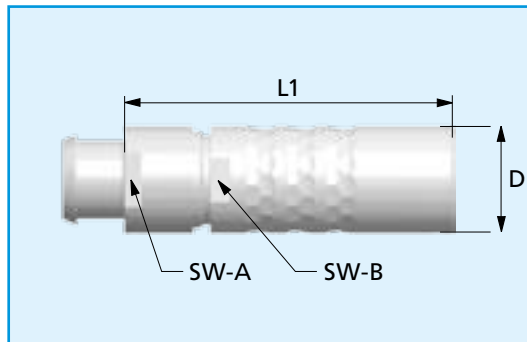
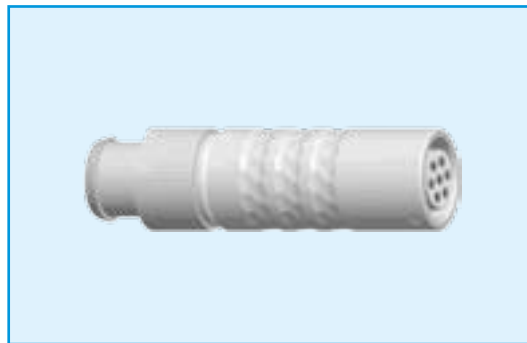
Dimensions in mm				
	L1	D	SW-A	SW-B
1	~ 46	12.5	11	11
2	~ 52	15.7	14	14
3	~ 60	18.7	16	17

Cable bend relief must be ordered separately ([See page 62](#))

Style 1 – standard back nut



Style 2 – back nut for cable bend relief



► only with black housing available

Coding

Protection Class IP 50

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

Coding	Receptacle front view	Size			Note
		1	2	3	
1		•	•	•	
2		•	•	•	
9		•	•	•	1)

1) not compatible with ODU MINI-SNAP Series F

Housing material

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

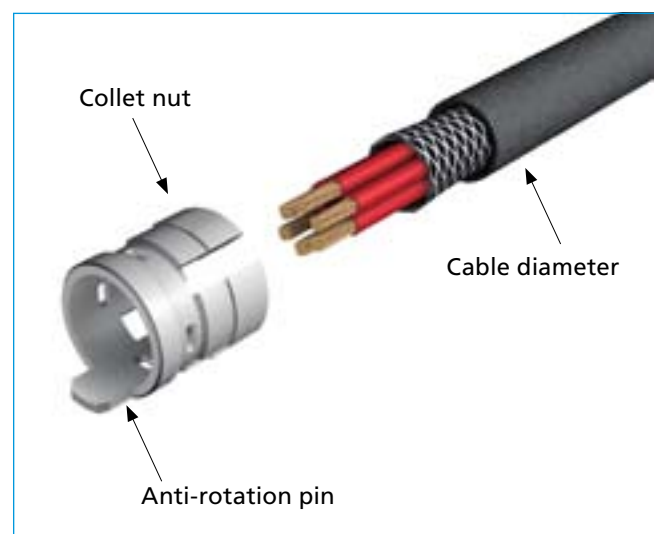
Housing material	Housing material	
G	Plastic, grey (similar RAL 7035)	
S	Plastic, black (similar RAL 9004)	
W	Plastic, white (similar RAL 9002)	

Plastic collet system for plug and in-line receptacle

Collet system

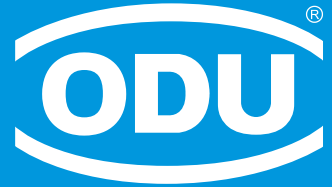
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-									-			

Cable diameter in mm	Size			Cable collet system	Cable collet system
	1	2	3		
> 1.5 – 2.5	•			2	5
> 2.5 – 3.7	•			3	7
> 3.1 – 4.5		•		4	5
> 3.7 – 4.9	•			4	9
> 4.6 – 6.0		•	•	6	0
> 4.9 – 6.0	•			6	0
> 6.1 – 7.5		•	•	7	5
> 7.6 – 9.0		•	•	9	0
> 9.1 – 10.5			•	0	2



Application:
Collet nut for strain relief
Protection of the connection points against pulling on the cable

ODU MINI-SNAP PC



Protection Class IP 50



EMI protected



Protection Class IP 50
EMI protected

**Straight plug – protection class IP 50
EMI protected**



Type, style

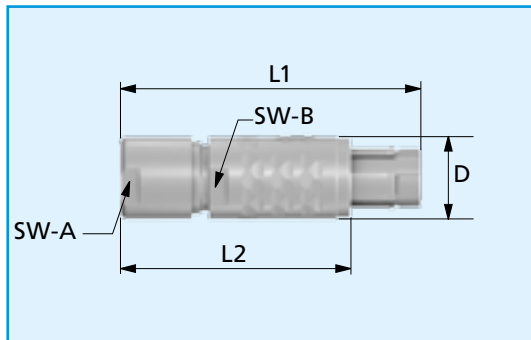
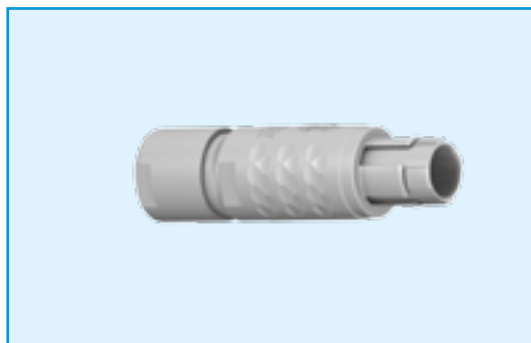
[illegible]

Size

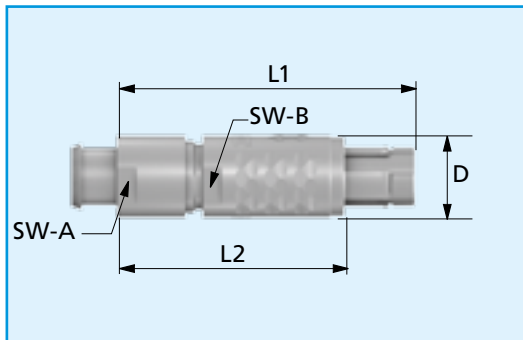
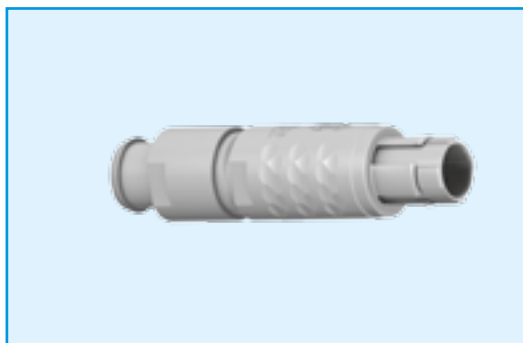
Size	L1	L2	D	SW-A	SW-B
1	~ 46	~ 35	12.5	11	11
2	~ 52	~ 39	15.7	14	14
3	~ 60	~ 45	18.7	16	17

Cable bend relief must be ordered separately (See page 62)

Style 1 – standard back nut



Style 2 – back nut for cable bend relief



Receptacle – protection class IP 50
EMI protected – style 1



Type, style

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

Connector type

Style

Type

G 1 C

for installation from front of panel

Typ EMI

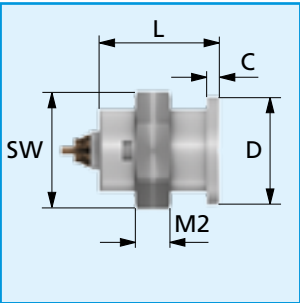
Size for style 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-									-			
Size	Dimensions in mm					Panel cut-out												
	L	D	C	M2	SW													
	1	18.5	16.5	2.0	5.5	16.0	SW 12.6 / Ø 13.6											
	2	20.5	21.0	2.0	5.5	19.0	SW 15.6 / Ø 16.6											
3	25.0	24.5	2.0	9.0	24.0	SW 19.1 / Ø 21.1												

Style 1 – installation from front of panel



- Technical data:
- ▶ IP 50 in reference to the tightness of the end device
 - ▶ anti-rotation feature
 - ▶ contact configuration [see page 37](#)
 - ▶ minimal wall-thickness 1 mm



Receptacle – protection class IP 50 EMI protected – style 5



Type, style

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

Protection Class IP 50
EMI protected

Connector type

Style

Type

G 5 C

continuous thread, installation from rear or front of panel, front extension adjustable

↑ Type EMI

Size for style 5

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

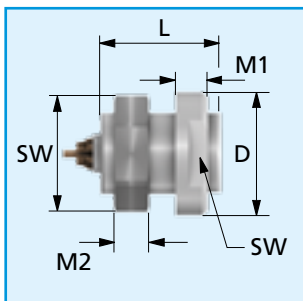
Size	Dimensions in mm					Panel cut-out
	L	D	M1	M2	SW	
1	18.5	19.0	5.0	5.5	16.0	SW 12.6 / Ø 13.6
2	20.5	21.5	5.0	5.5	19.0	SW 15.6 / Ø 16.6
3	25.0	28.0	5.0	5.5	24.0	SW 19.1 / Ø 21.1

Style 5 – installation from rear or front of panel



Technical data:

- ▶ IP 50 in reference to the tightness of the end device
- ▶ Anti-rotation feature
- ▶ Contact configuration [see page 37](#)



Coding

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Coding ↑					Receptacle front view	Size			Note									
						1	2	3										
					1		•	•		•								
					2		•	•		•								
9		•	•	•	1)													

1) not compatible with ODU MINI-SNAP Series F

Housing material

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Housing material						Housing material												
						G	Plastic, grey (similar RAL 7035)											

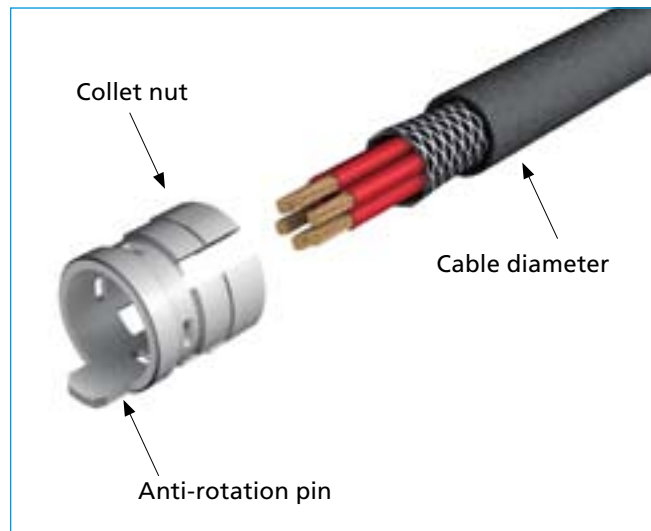
Protection Class IP 50
EMI protected

Plastic collet system for plug

Collet system

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

Cable diameter in mm	Size			
	1	2	3	
> 1.5 – 2.5	●			2 5
> 2.5 – 3.7	●			3 7
> 3.1 – 4.5		●		4 5
> 3.7 – 4.9	●			4 9
> 4.6 – 6.0		●	●	6 0
> 4.9 – 6.0	●			6 0
> 6.1 – 7.5		●	●	7 5
> 7.6 – 9.0		●	●	9 0
> 9.1 – 10.5			●	0 2

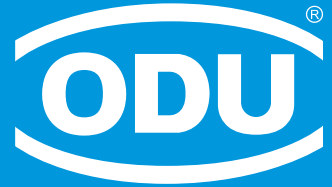


Application:

Collet nut for strain relief

Protection of the connection points against pulling on the cable

ODU MINI-SNAP PC



Protection Class IP 67



Protection Class IP 67

Straight plug – protection class IP 67



Type, style

Diagram illustrating the pinout for a 19-pin connector. The pins are numbered 1 through 19. The diagram shows the connector type, style, and type of back nut for different pin configurations.

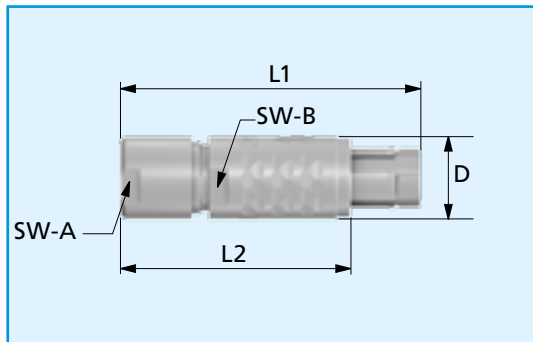
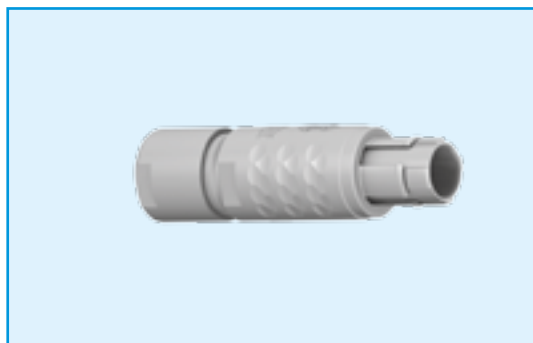
Pin	Connector type	Style	Type	Type of back nut
1	S	3	A	with standard back nut
2	S	4	A	with back nut for cable bend relief
4				
7				
14				
19				

Size

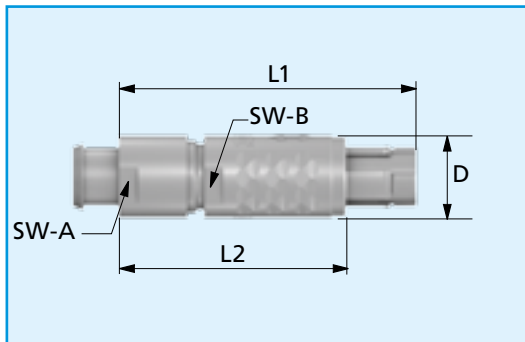
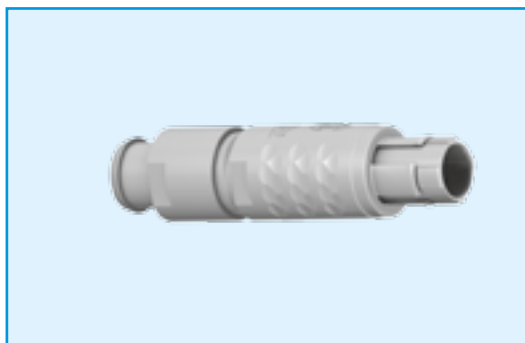
	Dimensions in mm				
Size	L1	L2	D	SW-A	SW-B
1	~ 46	~ 35	12.5	11	11
2	~ 52	~ 39	15.7	14	14
3	~ 60	~ 45	18.7	16	17

Cable bend relief must be ordered separately (See page 62)

Style 3 – standard back nut



Style 4 –back nut for cable bend relief



Receptacle – protection class IP 67 – style E



Type, style

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Connector type	Style	Type																
G	E	A																

for installation from front of panel

Size

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
						-								-					
Size																			
Dimensions in mm													Panel cut-out						
L	D	C	M	SW															
1	22.0	18.5	~ 6.0	5.5	16.0	SW 12.6 / Ø 13.6													
2	24.0	22.5	~ 6.0	5.5	19.0	SW 15.6 / Ø 16.6													
3	28.5	26.5	~ 6.0	5.5	24.0	SW 19.1 / Ø 21.1													

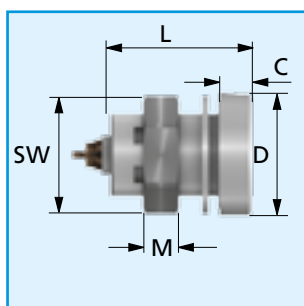
Protection Class IP 67

Style E – installation from front of panel



Technical data:

- IP 67 in **mated condition**
- IP 50 in **unmated condition** in reference to the tightness of the end device
- contact configuration [see page 37](#)



In-line receptacle – protection class IP 67



Type, style

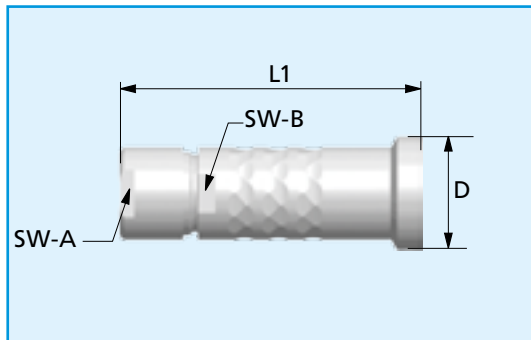
[illegible]

Size

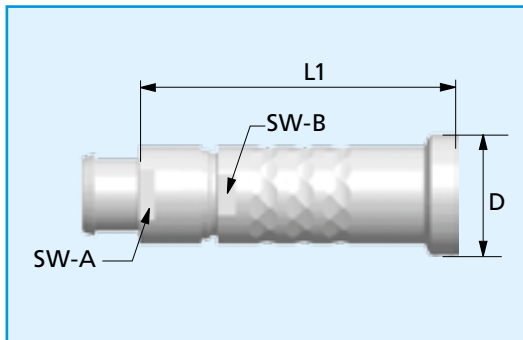
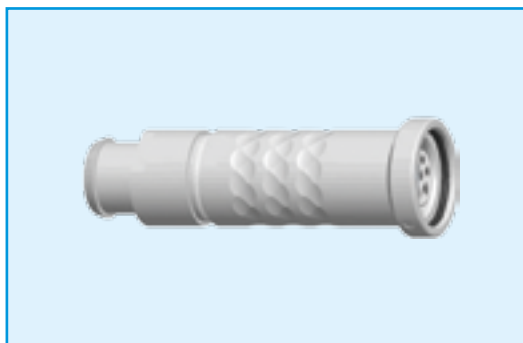
	Dimensions in mm			
	L1	D	SW-A	SW-B
1	~ 46	16.2	11	11
2	~ 52	19.8	14	14
3	~ 60	23	16	17

Cable bend relief must be ordered separately (See page 62)

Style 3 – standard back nut



Style 4 –back nut for cable bend relief



- ▶ only with black housing available

Coding

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Coding				Receptacle front view				Size			Note							
								1	2	3								
				1					•	•	•							
				2					•	•	•							
				9					•	•	•	1)						

1) not compatible with ODU MINI-SNAP Series F

Housing material

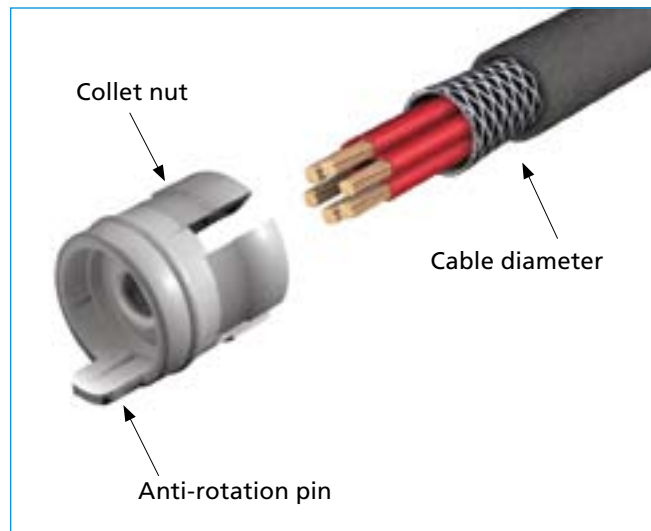
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Housing material						Housing material												
						G	Plastic, grey (similar RAL 7035)											
						S	Plastic, black (similar RAL 9004)											
						W	Plastic, white (similar RAL 9002)											

Plastic collet system for plug

Collet system

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

Cable diameter in mm	Size			
	1	2	3	
> 1.5 – 2.5	●			2 5
> 2.5 – 3.7	●			3 7
> 3.1 – 4.5		●		4 5
> 3.7 – 4.9	●			4 9
> 4.6 – 6.0		●	●	6 0
> 4.9 – 6.0	●			6 0
> 6.1 – 7.5		●	●	7 5
> 7.6 – 9.0		●	●	9 0
> 9.1 – 10.5			●	0 2



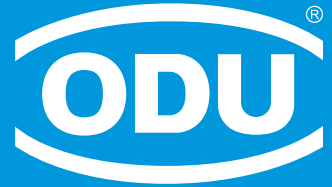
Application:

Collet Nut for strain relief

Protection of the connection points against pulling on the cable

Sealing between cable and connector housing

ODU MINI-SNAP PC



Protection class IP 67



EMI protected



Protection Class IP 67
EMI protected

Straight plug – protection class IP 67 EMI protected



Type, style

[illegible]

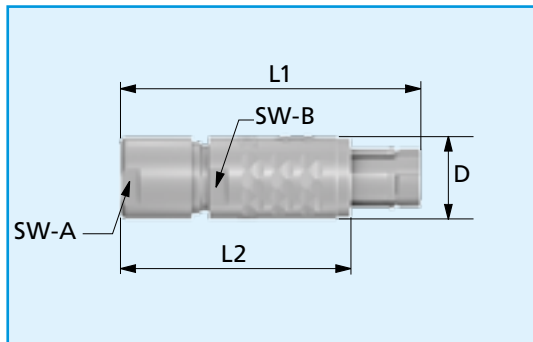
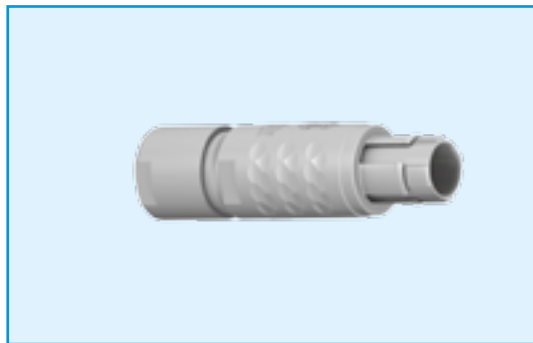
Size

	L1	L2	D	SW-A	SW-B
1	~ 46	~ 35	12.5	11	11
2	~ 52	~ 39	15.7	14	14
3	~ 60	~ 45	18.7	16	17

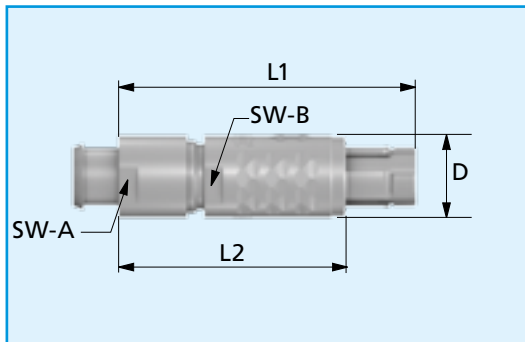
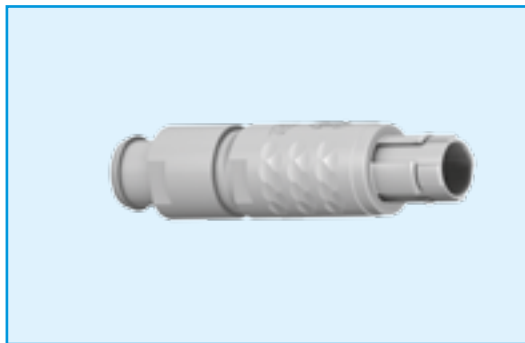
Dimensions in mm

Cable bend relief must be ordered separately (see [page 62](#))

Style 3 – standard back nut



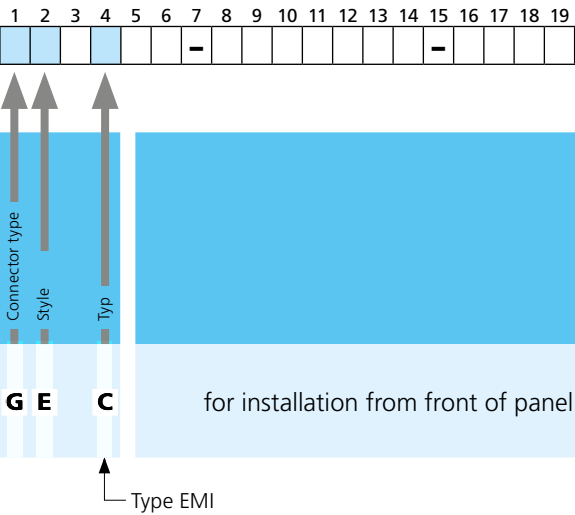
Style 4 – back nut for cable bend relief



Receptacle – protection class IP 67
EMI protected – style E



Type, style



Size

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

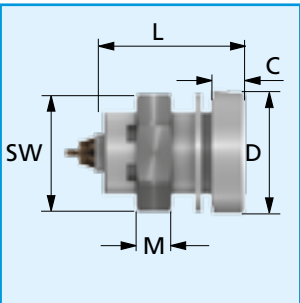
Size	Dimensions in mm					Panel cut-out
	L	D	C	M	SW	
1	22.0	18.5	~ 6,0	5.5	16.0	SW 12.6 / Ø 13.6
2	24.0	22.5	~ 6,0	5.5	19.0	SW 15.6 / Ø 16.6
3	28.5	26.5	~ 6,0	5.5	24.0	SW 19.1 / Ø 21.1

Style E – installation from front of panel



Technical data:

- IP 67 in **mated condition**
- IP 50 in **unmated condition** in reference to the tightness of the end device
- contact configuration [see page 37](#)



Coding

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Coding					Receptacle front view					Size			Note					
1										1	2	3						
2																		
9													1)					

1) not compatible with ODU MINI-SNAP Series F

Housing material

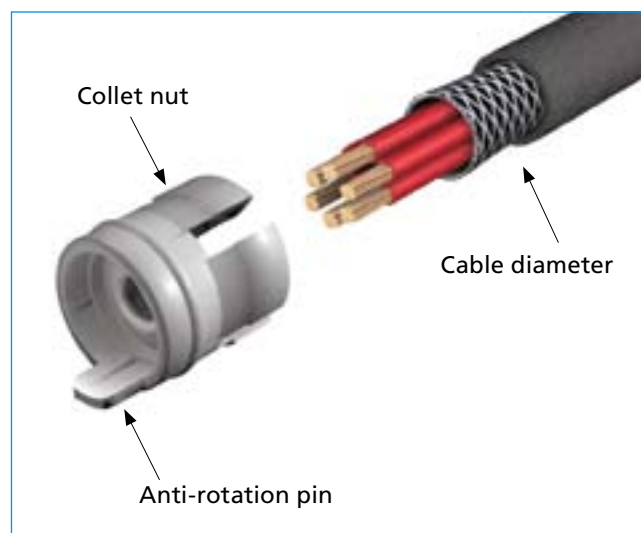
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Housing material						Housing material												
						G	Plastic, grey (similar RAL 7035)											

Plastic collet system for plug

Collet system

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

Cable diameter in mm	Size			
	1	2	3	
> 1.5 – 2.5	•			2 5
> 2.5 – 3.7	•			3 7
> 3.1 – 4.5		•		4 5
> 3.7 – 4.9	•			4 9
> 4.6 – 6.0		•	•	6 0
> 4.9 – 6.0	•			6 0
> 6.1 – 7.5		•	•	7 5
> 7.6 – 9.0		•	•	9 0
> 9.1 – 10.5			•	0 2



Application:

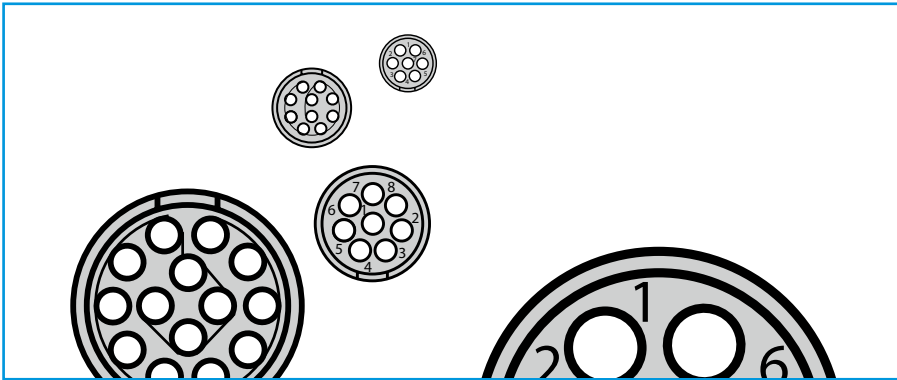
Collet nut for strain relief

Protection of the connection points against pulling on the cable

Sealing between cable and connector housing



ODU MINI-SNAP PC



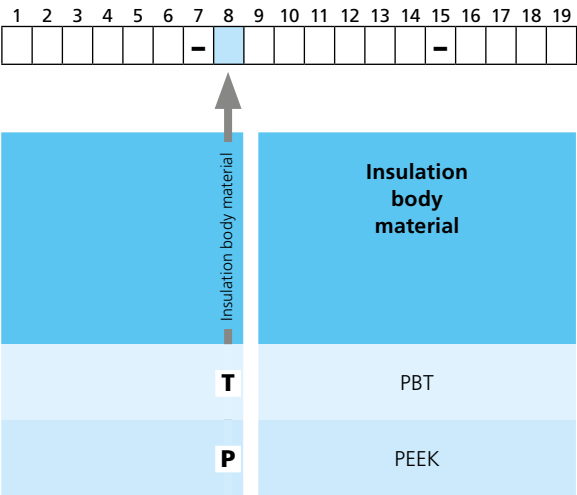
Contact Configuration



Contact Configuration



Insulation body material



Turned contacts

	PBT	PEEK	Note
Solder termination	●	●	pre-assembled contacts
Crimp termination with clip		●	contacts with clip loosely enclosed
Print termination	●	●	pre-assembled contacts

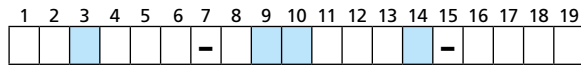
Stamped contacts

	PBT	PEEK	Note
Solder termination	●	●	pre-assembled contacts
Crimp termination		●	order contacts separatly
Print termination		●	pre-assembled contacts

● = Possibilities

Size 1, stamped contacts

Size, positions



Size	Positions	Positions	Insert direction	Contact diameter in mm	Contact to contact in mm	Clearance and creepage distance in mm	Test voltage acc. SAE J13441 contact to contact	Rated voltage A ²	Terminations			View on the termination area	
									Solder	Crimp 4	Print 1, 3	Pin part	Socket part
1	0	6	0	0.7	0.5	0.8	1.125 kV ~	4	●	●	●		
1	0	7	0	0.7	0.5	0.8	1.125 kV ~	4	●	●	●		
1	0	8	9	0.7	0.3	0.7	0.750 kV ~	4	●	●	●		

1) PCB layout [see page 44](#)

2) Calculation method, caution and suggestion [see page 75](#)

3) Only socket part available

4) Tools [see page 65](#)

Contact Configuration

Termination	Cable cross section		Contact	Packaging unit	Part number	Note
	AWG	mm ²				
Crimp*	22/24	0.38 / 0.25	Pin	500	186.080.103.535.251	Please, order contacts separately, they are not part of the delivery
	26/28	0.14 / 0.08	Pin	500	186.080.103.535.151	
	22/24	0.38 / 0.25	Socket	500	176.082.103.535.251	
	26/28	0.14 / 0.08	Socket	500	176.082.103.535.151	
Solder						Included in insert
Print						Included in insert

* Contacts will be delivered on a reel
Bigger packaging units possible

Size 1, stamped contacts

Contact type, contact surface and contact diameter

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Termination		Contact surface, plugging area		Contact type/surface		Contact type												
Solder		Galv. Au		1		Socket												
		Galv. Au		2		Pin												
Crimp		Galv. Au		3		Socket												
		Galv. Au		4		Pin												
Print		Galv. Au		5		Socket												

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19							
						-								-											
Crimp contacts																									
Contact Ø	Size											Contact diameter	Cross section												
		Contacts must be ordered separately												F 0											
0.7		1																							
Solder contacts																									
Contact Ø	Termination Ø	Cross section																	Contact diameter	Cross section					
				AWG	mm²																				
0.7		1.0	22	0.38																		F G			
Print contacts*																									
Contact Ø	Termination Ø											Contact diameter	Cross section												
														F 0											
0.7		0.7																							

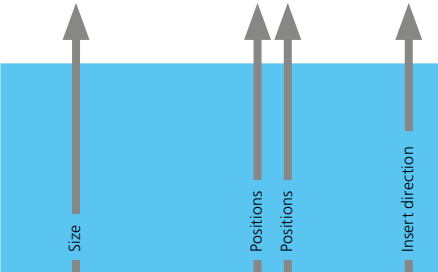
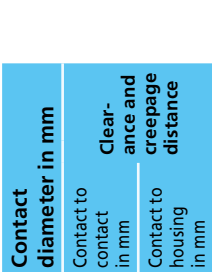
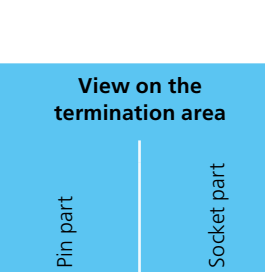
* only for socket insert available

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).

Size 1, turned contacts

Size, positions

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

																			
Size	Positions	Positions	Insert direction	Contact diameter in mm	Contact to contact in mm	Clearance and creepage distance to housing in mm	Test voltage acc. SAE 13441 contact to contact	Rated voltage A ²	Solder	Crimp 4	Print 1, 3	Pin part	Socket part						
1	0 2	0		1.3	1.3	0.9	1.600 kV~	14	●		●								
1	0 3	0		1.3	1.0	0.8	1.600 kV~	14	●		●								
1	0 4	0		0.9	1.2	0.8	1.600 kV~	10	●	●	●								
1	0 5	0		0.9	0.8	0.8	1.600 kV~	10	●	●	●								
1	0 6	0		0.7	0.8	0.8	1.600 kV~	7	●	●	●								
1	0 7	0		0.7	0.8	0.8	1.600 kV~	7	●	●	●								
1	0 8	9		0.7	0.6	0.7	1.350 kV~	7	●	●	●								
1	1 0	9		0.5	0.5	0.8	1.200 kV~	5	●		●								
1	1 2	0		0.5	0.5	0.6	1.200 kV~	5	●		●								
1	1 4	9		0.5	0.4	0.5	1.125 kV~	5	●		●								

Contact Configuration

1) PCB layout see page 44

2) Calculation method, caution and suggestion see page 74

3) Only socket part available

4) Tools see page 65

Size 1, turned contacts

Contact type, contact surface and contact diameter

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

Termination	Contact surface, plugging area	Contact type/surface	Contact type
Solder	Galv. Au	L	Socket
	Galv. Au	M	Pin
Crimp	Galv. Au	N	Socket
	Galv. Au	P	Pin
Print	Galv. Au	Q	Socket
	Galv. Au	R	Pin

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).

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

Crimp contacts

Contact Ø	Size	Cross section		Contact diameter	Cross section
		AWG	mm²		
0.7	1	22/26	0.38/0.15	F	G
0.9	1	22/26	0.38/0.15	J	G
0.9	1	20/24	0.50/0.25	J	H

Solder contacts

Contact Ø	Termination Ø	Cross section		Contact diameter	Cross section
		AWG	mm²		
0.5	0.4	28	0.08	C	C
0.7	0.6	26	0.15	F	D
0.9	0.85	22	0.38	J	G
1.3	1.1	20	0.50	P	H

Print contacts

Contact Ø	Termination Ø			Contact diameter	Cross section
0.5	0.5			C	0
0.7	0.5			F	0
0.9	0.7			J	0
1.3	0.7			P	0

PCB layout for print contacts: Size 1

Contact Configuration

Size 1	straight	right-angled	Size 1	straight	right-angled
2 positions	Drill: 0.8 mm 	Drill: 0.9 mm 	7 positions	Drill: 0.6 mm 	Drill: 0.7 mm
3 positions	Drill: 0.8 mm 	Drill: 0.9 mm 	8 positions	Drill: 0.6 mm 	Drill: 0.7 mm
4 positions	Drill: 0.8 mm 	Drill: 0.7 mm 	10 positions	Drill: 0.6 mm 	Drill: 0.7 mm
5 positions	Drill: 0.8 mm 	Drill: 0.7 mm 	12 positions	Drill: 0.6 mm 	Drill: 0.7 mm
6 positions	Drill: 0.6 mm 	Drill: 0.7 mm 	14 positions	Drill: 0.6 mm 	Drill: 0.7 mm

Size 2, stamped contacts

Size, positions

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Size			Positions		Positions		Insert direction											
2			1 2		9													
2			1 4		9													
2			1 6		0													
Contact diameter in mm			Clearance and creepage distance			Test voltage acc. SAE 13441 contact to contact			Rated voltage A²			Terminations			View on the termination area			
Contact to contact in mm			Contact to housing in mm									Solder			Pin part		Socket part	
0.7			0.6			1.200 kV ~			4			● ● ●						
0.7			0.5			1.125 kV ~			4			● ● ●						
0.7			0.5			1.125 kV ~			4			● ● ●						

1) PCB layout [see page 50](#)

2) Calculation method, caution and suggestion [see page 75](#)

3) Only socket part available

4) Tools [see page 65](#)

Termination	Cable cross section		Contact	Packaging unit	Part number	Note
	AWG	mm ²				
Crimp*	22/24	0.38 / 0.25	Pin	500	186.080.103.535.251	Please, order contacts separately, they are not part of the delivery
	26/28	0.14 / 0.08	Pin	500	186.080.103.535.151	
	22/24	0.38 / 0.25	Socket	500	176.081.103.535.251	
	26/28	0.14 / 0.08	Socket	500	176.081.103.535.151	
Solder						Included in insert
Print						Included in insert

* Contacts will be delivered on a reel
Bigger packaging units possible

Size 2, stamped contacts

Contact type, contact surface and contact diameter

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
						-								-				
Termination		Contact surface, plugging area		Contact type/surface		Contact type												
Solder		Galv. Au		1		Socket												
		Galv. Au		2		Pin												
Crimp		Galv. Au		3		Socket												
		Galv. Au		4		Pin												
Print		Galv. Au		5		Socket												

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

Crimp contacts

Contact Ø	Size	
0.7	2	Contacts must be ordered separately

Contact diameter

Cross section

F 0

Solder contacts

Contact Ø	Termination Ø	Cross section	
		AWG	mm²
0.7	1.0	22	0.38

Contact diameter

Cross section

F G

Print contacts*

Contact Ø	Termination Ø	
0.7	0.7	

Contact diameter

Cross section

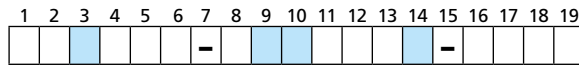
F 0

* only for socket insert available

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).

Size 2, turned contacts

Size, positions



Contact Configuration

Size	Positions	Positions	Insert direction	Contact diameter in mm	Contact to contact in mm	Clearance and creepage distance in mm	Test voltage acc. SAE J13441 contact to contact	Rated voltage in A ²	Terminations			View on the termination area	
									Solder	Crimp 4	Print 1, 3	Pin part	Socket part
2	0	3	9	1.6	1.9	1.5	2.100 kV ~	17	•		•		
2	0	5	0	1.3	1.2	1.0	1.725 kV ~	14	•	•	•		
2	0	6	0	0.9	1.5	1.3	1.900 kV ~	10	•		•		
2	0	8	0	0.9	1.0	1.1	1.600 kV ~	10	•		•		
2	0	9	0	0.9 1.3	0.8	0.6	1.350 kV ~	10 14	•				
2	1	0	9	0.9	0.9	0.9	1.600 kV ~	10	•	•	•		
2	1	1	0	0.9	0.8	0.8	1.600 kV ~	10	•		•		
2	1	2	9	0.7	0.9	0.9	1.600 kV ~	7	•	•	•		
2	1	6	0	0.7	0.6	0.7	1.350 kV ~	7	•	•	•		
2	1	9	0	0.7	0.7	0.6	1.350 kV ~	7	•		•		

¹⁾ PCB layout see [page 50](#)

²⁾ Calculation method, caution and suggestion see [page 74](#)

³⁾ Only socket part available

⁴⁾ Tools see [page 65](#)

Size 2, turned contacts

Contact type, contact surface and contact diameter

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

Termination	Contact surface, plugging area	Contact type/surface	Contact type
Solder	Galv. Au	L	Socket
	Galv. Au	M	Pin
Crimp	Galv. Au	N	Socket
	Galv. Au	P	Pin
Print	Galv. Au	Q	Socket
	Galv. Au	R	Pin

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).

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

Crimp contacts

Contact Ø	Size	Cross section		Contact diameter	Cross section
		AWG	mm²		
0.7	2	28/32	0.09/0.04	F	C
0.7	2	22/26	0.38/0.15	F	G
0.9	2	22/26	0.38/0.15	J	D
0.9	2	20/24	0.5/0.25	J	H
1.3	2	18/20	1.00/0.50	P	L
0.9	2	22	0.38	J	G

Solder contacts

Contact Ø	Termination Ø	Cross section		Contact diameter	Cross section
		AWG	mm²		
0.7	0.60	26	0.15	F	D
0.9	0.85	22	0.38	J	G
1.3	1.10	20	0.50	P	H
1.6	1.40	18	1.00	S	N

Print contacts

Contact Ø	Termination Ø	Contact diameter	Cross section
0.7	0.5	F	0
0.9	0.7	J	0
1.3	0.7	P	0
1.6	0.7	S	0

PCB layout for print contacts: Size 2

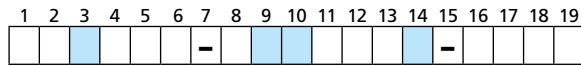
Contact Configuration

Size 2	straight	right-angled
3 positions	Drill: 1.1 mm 	on request
5 positions	Drill: 0.8 mm 	Drill: 0.9 mm
6 positions	Drill: 0.8 mm 	Drill: 0.7 mm
8 positions	Drill: 0.8 mm 	on request
9 positions	Drill: 0.8 mm 	on request

Size 2	straight	right-angled
10 positions	Drill: 0.8 mm 	Drill: 0.7 mm
11 positions	Drill: 0.8 mm 	Drill: 0.7 mm
12 positions	Drill: 0.6 mm 	on request
19 positions	Drill: 0.6 mm 	Drill: 0.7 mm

Size 3, stamped contacts

Size, positions



Size	Positions		Insert direction	Contact diameter in mm	Clear- ance and creepage distance		Test voltage acc. SAE 13441 contact to contact	Rated voltage in A ²	Terminations			View on the termination area	
					Contact to contact in mm	Contact to housing in mm			Solder	Crimp ⁴	Print 1, 3	Pin part	Socket part
3	2	0	9	0.7	0.8	0.8	1.350 kV ~	4	●	●	●		
3	2	2	9	0.7	0.6	0.7	1.200 kV ~	4	●	●	●		
3	2	4	0	0.7	0.4	0.7	0.900 kV ~	4	●	●	●		
3	2	6	9	0.7	0.4	0.6	0.900 kV ~	4	●				
3	2	7	0	0.7	0.4	0.7	0.900 kV ~	4	●	●	●		

1) PCB layout [see page 56](#)

2) Calculation method, caution
and suggestion [see page 75](#)

3) Only socket part available

4) Tools [see page 65](#)

Contact Configuration

Termination	Cable cross section		Contact	Packaging unit	Part number	Note
	AWG	mm ²				
Crimp*	22/24	0.38 / 0.25	Pin	500	186.080.103.535.251	Please, order contacts separately, they are not part of the delivery
	26/28	0.14 / 0.08	Pin	500	186.080.103.535.151	
	22/24	0.38 / 0.25	Socket	500	176.080.103.535.251	
	26/28	0.14 / 0.08	Socket	500	176.080.103.535.151	
Solder						Included in insert
Print						Included in insert

* Contacts will be delivered on a reel
Bigger packaging units possible

Size 3, stamped contacts

Contact type, contact surface and contact diameter

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

Termination	Contact surface, plugging area	Contact type/surface	Contact type
Solder	Galv. Au	1	Socket
	Galv. Au	2	Pin
Crimp	Galv. Au	3	Socket
	Galv. Au	4	Pin
Print	Galv. Au	5	Socket

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

Crimp contacts

Contact Ø	Size		
0.7	3	Contacts must be ordered separately	

Solder contacts

Contact Ø	Termination Ø	Cross section		 Contact diameter Cross section
		AWG	mm²	
0.7	1.0	22	0.38	F G

Print contacts*

Contact Ø	Termination Ø	
0.7	0.7	

Technical drawing of a contact termination. The drawing shows a side view and a cross-section. The side view is a rectangle with a width of 0.7 and a height of 0.7. The cross-section shows a rectangular contact with a diameter of 0.7 and a cross-section of 0.7. The contact is labeled 'F 0'.

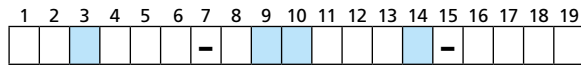
* only for socket insert available

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).

Size 3, turned contacts

Size, positions



Contact Configuration

Size	Positions	Positions	Insert direction	Contact diameter in mm	Contact to contact in mm	Clearance and creepage distance to housing in mm	Test voltage acc. SAE J1341 contact to contact	Rated Voltage in A ²	Terminations			View on the termination area	
									Solder	Crimp 4	Print 1, 3	Pin part	Socket part
3	0	2	0	3.0	1.7	1.3	1.900 kV ~	25	•				
3	0	4	9	2.0	1.9	1.3	1.900 kV ~	22	•		•		
3	0	7	9	1.6	1.5	1.2	1.900 kV ~	17	•		•		
3	0	8	9	1.3	1.3	1.1	1.800 kV ~	14	•		•		
3	1	2	0	1.3	1.0	1.0	1.725 kV ~	14	•		•		
3	1	4	9	0.9	1.2	1.0	1.725 kV ~	10	•		•		
3	1	5	0	0.9	0.9	0.8	1.600 kV ~	10	•	•	•		
3	1	8	9	0.9	0.9	0.7	1.350 kV ~	10	•		•		
3	2	0	9	0.7	1.0	0.8	1.600 kV ~	7	•		•		
3	2	2	9	0.7	0.9	0.7	1.350 kV ~	7	•		•		
3	2	4	0	0.7	0.7	0.7	1.350 kV ~	7	•		•		
3	2	6	9	0.7	0.7	0.6	1.350 kV ~	7	•		•		
3	2	7	0	0.7	0.7	0.7	1.350 kV ~	7	•	•	•		

1) PCB layout [see page 56](#)

2) Calculation method, caution and suggestion [see page 74](#)

3) Only socket part available

4) Tools [see page 65](#)

Size 3, turned contacts

Contact type, contact surface and contact diameter

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19																		
						-								-				
Termination	Contact surface, plugging area		Contact type/surface		Contact type													
Solder	Galv. Au		L		Socket													
	Galv. Au		M		Pin													
Crimp	Galv. Au		N		Socket													
	Galv. Au		P		Pin													
Print	Galv. Au		Q		Socket													
	Galv. Au		R		Pin													

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).

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

Crimp contacts

Contact Ø	Size	Cross sections		Contact diameter	Cross section
		AWG	mm²		
0.7	3	22/26	0.38/0.15	F	G
0.9	3	20/24	0.50/0.25	J	H
0.9	3	22/26	0.38/0.15	J	G

Solder contacts

Contact Ø	Termination Ø	Cross section		Contact diameter	Cross section
		AWG	mm²		
0.7	0.60	26	0.15	F	D
0.9	0.85	22	0.38	J	G
1.3	1.10	20	0.50	P	H
1.6	1.40	18	1.00	S	N
2.0	1.85	14	1.50	T	S
3.0	2.70	10	4.00	V	T

Print contacts

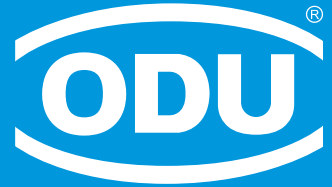
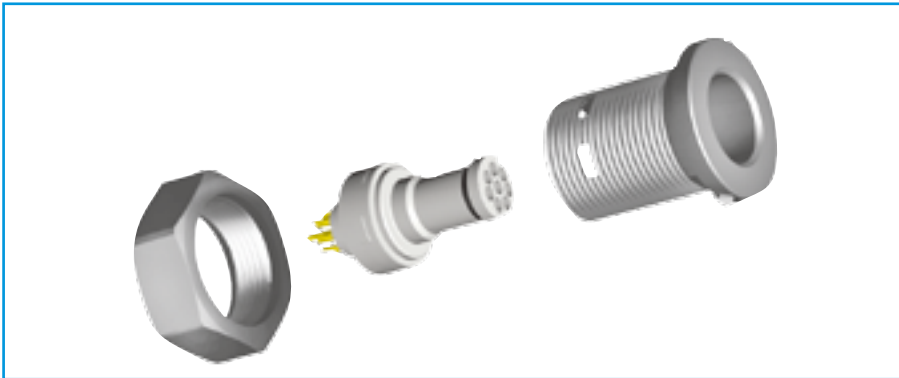
Contact Ø	Termination Ø	Contact diameter	Cross section
0.7	0.5	F	0
0.9	0.7	J	0
1.3	0.7	P	0
1.6	0.7	S	0
2.0	0.7	T	0

PCB layout for print contacts: Size 3

Size 3	straight	right-angled
2 pos.	on request	on request
4 positions	Drill: 0.8 mm 	on request
7 positions	Drill: 0.8 mm 	on request
8 positions	Drill: 0.8 mm 	Drill: 0.9 mm
12 positions	Drill: 0.8 mm 	on request
14 positions	Drill: 0.8 mm 	on request
15 positions	Drill: 0.8 mm 	on request
18 positions	Drill: 0.8 mm 	on request

Size 3	straight	right-angled
20 positions	Drill: 0.6 mm 	Drill: 0.7 mm
22 positions	Drill: 0.6 mm 	on request
24 positions	Drill: 0.6 mm 	Drill: 0.7 mm
26 positions	Drill: 0.6 mm 	on request
27 positions	Drill: 0.6 mm 	Drill: 0.8 mm

ODU MINI-SNAP PC



Special Solutions



Special solutions

Special solutions based on ODU MINI-SNAP PC

ODU as specialist for customized solutions have all main competences under one roof. Development, an own tool shop, stamping, molding, surface plating, manufacturing of complete assembly machines, cable assembly etc. With all these possibilities we are able to offer "custom tailored" solutions for our customers.

When do we actively pursue custom specific solutions?

First we have to study the customers requirements. In order to use existing development resources efficiently, it is necessary to concentrate on those ideas that are very likely to produce sustained earnings. And so we work very closely with you to develop exactly the product that optimally fulfills the requirements. And naturally the feasibility is analyzed in the starting phase of every development in order to make it possible to estimate the costs for a new development.

Here are a few examples how a special solution may look like:

1) Customized solution for hear assistant device

- ▶ 100 % touch proof
- ▶ "blind" mateable (fool-proof)
- ▶ plastic – low weight
- ▶ DIN EN 60601-1



2) Customized contact insert for ODU MINI-SNAP PC. Connector for ultrasonic dental cleaning device

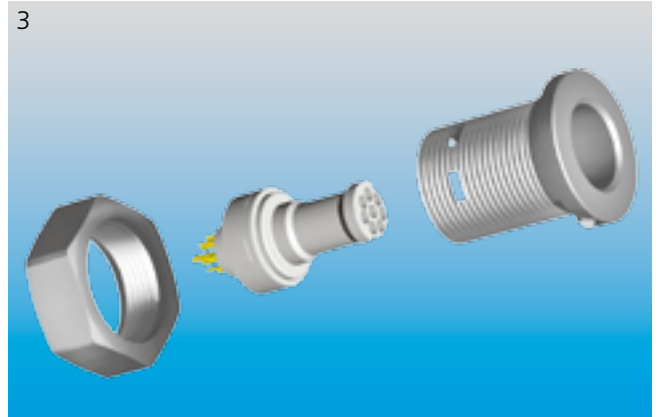
- ▶ insert with fluid
- ▶ with high voltage and signal contacts
- ▶ IP 67
- ▶ touch proof
- ▶ strain-relief for special cable



Special solutions

3) Disposable receptacle

All non conductive parts are made out of plastic



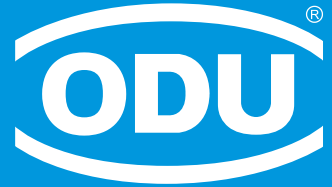
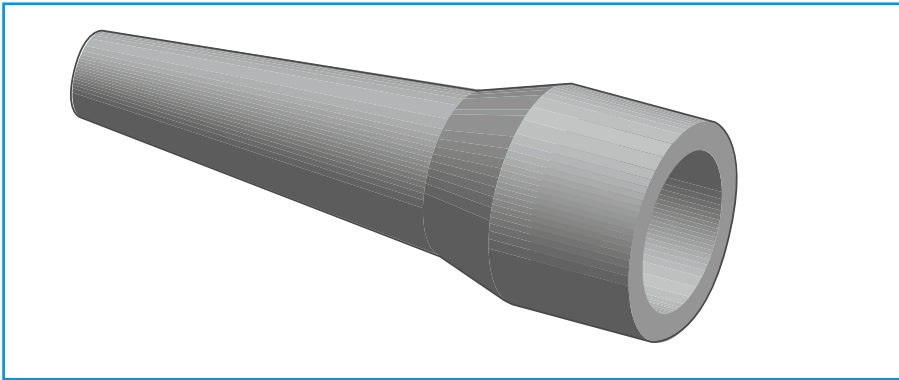
4) On a massage device a ODU MINI-SNAP PC plug and customized receptacle forms the interface for the hand devices

- ▶ 4 electric contacts for 4 A
- ▶ 1 air pressure contact (up to 0.7 bar pressure)
- ▶ cable assembly is done by ODU





ODU MINI-SNAP PC



Accessories, Tools, Assembly Instructions



Silicone cable bend relief

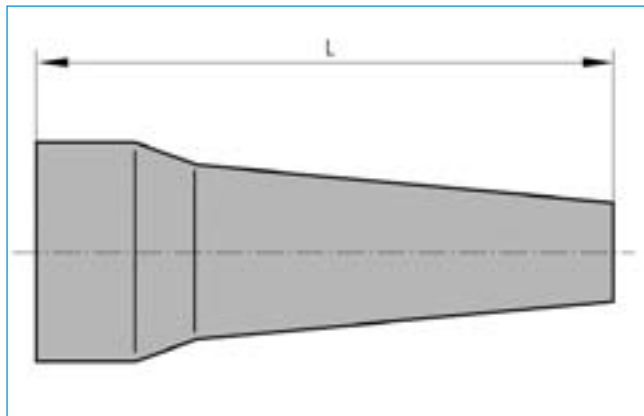
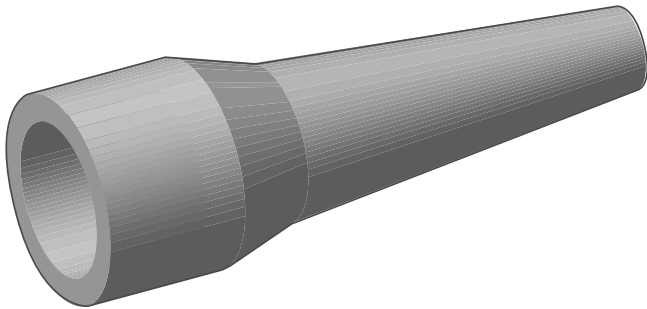
Because of different raw materials the colors may slightly differ from RAL numbers.

Temperature range:

Silicone: -50 °C up to +200 °C

Short-term up to +230 °C

Autoclaveable



Size	Part-Number	Dim. L	Cable O.D.	
			min.	max.
1	701 023 ... 965 025	30	> 2.5	3.0
1	701 023 ... 965 030	30	> 3.0	3.5
1	701 023 ... 965 035	30	> 3.5	4.0
1	701 023 ... 965 040	30	> 4.0	5.0
1	701 023 ... 965 050	30	> 5.0	6.0
2	702 023 ... 965 030	36	> 3.0	3.5
2	702 023 ... 965 035	36	> 3.5	4.0
2	702 023 ... 965 040	36	> 4.0	5.0
2	702 023 ... 965 050	36	> 5.0	6.0
2	702 023 ... 965 060	36	> 6.0	7.0
2	702 023 ... 965 070	36	> 7.0	8.0
2	702 023 ... 965 080	36	> 8.0	9.0
3	703 023 ... 965 040	42	> 4.0	5.0
3	703 023 ... 965 050	42	> 5.0	6.0
3	703 023 ... 965 060	42	> 6.0	7.0
3	703 023 ... 965 070	42	> 7.0	8.0
3	703 023 ... 965 080	42	> 8.0	9.0
3	703 023 ... 965 090	42	> 9.0	10.0
3	703 023 ... 965 100	42	> 10.0	10.5

Color Code	Color	RAL-No. (similar)
202	Red	3020
203	White	9010
204	Yellow	1016
205	Green	6029
206	Blue	5002
207	Grey	7005
208	Black	9005

Protective covers style 1 (with loop)

Protection class IP 50

Protection class IP 67 with receptacle style E

Size	Part number	Dimensions in mm					
		A	B	C	D	ØB	ØE
1	K01 097 006 933 .	7.80	18.80	15.10	75	17	10
2	K02 097 006 933 .	8.10	19.05	15.10	85	20	13
3	K03 097 006 933 .	10.30	19.7	16.00	100	25	16

Please register desired color of cover and lanyard material:
 003 = white with Polyamid lanyard
 007 = grey with Polyamid lanyard
 008 = black with Polyamid lanyard
 103 = white with stainless steel lanyard
 107 = grey with stainless steel lanyard
 108 = black with stainless steel lanyard

Protective covers style 2 (with solder lug)

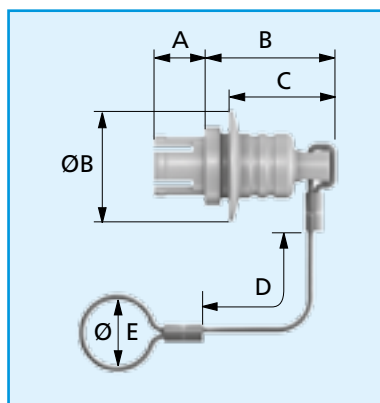
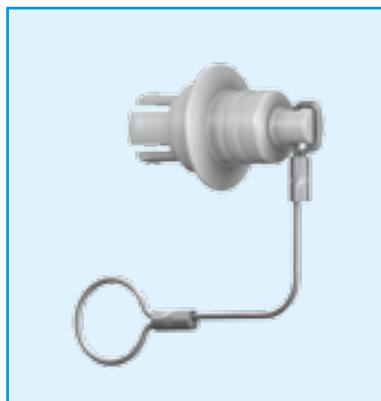
Protection class IP 50

Protection class IP 67 with receptacle style E

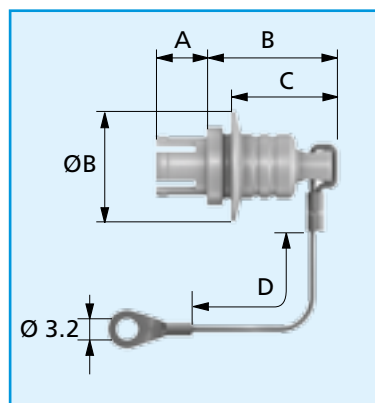
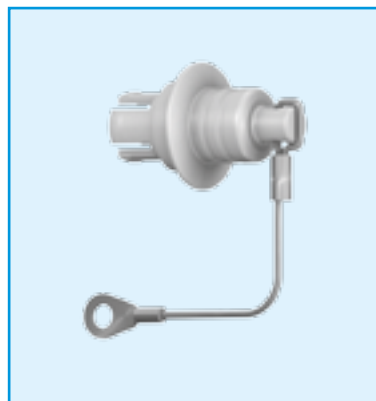
Size	Part number	Dimensions in mm				
		A	B	C	D	ØB
1	K01 097 006 933 .	7.80	18.80	15.10	75	17
2	K02 097 006 933 .	8.10	19.05	15.10	85	20
3	K03 097 006 933 .	10.30	19.7	16.00	100	25

Please register desired color of cover and lanyard material:
 203 = white with Polyamid lanyard
 207 = grey with Polyamid lanyard
 208 = black with Polyamid lanyard
 303 = white with stainless steel lanyard
 307 = grey with stainless steel lanyard
 308 = black with stainless steel lanyard

Style 1



Style 2

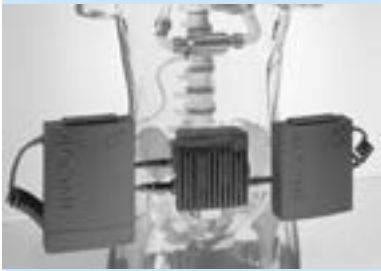




ODU MINI-SNAP PC



Tools



Crimping

Crimping creates an easy, reliable, corrosion-free, and long-term connection between conductor and contact. It requires little skill and can be performed by non-experts.

Crimping causes cold-flow of the conductor and contact material creating a gas-tight connection between contact and conductor. A stiffening of the

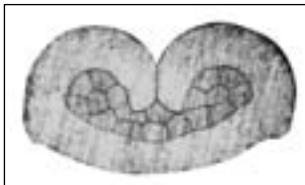
conductor at the connection, as it is possible with soldering, can not occur.

Crimping can be performed on very small or very large conductor cross section.

Crimping tools for stamped contacts

The contacts will be delivered on a tape of the cross section AWG 24/22 and AWG 28/26:

When assembled, the contact can be slid into the insulator without additional tools and with very low force required; it snaps into place in the insulator.



The F crimp results in a pinch that is unambiguous and clean.

Hand crimp tool with reel

The hand crimping tool feeds the contact on a tape and the contacts are separated automatically during the crimping process. Contacts are moved forward by hand operation.

Part number:
080 000 041 000 000

For more technical datas please request our data sheets



Hand crimp tool for single contacts

Here single contacts are inserted into the tong manually and are crimped.

Part number:
080 000 040 000 000



Stripper-Crimper for automatic crimping

Automatic crimping machines can be used on cables which have been stripped to a very short length. Consequently they are ideally suited for the ODU MINI-SNAP PC.

To order by:

Fa. Schäfer Werkzeug- und Sondermaschinen GmbH

www.schaefer-werkzeugbau.com
E-mail: info@schaefer-werkzeugbau.com



Crimping tools for turned contacts



Crimp instructions

Correct crimp position will be attained by use of different positioner. By rotating the selector knob to selected number you will get the correct crimp connection.

The crimp tool has an internal ratchet which opens only after completing the crimp process.

8-point crimp tool

Adjustable for cross section from 0.08 to 0.5 mm² (AWG 28 to AWG 20) Table for adjustment and contact holder = positioner – see next page.

Part number:
080 000 037 000 000



8-point crimp tool

Adjustable for cross section from 0.38 to 2.5 mm² (AWG 22 to AWG 12). Table for adjustment and Contact holder = positioner – see next page.

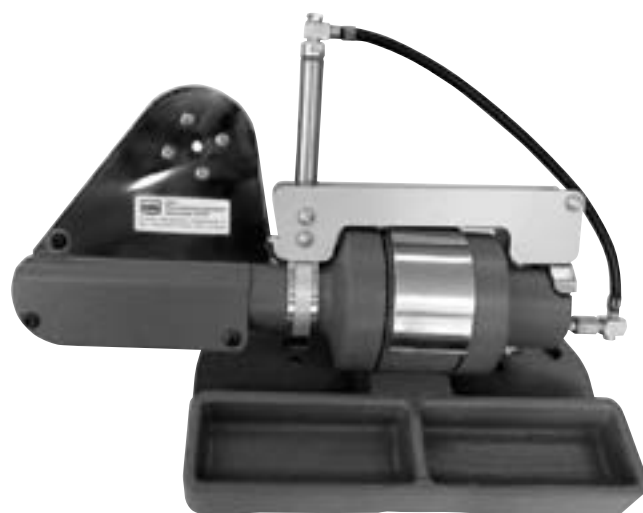
Part number:
080 000 038 000 000



8-point crimp tool with pneumatic activation

Datasheets and more information to this crimp tool can be requested at our sales department.

Part number:
080 000 032 000 000



Assembly tools for turned crimp contacts

Size	Positions	Contact diameter	AWG	cross sections mm²	Crimptool	Identification groove	Positioner socket	Positioner pin	Removal tool
1	4	0.9	24	0.25	080.000.037.000.000	5	081.701.003.749.037	081.701.003.849.037	087.7CC.090.001.000
			22	0.38		6			
			20	0.50		7			
			26–22	0.15–0.38		4	081.701.002.749.037	081.701.002.849.037	
	5		24	0.25		5	081.701.003.749.037	081.701.003.849.037	
			22	0.38		6			
			20	0.50		7			
			26–22	0.15–0.38		4	081.701.002.749.037	081.701.002.849.037	
	6	0.7	26–22	0.15–0.38		4	081.701.002.748.037	081.702.001.848.037	087.7CC.070.001.000
	7		26–22	0.15–0.38		4			
2	5	1.3	18	1	080.000.038.000.000	5	081.702.001.744.038	081.702.001.844.038	087.7CC.130.001.000
	16	0.7	26–22	0.15–0.38	080.000.037.000.000	4	081.702.001.748.037	081.702.001.848.037	087.7CC.070.001.000
3	15	0.9	24	0.25	080.000.037.000.000	5	081.702.002.749.037	081.701.003.849.037	087.7CC.090.001.000
			22	0.38		6			
	27		20	0.5		7			
		0.7	26–22	0.15 – 0.38		4	081.703.004.748.037	081.703.001.848.037	087.7CC.070.001.000

Adjustment of the crimp tongs 080.000.037.000.000 and 080.000.038.000.000

Required tools:

Positioner (type 037)

Crimp tong (type 037)



1. Fasten the positioner on the Crimp Tong



Please fasten the positioner while observing the guiding into the tong.



Type 037:

Thereby push the positioner down and turn it right at the same time.

Type 038:

You don't have to do this with this tong.



Type 037:

To fix the positioner in this position, you have to use the attached safety pin.

Type 038:

Here you have to fix the positioner with some attached allen screw and the suitable spanner.

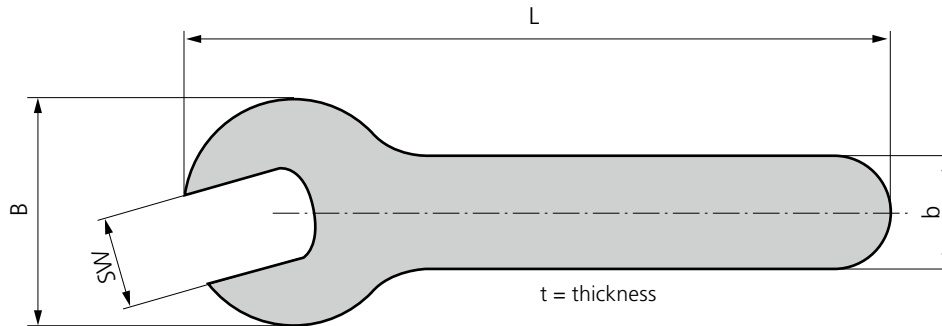
2. Adjust the crimp tong for the cable cross section



Please turn the adjustment wheel onto the right position. If the adjustment is done, so please fix the wheel with the attached safety pin.

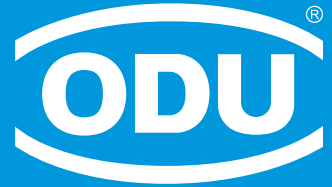
Now the tong is adjusted. You can start with the crimp process.

Spanner wrench



Part number	SW	t	B	L	b
598.700.001.003.000	12	2.5	24.5	115	10.0
598.700.001.004.000	13	2.5	30.5	98	16.5
598.700.001.005.000	14	2.5	30.5	98	16.5
598.700.001.007.000	16	3.0	35.5	145	15.0
598.700.001.008.000	17	3.0	35.5	145	15.0
598.700.001.013.000	19	3.0	42.0	172	16.0
598.700.001.014.000	24	3.0	54.0	119	23.5

ODU MINI-SNAP PC



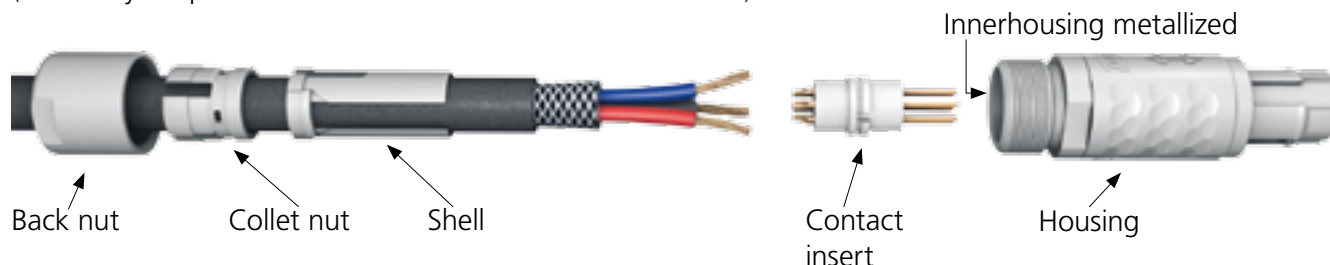
Assembly Instructions



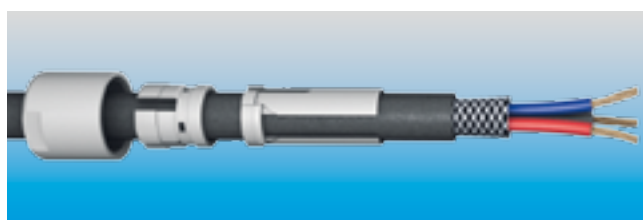
Assembly instructions

Assembly of EMI protected version

(Assembly for protection class IP 50 and IP 67 are the same)

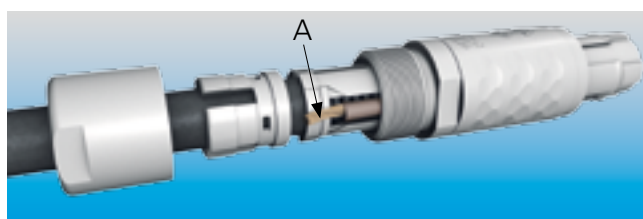


1. Slide back nut, collet nut and shell on to the stripped cable.



2. Solder on the wires, slide the sleeve on up to the insert (check the position: insulator nose in the narrow slit of the sleeve).

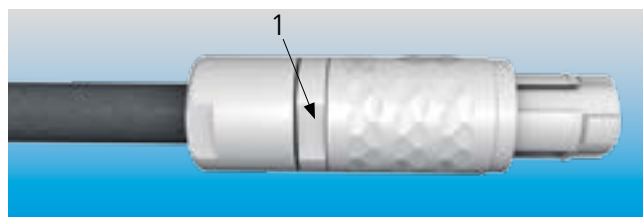
Shielded version: turn the cable shield back through the **wide slit of the sleeve (A)**.



3. Slide the sleeve and grips into the connector housing.



4. Screw the clamping nut on to the mounted connector, hold it against the surface (1) and tighten it with the ODU spanner wrench (see page 70). Secure the screw thread with adhesive if necessary



Recommended adhesive:

Scotchweld, ODU part number: 890.204.000.030.025

Recommended cleaning agent:

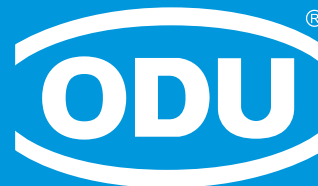
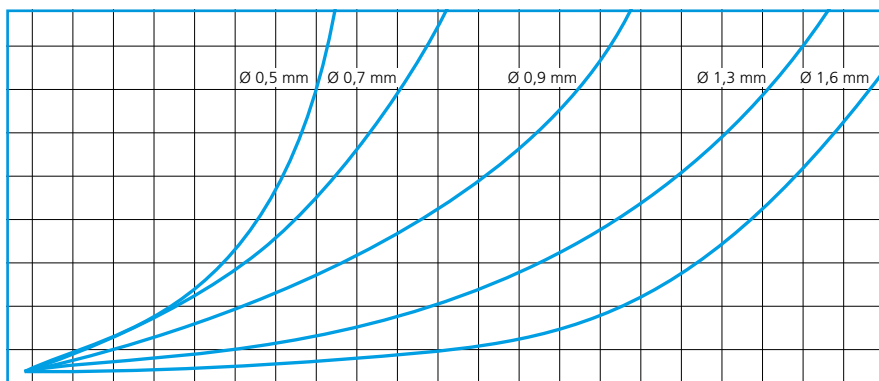
isopropyl alcohol

If adhesives that have not been released are used, cracks may appear after some time. Use only the indicated adhesive.

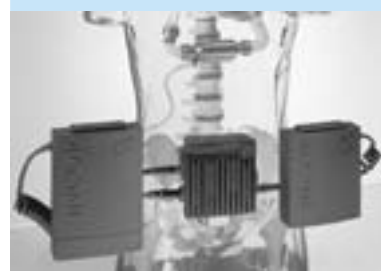
ATTENTION: Torque values:

Size 1	0.5 Nm
Size 2	0.5 Nm
Size 3	0.7 Nm

ODU MINI-SNAP PC



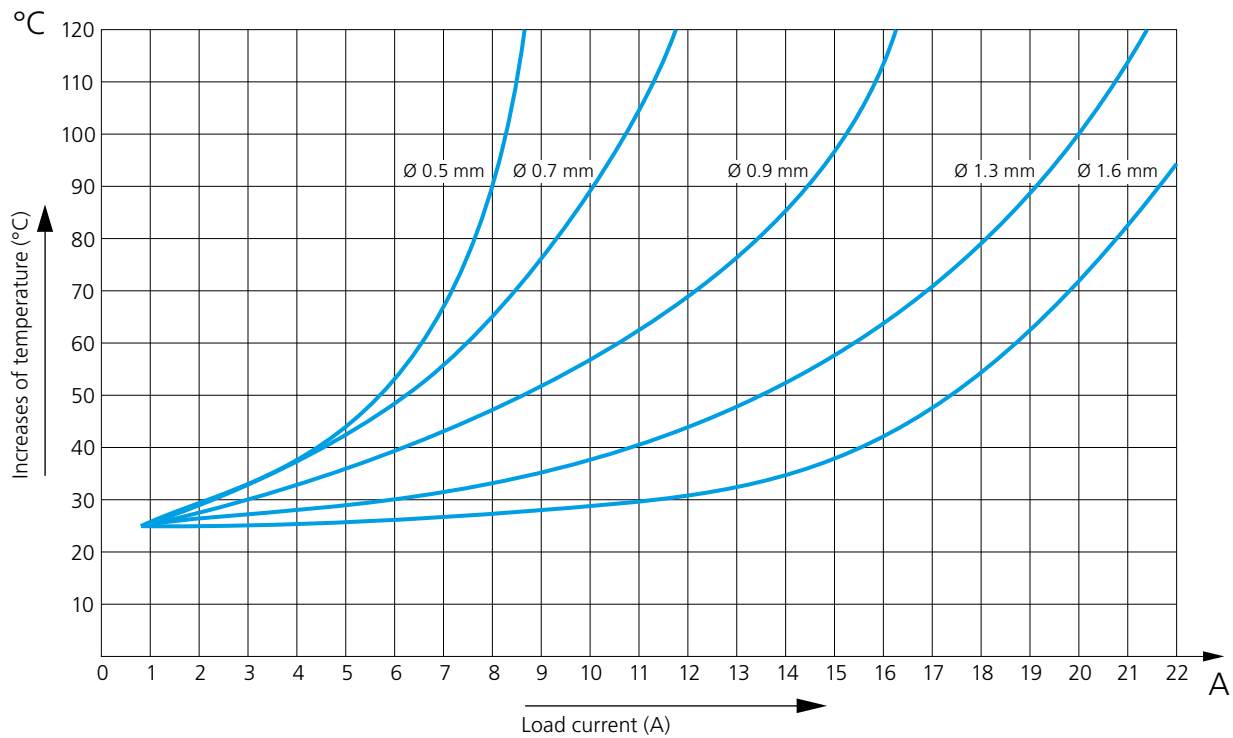
Technical Information



Current load – turned contacts

Nominal single contact current load for pin/slotted socket

(Nominal diameter 0.5 to 1.6 mm)



Upper maximum 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 temperature than a single contact. Therefore, a derating factor must be applied. For connectors the derating factor 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

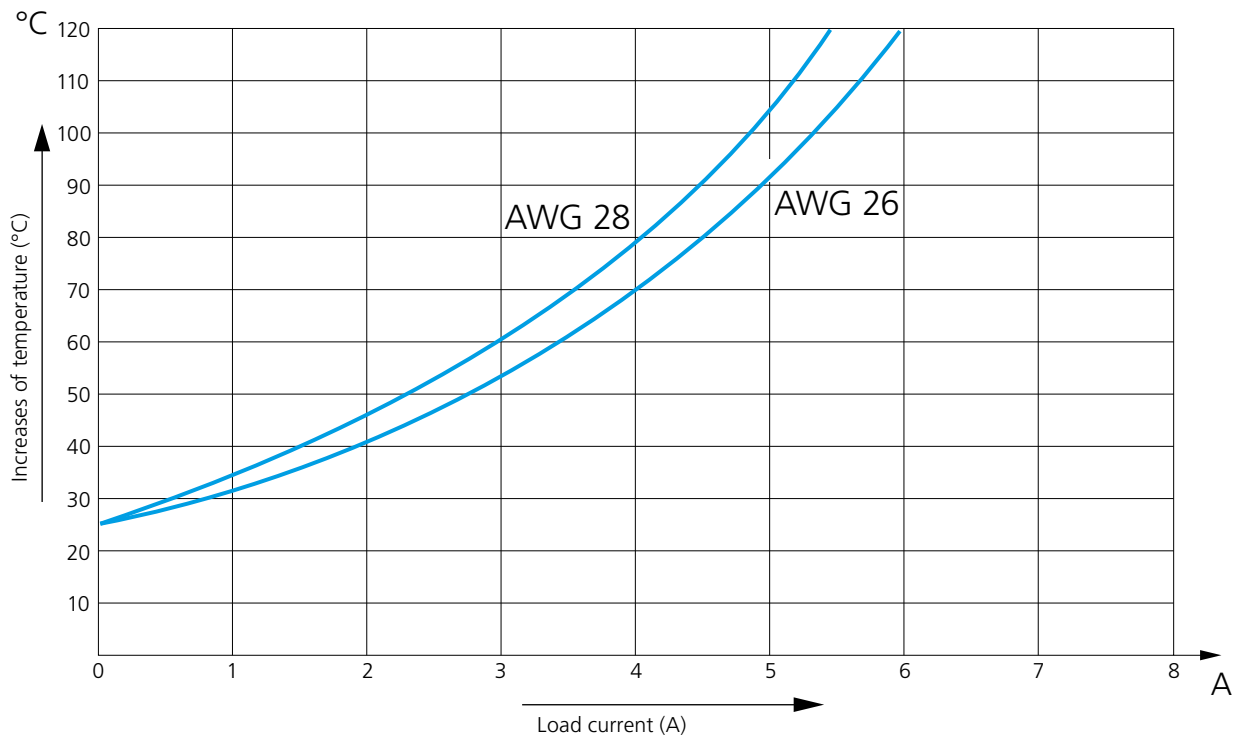
Number of loaded wires	Derating factor
5	0.75
7	0.65
10	0.55
14	0.50
19	0.45
24	0.40

Current load – stamped contacts

Nominal single contact current load for pin / slotted socket

(Nominal diameter 0.7 mm)

RT: 24 °C



Mating force: ..0.35.. N

Demating force: ..0.33.. N

Conclusion:

The diagram shows that the connector under a current load of 4 A

- will reach a temperature of approximately 70 °C with connection AWG 26
- will reach a temperature of approximately 79 °C with connection AWG 28

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

Housing materials/surfaces

Insulation body material (listed)

Size, positions

Components part	Material	Surface
Housing	PEI	
Housing (shielded)	PEI	partial 5 µm Cu 2 µm Ni
Back nut	PEI	
Shell	PEI	
Collet nut	PA/PSU	
Hex nut Receptacle plastic	PEI	
Hex nut Receptacle shielded	Cu-alloy	6 µm Ni
Stamped contact	Cu-alloy	1.25 µm Ni 0.75 µm Au (contact area) 3 µm Sn (termination area)
Turned contact	Cu-alloy	1.25 µm Ni 0.75 µm Au

	Norm	Unit	PBT	PEEK
Dialectric strenght	DIN 53481 ASTM D-149	kV / mm	30	19
Operating temperature	--	°C	-40 / +140	-50 / +250
Flammability rating	UL-94	--	V-0	V-0
Creeping distance acc. to CTI	IEC 60112	V	275	175

Information for the correct handling with ODU MINI-SNAP PC

Failure mating force of the housing acc. IEC 60512-13-5

	Size 1	Size 2	Size 3
Failure mating force	> 40 N	> 40 N	> 50 N

Not to be inserted when under load (live).

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.

Sterilizability

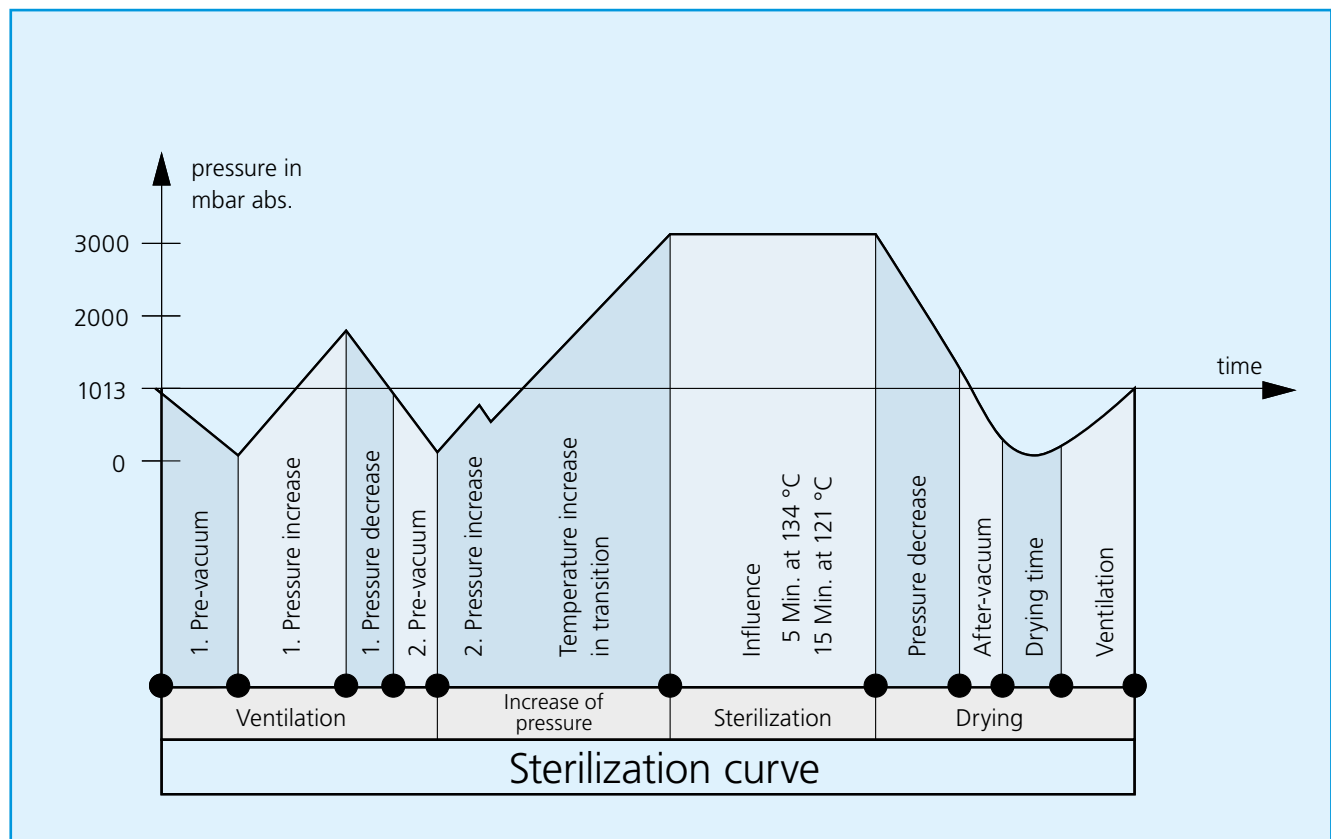
Autoclave

The connectors in the ODU MINI-SNAP PC series have been tested for 200 autoclave cycles according to the sterilization curve below. This applies only to connectors with PEEK contact inserts.

Gamma radiation: 4 cycles á 25 K Gray

E-beam: 4 cycles á 25 K Gray

For additional sterilization methods, please contact our technical team.



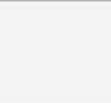
International Protecting (IP) Classes DIN EN 60 529 (respectively IEC 529 / VDE 0470 T1)

The housing and the locking system of the ODU MINI-SNAP PC protect the contacts against outside mechanical influence, such as impact shocks, impurities, dust, unintended contact and penetration of moisture, water or other liquids (coolants, oils etc.).

Protection classification is indicated with the letters IP and two numbers.

To achieve leak tightness at the cable gland, the sealing system must be adapted to the cable and the cable must be smooth, cylindrical and grooveless.

If coordination to the cable is not possible, the cable area can also be potted.

Code letters (International Protection)		First index figure (foreign bodies protection)	Second Index Figure (water protection)	
IP		6	8	
Index	Degree of protection	Index	Degree of protection	
0	 No protection against accidental contact, no protection against intrusion of solid foreign bodies	0	 No protection against water	
1	 Protection against contact with any large area by hand and against large solid foreign bodies with $\varnothing > 50 \text{ mm}$	1	 Protection against vertical water drips	
2	 Protection against contact with the fingers, protection against large solid foreign bodies with $\varnothing > 12 \text{ mm}$	2	 Protection against water drips (up to a 15° angle)	
3	 Protection against tools, wires or similar objects with $\varnothing > 2.5 \text{ mm}$. Protection against small foreign solid bodies with $\varnothing > 2.5 \text{ mm}$	3	 Protection against diagonal water drips (up to a 60° angle)	
4	 As 3 however $\varnothing > 1 \text{ mm}$	4	 Protection against splashed water from all directions	
5	 Full protection against contact. Protection against interior detrimental dust deposition	5	 Protection against water spray from all directions	
6	 Total protection against contact. Protection against intrusion of dust	6	 Protection against temporary flooding	
		7	 Protection against porary immersion	
		8	 Protection against water pressure	

In accordance with DIN VDE 0470, DIN EN 60 529, IEC 529
Source: ZVEI = German Association of the Electrotechnical and Electronic Industry e.V.

Conversion: AWG to metric

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 size increase, the AWG gauge numbers decrease. **Most wires are made with standard 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 section 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.

Conversion table AWG/mm²

CIRCULAR WIRE					
AWG	Diameter		Cross section mm ²	Weight kg/km	Max. resistance Ω/km
	in	mm			
10 (1)	0.102	2.59	5.27	47.0	3.45
10 (37/26)	1.109	2.75	4.53	43.6	4.13
12 (1)	0.0808	2.05	3.31	29.5	5.45
12 (19/25)	0.0895	2.25	3.08	28.6	6.14
12 (37/28)	0.0858	2.18	2.97	26.3	6.36
14 (1)	0.0641	1.63	2.08	18.5	8.79
14 (19/27)	0.0670	1.70	1.94	18.0	9.94
14 (37/30)	0.0673	1.71	1.87	17.4	10.5
16 (1)	0.0508	1.29	1.31	11.6	13.94
16 (19/29)	0.0551	1.40	1.23	11.0	15.7
18 (1)	0.0403	1.02	0.82	7.32	22.18
18 (19/30)	0.0480	1.22	0.96	8.84	20.4
20 (1)	0.032	0.813	0.52	4.61	35.1
20 (7/28)	0.0366	0.93	0.56	5.15	34.1
20 (19/32)	0.0384	0.98	0.62	5.45	32.0
22 (1)	0.0252	0.64	0.324	2.89	57.7
22 (7/30)	0.0288	0.731	0.354	3.24	54.8
22 (19/34)	0.0307	0.780	0.382	3.41	51.8
24 (1)	0.0197	0.50	0.196	1.83	91.2
24 (7/32)	0.023	0.585	0.227	2.08	86.0
24 (19/36)	0.0252	0.640	0.240	2.16	83.3
26 (1)	0.157	0.40	0.122	1.14	147.0
26 (7/34)	0.0189	0.48	0.140	1.29	140.0
26 (19/38)	0.0192	0.487	0.15	1.40	131.0
28 (1)	0.0126	0.32	0.08	0.716	231.0
28 (7/36)	0.015	0.381	0.089	0.813	224.0
28 (19/40)	0.0151	0.385	0.095	0.931	207.0
30 (1)	0.0098	0.250	0.0506	0.451	374.0
30 (7/38)	0.0115	0.293	0.055	0.519	354.0
30 (19/42)	0.0123	0.312	0.072	0.622	310.0
32 (1)	0.0080	0.203	0.032	0.289	561.0
32 (7/40)	0.0094	0.240	0.035	0.340	597.1
32 (19/44)	0.0100	0.254	0.044	0.356	492.0
34 (1)	0.0063	0.160	0.0201	0.179	951.0
34 (7/42)	0.0083	0.211	0.0266	0.113	1491.0
36 (1)	0.0050	0.127	0.0127	0.072	1519.0
36 (7/44)	0.0064	0.163	0.0161	0.130	1322.0
38 (1)	0.0040	0.100	0.0078	0.072	2402.0
40 (1)	0.0031	0.080	0.0050	0.043	3878.6
42 (1)	0.0028	0.0700	0.0038	0.028	5964.0
44 (1)	0.0021	0.054	0.0023	0.018	8660.0

Quality Management at ODU

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 the medical norm ISO 13485 : 2003 + AC : 2007.

Additional to this ODU is approved to different certifications: VDE, UL, UL wiring harness, SCA, VG and MIL.



Technical Information / Definition / Terms

Autoclavability

(see [page 78](#))

AWG

(see [page 80](#))

Clearance Distance

= Shortest distance between two conductive elements through the air.

Coding

= 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.

Connector – ODU MINI-SNAP PC

= a component that allows the connection of electrical conductors and that is intended to set up connections with a suitable mating component and/or to separate them. Connectors are operating materials that are not permitted to be inserted or separated when used as intended (when energized). The connector consists of the connector housing and the contact elements.

Creepage distance

= The distance measured across the surface of a dielectric between two contacts or a contact and a metal part. The longer the distance, the lesser the risk of damage or tracking. Minimum creepage distances are specified according to the operating voltage and the applicable isolation group.

Crimp 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.

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 connection

(see [page 66-70](#))

Delivery

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

Fixed connector

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

Free connector

= A connector for attachment to the free end of a wire or cable. Also called free hanging connector or inline receptacle.

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 demating force.

Insulation body

= Non-conductive part of a connector, to electrically and mechanically separate live parts and to protect against accidental touch.

Materials

(see [page 76](#))

Mating cycles

= Mechanical operation of connectors and plug-in devices by insertion and withdrawal. One mating cycle comprises one insertion and one withdrawal operation.

Nominal single contact current load

= Current load, which can load every single contact (see [page 74-75](#)).

Nominal voltage

= nominal voltage characterizes a component.

Operating voltage

= is the nominal voltage of the current source for which the connector is intended for use. The operating voltage is not permitted to be higher than the connector's nominal voltage.

Operating temperature of the ODU MINI-SNAP PC

= Range between upper and lower temperature limits. -40°C to $+120^{\circ}\text{C}$

Plug appliance coupler

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

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 board, 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.

Rated voltage

= voltage on which connectors will be tested and cover is define operating characteristics

Reference current

= the current at which a connector can be operated permanently simultaneously through all contacts without reaching maximum temperature.

Reference voltage

= the standardized voltage (VDE 0110) for which a connector's insulation is dimensioned.

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 Techniques

= Methods for connecting a wire to an electro-mechanical component, e.g. solderless connection according to IEC 60352: respectively such as crimp, press-in etc. or solder contacts.

Test voltage

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

Watertightness

(see [page 79](#))

Wire

= Wires may be provided with an insulationcover, an electrical shielding. Cables or conductors may consist of one of more wires.

Connectors shown in this catalogue are designed to transmit signals. Care must be taken to assure that no person can come in contact with live conductors during installation or operation of the connectors.

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.

More push-pull series from ODU

ODU MINI-SNAP Series L



- ▶ keying with pin and groove
- ▶ locking: LP push-pull principle with locking fingers
- ▶ degree of protection: IP 50
- ▶ special features: a multitude of keying options

ODU MINI-SNAP Series K



- ▶ keying with pin and groove
- ▶ locking: LP push-pull principle with locking fingers
- ▶ degree of protection: IP 68

ODU MINI-SNAP Series B



- ▶ keying with pin and groove
- ▶ locking: FP push-pull principle with locking fingers
- ▶ degree of protection: IP 50 and IP 68
- ▶ special features: tight sealing with low outside diameter

ODU MINI-SNAP Series F



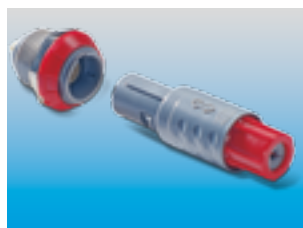
- ▶ keying with half-shells
- ▶ locking: FP push-pull principle with locking fingers
- ▶ degree of protection: IP 50 and IP 68
- ▶ special features: blind insertion, „blind mate“

ODU MINI-SNAP Series S



- ▶ keying with insulator
- ▶ locking: LP push-pull principle with locking fingers
- ▶ degree of protection: IP 50 and IP 68

ODU MEDI-SNAP



- ▶ made out of plastic
- ▶ keying with pin and groove
- ▶ locking: LP push-pull principle with locking fingers
- ▶ sterilizable/Auto-claveable

Ask for the separate product catalog:
zentral@odu.de

Please visit our websites

www.odu.de

www.odu-usa.com

www.odu-china.com





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GmbH & Co. KG

Sales ODU MINI-SNAP PC

Pregelstr. 11

84453 Mühldorf am Inn

GERMANY

Company: _____

Name: _____

Department: _____

Street: _____

City: _____

Phone: _____ Date: _____

ODU MINI-SNAP PC Summary of Technical Requirements

1) Connector application			
2) Environment			
3) Connector type	☐ Plug	☐ Receptacle	☐ In-line receptacle
4) Special version			
5) Style			
6) Size	☐ 1	☐ 2	☐ 3
7) Type	☐ A	☐ C	
8) Coding	☐ 1	☐ 2	☐ 9
9) Color	☐ grey	☐ black	☐ white (on request)
10) Number of positions			
11) Termination	☐ solder	☐ crimp	☐ PCB
12) Kind of contacts	☐ stamped contact	☐ turned contact	
13) Cross section of wire			mm ² AWG
14) Cable diameter			mm
15) Cable bend relief (color)			
16) Protection class acc. DIN EN 60 529	☐ IP 50 (standard)	☐ IP 67 (watertight)	☐ other _____
17) Operating temperature	°C max.		°C min.
18) Electrical specs:			
Operating voltage	_____ V AC	_____ V DC	
Operating current	Constant _____ A	Short-term _____ A	_____ Sec
19) Chemical resistance against			
20) Other requirements			
21) Autoclavable, 134°C	☐ Yes	☐ No	
► Required quantity			
► Production quantity			

The part number key

No.	Description	Coding	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
									-								-			0	
1	Type	S = Plug G = Receptacle K = In-line receptacle																			
2	Style	1 – 9 and A – Z																			
3	Size	1, 2, 3																			
4	Type	A, C																			
5	Coding																				
6	Material/surface of housing																				
8	Material insulator																				
9	Contact insert	e. g. 27 =																			
10	(2 positions)	27 positions																			
11	Contact type/surface																				
12	Contact diameter																				
13	Term. cross section	Special																			
14	(2 positions)	inserts = 09																			
16	Collet system																				
17	(2 positions)																				
18																					
19	Back nut type																				

Example receptacle

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

- 1 = Receptacle
- 2 = Style E = IP 67
- 3 = Size 1
- 4 = Type A
- 5 = Coding 1
- 6 = Plastic housing, PEI grey
- 8 = PEEK Insulator
- 9, 10 = 7 positions
- 11 = Stamped sockets with solder termination
- 12 = Contact diameter 0.7 mm
- 13, 14 = Cross Section AWG 22
- 16, 17, 18, 19 = Free by receptable

Example plug

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
S	4	1	A	1	G	-	P	0	7	4	F	Z	0	-	4	5	0	S

- 1 = Plug
- 2 = Style 4 = IP 67
- 3 = Size 1
- 4 = Typ A
- 5 = Coding 1
- 6 = Plastic housing, PEI grey
- 8 = PEEK Insulator
- 9, 10 = 7 positions
- 11 = Stamped pin with Crimp termination
- 12 = Contact diameter 0.7 mm
- 13, 14 = Cross Section AWG 28–26
- 16, 17 = Cable diameter 3.1–4.5 mm
- 19 = For cable bend relief (silicone)

Please open



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