ODU AMC

ODU Advanced Military Connector

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ODU AMC – Advanced Military Connector

Applications
- Defence and security
- PTT and PRR systems
- Ruggedized computers and hand-helds
- Nightvision
- Power supply
- Dismounted soldier
- Unmanned systems
- Land vehicles
- Software defined radios

Features
- Low weight
- Compact design
- Easy to handle
- Watertight
- Easy clean
- Robust
- MIL approved

The latest version of this catalogue is posted on our websites:

www.odu.de

www.odu-usa.com

www.odu-china.com

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.

This pdf document is interactive:
Blue underlined texts lead to the appropriate sides in the catalog and/or to the appropriate Internet sites.

HVS. PRECONISATEUR DE SOLUTIONS DEPUIS 1985
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Product Description
ODU AMC

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Only the Best Solution Keeps you Running

Since its founding in 1942, ODU has developed and manufactured reliable connector systems for the military and defence sectors. These high-quality, innovative products are produced for the global market. ODU connectors are involved in many different sectors of the defence and military market, e.g. soldier communication systems, various „Soldier of the future" programmes, night vision systems, radio systems, radar systems, sonar systems for nuclear and non-nuclear submarines, weapon systems, portable navigation systems, launcher/rockets, aviation, battleships, armoured vehicles, etc.

ODU has all the necessary technologies under one roof, so we can respond to our customers requests flexibly and quickly. Design and development, tool making, injection molding, electro-plating, stamping, turning, automated assembly and cable assembly are all housed in our facility in Mühldorf a. Inn, Germany.

ODU connectors are certified to: ISO 9001, VDE, UL, CSA, VG, MIL, ISO TS 16949.

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ODU AMC – a Connection you Can Count on

ODU is involved in soldier modernisation programs – worldwide.
In this field connectors must meet a number of rigorous conditions including ease-of-use and reliability under the most extreme conditions. ODU connectors meet and often exceed these by providing a reliable connection under the harshest of conditions. If you are looking for an innovative, robust, secure and reliable connector solution in the military/defence area – ODU is your partner!

To meet all requirements of the future ODU developed the military connector **ODU AMC** – **A**dvanced **M**ilitary **C**onnector.

GPS antenna
– Coax Size 0
– Push-Pull locking

Group voice and data radio
– Good shielding
– Good data transmission

Right-angled connector

Navigation module
– Easy-Clean version

Personal computer
– Small
– Light
– Colour coding possible

Soldier control unit
– Cable-to-cable connection

Vehicle adaption
– Mating and demating under load

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Features ODU AMC Series

- Push-Pull locking or Break-Away function
- Lightweight, small and easy handling
- Operating temperatures range from –51° C to +125° C
- Optimized mechanical and colour keying
- Lifetime of greater than 5,000 mating cycles
- Easy handling and blind mateable
- A lot of standard inserts available
- Individual contact configuration: signals, low/high voltage transmission, coax/triax, fiber optic, compressed air and fluids inserts are possible in one connector
- Version with spring loaded contacts available: Easy-Clean
- System solution inclusive cable assembly and overmolding: everything from one source
- Excellent shielding features (360°)
- Version for hot-plugging available
- Watertight protection class IP 68 and IP 69 K
- Excellent data transmission

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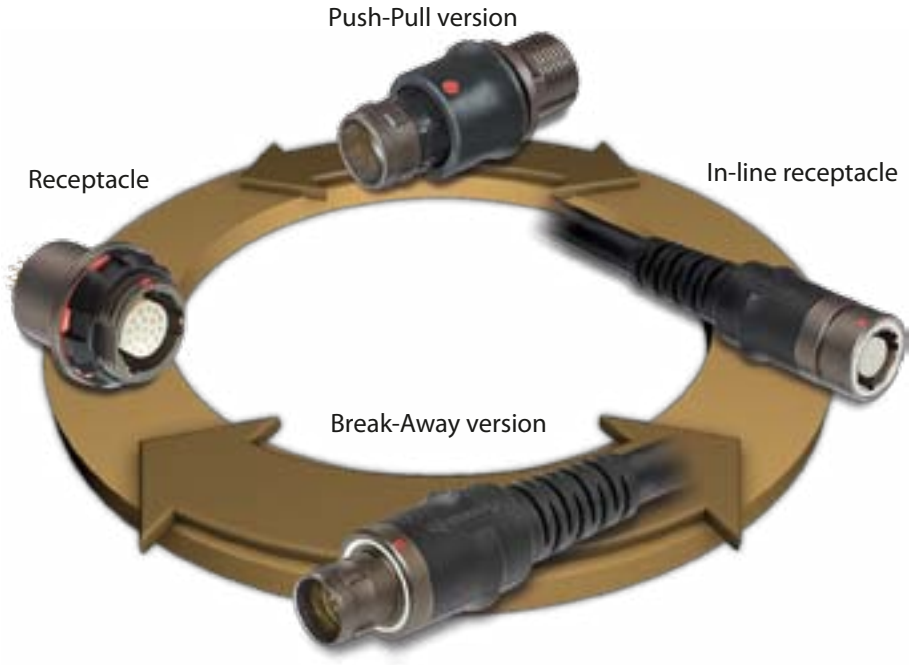
ODU AMC – Your Flexible Solution

ODU AMC offers flexibility for all system engineers. Push-Pull and Break-Away version are interoperable with the same receptacle and in-line receptacle. Cables could be changed later on without touching the receptacle (housing). The soldier has an option.



System Solution

ODU provides all necessary cable assemblies and overmoulding tools.

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The Part Number Key

No.	Description	Coding
1	Type	**S** = Push-Pull plug **G** = Receptacle **K** = In-line receptacle **A** = Break-Away plug
2	Style	**1, 8, K, W**
3	Size	**0, 1, A, 2, 3, E**
4	Series	**Y = ODU AMC**
5	Keying (colour and mechanical)	**A – D**
6	Material / surface of housing	**R** = Ruthenium
8	Material insulator	
9 10	Contact configuration (2 positions)	
11	Contact type / surface	
12	Contact diameter	
13	Termination cross section	Special
14		**0**
16	Locking principle	**0, R**
17	Cover / nut	**0** = Standard
18		**0**
19	Receptacle earth tag – GK and G8	L

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

Example plug

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

1 = Plug
2 = Style 1
3 = Size 1
4 = Series Y = ODU AMC
5 = Coding A = light brown
6 = Ruthenium over Aluminium

8 = Peek insulator
9, 10 = 8 positions
11 = Solder pin
12 = Contact diameter 0.7 mm
13 = Cross section AWG 22/0.38 mm^2
14 = free (0)

16 = Locking Push-Pull
17 = free (0)
18 = free (0)
19 = free (0)

Example receptacle

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

1 = Receptacle
2 = Style 8
3 = Size 1
4 = Series Y = ODU AMC
5 = Coding A = light brown
6 = Ruthenium over Aluminium

8 = Peek insulator
9, 10 = 8 positions
11 = Solder pin
12 = Contact diameter 0.7 mm
13 = Cross section AWG 22/0.38 mm^2
14 = free (0)

16 = Locking Push-Pull / Break-Away
17 = free (0)
18 = free (0)
19 = Earth tag

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ODU AMC – Standard Version with Push-Pull or Break-Away Function

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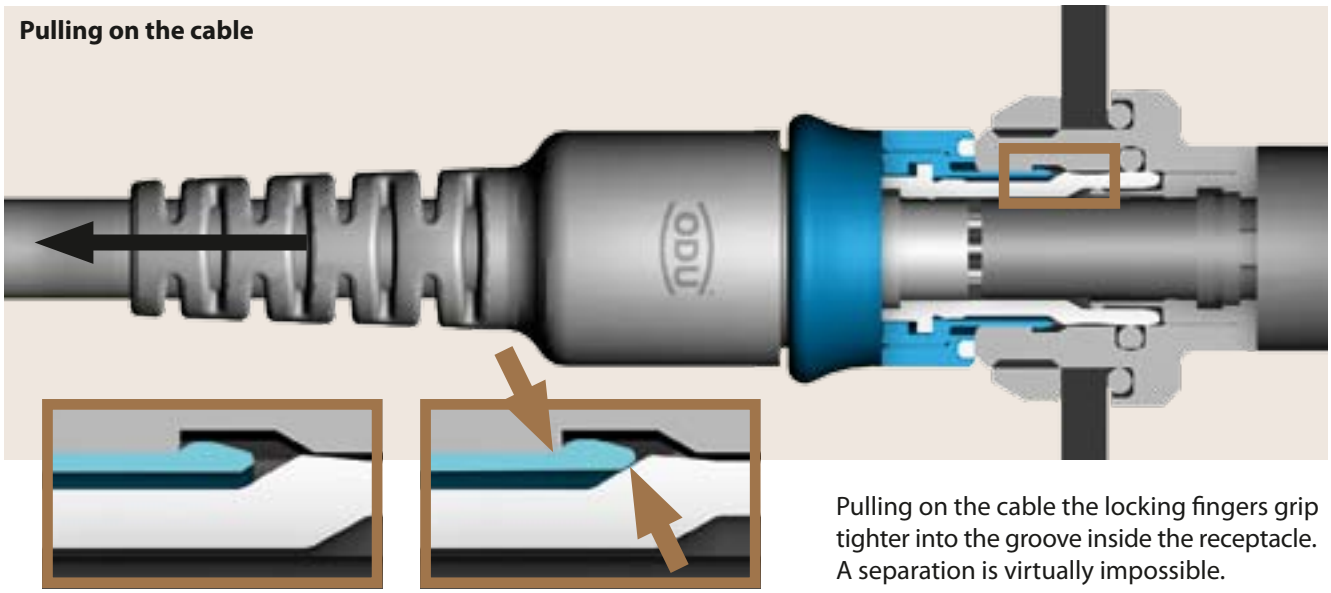
Push-Pull Locking Principle

Pulling on the cable

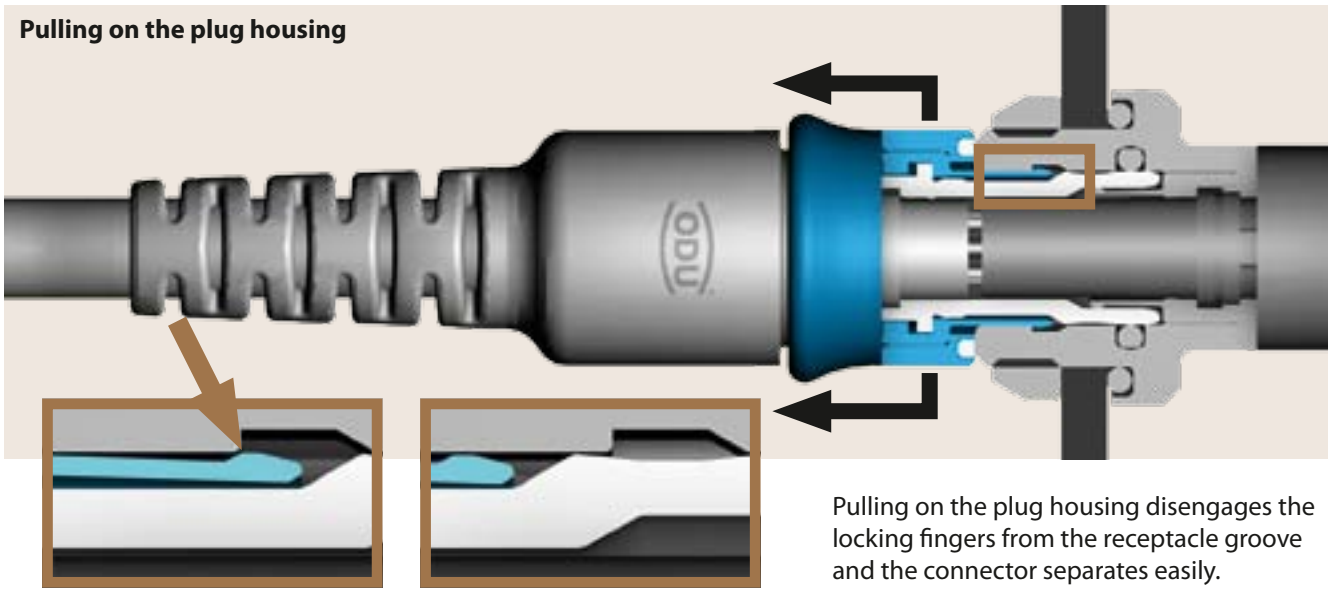


Normal position.

Position if someone pulls on the cable.

Pulling on the cable the locking fingers grip tighter into the groove inside the receptacle. A separation is virtually impossible.

Pulling on the plug housing



Position if someone pulls on the outer housing.

Demating of the connection.

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

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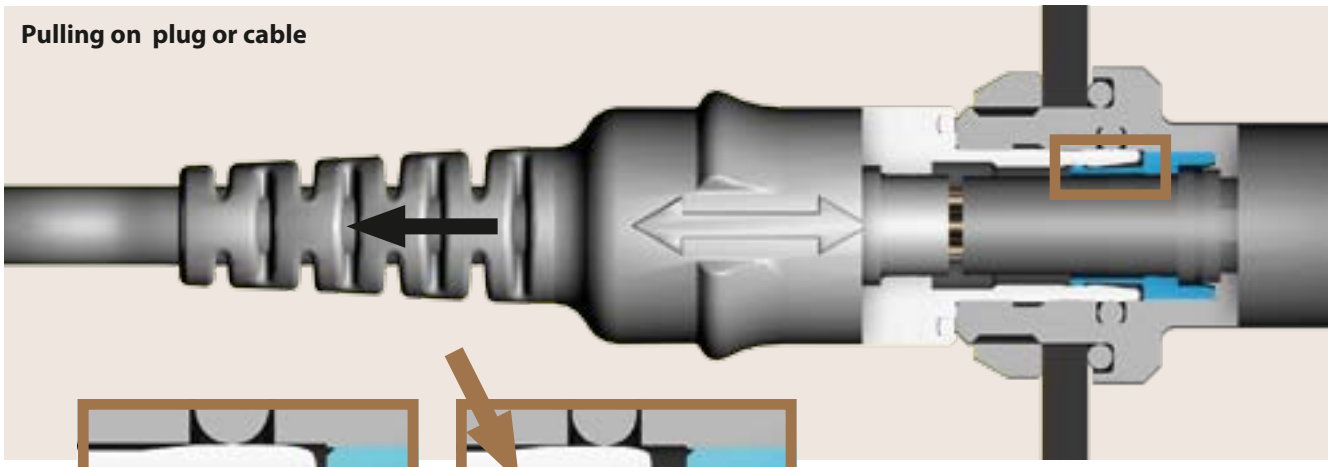
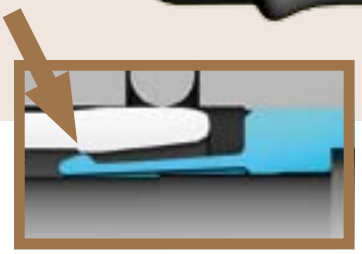
Break-Away Function



Connected position (fig. 1).



Demating of the connection (fig. 2).

Pulling on the cable with a certain force, the locking ring keeps the plug connected (fig. 1). Pulling on the cable with more force, the plug will disconnect (fig. 2).
Break-away forces depend on size and contact configuration. Additional information on request.

The advantages of Break-Away function

– Disconnect in a hurry

– Quick and easy mating and demating

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Push-Pull Plug

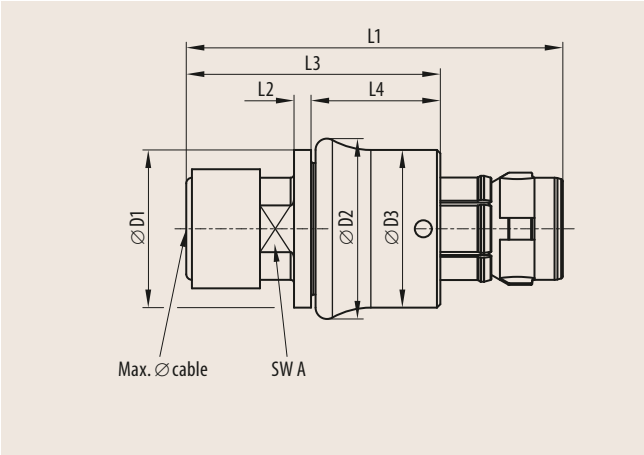
Size

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

	Size	Size	Dimensions in mm								
			L1	L2	L3	L4	D1	D2	D3	SW A	Max. ∅ cable[1]
	0	0	31.4	1.5	21.4	10.4	11.9	14.0	12.0	6.5	5.0
	1	1	33.2	1.5	22.4	11.4	13.9	15.9	13.9	8	6.5
	A	1.5	32.7	1.5	22.7	11.7	14.5	16.5	14.5	10	8.0
	2	2	35.2	1.5	23.2	12.2	17.6	19.6	17.6	12	10.0
	3	3	38.3	1.5	23.2	12.2	21.9	23.9	22.0	14	11.5
	E	4.5	52.6	2.2	34.1	18.1	29.8	33.0	30.0	21	17.5

[1] Based on cable with one braided shield.

– Technical data see page 62
– Contact configuration and PCB layout see page 22
– Cable assembly information see ODU instruction 010.645.001.000.002 (available at www.odu.de/amc/assembly)



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Break-Away Plug

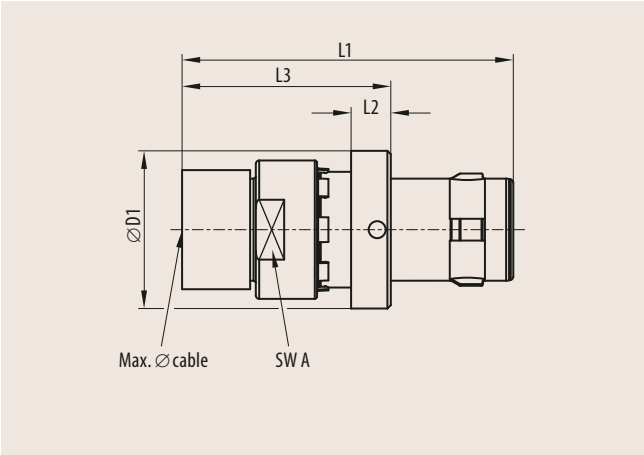
Size

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

	Size	Size	Dimensions in mm					
			L1	L2	L3	D1	SW A	Max. ∅ cable[1)]
	0	0	25.0	3.0	15.0	11.9	9	5.0
	1	1	29.2	3.5	18.4	13.9	11	6.5
	A	1.5	28.5	3.5	18.5	15.9	12	8.0
	2	2	31.0	4.0	19.0	17.6	14	10.0
	3	3	37.5	4.0	22.4	21.9	18	11.5

[1] Based on cable with one braided shield.

– Technical data see page 62
– Contact configuration and PCB layout see page 22
– Cable assembly information see ODU instruction 010.645.001.000.004 (available at www.odu.de/amc/assembly)



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In-Line Receptacle

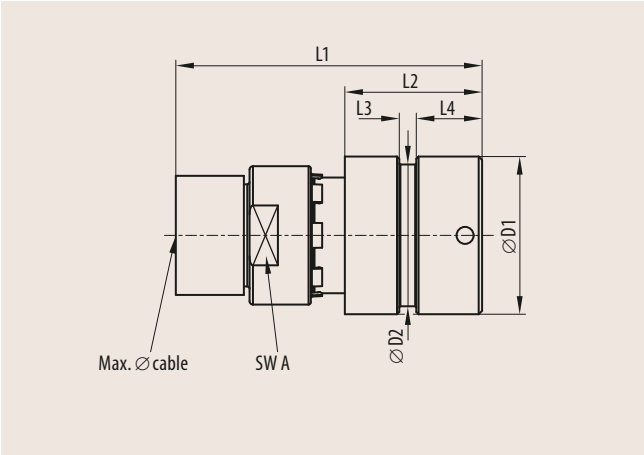
Size

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

	Size	Size	Dimensions in mm							
			L1	L2	L3	L4	D1	D2	SW A	Max. ∅ cable[1)]
	0	0	25.0	13.0	1.5	5.8	11.9	10.5	9	5.0
	1	1	27.0	12.1	1.5	5.8	13.9	12.5	11	6.5
	A	1.5	27.0	12.0	1.5	5.8	15.9	14.5	12	8.0
	2	2	30.0	15.0	1.5	5.8	17.6	16.2	14	10.0
	3	3	38.0	19.5	1.5	5.8	21.9	20.8	18	11.5

[1] Based on cable with one braided shield.

– Technical data see page 62
– Contact configuration and PCB layout see page 22
– Cable assembly information see ODU instruction 010.645.001.000.003 (available at www.odu.de/amc/assembly)



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Receptacle

Connector Type

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

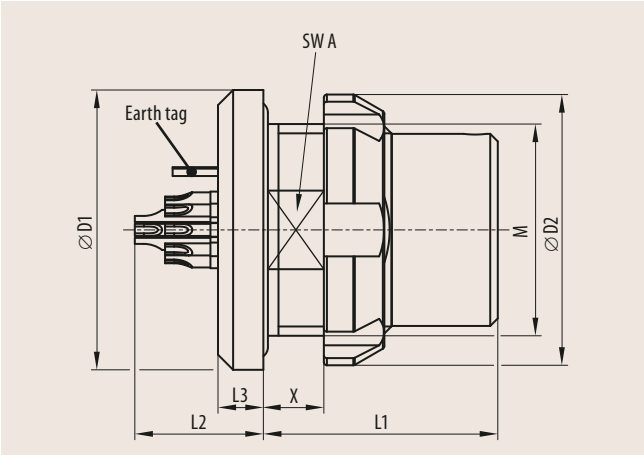
Connector type	Type	
G	K	For installation from rear of panel – low profile inside the device

Size

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

Size	Size	Dimensions in mm								Panel cut out	
		L1	L2 max.	L3	X max.	D1	D2	SW A	M	SW	∅
0	0	13.0	7.5	2.5	5	15.5	15.0	10	11×0.75	10.1	11.1
1	1	15.5	8.5	3.0	4	18.5	17.9	13	14×1	13.1	14.1
1.5	A	14.2	8.5	3.0	4	18.9	17.9	13	14×1	13.1	14.1
2	2	17.5	9.5	3.0	4	20.8	21.9	15	16×1	15.1	16.1

– Technical data see page 62
– Contact configuration and PCB layout see page 22
– IP 68, also in unmated condition



Nutdriver for slotted nut		
Size	Number	Torque in Nm
0	700 098 001 000 000	1.0
1	701 098 002 000 000	3.0
A (1.5)	701 098 002 000 000	3.0
2	702 098 001 000 000	4.0

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Receptacle

Connector Type

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

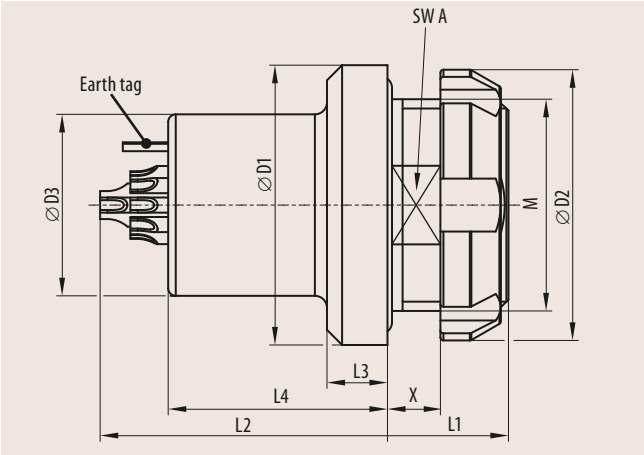
Connector type	Type	
G	8	For installation from rear of panel – low profile outside the device

Size

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

Size	Size	Dimensions in mm										Panel cut out	
		L1	L2 max.	L3	L4	X max.	D1	D2	D3	SW A	M	SW	∅
0	0	6.5	15.5	3.0	11.5	3.0	15.5	15.0	10.0	10	11×0.75	10.1	11.1
1	1	8.0	19.0	4.0	14.5	3.5	18.5	17.9	12.0	13	14×1	13.1	14.1
1.5	A	7.0	17.7	2.5	12.5	3.0	18.9	17.9	14.0	13	14×1	13.1	14.1
2	2	8.0	21.5	4.0	15.0	3.0	20.8	21.9	14.5	15	16×1	15.1	16.1
3	3	11.0	22.5	4.0	15.5	5.5	26.0	25.0	18.0	18	20×1	18.1	20.1
4.5	E	13.0	19.0	5.0	13.0	6.5	39.0	37.5	27.0	27	30×1.5	27.1	30.1

– Technical data see page 62
– Contact configuration and PCB layout see page 22
– IP 68, also in unmated condition



Nutdriver for slotted nut		
Size	Number	Torque in Nm
0	700 098 001 000 000	1.0
1	701 098 002 000 000	3.0
A (1.5)	701 098 002 000 000	3.0
2	702 098 001 000 000	4.0
3	703 098 001 000 000	5.5
E (4.5)	745 645 098 001 000	10.0

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ODU AMC Standard Version
Details for the Part Number Key

Keying

Housing Material

Contact Inserts

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Keying Possibilities

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

	Keying	Receptacle Front view	Colour keying	
Standard	A			Light brown
	B			Red
	C			Blue
	D			Green

Housing Material

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

	Housing material	
	R	Aluminium EN-6023 Ruthenium over electroless Ni

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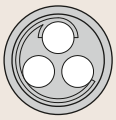
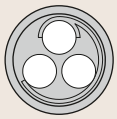
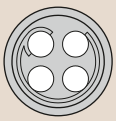
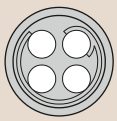
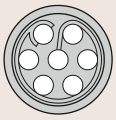
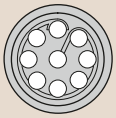
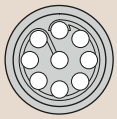
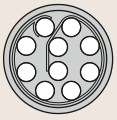
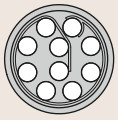
Contact Configurations
Size 0

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Male contact side	View on the termination side Female contact side
	0		P	0	3	0.9	10	1.200	0.400	●	●		
	0		P	0	4	0.7	7	0.900	0.300	●	●		
	0		P	0	7	0.5	5	0.900	0.300	●	●		
	0		P	0	9	0.5	5	0.600	0.200	●	●		
	0		P	1	0	0.5	5	0.600	0.200	●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.

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Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts[1)]

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.5		C	D	26	0.15	
	0.7		F	G	22	0.38	
	0.9		J	G	22	0.38	

Print contacts

	0.5		C	0			0.5
	0.7		F	0			0.5
	0.9		J	0			0.7

[1] Other cross sections on request.

PCB Layout for Print Contacts Size 0

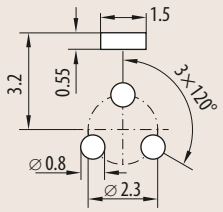
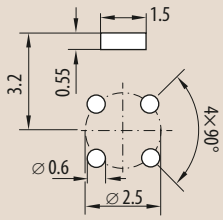
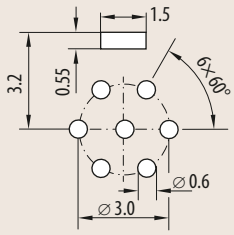
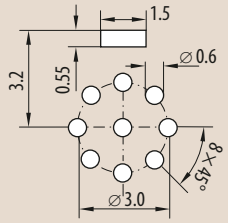
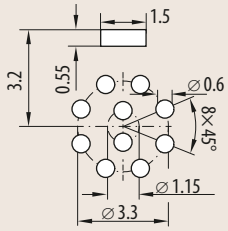
		Fig. 1 G8 mm	Fig. 2 GK mm
3 pos.		3.5	3.5
4 pos.		3.5	3.5
7 pos.		3.5	3.3
9 pos.		3.5	3.1
10 pos.		3.5	3.1

Fig. 1: Length earth tag and pin G8

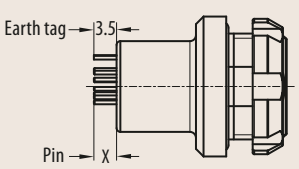
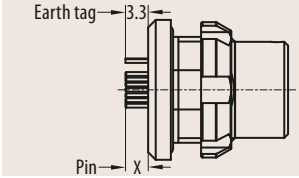


Fig. 2: Length earth tag and pin GK



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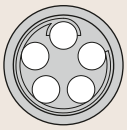
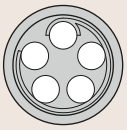
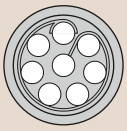
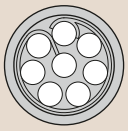
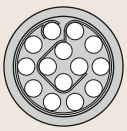
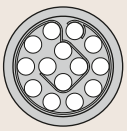
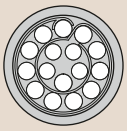
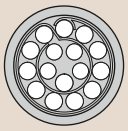
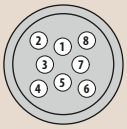
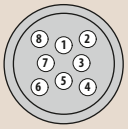
Contact Configurations
Size 1

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

	Size		Insulation body	Number of contacts[3]		Contact diameter in mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Male contact side	View on the termination side Female contact side
	1		P	0	5	0.9	10	1.350	0.450	●	●		
	1		P	0	8	0.7	7	1.000	0.333	●	●		
	1		P	1	4	0.5	5	0.900	0.300	●	●		
	1		P	1	6	0.5	5	0.900	0.300	●	●		
Data rate insert:													
	1		M	D	8	0.5	Type: CAT5 Gigabit Ethernet[4]			●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.
[4] Additional information on request.

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Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts[1)]

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.5		C	D	26	0.15	
	0.7		F	G	22	0.38	
	0.9		J	G	22	0.38	

Print contacts

	0.5		C	0			0.5
	0.7		F	0			0.5
	0.9		J	0			0.7

[1] Other cross sections on request.

PCB Layout for Print Contacts Size 1

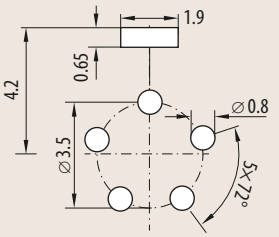
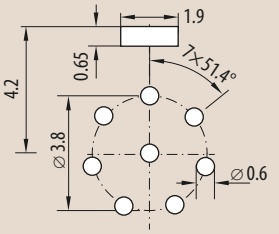
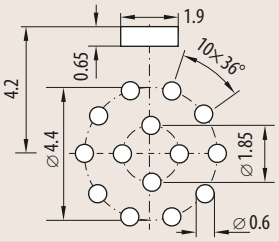
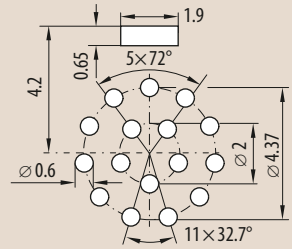
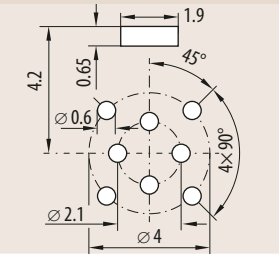
		Fig. 1 G8 mm	Fig. 2 GK mm
5 pos.		3.5	3.0
8 pos.		3.5	3.0
14 pos.		3.0	3.0
16 pos.		3.0	3.0
Data rate 8 pos.		3.5	3.0

Fig. 1: Length earth tag and pin G8

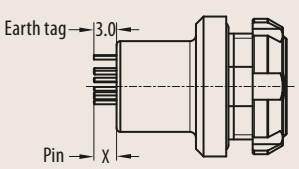
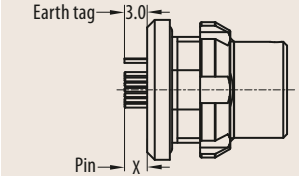


Fig. 2: Length earth tag and pin GK



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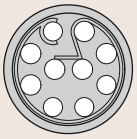
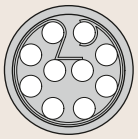
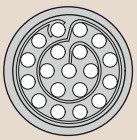
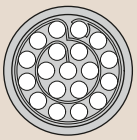
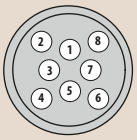
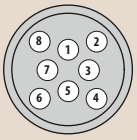
Contact Configurations
Size 1.5

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Male contact side	View on the termination side Female contact side
	A		P	1	0	0.7	7	1.200	0.400	●	●		
	A		P	1	9	0.5	5	1.000	0.333	●	●		
Data rate insert													
	A		P	D	8	0.7	Type: CAT5 Gigabit Ethernet[4]			●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.
[4] Additional information on request.

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PCB Layout for Print Contacts Size 1.5

Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts[1)]

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.5		C	D	26	0.15	
	0.7		F	G	22	0.38	

Print contacts

	0.5		C	0			0.5
	0.7		F	0			0.5

[1] Other cross sections on request.

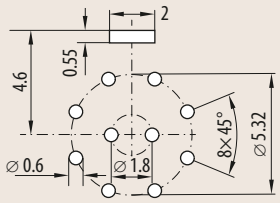
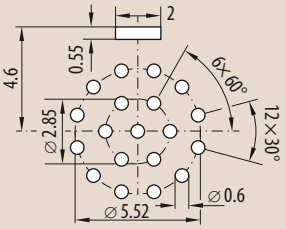
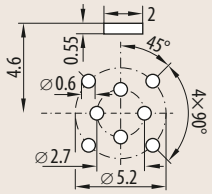
		Fig. 1 G8 mm	Fig. 2 GK mm
10 pos.		3.2	3.0
19 pos.		3.2	3.0
Data rate 8 pos.		3.2	3.0

Fig. 1: Length earth tag and pin G8

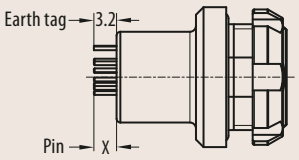
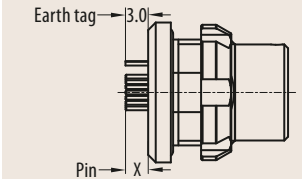


Fig. 2: Length earth tag and pin GK



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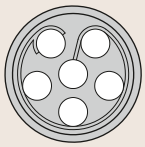
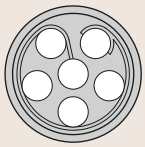
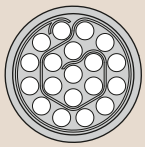
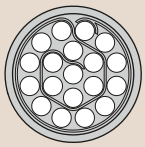
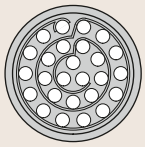
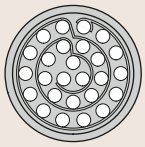
Contact Configurations
Size 2

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Male contact side	View on the termination side Female contact side
	2		P	0	6	1.3	14	1.500	0.500	●	●		
	2		P	1	9	0.7	7	1.000	0.333	●	●		
	2		P	2	6	0.5	5	0.900	0.300	●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.

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Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts[1)]

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.5		C	D	26	0.15	
	0.7		F	G	22	0.38	
	1.3		P	H	20	0.50	

Print contacts

	0.5		C	0			0.5
	0.7		F	0			0.5
	1.3		P	0			0.7

[1] Other cross sections on request.

PCB Layout for Print Contacts Size 2

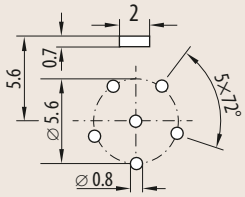
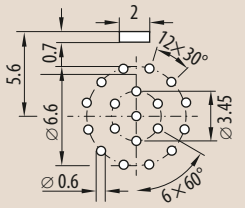
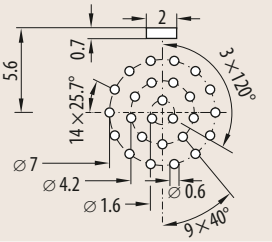
		Fig. 1 G8 mm	Fig. 2 GK mm
6 pos.		4.5	3.0
19 pos.		5.5	3.0
26 pos.		5.5	3.0

Fig. 1: Length earth tag and pin G8

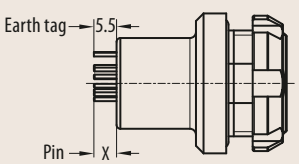
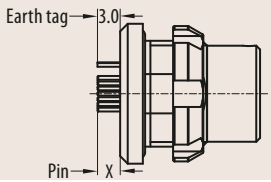


Fig. 2: Length earth tag and pin GK



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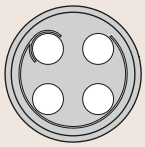
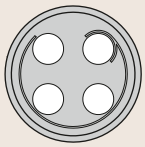
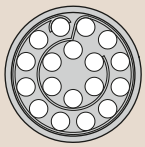
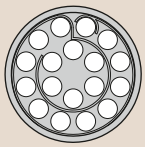
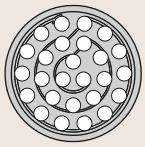
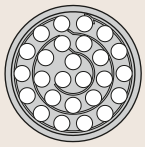
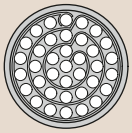
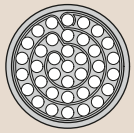
Contact Configurations
Size 3

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Male contact side	View on the termination side Female contact side
	3		P	0	4	2.0	22	1.650	0.550	●	●		
	3		P	1	8	0.9	10	1.350	0.450	●	●		
	3		P	2	6	0.7	7	1.000	0.333	●	●		
	3		P	3	7	0.5	5	0.900	0.300	●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.

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PCB Layout for Print Contacts Size 3

Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts[1)]

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.5		C	D	26	0.15	
	0.7		F	G	22	0.38	
	0.9		J	G	22	0.38	
	2.0		T	S	12	2.5	

Print contacts

	0.5		C	0			0.5
	0.7		F	0			0.5
	0.9		J	0			0.7
	2.0		T	0			0.7

[1] Other cross sections on request.

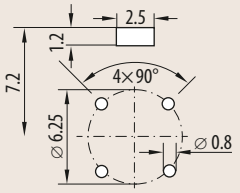
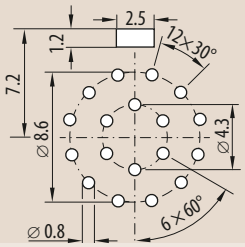
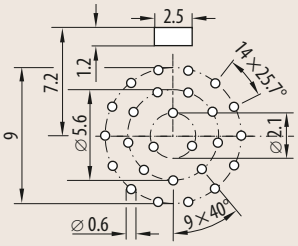
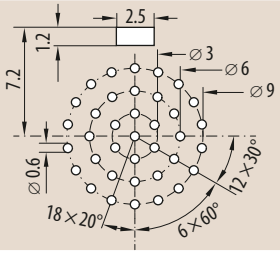
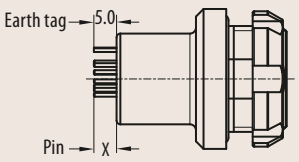
		Fig. 1 G8 mm
4 pos.		5.0
18 pos.		4.5
26 pos.		4.5
37 pos.		4.5

Fig. 1: Length earth tag and pin G8



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Contact Configurations
Size 4.5

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Male contact side	View on the termination side Female contact side
	E		P	5	5	0.7	7	1.000	0.333	●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.

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PCB Layout for Print Contacts Size 4.5

Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts[1)]

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.7		F	G	22	0.38	

Print contacts

	0.7		F	0			0.5

[1] Other cross sections on request.

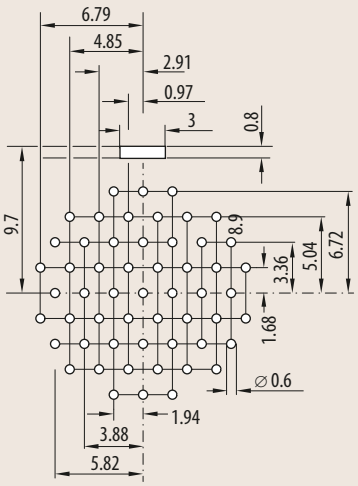
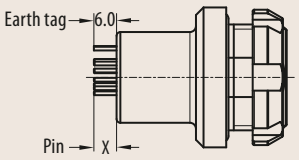
		Fig. 1 G8 mm
55 pos.		6.0

Fig. 1: Length earth tag and pin G8



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ODU AMC Easy-Clean

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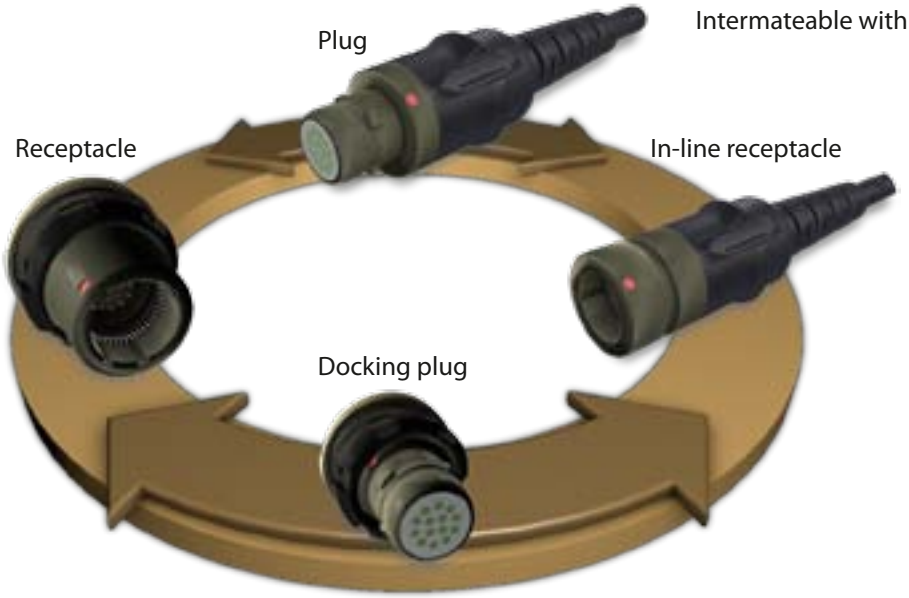
ODU AMC – Easy-Clean Version

Easy-Clean version – fast and easy cleaning of the connection in the field.

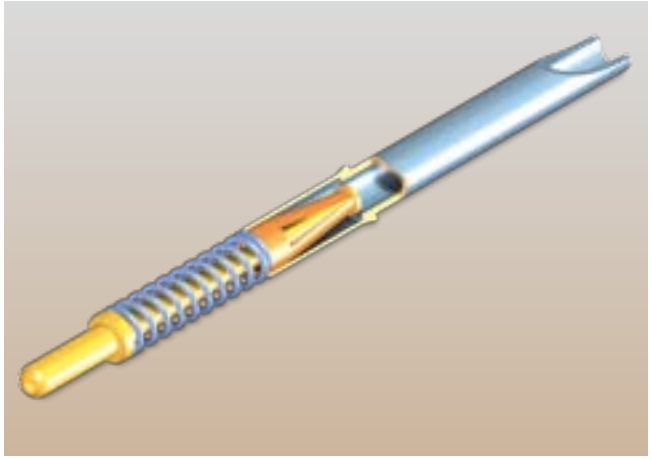
Size 0	7 positions
Size 1	10/16 positions
Size 1.5	19 positions

All solder and print termination.

Intermateable with receptacle and in-line receptacle.



Cable-to-cable connection available.



The contacts within the Easy-Clean version are patented spring loaded contacts made by a company of Switzerland.

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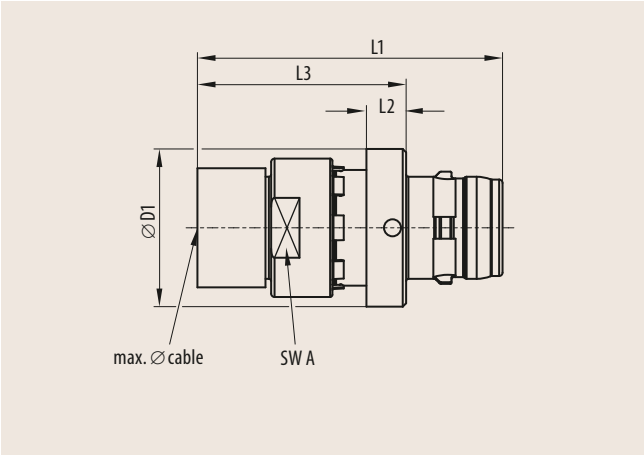
Break-Away Plug

Size

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

Size	Size	Dimensions in mm					
		L1	L2	L3	D1	SW A	Max. ∅ cable[1)]
0	**0**	23.5	3.0	15.0	11.9	9	5.0
1	**1**	26.9	3.5	18.4	13.9	11	6.5
1.5	**A**	27.5	3.5	18.5	15.9	12	8.0

[1] Based on cable with one braided shield.



– Technical data see page 64
– Contact configuration and PCB layout see page 46
– Cable assembly information see ODU instruction 010.645.001.000.004 (available at www.odu.de/amc/assembly)

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In-Line Receptacle

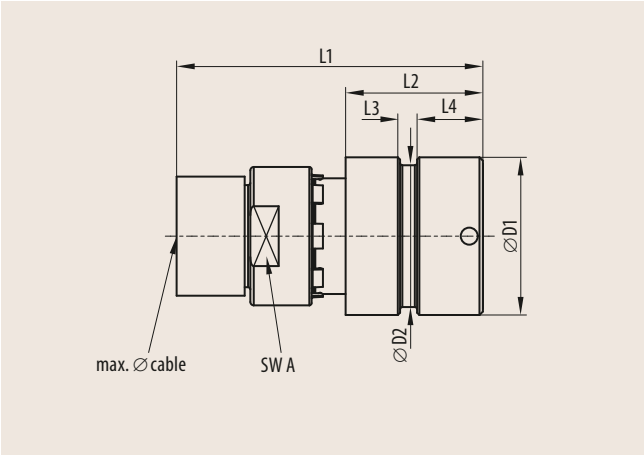
Size

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

Size	Size	Dimensions in mm							
		L1	L2	L3	L4	D1	D2	SW A	Max. ∅ cable[1]
0	**0**	25.0	13.0	1.5	5.8	11.9	10.5	9	5.0
1	**1**	27.0	12.1	1.5	5.8	13.9	12.5	11	6.5
1.5	**A**	27.0	12.0	1.5	5.8	15.9	14.5	12	8.0

[1] Based on cable with one braided shield.

– Technical data see page 64
– Contact configuration and PCB layout see page 46
– Cable assembly information see ODU instruction 010.645.001.000.003 (available at www.odu.de/amc/assembly)



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Receptacle

Connector type / Style

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

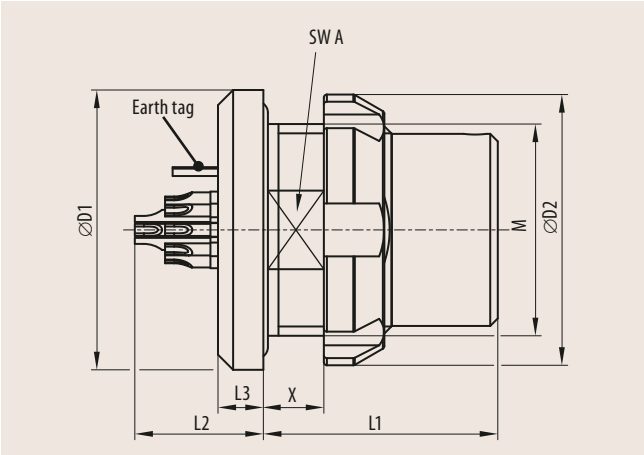
Connector type	Style	
G	K	For installation from rear of panel – low profile inside the device

Size

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

Size	Size	Dimensions in mm								Panel cut out	
		L1	L2 max.	L3	X max.	D1	D2	SW A	M	SW	∅
0	0	15.5	7.3	2.5	7.0	15.5	15.0	10	11×0.75	10.1	11.1
1	1	15.5	7.4	3.0	4.0	18.5	17.9	13	14×1	13.1	14.1
1.5	A	16.5	8.2	3.0	5.5	18.9	17.9	13	14×0.75	13.1	14.1

– Technical data see page 64
– Contact configuration and PCB layout see page 46
– IP 68, also in unmated condition



Nutdriver for slotted nut		
Size	Number	Torque in Nm
0	700 098 001 000 000	1.0
1	701 098 002 000 000	3.0
A (1.5)	701 098 002 000 000	3.0

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Receptacle

Connector type / Style

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

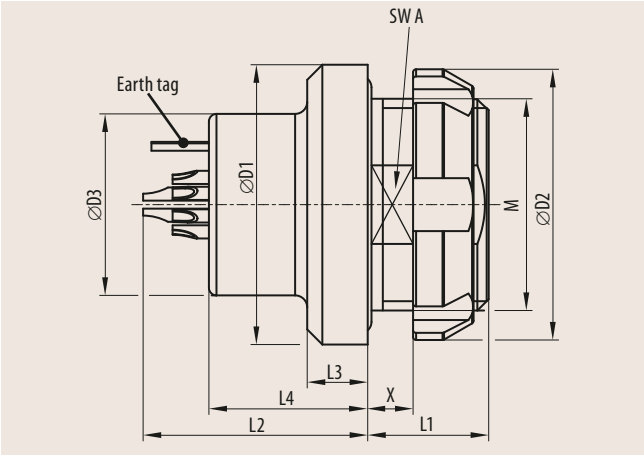
Connector type	Style	
G	8	For installation from rear of panel – low profile outside the device

Size

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

Size	Size	Dimensions in mm										Panel cut out	
		L1	L2 max.	L3	L4	X max.	D1	D2	D3	SW A	M	SW	∅
0	**0**	6.5	16.3	3.0	11.5	3.0	15.5	15.0	10.0	10	11 × 0.75	10.1	11.1
1	**1**	8.0	14.9	4.0	10.5	3.5	18.5	17.9	12.0	13	14 × 1	13.1	14.1

– Technical data see page 64
– Contact configuration and PCB layout see page 46
– IP 68, also in unmated condition



Nutdriver for slotted nut		
Size	Number	Torque in Nm
0	700 098 001 000 000	1.0
1	701 098 002 000 000	3.0

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Docking Plug

Connector type / Style

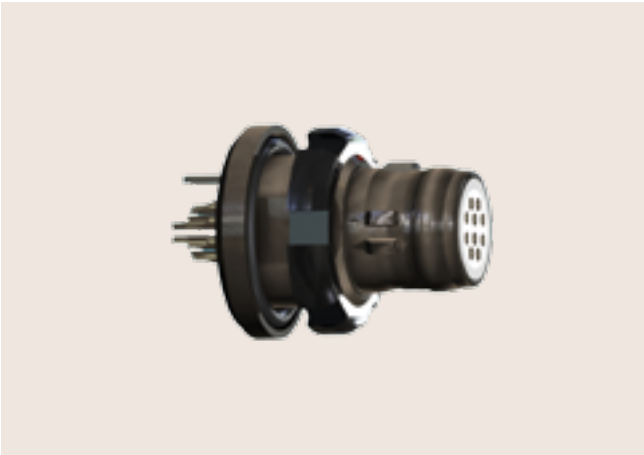
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			Y		R	–							0	–	R	0	0	L

Connector type	Style	
G	W	Docking plug

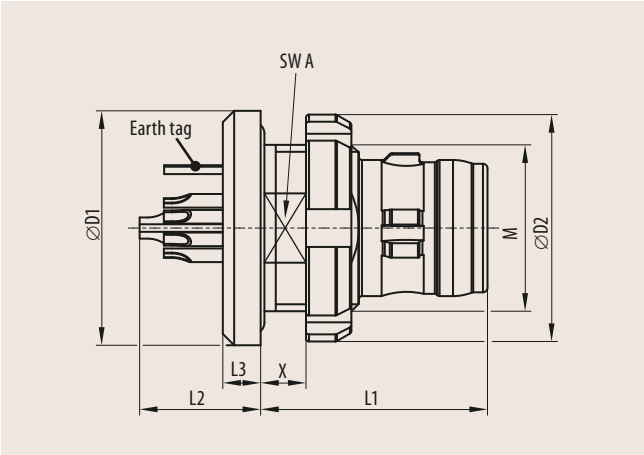
Size

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

Size	Size	Dimensions in mm								Panel cut out	
		L1	L2	L3	X max.	D1	D2	SW A	M	SW	∅
0	**0**	15.0	6.4	2.5	3.0	13.2	12.8	9.2	10 × 0.5	9.3	10.1
1	**1**	15.0	8.0	2.5	3.5	15.5	15.0	10.0	11 × 0.75	10.1	11.1



– Technical data see page 64
– Contact configuration and PCB layout see page 46
– IP 68, also in unmated condition



Nutdriver for slotted nut		
Size	Number	Torque in Nm
0	700 098 005 000 000	0.8
1	700 098 001 000 000	1.0

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ODU AMC Easy-Clean
Details for the Part Number Key

Keying

Housing Material

Contact Inserts

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Keying Possibilities

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

	Keying	Receptacle front view	Colour keying	
Standard	A			Light brown
	B			Red
	C			Blue
	D			Green

Housing Material

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

	Housing material	
	R	Aluminium EN-6023 Ruthenium over electroless Ni

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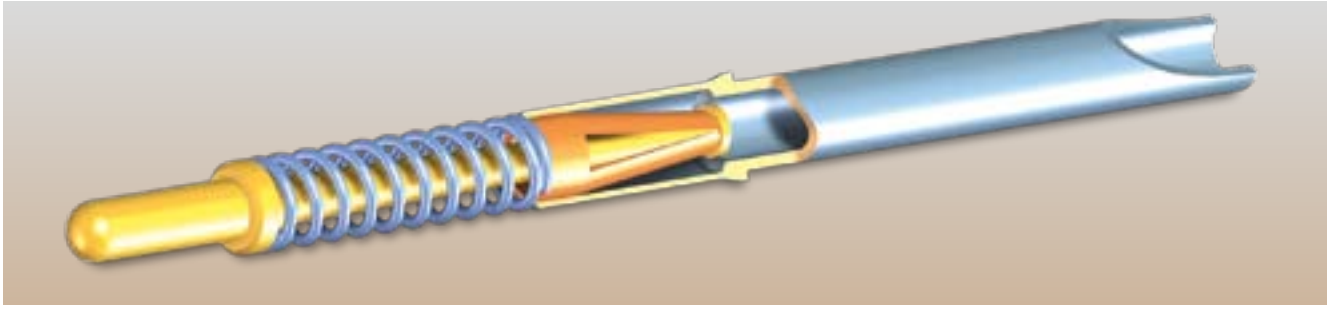
Spring Loaded Contacts



Environmental
Operating temperature range:
– stainless steel –51°C to +125°C

Materials (RoHS 2011/65/EC)

Piston	Gold plated machined brass
Barrel	Tin plated machined brass
Spring	Stainless steel
Clip	Gold plated BeCu C17200

Mechanical

Min. diameter	0.8 mm
Min. initial height	9 mm
Travel / height ratio	max. 0.15
Max. travel (stroke)	1.5 mm
Min. initial spring force	0.2 N
Mechanical life[1]	40,000 cycles

Electrical

Contact resistance[2]	max. 20 mOhm
Max. operating current[3]	2 A cont. / 4 A peak

[1] Tested at nominal stroke with perpendicular pad connector area.
[2] Static measurement in halfway position of piston travel.
[3] Above max. current values are for single contacts in free air and for 10°C temperature rise. Values are indicative and may be affected by contact force, static or dynamic applications, shocks or vibrations.

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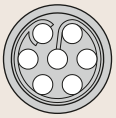
Contact Configurations
Size 0

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Pogo-pin contact side	View on the termination side Flat contact side
	0		P	0	7	0.6	2	0.600	0.200	●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.

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Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.6		D	D	26	0.15	

Print contacts

	0.6		D	0			0.5

PCB Layout for Print Contacts Size 0

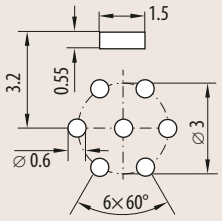
		Fig. 1 G8 mm	Fig. 2 GK mm	Fig. 3 GW mm
7 pos.		4.3	4.3	3.0

Fig. 1: Length earth tag and pin G8

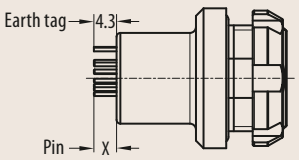


Fig. 2: Length earth tag and pin GK

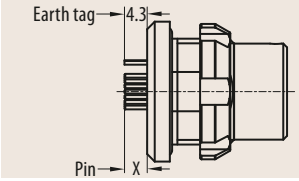
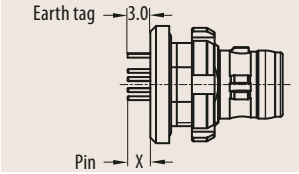


Fig. 3: Length earth tag and pin GW



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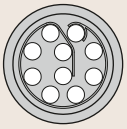
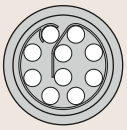
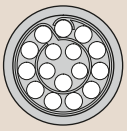
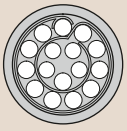
Contact Configurations
Size 1

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Pogo-pin contact side	View on the termination side Flat contact side
	1		P	1	0	0.6	2	0.600	0.200	●	●		
	1		P	1	6	0.6	2	0.600	0.200	●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.

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Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

Contact diameter / Termination cross section

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

Solder contacts

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.6		D	D	26	0.15	

Print contacts

	0.6		D	0			0.5

PCB Layout for Print Contacts Size 1

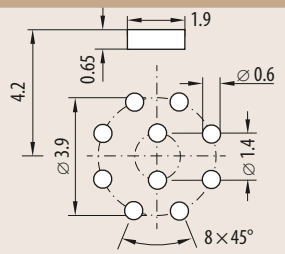
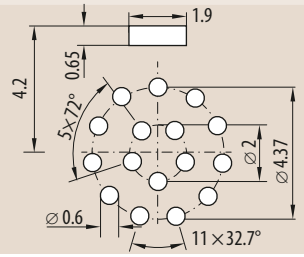
		Fig. 1 G8 mm	Fig. 2 GK mm	Fig. 3 GW mm
10 pos.		3.8	3.8	3.0
16 pos.		3.8	3.8	3.0

Fig. 1: Length earth tag and pin G8

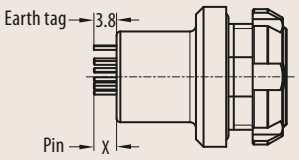


Fig. 2: Length earth tag and pin GK

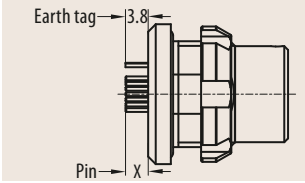
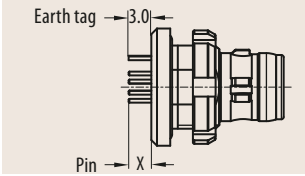


Fig. 3: Length earth tag and pin GW



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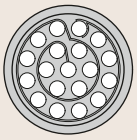
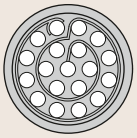
Contact Configurations
Size 1.5

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

	Size		Insulation body	Number of contacts[3]		Contact diameter mm	Nominal current load per contact[2] A	Test voltage acc. SAE 13441 Contact to contact kV	Rated voltage[1] kV	Termination Solder	Termination Print	View on the termination side Pogo-pin contact side	View on the termination side Flat contact side
	A		P	1	9	0.6	2	0.600	0.200	●	●		

[1] Maximal operating voltage at sea level up to 2.000 m acc. to SAE 13441. More information on page 69.
[2] Derating factor see page 70.
[3] Other contact configurations on request.

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PCB Layout for Print Contacts Size 1.5

Contact type

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

Termination	Contact type	Contact type
Solder	Socket	W
	Pin	X
Print	Socket	U
	Pin	V

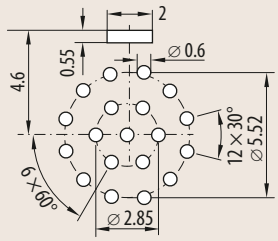
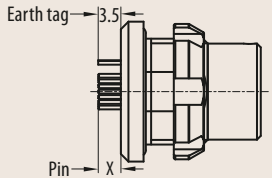
		Fig. 1 GK mm
19 pos.		3.5

Fig. 2: Length earth tag and pin GK



Contact diameter / Termination cross section

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

Solder contacts

	Contact diameter mm		Contact diameter	Term. cross section	Termination cross section AWG	Termination cross section mm²	Termination diameter mm
	0.6		C	C	26	0.15	

Print contacts

	0.6		C	0			0.5

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Accessories

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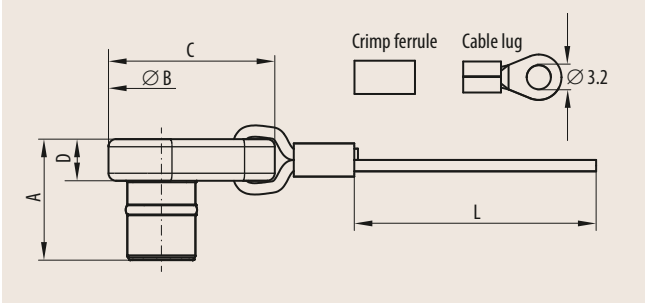
Protective Caps

for Standard and Easy-Clean Version

For receptacles G8

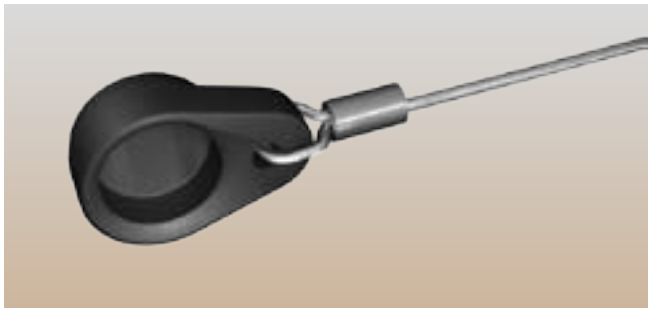
Size	Part number	Dimensions in mm				
		A	B	C	D	L
0	700.645.097.002.945	15.5	12.0	20.0	5.5	200
1	701.645.097.002.945	16.0	14.0	22.0	5.5	200
1.5	715.645.097.002.945	15.3	15.0	23.0	5.5	200
2	702.645.097.002.945	17.5	17.0	25.0	5.5	200
3	703.645.097.002.945	20.5	20.0	28.0	5.5	200
4.5	745.645.097.002.945	24.0	30.0	40.0	5.5	200

Crimp ferrule and cable lug are included.

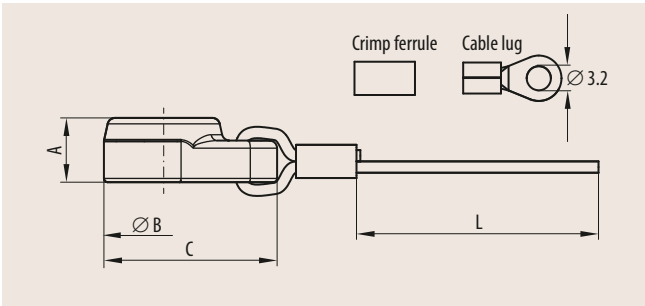


For in-line receptacle and receptacle GK

Size	Part number	Dimensions in mm			
		A	B	C	L
Receptacle GK:					
0	700.645.097.003.945	8.0	14.0	21.0	200
1	701.645.097.003.945	8.5	16.0	23.0	200
1.5	701.645.097.003.945	8.5	16.0	23.0	200
2	715.645.097.003.945	11.5	19.5	25.8	200
3	702.645.097.003.945	12.0	20.6	29.3	200
In-line Receptacle:					
0	700.645.097.003.945	8.0	14.0	21.0	200
1	701.645.097.003.945	8.5	16.0	23.0	200
1.5	715.645.097.003.945	11.5	19.5	25.8	200
2	702.645.097.003.945	12.0	20.6	29.3	200



Crimp ferrule and cable lug are included.



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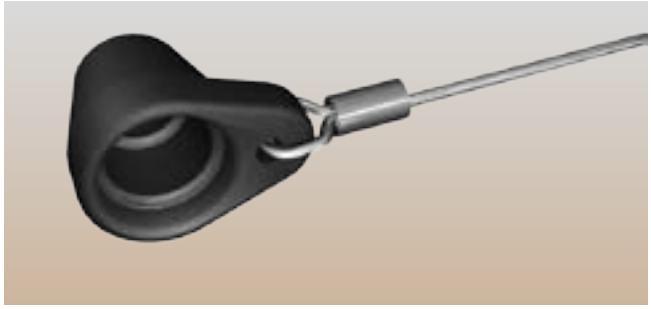
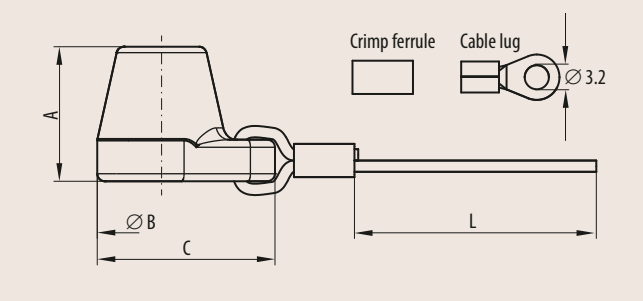
For plugs – Push-Pull plug and Break-Away plug S1 and A1

Size	Part number	Dimensions in mm			
		A	B	C	L
0	700.645.097.001.945	16.5	15.0	21.5	200
1	701.645.097.001.945	17.8	17.0	23.5	200
1.5	715.645.097.001.945	17.0	18.0	24.0	200
2	702.645.097.001.945	19.5	21.0	28.0	200
3	703.645.097.001.945	22.6	25.0	32.5	200
4.5	745.645.097.001.945	27.5	33.5	42.0	200



Crimp ferrule and cable lug are included.



Environmental and electrical characteristics

Type	Performance	Standard
Tightness	IP 67	IEC 60529
Operating temperature	–51° C to +125° C	IEC 60512-6-11 i+j
Shielding effectiveness	> 55dB	VG 95214-11

Material

Part	Material	Flammability
Cap	Conductive silicone	UL94 (V1)
Lanyard	Polyester (PES)	UL94 (V0)
Crimp ferrule, cable lug	Brass, copper	
Shrinktube	FPO (RNF-100)	ASTM D 876 (30 sec)

Assembly information including tools see ODU instruction 010 645 001 000 005 (available at odu.de\amc\assembly).

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ODU – The System Supplier

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Everything from one Source

Don't buy just the connector – ODU supplies you with the ODU AMC series as a complete solution including cable assembly and over-moulding.
Cable assembly is a very complex subject. It requires equal measures of expertise in the areas of connectors, cable and assembly. ODU meets all these requirements fully.

We handle everything for you – consultation, problems analysis, project planning, development, prototype construction with first sample test report, assembly, technical documentation – in short, all the jobs involved in creating a complete solution – you get everything from one source, with no intermediary suppliers.

Assembly instruction you will find on our website:
www.odu.de/amc/assembly

Standard solutions

Customized solutions

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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.

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

Advantages for the customer

- Close cooperation with our customers to find the optimal solution
- 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-known 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.

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Our outstanding supplier management system allows us to find the right cable for each customer – whether it's a standard line or a special cable. We can connect almost every cable.
Our companys' global presence allows us to produce all projects, from small scale to large scale production, within the group swiftly and flexibly, and above all in constant quality.

Not every company offers you all this

- 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
- Customer-specific labeling
- Widest range of potting possibilities for sealed systems
- Extruded cable crossovers possible.

Advantages for the customer

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

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Technical Information

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Technical Data ODU AMC – Standard

Environmental and testing

Type	Performance	Standard
Tightness	IP 68 IP 69 K	IEC 60529 / MIL-STD-810F 5811.4/5 DIN 40050-9
Sand and dust	Blowing sand and dust, settling dust	MIL-STD-810F 510.4/5 Procedure I / II DIN 40050-9 / IP6kx
Operating temperature	–51°C up to +125° C	IEC 60512-6-11 i+j
Thermal shock	–65°C up to +150° C	EIA 364-32-E IEC 60068-2-14
Humidity cyclic	85 % up to 95 %, 28 up to 71° C	MIL-STD-1344A Method 1002.2 Type III IEC 60068-2-38
Low pressure (rapid decompression)	59.1 kPa to 18.8 kPa	AECTP 300, 312 Procedure III (STANAG 4370)
Low pressure	57.2 kPa -55° C	MIL-STD-810F 500.4/5 IEC 60068-2-40
Icing	Rime ice 6 mm	MIL-STD-810F 521.2/3
Corrosion resistance	96 h salt mist, 5 % salt solution, 35° C	EIA-364-26B STANAG 4370, AECTP 300-309 MIL-STD-810F 509.4/5
Mould growth	European fungus	IEC 60068-2-10
Solar radiation		60068-2-5
Chemical endurance	Several substances [1)]	ISO 16750-5

[1]Substances listed at ODU Datasheet 009 410 021 000 000

Fig. 1 Measurement points

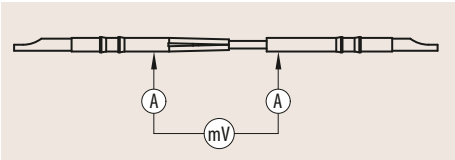
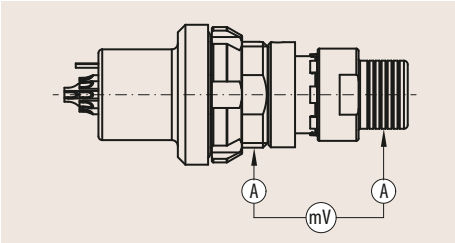


Fig. 2 Measurement points



Mechanical data

Type	Performance	Standard
Mechanical endurance	5,000 mating cycles	IEC 60512-5-9-a EIA-364-09
Vibration		MIL-STD 1344 Method 2005 EIA-364-28
Shock	300 g amplitude, half sine pulse of 3 ms, no discontinuity > 1 us	MIL-STD 1344 Method 2004 EIA-364-27

Electrical data

Type	Performance	Standard
Contact resistance (fig. 1) over 5 000 mating cycles	Contact diameter / resistance ∅ 0.5 mm < 5 mOhm ∅ 0.7 mm < 4 mOhm ∅ 0.9 mm < 4 mOhm ∅ 1.3 mm < 3 mOhm ∅ 2.0 mm < 3 mOhm	IEC 60512-2-1
Shell resistance (fig. 2)	< 5mOhm	IEC 60512-2-1
Insulation resistance	> 100MOhm	IEC 60512-3-1
Shielding effectiveness[2)]	> 65 dB	VG 95214-11

[2] A11Y , GK1Y connector pair

2011/65/EC RoHS

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Material and surface treatments

	Material	Standard		Surface	Standard	Flammability
		EU	US			
Housing (conductive parts)	Aluminium AlMgSiSn1Bi	EN-AW 6023		Ruthenium over electroless nickel		
Housing / Nut (non conductive parts)	Aluminium AlMgSiSn1Bi	EN-AW 6023		Black anodized (hardcoat)		
Backshell (Push-Pull plug)	Aluminium AlMgSiSn1Bi	EN-AW 6023		Ruthenium over electroless nickel		
Backshell (Break-Away plug and in-line receptacle)	Aluminium AlMgSiSn1Bi	EN-AW 6023		Electroless nickel	SAE-AMS2404	
EMI-locking ring	CuBe2	CW102C (2.1248)		Electrodeposited nickel		
Crimp sleeve	CuZn38Pb1.5	CW608N (2.0371)	C35300	Electrodeposited nickel		
Colour ring	PSU					UL94 (V0)
Insulation body	PEEK					UL94 (V0)
Pin contact	Copper alloy	CW614N (2.0401)	C38500	1.25µm gold over electrodeposited nickel	MIL-G-45204D	
Socket contact	Copper alloy	CW614N (2.0401)	C38500	1.25µm gold over electrodeposited nickel	MIL-G-45204D	
O-rings	FVMQ (floursilikon)					
Potting	2 component PU material					UL94 (V0)
Overmolding material	TPU					UL94 (HB)
Shrink boots	Polyester-elastomeer					acc to. VG95343

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Technical Data ODU AMC – Easy-Clean

Environmental and testing

Type	Performance	Standard
Tightness	IP 68 IP 69 K	IEC 60529 / MIL-STD-810F 5811.4/5 DIN 40050-9
Sand and dust	Blowing sand and dust, settling dust	MIL-STD-810F 510.4/5 Procedure I / II DIN 40050-9 / IP 6kx
Operating temperature	–51° C up to +125° C	IEC 60512-6-11 i+j
Thermal shock	–65° C up to +150° C	EIA 364-32-E IEC 60068-2-14
Humidity cyclic	85% up to 95 % 28 up to 71° C	MIL-STD-1344A Method 1002.2 Type III IEC 60068-2-38
Low pressure (rapid decompression)	59.1 kPa to 18.8 kPa	AECTP 300, 312 Procedure III (STANAG 4370)
Low pressure	57.2 kPa –55°C	MIL-STD-810F 500.4/5 IEC 60068-2-40
Icing	Rime ice 6 mm	MIL-STD-810F 521.2/3
Corrosion resistance	96 h salt mist, 5 % salt solution, 35° C	EIA-364-26B, STANAG 4370, AECTP 300-309, MIL-STD-810F 509.4/5
Mould growth	European fungus	IEC 60068-2-10
Solar radiation		60068-2-5
Chemical endurance	Several substances[1)]	ISO 16750-5

[1]Substances listed at ODU Datasheet 009 410 021 000 000

Mechanical data

Type	Performance	Standard
Mechanical endurance	5,000 mating cycles	IEC 60512-5-9-a EIA-364-09
Vibration		MIL-STD 1344 Method 2005 EIA-364-28
Shock	300 g amplitude, half sine pulse of 3 ms, no discontinuity > 1 us	MIL-STD 1344 Method 2004 EIA-364-27

Electrical data

Type	Performance	Standard
Contact resistance (fig. 1) over 5 000 mating cycles	Contact diameter / resistance ∅ 0.6 mm pogo pin < 20 mOhm	IEC 60512-2-1
Shell resistance (fig. 2)	< 10 mOhm	IEC 60512-2-1
Insulation resistance	> 100 MOhm	IEC 60512-3-1

2011/65/EC RoHS

Fig. 1 Measurement points

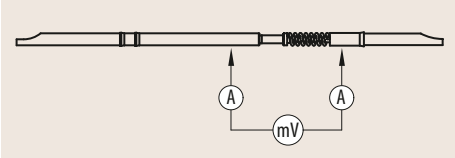
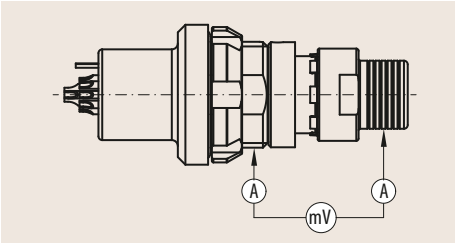


Fig. 2 Measurement points



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Material and surface treatments

	Material	Standard		Surface	Standard	Flammability
		EU	US			
Housing (conductive parts)	Aluminium AlMgSiSn1Bi	EN-AW 6023		Ruthenium over electroless nickel		
Nut	Aluminium AlMgSiSn1Bi	EN-AW 6023		Black anodized (hardcoat)		
Backshell	Aluminium AlMgSiSn1Bi	EN-AW 6023		Electroless nickel	SAE-AMS2404	
EMI-locking ring	Stainless steel	CW102C (2.1248)		Electrodeposited gold		
Crimp sleeve	CuZn38Pb1.5	CW608N (2.0371)	C35300	Electrodeposited nickel		
Colour ring	PSU					UL94 (V0)
Insulation body	PEEK / PBT / PCT					UL94 (V0)
Pin contact (pogo-pin)	Copper alloy, CuBe, steel,			1.25 µm gold over electrodeposited nickel (on piston)	MIL-G-45204D	
Socket contact	Copper alloy	CW614N (2.0401)	C38500	1.25 µm gold over electrodeposited nickel	MIL-G-45204D	
O-rings	FVMQ (floursilikon)					
Potting	2 component PU material					UL94 (V0)
Overmolding material	TPU					UL94 (HB)
Shrink boots	Polyester-elastomeer					Acc. to VG95343

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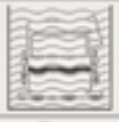
International Protecting (IP) Classes DIN EN 60529 (respectively IEC 529 / VDE 0470 T1)

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

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

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 ∅ > 50 mm.	**1**		Protection against vertical water drips.
2		Protection against contact with the fingers, protection against large solid foreign bodies with ∅ > 12 mm.	**2**		Protection against water drips (up to a 15° angle).
3		Protection against tools, wires or similar objects with ∅ > 2.5 mm. Protection against small foreign solid bodies with ∅ > 2.5 mm.	**3**		Protection against diagonal water drips (up to a 60° angle).
4		As 3 however ∅ > 1 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 temporary immersion.
			8		Protection against water pressure.
			9K		Protection against water jet of 80-100 bar at a temperature of 80°C in accordance with DIN 40050 / part 9.

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

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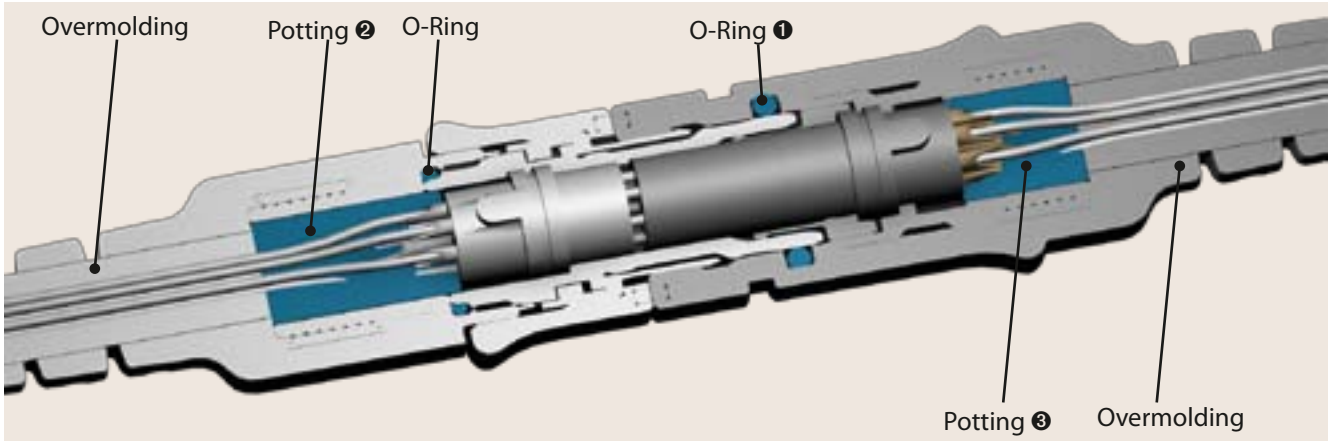
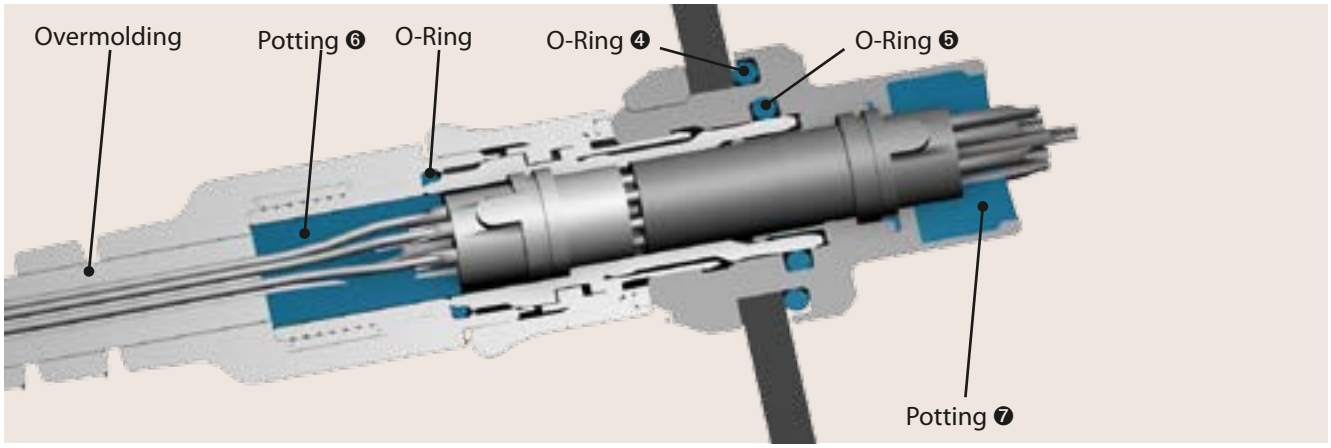
Watertightness of the Series AMC

Plug and in-line receptacle connection (case 1)



Plug and receptacle connection (case 2)



In mated condition the contacts are protected (in cases 1 and 2).
In unmated condition the contacts can be protected using a protective cover (see page 54 – 55). The cover must be removed before mating the plug with the receptacle.

Protection against water through following seals

Termination area	Mated		Unmated	
		Position		Position
Cable – Cable (Case 1)	Yes	❶ ❷ ❸	No	
Device – Cable (Case 2)	Yes	❹ ❺ ❻ ❼	Yes	❹ ❼

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Insulation Groups / Nominal Voltage / Test Voltage

Insulation groups in acc. with DIN VDE 0110 T1/2.79

Groups of connectors based on ambient and operating conditions.
Example: A connector used in a shop environment falls into group B. (Laboratory environment would fall into Group A).

Insulation group A0:
For low power equipment in climate-controlled and dry rooms with only minimal heat rise when subjected to short circuit conditions.

Insulation group A:
For equipment operated in climate-controlled and dry rooms.

Insulation group B:
For equipment operated in living quarters, offices, and other commercial environments. Also for clean machine shops, laboratories, test stands, and medical environments.

Insulation group C:
Equipment primarily operated in industrial, commercial, and agricultural establishments. Non climate-controlled warehouses, workshops, boiler rooms and manufacturing floors.

Insulation group D:
Equipment operated on vehicles subjected to dirt, brake dust, and splash water or snow. Unprotected by housing.

Determination of nominal voltage from test voltage in accordance with VDE 0627

The following explains how to derive the nominal voltage from the test voltage (for practical purposes nominal voltage, rated voltage and reference voltage are the same.) The **operating voltage** must be less than the **nominal** voltage.

Example:
The selected connector has a test voltage of 1,000 VAC and will be operated in a clean mechanical shop environment (insulation group B). According the table 3 below, the connector has a nominal voltage of 150 VDC (the example shows both printed in bold).

Notice: According to MIL-STD-1344, Method 3001 higher test voltages are acceptable (see next page).

Table 3 from DIN VDE 0627

Reference voltage / Nominal voltage		Test voltage in Volt (AC 50 Hz)				
		Insulation group				
in Volt (DC)	in Volt (AC)	A0	A	B	C	D
15	12	375	500	750	875	1,250
36	30	500	500	750	1,000	1,500
75	60	500	625	875	1,000	1,500
150	125	625	750	**1,000**	1,250	1,750
300	250	750	875	1,250	1,750	2,250
450	380	875	1,000	1,750	2,250	3,000
600	500	1,000	1,250	2,000	2,750	3,500
800	660	1,250	1,750	2,500	3,500	4,000
900	750	1,500	1,750	2,750	3,500	4,500
1,200	1,000	1,750	2,250	3,500	4,500	5,500

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Operating Voltage acc. to SAE AS 13441-Method 3001.1

The values acc. to SAE AS 13441-method 3001.1 comply with MIL-Std. 1344 – method 3001. The chart values results are acc. to IEC 60512-2.
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. ⅓ 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 chose the proper connector please consult us and indicate the safty standard which your product has to meet.

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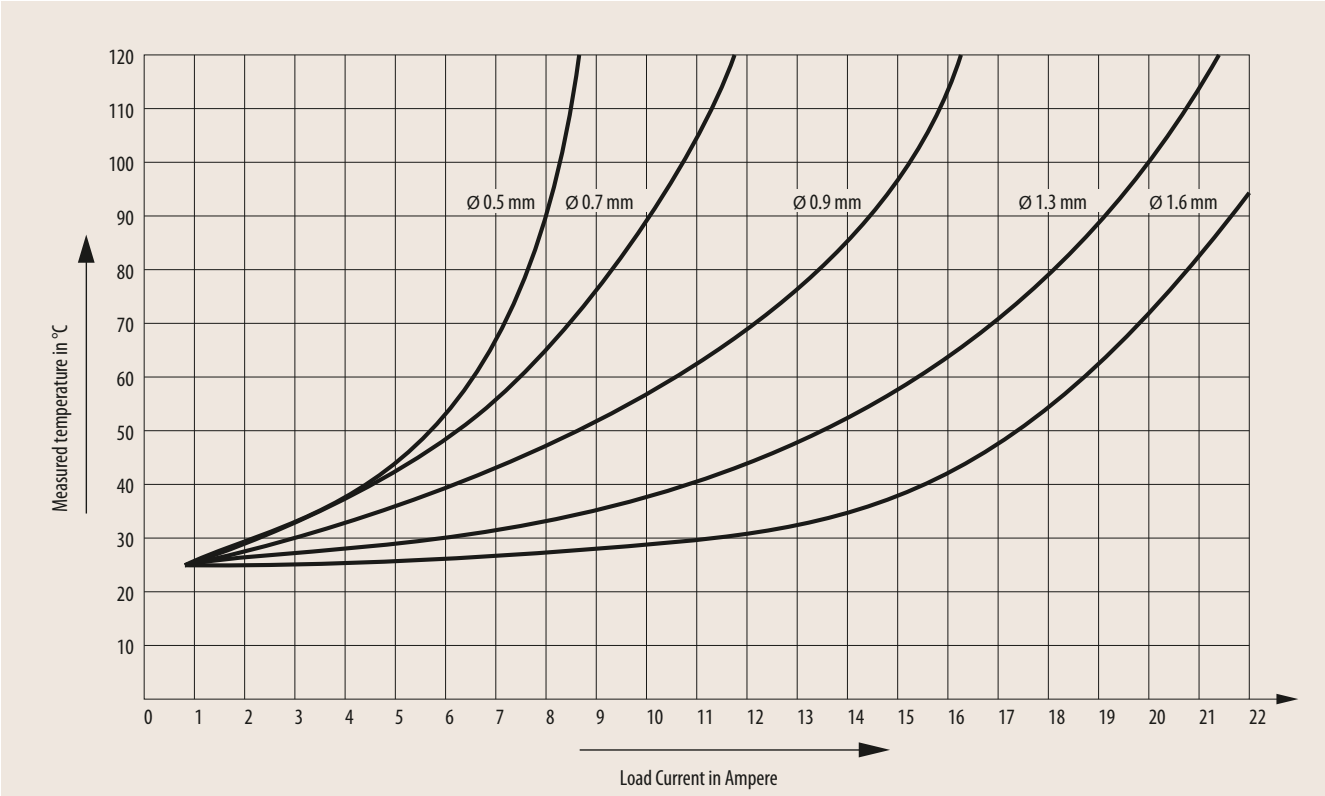
Current Load – Contacts

Nominal single contact current load for pin / slotted socket (nominal diameter 0.5 mm – 1.6 mm)



Upper maximum temperature for standard contacts: +125°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 is applied according to DIN IEC 60512-3 / VDE 0276-1000. The derating factor is used starting with 5 loaded wires.

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

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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 mm^2; an AWG-20 stranded wire with 19 AWG-32 conductors has a cross section of 0.616 mm^2.

Conversion table AWG/mm^2

Circular wire					
AWG	Diameter		Cross section	Weight	Max. resistance
	Inch	mm	mm^2	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

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

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

Please Visit our Websites!

www.odu.de

www.odu-usa.com

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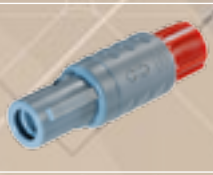
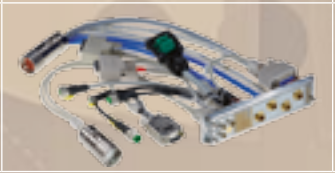
The Complete ODU Product Range

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

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- Industrial electronics and automatisation
- Measurement and testing
- Engineering and heavy industrie
- Military defence
- Renewable energy.

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