ODU MINI-SNAP
Miniature Cylindrical Connectors
with
Push-Pull-Locking
Series F
The latest version of this catalogue is posted on our websites:
www.odu.de
www.odu-usa.com
www.odu-china.com

More Push-Pull series see page 83

UL-File E110586 00 RT03566:
MIL-Specification: see page 78

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

All data and specifications subject to change without notice. 
All dimensions in mm. 
All pictures are illustrations.
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**Inquiry Form (Fax)**

Inside gatefold
Product Description
The ODU MINI-SNAP family of Miniature Cylindrical Connectors features Push-Pull-Locking

Cylindrical Connectors are generally available with several locking mechanisms.

The most frequently used are:  
- Threaded-Locking Sleeve  
- 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 required  
- Robotic mating and demating possible  
- Easy cleaning of 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  
- Nuclear Technology
Applications

Medical

Consumer electronics

Test and Measurement

Telecommunication

Industrial and Automation
Important Issues at a Glance:

- The series is certified acc. UL and VDE.

- **Connector with metal shells available in 5 sizes**
  Outside diameter between 9.4 mm and 18 mm
  Number of contact positions: 2 to 27 position, mixed insert arrangements

- **Plugs and inline receptacles** are offered with solder and crimp termination.
  **Receptacles** are available for solder, crimp, and PCB termination.

- **Applications and Contact Material**

<table>
<thead>
<tr>
<th>Insulation Body Material</th>
<th>Contact Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>PBT</td>
<td>PEEK</td>
</tr>
<tr>
<td>Ms</td>
<td></td>
</tr>
</tbody>
</table>

  General Application requirements\(^{1)}\)
  (-40 °C +120 °C)

  Connectors which are autoclavable
  (+134 °C, see page 76)

- **Termination Style**
  - Crimp Termination
  - Solder Termination
  - Printed Circuit Board (PCB) Termination

- **Environmental Protection Classification**
  IP 50 and IP 68 are available

* = Crimp-Clip Contacts with 0.7 mm diameter are available.

→ What we don’t have yet, we can build for you!
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 Mühldorf, Shanghai (China), Camarillo (USA) and Sibiu (Romania).
Turned contact

Turned contacts are available from the metal version ODU MINI-SNAP in the diameters 0.5 to 1.3 mm.

The contacts are available with following terminations:

- Solder
- Crimp
- Print

Standard Pin Contacts

Mating cycles: > 5000
Material: Brass
Treatment processing: At least. 1.25 µm Ni; at least. 0.75 µm Au on the mating area

For information regarding diameter, termination style and current load please see the Contact Configuration section.
Series F - IP 50 and IP 68
FP-Locking Concept
Keying with Halfshells
The Push-Pull Locking Principle: FP
with Halfshells

Pulling on the cable or on the back nut causes the locking fingers to grip tighter into the groove inside the 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.
ODU MINI-SNAP with FP-Locking Scheme in Cross Section

ODU MINI-SNAP Plug

Cable
Collet Nut
EMI Ring
Shield
Locking Ring
Single Conductor
Inner Housing
Contacts
Locking Finger
Hex Nut
Locking Groove
Press Ring
Insulator
Conical Sleeve
Housing
Back Nut

ODU MINI-SNAP Receptacle

Series F ODU MINI-SNAP
Available Housing Sizes
(Scale 1 : 1)

**OD** = Outside Diameter (Plug)
**S** = Size

<table>
<thead>
<tr>
<th>OD:</th>
<th>9.4</th>
<th>12</th>
<th>13</th>
<th>15</th>
<th>18</th>
</tr>
</thead>
<tbody>
<tr>
<td>S:</td>
<td>0</td>
<td>1</td>
<td>1.5</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
The Part Number Key

1. Type
   - A = Break-Apart-Plug
   - Panel Mounted Plug
   - G = Receptacle
   - K = In-Line Receptacle
   - S = Straight Plug
   - W = Right-Angle Plug

2. Style
   - 1 - 9 and A
   - X = Special

3. Size
   - 0 - 3 and A
   - A = 1,5

4. Series
   - F

5. Coding (page 26)

6. Material/Surface - Housing (page 26)

7. empty

8. Material - Insulator (page 27)

9. + 10. Contact Insert (page 28 - 32)

   e.g. 18-way = 18

10. Contact Type/Surface (page 33)

11. Contact Diameter (page 33)

   M = mixed arrangement


   for special Contact

   9

13. empty

16. + 17. Collet System (page 36)

18. + 19. Cable Bend Relief (page 38)

Example:

Receptacle - Style 5 - Size 2 - Series F - Coding 1 - Brass matt chromate Housing -
PBT Insulator - 16pos. - Socket (solder) 0.75 µm Au - Term. Cross Section AWG24/26

Plug - Style 2 - Size 2 - Series F - Coding 1 - Brass matt chromate Housing -
PEEK Insulator - 16pos. - Pin (solder) 0.75 µm Au - Term. Cross Section AWG24/26 -
Cable Diameter 7.1-7.5 - Blue Cable Bend Relief - Material Silicone
Part number key

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Straight Plug**

- **S1** - IP 50 – with Standard Back Nut
- **S2** - IP 50 – with Back Nut for Cable Bend Relief*
- **S3** - IP 68 – watertight with Standard Back Nut
- **S4** - IP 68 – watertight with Back Nut for Cable Bend Relief*

(contact configuration from page 28)

**IP 50**

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>S1</th>
<th>S2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>– 37 – 28</td>
<td>9.4</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>– 46 – 35</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>1.5</td>
<td>– 48 – 38</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>– 50 – 38</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>– 60 – 44</td>
<td>18</td>
<td>16</td>
</tr>
</tbody>
</table>

**IP 68**

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>S3</th>
<th>S4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>– 40 – 30</td>
<td>9.4</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>– 49 – 38</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>1.5</td>
<td>– 50 – 40</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>– 53 – 40</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>– 62 – 47</td>
<td>18</td>
<td>16</td>
</tr>
</tbody>
</table>

* Cable Bend Reliefs
(see page 38)
Part number key

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

**Right-Angle Plug**

- **W1** - IP 50 – with Standard Back Nut
- **W2** - IP 50 – with Back Nut for Cable Bend Relief*

* Cable Bend Reliefs (see page 38)

**Contact configuration from page 28**

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>W1</th>
<th>W2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1</td>
<td>L2</td>
<td>L3</td>
</tr>
<tr>
<td>0</td>
<td>33</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>1</td>
<td>37</td>
<td>26.5</td>
<td>29</td>
</tr>
<tr>
<td>1.5</td>
<td>39</td>
<td>29</td>
<td>31</td>
</tr>
<tr>
<td>3</td>
<td>50</td>
<td>35</td>
<td>38</td>
</tr>
</tbody>
</table>
Part number key

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Break-Apart-Plug (without latching)

- **A 5** - IP 68 – with Standard Back Nut
- **A 6** - IP 68 – with Back Nut for Cable Bend Relief*

(A suitable for all following receptacles and in-line receptacles)

Contact configuration from page 28

### Dimensions in mm

<table>
<thead>
<tr>
<th>Size</th>
<th>L1</th>
<th>L2</th>
<th>D</th>
<th>SW-A</th>
<th>SW-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>~62</td>
<td>~46</td>
<td>17.5</td>
<td>16</td>
<td>15</td>
</tr>
</tbody>
</table>

- **A 7** - IP 50 – with Standard Back Nut
- **A 8** - IP 50 – with Back Nut for Cable Bend Relief*

Contact configuration from page 28

### Dimensions in mm

<table>
<thead>
<tr>
<th>Size</th>
<th>L1</th>
<th>L2</th>
<th>D</th>
<th>SW-A</th>
<th>SW-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>~46.0</td>
<td>~35</td>
<td>12</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>~50.0</td>
<td>~38</td>
<td>15</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>

Connector can be separated by pulling the cable.

* Cable Bend Reliefs (see page 38)
Part number key

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

Panel mounted plug

(A suitable for all following receptacles and in-line receptacles)

**IP 50** – with hex nut, non-latching, installation from front of panel

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>15.5</td>
<td>4.2</td>
</tr>
<tr>
<td>2</td>
<td>17.5</td>
<td>3.4</td>
</tr>
<tr>
<td>3</td>
<td>17.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Created to build up a docking connection between 2 instruments (E.g. a charging station)

**IP 68** – with hex nut, non-latching, installation from front of panel

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>14.5</td>
<td>4.5</td>
</tr>
<tr>
<td>1</td>
<td>18.5</td>
<td>6.5</td>
</tr>
<tr>
<td>2</td>
<td>19.7</td>
<td>7</td>
</tr>
</tbody>
</table>

Created to build up a docking connection between 2 instruments (E.g. a charging station)

Technical Data

- IP 50 in mated condition
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- no crimp contacts possible

Technical Data

- IP 68 in mated condition
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- no crimp contacts possible
Part number key

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

**In-Line Receptacle**

- **IP 50** – with Standard Back Nut
- **IP 50** – with Back Nut for Cable Bend Relief*
- **IP 68** – watertight with Standard Back Nut
- **IP 68** – watertight with Back Nut for Cable Bend Relief*

(contact configuration from page 28)

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>K1</th>
<th>K2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>- 35</td>
<td>9.5</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>- 43</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>- 49</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>3</td>
<td>- 58</td>
<td>18</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>K3</th>
<th>K4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>- 39</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>- 47</td>
<td>13</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>- 50</td>
<td>16</td>
<td>13</td>
</tr>
</tbody>
</table>

* Cable Bend Reliefs (see page 38)

ODU MINI-SNAP In-line Receptacle connect to plug for cable-to-cable connection.
Part number key

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

1) L1 = Maximum Length incl. Contact Insert
2) L3 = Length of Housing
3) C = min. wall thickness without using a distance ring

Receptacle

**Style 1** – ODU MINI-SNAP RECEPTACLE IP 50, installation from front of panel

Technical Data

- IP 50
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39

<table>
<thead>
<tr>
<th>Size</th>
<th>L1</th>
<th>L2 max.</th>
<th>L2 min.</th>
<th>L3</th>
<th>M</th>
<th>D</th>
<th>SW-A</th>
<th>SW-B</th>
<th>C</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>20</td>
<td>9</td>
<td>14.5</td>
<td>9x0.5</td>
<td>10</td>
<td>8.2</td>
<td>11</td>
<td>1.5</td>
<td>SW 8.3 / Ø 9.1*</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>24</td>
<td>8</td>
<td>16.5</td>
<td>12x1</td>
<td>14</td>
<td>10</td>
<td>14</td>
<td>1.5</td>
<td>SW 10.1 / Ø 12.1*</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>25</td>
<td>8</td>
<td>15.5</td>
<td>14x1</td>
<td>16</td>
<td>12</td>
<td>17</td>
<td>2</td>
<td>SW 12.1 / Ø 14.1***</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>27</td>
<td>10</td>
<td>18.5</td>
<td>15x1</td>
<td>18</td>
<td>14</td>
<td>17</td>
<td>2</td>
<td>SW 14.2 / Ø 15.1***</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>13</td>
<td>22.5</td>
<td>18x1</td>
<td>22</td>
<td>16</td>
<td>22</td>
<td>2</td>
<td>SW 16.6 / Ø 18.1***</td>
<td></td>
</tr>
</tbody>
</table>

**Style 2** – ODU MINI-SNAP WATERTIGHT RECEPTACLE IP 68*, installation from front of panel

Technical Data

- IP 68 in reference to the end device and in unmated condition
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- Distance ring for wall thickness adjustment, see accessories page 52
- No crimp contacts possible

<table>
<thead>
<tr>
<th>Size</th>
<th>L1</th>
<th>L2 max.</th>
<th>L2 min.</th>
<th>L3</th>
<th>M</th>
<th>D</th>
<th>SW-A</th>
<th>SW-B</th>
<th>C</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>22.5</td>
<td>12.5</td>
<td>8</td>
<td>18.5</td>
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<td>16</td>
<td>9</td>
<td>22.5</td>
<td>14x1</td>
<td>18</td>
<td>14</td>
<td>14</td>
<td>3</td>
<td>14</td>
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<td>1.5</td>
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<td>14x1</td>
<td>19</td>
<td>15</td>
<td>17</td>
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<td>14</td>
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<td>29</td>
<td>16</td>
<td>8</td>
<td>23</td>
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<td>22</td>
<td>17</td>
<td>19</td>
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<td>26</td>
<td>24</td>
<td>25</td>
<td>4</td>
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</tbody>
</table>

**Style 4** – ODU MINI-SNAP WATERTIGHT RECEPTACLE IP 68*, installation from front of panel with low rear profile

Technical Data

- IP 68 in reference to the end device and in unmated condition
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- No crimp contacts possible

<table>
<thead>
<tr>
<th>Size</th>
<th>L1</th>
<th>L2 max.</th>
<th>L2 min.</th>
<th>L3</th>
<th>M</th>
<th>D</th>
<th>SW-A</th>
<th>SW-B</th>
<th>SW-C</th>
<th>Panel Cut-Out</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>22.5</td>
<td>5</td>
<td>17.5</td>
<td>9x0.5</td>
<td>14.5</td>
<td>8.2</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>SW 8.3 / Ø 9.1</td>
</tr>
<tr>
<td>1</td>
<td>26</td>
<td>4</td>
<td>22.5</td>
<td>14x1</td>
<td>18</td>
<td>12</td>
<td>14</td>
<td>17</td>
<td>15.5</td>
<td>SW 12.1 / Ø 14.1</td>
</tr>
<tr>
<td>1.5</td>
<td>28</td>
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<td>19</td>
<td>12</td>
<td>15</td>
<td>17</td>
<td>13.6</td>
<td>SW 12.1 / Ø 14.1</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>4</td>
<td>23</td>
<td>16x1</td>
<td>21</td>
<td>14</td>
<td>14</td>
<td>17</td>
<td>19</td>
<td>SW 14.1 / Ø 16.1</td>
</tr>
</tbody>
</table>

*Reference: Potted Receptacle please see page 69
Part number key

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

Receptacle

**Style 5** – ODU MINI-SNAP RECEPTACLE IP 50, CONTINUOUS THREAD, installation from rear or front of panel. Front extension adjustable

Technical Data

- IP 50
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1</td>
<td>L2 max.</td>
</tr>
<tr>
<td>0</td>
<td>20</td>
<td>8</td>
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<tr>
<td>1</td>
<td>24</td>
<td>8</td>
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<tr>
<td>1.5</td>
<td>25</td>
<td>8</td>
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<tr>
<td>2</td>
<td>27</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>14</td>
</tr>
</tbody>
</table>

Receptacle

**Style 8** – ODU MINI-SNAP WATERTIGHT RECEPTACLE IP 68*, with slotted nut, installation from rear of panel

Technical Data

- IP 68 in reference to the end device and in unmated condition
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- Nutdriver for slotted mounting nut, see page 59
- No crimp contacts possible

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1</td>
<td>L2 max.</td>
</tr>
<tr>
<td>0</td>
<td>22</td>
<td>3.5</td>
</tr>
<tr>
<td>1</td>
<td>27.5</td>
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<tr>
<td>3</td>
<td>33</td>
<td>6</td>
</tr>
</tbody>
</table>

*Reference: Potted Receptacle please see page 69.
Part number key

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

1) L1 = Maximum Length incl. Contact Insert
   2) L3 = Length of Housing

Receptacle

**Style B** – ODU-MINI-SNAP RECEPTACLE IP 50 (similar style 1), with grounding tab, installation from front of panel

Grounding tab

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
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<td></td>
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<td>24.5</td>
<td>8</td>
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<tr>
<td>2</td>
<td>27</td>
<td>10</td>
</tr>
</tbody>
</table>

**Style D** – ODU-MINI-SNAP RECEPTACLE IP 68*, with round nut, installation from rear of panel

Technical Data

- IP 68 in reference to the end device and in unmated condition
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- no crimp contacts possible

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1</td>
<td>L2 max</td>
</tr>
<tr>
<td>0</td>
<td>22</td>
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<tr>
<td>1</td>
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<tr>
<td>1.5</td>
<td>24</td>
<td>4</td>
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<tr>
<td>2</td>
<td>30</td>
<td>5</td>
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<tr>
<td>3</td>
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<td>6</td>
</tr>
</tbody>
</table>

*) Reference: Potted Receptacle please see page 69.
**Part number key**

<table>
<thead>
<tr>
<th></th>
<th>F</th>
<th></th>
<th></th>
<th></th>
<th></th>
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<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

1) **L1** = Maximum Length incl. Contact Insert
2) **L3** = Length of Housing

## Receptacle

**Style H** – ODU MINI-SNAP **RECEPTACLE IP 50**, installation from front of panel.

### Technical Data

- IP 50
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39

### Dimensions in mm

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
<th>Panel Cut-Out</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>L1</strong></td>
<td><strong>L2max.</strong></td>
</tr>
<tr>
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<td>3</td>
</tr>
<tr>
<td>1</td>
<td>24</td>
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<td>5</td>
</tr>
<tr>
<td>2</td>
<td>27</td>
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</tr>
</tbody>
</table>

**Style K** – ODU-MINI-SNAP **RECEPTACLE IP 50**, installation from rear of panel.

### Technical Data

- IP 50
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- Nutdriver Page 59

### Dimensions in mm

<table>
<thead>
<tr>
<th>Size</th>
<th>Dimensions in mm</th>
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</thead>
<tbody>
<tr>
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<td><strong>L1</strong></td>
<td><strong>L2max.</strong></td>
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</tr>
<tr>
<td>3</td>
<td>30.5</td>
<td>12</td>
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</tbody>
</table>

**Style Q** – ODU-MINI-SNAP **RECEPTACLE IP 50, CONTINUOUS THREAD**, (see Style 5, but 2 special nuts) installation from rear or front of panel. Extension in front of panel is adjustable.

### Technical Data

- IP 50
- Anti-rotation feature
- Contact configuration from Page 28
- PCB-Layouts from Page 39
- Nutdriver Page 59

### Dimensions in mm

<table>
<thead>
<tr>
<th>Size</th>
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</thead>
<tbody>
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<td><strong>L2max.</strong></td>
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</tr>
<tr>
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<td>7</td>
</tr>
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<td>7</td>
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</tbody>
</table>
Details for the Part Number Key

Keying
Housing Materials / Surfaces
Inserts
Collet System
Cable Bend Reliefs
### Coding

#### Part number key

<table>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<th>14</th>
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<th>19</th>
</tr>
</thead>
<tbody>
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<td>F</td>
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</tbody>
</table>

#### Serie F

<table>
<thead>
<tr>
<th>Angle</th>
<th>Receptacle Front View</th>
<th>Size</th>
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<td><img src="image1" alt="Receptacle Front View" /></td>
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<tr>
<td>2</td>
<td><img src="image2" alt="Receptacle Front View" /></td>
<td>2</td>
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<tr>
<td>3</td>
<td><img src="image3" alt="Receptacle Front View" /></td>
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</tr>
</tbody>
</table>

- ● = Standard
- ○ = On request

### Housing Materials / Surfaces

#### Part number key

<table>
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<th>19</th>
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<tbody>
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</tbody>
</table>

#### Standard
- Cu-alloy / matt chrome

#### Special materials and surfaces on request.
- Cu-alloy / nickel
- Cu-alloy / black chromate
Insulation Body Material

Part number key

<table>
<thead>
<tr>
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</table>

P

PEEK

T

PBT available size 1.5 - 3

Additional materials on request

Turned Contacts

<table>
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<tr>
<th>Article Number</th>
<th>PBT</th>
<th>PEEK</th>
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<tr>
<td>Solder Termination</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Crimp Termination</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>PCB Termination</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

● = available

Advice for insulation body selection regarding PCB termination:
wave-solder: PBT or PEEK insulation body.
All other methods: only PEEK insulation body.
# Size 0

## Part number key

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### Positions

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<tbody>
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<td>0,450</td>
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</table>

### View on termination side

**Pin part**

**Socket**

1) Inserts in size 0 are only available in PEEK.


Method of calculation, utilization warning and Proposals see page 70.
## Size 1

### Part number key

<table>
<thead>
<tr>
<th>1</th>
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<th>3</th>
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### Standard Contact Configuration

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</tr>
<tr>
<td></td>
<td>1,3 mm H2</td>
</tr>
<tr>
<td></td>
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</tr>
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<tr>
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### Clearance and creepage distance

<table>
<thead>
<tr>
<th>Clearance and creepage distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Signal Contact Current load in A</td>
</tr>
<tr>
<td>Solder</td>
</tr>
<tr>
<td>Crimp</td>
</tr>
<tr>
<td>Print</td>
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</tbody>
</table>

### Test Voltage acc. SAE AS13441:1998 method 3001.1

<table>
<thead>
<tr>
<th>Test Voltage acc. SAE AS13441:1998 method 3001.1 (kVeff)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage acc. SAE AS13441:1998 method 3001.1 (kVrms)</td>
</tr>
</tbody>
</table>

### Termination

<table>
<thead>
<tr>
<th>Termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>View on termination side</td>
</tr>
</tbody>
</table>

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1) Inserts in size 1 are only available in PEEK.
Method of calculation, utilization warning and Proposals see page 70.
## Size 1,5

### Part number key

<table>
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<tr>
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<th>6</th>
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<th>9</th>
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<th>11</th>
<th>12</th>
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<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>F</td>
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#### Standard Contact Configuration

<table>
<thead>
<tr>
<th>Size 1,5</th>
<th>Positions</th>
<th>Contact Ø mm</th>
<th>Nominal Signal Contact Current in A (Derating Factor see page 74)</th>
<th>Clearance and creepage distance</th>
<th>Termination</th>
<th>View on termination side</th>
</tr>
</thead>
</table>
| 1,5      | 1 0       | 0,7  7  1,0  0,8  1,650  0,550 | ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● 

1) Inserts in size 1.5 are only available in PEEK.

## Size 2

### Part number key

<table>
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<tr>
<th>Positions</th>
<th>Contacts Ø mm</th>
<th>Nominal Signal Current used in A (Derating Factor see page 74)</th>
<th>Clearance and creepage distance</th>
<th>Nominal Contact to contact in mm</th>
<th>Nominal Contact to housing in mm</th>
<th>Termination</th>
<th>View on termination side</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 02</td>
<td>1,6 17</td>
<td>2,1 1,8</td>
<td>2,100 0,700</td>
<td></td>
<td></td>
<td>Pin part</td>
<td>Socket</td>
</tr>
<tr>
<td>2 03</td>
<td>1,6 17</td>
<td>1,6 1,7</td>
<td>2,100 0,700</td>
<td></td>
<td></td>
<td>Pin part</td>
<td>Socket</td>
</tr>
<tr>
<td>2 05</td>
<td>1,3 14</td>
<td>1,2 1,3</td>
<td>1,500 0,500</td>
<td></td>
<td></td>
<td>Pin part</td>
<td>Socket</td>
</tr>
<tr>
<td>2 06</td>
<td>0,9 10</td>
<td>1,5 1,5</td>
<td>1,800 0,600</td>
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<td></td>
<td>Pin part</td>
<td>Socket</td>
</tr>
<tr>
<td>2 08</td>
<td>0,9 10</td>
<td>1,0 1,3</td>
<td>1,650 0,550</td>
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<td>Pin part</td>
<td>Socket</td>
</tr>
<tr>
<td>2 09</td>
<td>0,9 13</td>
<td>0,8 1,0</td>
<td>1,350 0,450</td>
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<td>Pin part</td>
<td>Socket</td>
</tr>
<tr>
<td>2 11</td>
<td>0,9 10</td>
<td>0,8 1,0</td>
<td>1,500 0,500</td>
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<td></td>
<td>Pin part</td>
<td>Socket</td>
</tr>
<tr>
<td>2 16</td>
<td>0,7 7</td>
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<td>1,350 0,450</td>
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<td>Socket</td>
<td>Pin part</td>
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<tr>
<td>2 19</td>
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1) Inserts in size 2 are only available in PEEK.

Method of calculation, utilization warning and Proposals see page 70.
### Size 3

#### Part number key

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<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
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<tr>
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#### Standard Contact Configuration

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<tr>
<td>1,3</td>
<td>14</td>
<td>1,0</td>
</tr>
<tr>
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<td>0,550</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
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<th>1</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0,9</td>
</tr>
<tr>
<td>1,500</td>
<td>0,500</td>
<td>●</td>
</tr>
</tbody>
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<table>
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<tr>
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<th>1</th>
<th>8</th>
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</thead>
<tbody>
<tr>
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<td>0,9</td>
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<tr>
<td>1,500</td>
<td>0,500</td>
<td>●</td>
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<tr>
<th>3</th>
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<th>4</th>
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</thead>
<tbody>
<tr>
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<td>0,7</td>
</tr>
<tr>
<td>1,350</td>
<td>0,450</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>2</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,7</td>
<td>7</td>
<td>0,7</td>
</tr>
<tr>
<td>1,350</td>
<td>0,450</td>
<td>●</td>
</tr>
</tbody>
</table>

#### Notes:
1) Inserts in size 3 are only available in PEEK.

Method of calculation, utilization warning and Proposals see page 70.
### Contact Type / Contact Surface - Contact Diameter

#### Part number key

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

#### Details for the Part number key

**Type** | **Surface**                     | **Contact Diameter** |
----------|---------------------------------|----------------------|
Socket    | L - 0.75 µm Au (min.)           |                      |
Pin       | L - 0.75 µm Au (min.)           |                      |
Socket    | C - 0.75 µm Au (min.)           |                      |
Pin       | C - 0.75 µm Au (min.)           |                      |
Socket    | P - 0.75 µm Au (min.)           |                      |
Pin       | P - 0.75 µm Au (min.)           |                      |

**Contact Diameter**
## Contact Termination Cross Sections

### Part number key

<table>
<thead>
<tr>
<th>Size</th>
<th>Positions</th>
<th>Contact Ø</th>
<th>AWG</th>
<th>mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4-5</td>
<td>0.7</td>
<td>28-32</td>
<td>0.09–0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td>2-3</td>
<td>0.9</td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20-24</td>
<td>0.50–0.25</td>
</tr>
<tr>
<td>1</td>
<td>6-7</td>
<td>0.7</td>
<td>28-32</td>
<td>0.09–0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td>4-5</td>
<td>0.9</td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20-24</td>
<td>0.50–0.25</td>
</tr>
<tr>
<td></td>
<td>2-3</td>
<td>1.3</td>
<td>18-20</td>
<td>1.00–0.50</td>
</tr>
<tr>
<td>1.5</td>
<td>10-12</td>
<td>0.7</td>
<td>28–32</td>
<td>0.09–0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td>2</td>
<td>16-19</td>
<td>0.7</td>
<td>28–32</td>
<td>0.09–0.04</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td>6-11</td>
<td>0.9</td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20-24</td>
<td>0.50–0.25</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1.3</td>
<td>18-20</td>
<td>1.00–0.50</td>
</tr>
<tr>
<td>3</td>
<td>24-27</td>
<td>0.7</td>
<td>28–32</td>
<td>0.09–0.04</td>
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<td></td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td>15-18</td>
<td>0.9</td>
<td>22-26</td>
<td>0.38–0.15</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20-24</td>
<td>0.50–0.25</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>1.3</td>
<td>18-20</td>
<td>1.00–0.50</td>
</tr>
</tbody>
</table>

### Crimp Contact

**Tools for crimping and adjustments**

see from page 55.

**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).
Contact Termination Cross Sections

Part number key

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

Solder Contact

<table>
<thead>
<tr>
<th>Contact Ø</th>
<th>Term. Ø</th>
<th>Term. Cross AWG</th>
<th>Term. Cross mm²</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0,4</td>
<td>28</td>
<td>0,08</td>
</tr>
<tr>
<td>0,7</td>
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<td>0,15</td>
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<td>0,7</td>
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</tr>
<tr>
<td>1,3</td>
<td>1,1</td>
<td>20</td>
<td>0,50</td>
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</table>

PCB Contact

<table>
<thead>
<tr>
<th>Contact Ø</th>
<th>Term. Ø</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0,5</td>
</tr>
<tr>
<td>0,7</td>
<td>0,5</td>
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<td>0,9</td>
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<td>1,3</td>
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C C 0
F D 0
F G 0
J G 0
P H 0

Please see the PCB-layouts on page 39-40.
### Collet System

#### Part number key

<table>
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<tr>
<th>Cable diameter in mm</th>
<th>Size</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>16</th>
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<td>&gt; 10,5 - 11,5</td>
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<tr>
<td>without collet system</td>
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</tbody>
</table>

#### Insert:
for all Plugs and In-Line receptacles.

#### Application:
- **Collet nut** for strain relief,
- **EMI ring** for conductive path between shield and housing.

#### References:
- ❍ This diameters are not available for applications in IP 68
- 1 This application is not available for applications with cable bend relief.

It's possible that the collet nut cannot be covered completely over the cable.
Right-Angled Print Contacts in the Receptacle

Part number key

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

|   | F |   | Q |   | 0 | 0 |

Right-Angled Print Contact

A

Pin contacts on request
PCB-Layout see Page 39 - 40

Definition of the back nut

Straight-angled-break apart plugs, inline receptacles, receptacles style 6 and 7

Part number key

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

|   | F |   | Q |   | 0 |

Standard back nut

0

Back nut for silicon cable bend reliefs

S

Cable bend reliefs on page 38
Cable Bend Reliefs

Silicone

Temperature range
Silicone       -50 ºC up to +200 ºC
               short term up to +230 ºC
               autoclavable

Part number key

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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</tbody>
</table>

Color of the Cable Bend Relief

<table>
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<tr>
<th>Color / RAL-number</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>red</td>
<td>RAL 3020</td>
</tr>
<tr>
<td>white</td>
<td>RAL 9010</td>
</tr>
<tr>
<td>yellow</td>
<td>RAL 1016</td>
</tr>
<tr>
<td>green</td>
<td>RAL 6029</td>
</tr>
<tr>
<td>blue</td>
<td>RAL 5002</td>
</tr>
<tr>
<td>grey</td>
<td>RAL 7005</td>
</tr>
<tr>
<td>black</td>
<td>RAL 9005</td>
</tr>
<tr>
<td>without cable bend relief</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>straight</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td></td>
<td>Drill: 0.8 mm</td>
</tr>
<tr>
<td>2 pos.</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>3 pos.</td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td>4 pos.</td>
<td><img src="image7.png" alt="Image" /></td>
</tr>
<tr>
<td>5 pos.</td>
<td><img src="image9.png" alt="Image" /></td>
</tr>
<tr>
<td>7 pos.</td>
<td><img src="image11.png" alt="Image" /></td>
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<table>
<thead>
<tr>
<th>Size 1.5</th>
<th>straight</th>
<th>right-angled</th>
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<tbody>
<tr>
<td></td>
<td><img src="image13.png" alt="Image" /></td>
<td><img src="image14.png" alt="Image" /></td>
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<tr>
<td>10 pos.</td>
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<td><img src="image16.png" alt="Image" /></td>
</tr>
<tr>
<td>12 pos.</td>
<td><img src="image17.png" alt="Image" /></td>
<td><img src="image18.png" alt="Image" /></td>
</tr>
<tr>
<td>19 pos.</td>
<td><img src="image19.png" alt="Image" /></td>
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</table>

All declarations are legal for socket inserts. Pin inserts on request.
## Drilling Patterns for PCB-contacts

### Size 2

<table>
<thead>
<tr>
<th>Pattern</th>
<th>Drilling Pattern 1</th>
<th>Drilling Pattern 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2 pos.</strong></td>
<td>Drill: 1.1 mm</td>
<td>on request</td>
</tr>
<tr>
<td><strong>3 positions</strong></td>
<td>Drill: 1.1 mm</td>
<td>on request</td>
</tr>
<tr>
<td></td>
<td>Drill: 0.8 mm</td>
<td>Drill: 0.9 mm</td>
</tr>
<tr>
<td><strong>5 positions</strong></td>
<td>Drill: 0.8 mm</td>
<td>Drill: 0.7 mm</td>
</tr>
<tr>
<td><strong>6 positions</strong></td>
<td>Drill: 0.8 mm</td>
<td>on request</td>
</tr>
<tr>
<td><strong>8 positions</strong></td>
<td>Drill: 0.8 mm</td>
<td>on request</td>
</tr>
<tr>
<td><strong>9 positions</strong></td>
<td>Drill: 0.8 mm</td>
<td>on request</td>
</tr>
<tr>
<td><strong>11 positions</strong></td>
<td>Drill: 0.8 mm</td>
<td>Drill: 0.7 mm</td>
</tr>
<tr>
<td><strong>16 positions</strong></td>
<td>Drill: 0.6 mm</td>
<td>Drill: 0.7 mm</td>
</tr>
<tr>
<td><strong>19 positions</strong></td>
<td>Drill: 0.6 mm</td>
<td>Drill: 0.7 mm</td>
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### Size 3

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<th>Drilling Pattern 1</th>
<th>Drilling Pattern 2</th>
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</thead>
<tbody>
<tr>
<td><strong>12 pos.</strong></td>
<td>Drill: 0.8 mm</td>
<td>on request</td>
</tr>
<tr>
<td><strong>15 positions</strong></td>
<td>Drill: 0.8 mm</td>
<td>on request</td>
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<tr>
<td><strong>18 positions</strong></td>
<td>Drill: 0.8 mm</td>
<td>on request</td>
</tr>
<tr>
<td><strong>24 positions</strong></td>
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<td>Drill: 0.7 mm</td>
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<tr>
<td><strong>27 positions</strong></td>
<td>Drill: 0.6 mm</td>
<td>Drill: 0.8 mm</td>
</tr>
</tbody>
</table>

All declarations are legal for socket inserts. Pin inserts on request.
Special Solutions
Customer specific solutions for ODU MINI-SNAP

ODU as a 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 etc. etc. With all these possibilities we are able to offer “Custom tailored” solutions for our customers.

When do we actively pursue customer 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:

Custom Specific Inserts

Special insulators and special assemblings for High-Voltage applications
Special solutions

ODU MINI-SNAP

Custom specific PCB assembling

Special overmouldings and insulation sleeves

Also different locking mechanism are possible (picture: Bajonett and Threaded Locking)
Accessories
Color Coding Ring

Mounting Example:

Order Example

700 422 202 922 009

Housing Ø M9

Size 0

<table>
<thead>
<tr>
<th>Size</th>
<th>Part Number with Colour</th>
<th>Ø A</th>
<th>Ø B</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>700 422 ... 922 009</td>
<td>13,5</td>
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<tr>
<td>0</td>
<td>700 422 ... 922 010</td>
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<tr>
<td>1</td>
<td>701 422 ... 922 012</td>
<td>17,0</td>
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<td>1</td>
<td>701 422 ... 922 014</td>
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<td>1,5</td>
<td>715 422 ... 922 014</td>
<td>21,0</td>
<td>14,1</td>
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<td>2</td>
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<td>22,0</td>
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<tr>
<td>2</td>
<td>702 422 ... 922 016</td>
<td>23,0</td>
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<tr>
<td>3</td>
<td>703 422 ... 922 018</td>
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<td>703 422 ... 922 020</td>
<td>28,0</td>
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**Size**

* = In ... please indicate color code

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<th>RAL-No. (similar)</th>
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<td>red</td>
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<td>203</td>
<td>white</td>
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</tr>
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<td>215</td>
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</tr>
<tr>
<td>216</td>
<td>light blue</td>
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</tbody>
</table>

Because of different raw materials the colors may slightly differ from RAL numbers.
Protective Covers for Receptacles (IP 50)

* = With . please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug

Surface: Matt chromate

<table>
<thead>
<tr>
<th>Size</th>
<th>Part Number*</th>
<th>Dimensions in mm</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>0</td>
<td>700 097 003 215.00</td>
<td>10,5</td>
</tr>
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<td>1</td>
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</tr>
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</tr>
<tr>
<td>3</td>
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<td>16,6</td>
</tr>
</tbody>
</table>

Protective Covers for Receptacles (IP 68)

* = With . please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug

Surface: Matt chromate

<table>
<thead>
<tr>
<th>Size</th>
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<th>Dimensions in mm</th>
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</tbody>
</table>
ODU MINI-SNAP  Accessories

Protective Covers for Plugs (IP 50)

![Diagram of Protective Covers for Plugs (IP 50)]

* = With . please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug
Surface: Matt chromate

<table>
<thead>
<tr>
<th>Size</th>
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<th>Dimensions in mm</th>
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<td>20.5</td>
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Protective Covers for Plugs (IP 68)

![Diagram of Protective Covers for Plugs (IP 68)]

* = With . please, register desired lanyard material
0 = Polyamide lanyard with loop
1 = Stainless steel lanyard with loop
2 = Polyamide lanyard solder lug
3 = Stainless steel lanyard solder lug
Surface: Matt chromate

<table>
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Silicone-Cable Bend Relief

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<tr>
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<td>700 023 ... 965 025</td>
<td>27</td>
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<tr>
<td>0</td>
<td>700 023 ... 965 030</td>
<td>27</td>
<td>&gt; 3.0</td>
</tr>
<tr>
<td>0</td>
<td>700 023 ... 965 035</td>
<td>27</td>
<td>&gt; 3.5</td>
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<tr>
<td>0</td>
<td>700 023 ... 965 040</td>
<td>27</td>
<td>&gt; 4.0</td>
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<tr>
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<td>700 023 ... 965 045</td>
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<td>701 023 ... 965 030</td>
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<tr>
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<td>&gt; 6.0</td>
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<tr>
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</tr>
<tr>
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<td>36</td>
<td>&gt; 6.0</td>
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<tr>
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<td>702 023 ... 965 070</td>
<td>36</td>
<td>&gt; 7.0</td>
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<tr>
<td>2</td>
<td>702 023 ... 965 080</td>
<td>36</td>
<td>&gt; 8.0</td>
</tr>
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<td>3</td>
<td>703 023 ... 965 040</td>
<td>42</td>
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<tr>
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<td>703 023 ... 965 050</td>
<td>42</td>
<td>&gt; 5.0</td>
</tr>
<tr>
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<td>703 023 ... 965 060</td>
<td>42</td>
<td>&gt; 6.0</td>
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<td>703 023 ... 965 070</td>
<td>42</td>
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<td>703 023 ... 965 080</td>
<td>42</td>
<td>&gt; 8.0</td>
</tr>
<tr>
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<td>703 023 ... 965 090</td>
<td>42</td>
<td>&gt; 9.0</td>
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<tr>
<td>3</td>
<td>703 023 ... 965 100</td>
<td>42</td>
<td>&gt; 10.0</td>
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<tr>
<td>3</td>
<td>703 023 ... 965 110</td>
<td>42</td>
<td>&gt; 11.0</td>
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</table>

* = In ... please indicate color code

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

Color Code | Color | RAL-Nr. (similar)
-----------|-------|------------------
202  red   | 3020  |
203  white | 9010  |
204  yellow| 1016  |
205  green | 6029  |
206  blue  | 5002  |
207  grey  | 7005  |
208  black | 9005  |

Temperature range
Silicone -50°C up to +200°C
Short-term up to +230°C autoclavable
Locking Washers

Mounting example:

Panel
Hex Nut
Locking Washer
Receptacle

Nickel-plated surface

<table>
<thead>
<tr>
<th>Size</th>
<th>Part number</th>
<th>A</th>
<th>C</th>
<th>L*</th>
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</thead>
<tbody>
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<td>945 000 001 000 046</td>
<td>12.5</td>
<td>9.1</td>
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<tr>
<td>M12</td>
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<td>16.0</td>
<td>12.1</td>
<td>1.1</td>
</tr>
<tr>
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<td>945 000 001 000 070</td>
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<td>14.2</td>
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<tr>
<td>M15</td>
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<td>19.5</td>
<td>15.1</td>
<td>1.1</td>
</tr>
<tr>
<td>M16</td>
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<tr>
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</table>

*) Measurement under pressure

Solder Lugs for Series L and B

Mounting example:

Panel
Receptacle
Hex Nut
Solder Lug

Silver-plated surface

<table>
<thead>
<tr>
<th>Thread</th>
<th>Part Number*</th>
<th>Dimensions in mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
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</tr>
<tr>
<td>M9</td>
<td>700 140 246 301 000</td>
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<tr>
<td>M12</td>
<td>701 140 246 301 000</td>
<td>12.2</td>
</tr>
<tr>
<td>M14</td>
<td>715 140 246 301 000</td>
<td>14.1</td>
</tr>
<tr>
<td>M15</td>
<td>702 140 246 301 000</td>
<td>15.2</td>
</tr>
<tr>
<td>M16</td>
<td>721 140 246 301 000</td>
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<tr>
<td>M18</td>
<td>703 140 246 301 000</td>
<td>18.2</td>
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<td>M20</td>
<td>722 140 246 301 000</td>
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Distance Ring for Wall Thickness Adjustment for style 2
(see page 21)

Mounting example:

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<th>Size</th>
<th>Da</th>
<th>Di</th>
<th>L</th>
<th>T</th>
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</thead>
<tbody>
<tr>
<td>700 123 102 304 000</td>
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<td>13</td>
<td>10.3</td>
<td>7</td>
<td>1-6</td>
</tr>
<tr>
<td>701 123 102 304 000</td>
<td>1</td>
<td>17</td>
<td>14.3</td>
<td>12</td>
<td>0.5-6</td>
</tr>
<tr>
<td>701 123 102 304 001</td>
<td>1</td>
<td>17</td>
<td>14.3</td>
<td>6</td>
<td>6-16</td>
</tr>
<tr>
<td>702 123 102 304 000</td>
<td>2</td>
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<td>3</td>
<td>25</td>
<td>20.3</td>
<td>11.5</td>
<td>0.5-7</td>
</tr>
</tbody>
</table>
Backnut for Silicone-Cable Bend Relief

* = In .. please indicate surface finish:
  15 = Cu-alloy / matt chromate
  11 = Cu-alloy / black chromate
  04 = Cu-alloy / nickel

<table>
<thead>
<tr>
<th>Size</th>
<th>Part number</th>
<th>Dimensions in mm</th>
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<td>702 022 117 3.. 002</td>
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<td>703 022 117 3.. 002</td>
<td>11,5</td>
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</table>
Tools
Crimping Tongs and Assembling Tools for Turned Contacts

**8-point-crimp tong**
Order-Nr.: 080.000.037.000.000
for crimp contacts: 0.7 mm and 0.9 mm.
cross section: 0.08 mm² up to 0.5 mm²

You can find all informations about adjustment and using of this tools on page 57.

**8-point-crimp tong**
Order-Nr.: 080.000.038.000.000
for crimp contacts: 1.3 mm and 1.6 mm.
for cross section: 0.38 mm² up to 2.5 mm²

You can find all informations about adjustment and using of this tools on page 57.

**Pneumatic crimping tool**
Order-Nr.: 080.000.032.000.000
For all MINI-SNAP contacts applicable
cross section: 0.08 mm² up to 2.5 mm²

Assembly Jig for the assembling of our Crimp Contacts into the insulation body (see page 61)

<table>
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# Crimping and Assembly Tools for Crimp Contacts (037 and 038)

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<th>Cross sections</th>
<th>Crimp tool</th>
<th>Identification groove</th>
<th>Positioner socket</th>
<th>Positioner pin</th>
<th>Removal tool</th>
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<td>0.9</td>
<td>22-26</td>
<td>0.38–0.15</td>
<td></td>
<td>4</td>
<td>081.702.003.749.037</td>
<td>081.701.002.849.037</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>5</td>
<td>0.7</td>
<td>22–26</td>
<td>0.38–0.15</td>
<td></td>
<td>4</td>
<td>081.703.004.748.037</td>
<td>081.703.001.848.037</td>
<td>087.7CC.070.001.000</td>
</tr>
</tbody>
</table>

Order example for the tongs type 037 and 038:
Assumed Connector: S12F1C-T06PJH0-7500
In this size 2 connector is a 6-way Pin Insert used.
The contact diameter is 0.9 mm.
The cable cross section is AWG 20/22
Therefore you have to order following tools:
080.000.037.000.000 Crimp Tong 037 (Adjustment 7) 081.702.001.849.038 Positioner for Pin Contacts 085.180.689.000.000 Insertion tool 702.098.004.300.000 Assembly Jig (see page 56)
You can find all informations about adjustment and using of this tools on the page 59 et seq.
Adjustment of the Crimp Tongs 080.000.037.000.000 and 080.000.038.000.000
(see page 56)

1. Fasten the Positionier on the Crimp Tong

Please fasten the Positionier under consideration of the guiding into the tong

037: Therby push the positionier down and turn it right at the same time.
038: You don’t have to do this with this tong.

037: To fix the positionier in this position, you have to use the attached safety pin.
038: Here you have to fix the positionier with some attached allen screw and the suitable spanner.

2. Adjust of 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 ready adjusted. You can start with the crimp process.
Spanner Wrench

![Spanner Wrench Diagram]

<table>
<thead>
<tr>
<th>Order No.</th>
<th>SW</th>
<th>t</th>
<th>B</th>
<th>L</th>
<th>b</th>
</tr>
</thead>
<tbody>
<tr>
<td>598.700.001.016.000</td>
<td>5</td>
<td>1,5</td>
<td>18,5</td>
<td>92</td>
<td>8</td>
</tr>
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<td>1,5</td>
<td>18,5</td>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>598.700.001.021.000</td>
<td>6</td>
<td>2</td>
<td>18,5</td>
<td>92</td>
<td>8</td>
</tr>
<tr>
<td>598.700.001.011.000</td>
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<td>18,5</td>
<td>92</td>
<td>8</td>
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<tr>
<td>598.700.001.001.000</td>
<td>8</td>
<td>2</td>
<td>18,5</td>
<td>92</td>
<td>8</td>
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<td>598.700.001.022.000</td>
<td>9</td>
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<td>21,5</td>
<td>102</td>
<td>9</td>
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<td>598.700.001.002.000</td>
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<td>598.700.001.012.000</td>
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<td>24,5</td>
<td>115</td>
<td>10</td>
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<td>598.700.001.003.000</td>
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<td>24,5</td>
<td>115</td>
<td>10</td>
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<td>598.700.001.017.000</td>
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<td>24,5</td>
<td>115</td>
<td>10</td>
</tr>
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<td>30,5</td>
<td>98</td>
<td>16,5</td>
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<td>2,5</td>
<td>30,5</td>
<td>98</td>
<td>16,5</td>
</tr>
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<td>598.700.001.006.000</td>
<td>15</td>
<td>3</td>
<td>35,5</td>
<td>145</td>
<td>15</td>
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<tr>
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</tr>
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<td>598.700.001.008.000</td>
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<td>3</td>
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<td>145</td>
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<td>598.700.001.023.000</td>
<td>18</td>
<td>3</td>
<td>42</td>
<td>172</td>
<td>16</td>
</tr>
<tr>
<td>598.700.001.013.000</td>
<td>19</td>
<td>3</td>
<td>42</td>
<td>172</td>
<td>16</td>
</tr>
<tr>
<td>598.700.001.009.000</td>
<td>20</td>
<td>3</td>
<td>42</td>
<td>172</td>
<td>16</td>
</tr>
<tr>
<td>598.700.001.018.000</td>
<td>21</td>
<td>3</td>
<td>42</td>
<td>172</td>
<td>16</td>
</tr>
<tr>
<td>598.700.001.010.000</td>
<td>22</td>
<td>3</td>
<td>47</td>
<td>119</td>
<td>23,5</td>
</tr>
<tr>
<td>598.700.001.014.000</td>
<td>24</td>
<td>3</td>
<td>47</td>
<td>119</td>
<td>23,5</td>
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<tr>
<td>598.700.001.019.000</td>
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<td>3</td>
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<td>598.700.001.020.000</td>
<td>31</td>
<td>3</td>
<td>50</td>
<td>150</td>
<td>25</td>
</tr>
</tbody>
</table>

**Nutdriver for Slotted Mounting Nut** suitable for style 8, C, Q

![Nutdriver Diagram]

<table>
<thead>
<tr>
<th>Nutdriver</th>
<th>Thread</th>
</tr>
</thead>
<tbody>
<tr>
<td>700 098 002 000 000</td>
<td>M 9x0,5</td>
</tr>
<tr>
<td>700 098 001 000 000</td>
<td>M 10x0,5</td>
</tr>
<tr>
<td>700 098 001 000 000</td>
<td>M 12x1</td>
</tr>
<tr>
<td>701 098 002 000 000</td>
<td>M 14x1</td>
</tr>
<tr>
<td>701 098 001 000 000</td>
<td>M 15x1</td>
</tr>
<tr>
<td>702 098 001 000 000</td>
<td>M 16x1</td>
</tr>
<tr>
<td>702 098 001 000 000</td>
<td>M 18x1</td>
</tr>
<tr>
<td>703 098 001 000 000</td>
<td>M 20x1</td>
</tr>
</tbody>
</table>
Removal tool for Crimp-Clip-Contacts

<table>
<thead>
<tr>
<th>Part-Number</th>
<th>Contact Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>087 7CC 050 001 000</td>
<td>0.5 mm</td>
</tr>
<tr>
<td>087 7CC 070 001 000</td>
<td>0.7 mm</td>
</tr>
<tr>
<td>087 7CC 090 001 000</td>
<td>0.9 mm</td>
</tr>
<tr>
<td>087 7CC 130 001 000</td>
<td>1.3 mm</td>
</tr>
<tr>
<td>087 7CC 160 001 000</td>
<td>1.6 mm</td>
</tr>
</tbody>
</table>
Assembly Instruction

For unsealed connectors (IP 50)

Crimp termination

1. Slide Back nut, Collet, and EMI-Ring over the cable.

2. Strip cable and wire.

3. Fit wire into the contact barrel and crimp.

4. Insert contacts into insulator, use the insertion tool to push them in.

Solder termination

2. Strip cable and wire.

3. Pre-tinning of strands recommended.

4. Solder each wire to the corresponding contact.

5. Bend cable shield outwards.

6. Slide the EMI-ring against the sleeve and clamp the shield against it.

7. Now you can put the coding and the assembled cable into the plug housing.

8. Screw back nut on the plug and fasten cable in the housing. Hold against with flat spanner at flat A* (Torque see page 65). Now the plug is assembled.

* ODU-Spanner-Wrench: see page 59
Assembly Instruction

For sealed connectors (IP 68)

1. Slide Back nut, Collet, Seal Ring and EMI-Ring over the cable.

**Crimp termination**

2. Strip cable and wire.
3. Fit wire into the contact barrel and crimp.
4. Insert contacts into insulator, use the insertion tool to push them in.

**Solder termination**

2. Strip cable and wire.
3. Pre-tinning of strands recommended.
4. Solder each wire to the corresponding contact.
5. Bend cable shield outwards.
6. Slide the EMI-ring against the sleeve and clamp the shield against it.
7. Now you can put the coding and the assembled cable into the plug housing.
8. Screw back nut on the plug and fasten cable in the housing. Hold against with flat spanner at flat A* (Torque see page 65). Now the plug ist assembled.

Watertight connectors require a grommet seal designed for the intended cable. We require either the exact specification or a sample of the cable.

* ODU-Spanner-Wrench: see page 59
Assembly Instruction

for unsealed right-angled plugs (IP 50)

1. Slide back nut, collet nut, EMI-ring and right-angled-part over the cable.

2. Strip cable and wire.
3. Pre-tinning of strands recommended.

4. Solder each wire to the corresponding contact (Crimp version see straight connector on page 64).

5. Pull cable back, bend cable shield outwards, place half shells over insulator.


7. Now you can put the coding and the assembled cable into the plug housing.

8. Mount sack screw on the plug and fasten cable in the housing. Hold against with flat spanner at flat A* (Torque see page 65). Now the plug is assembled.

* ODU-Spanner-Wrench: see page 59
Torque for back-nuts

Torque for styles
- Straight plug S1; S2; S3; S4
- Right-angled-plug W1; W2
- Break-apart-plug A5; A6; A7; A8
- In-line-receptacle K1; K2; K3; K4
- Receptacle G6; G7

<table>
<thead>
<tr>
<th>Style</th>
<th>0</th>
<th>1</th>
<th>1,5</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque</td>
<td>0.6 Nm</td>
<td>1.0 Nm</td>
<td>1.5 Nm</td>
<td>2.0 Nm</td>
<td>3.5 Nm</td>
</tr>
</tbody>
</table>

1 Nm = 8.85 inch-pounds

Cable preparation:
The following table provides recommended guidelines for cable preparation:

A = Stripping length single conductor
L = Stripping length cable jacket
S = Stripping length braided shield

<table>
<thead>
<tr>
<th>Size</th>
<th>Contact Ø</th>
<th>Solder Termination</th>
<th>Crimp Termination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>L</td>
<td>A</td>
</tr>
<tr>
<td>Size 0</td>
<td>0.5</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0.7</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>6</td>
<td>2.5</td>
</tr>
<tr>
<td>Size 1</td>
<td>0.5</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0.7</td>
<td>9</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>9</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Size 1.5</td>
<td>0.5</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>0.7</td>
<td>12</td>
<td>2.5</td>
</tr>
<tr>
<td>Size 2</td>
<td>0.7</td>
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<td>2.5</td>
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<td></td>
<td>0.9</td>
<td>11</td>
<td>2.5</td>
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<td></td>
<td>1.3</td>
<td>11</td>
<td>2</td>
</tr>
<tr>
<td>Size 3</td>
<td>0.7</td>
<td>14</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>0.9</td>
<td>14</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>14</td>
<td>3</td>
</tr>
</tbody>
</table>

All dimensions in mm  Tolerance: + 10 %

Exceptions are noted on special instructions.
Right-angle plugs have special instructions.
INDEX:

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

The housing and the locking system of the ODU MINI-SNAP 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.

**IP:** International Protection

**All IP 68 submersible ODU MINI-SNAP Connectors are rated to 2 m water depth (0.2 bar) for 24 hours in accordance with DIN EN 60529.**

A watertight plug requires a cable grommet in the collet. The grommet has to fit tightly over the cable. The cable jacket must be smooth, cylindrical and free of grooves. The plug should be potted for watertightness in unmated condition.

(Higher requirements for Watertightness on request)

<table>
<thead>
<tr>
<th>Code letters (International Protection)</th>
<th>First Index Figure (Foreign bodies protection)</th>
<th>Second Index Figure (Water protection)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index 0</td>
<td>No protection against accidental contact, no protection against intrusion of solid foreign bodies</td>
<td>No protection against water</td>
</tr>
<tr>
<td>Index 1</td>
<td>Protection against contact with any large area by hand and against large solid foreign bodies with Ø &gt; 50 mm</td>
<td>Protection against vertical water drips</td>
</tr>
<tr>
<td>Index 2</td>
<td>Protection against contact with the fingers, protection against large solid foreign bodies with Ø &gt; 50 mm</td>
<td>Protection against water drips (up to a 15° angle)</td>
</tr>
<tr>
<td>Index 3</td>
<td>Protection against tools, wires or similar objects with Ø &gt; 2.5 mm. Protection against small foreign solid bodies with Ø &gt; 2.5 mm</td>
<td>Protection against diagonal water drips (up to a 60° angle)</td>
</tr>
<tr>
<td>Index 4</td>
<td>As 3 however Ø &gt; 1 mm</td>
<td>Protection against splashed water from all directions</td>
</tr>
<tr>
<td>Index 5</td>
<td>Full protection against contact. Protection against interior detrimental dust deposition.</td>
<td>Protection against water spray from all directions</td>
</tr>
<tr>
<td>Index 6</td>
<td>Total protection against contact. Protection against intrusion of dust</td>
<td>Protection against temporary flooding</td>
</tr>
<tr>
<td>Index 7</td>
<td></td>
<td>Protection against temporary immersion</td>
</tr>
<tr>
<td>Index 8</td>
<td></td>
<td>Protection against water pressure</td>
</tr>
</tbody>
</table>

In accordance with DIN VDE 0470, DIN EN 60 529, IEC 529

Source: ZVEI = German Association of the Electrotechnical and Electronic Industry e.V.
Watertightness of the ODU MINI-SNAP

Protection against Water through following seals:  *1

<table>
<thead>
<tr>
<th></th>
<th>Cable – Cable termination area</th>
<th>mated</th>
<th>unmated</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Device – Cable termination area</td>
<td>Yes 1 + 2</td>
<td>No</td>
</tr>
<tr>
<td>II</td>
<td>Device – Cable termination area</td>
<td>Yes 1 + 3 + 2</td>
<td>No</td>
</tr>
<tr>
<td>III</td>
<td>Device – Cable termination area</td>
<td>Yes 1 + 3 + 2</td>
<td>Yes 3 + 4</td>
</tr>
</tbody>
</table>

*1 Contacts: in mated condition the contacts are protected (in cases I, II, III). In unmated condition the contacts can be protected using a protective cover (see page 47 - 48). The cover must be removed before mating the plug with the receptacle.

*2 The elastic grommet acts as the cable seal. It requires exact knowledge of the cable dimension. Important factors: Diameter tolerance, roundness, cable design and cable jacket hardness.
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. 1/3 of this value is the corresponding operating voltage.

All tests were performed at standard environment conditions (room temperature) and can be applied up to an altitude of 2000 m.
For any deviations one has to consider the reduction factor acc. to the relevant standards.

Test voltage: Break-down voltage x 0.75
Operating voltage: Break-down voltage x 0.75 x 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 safety standard which your product has to meet.
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: + 120 °C

Test contact was terminated to largest possible conductor.

Connectors or cables with more than one contact or conductor generate a higher heat than a single contact. Therefore, a Derating Factor must be applied. For connectors the Derating Factor is applied according to DIN IEC 60512-3 / VDE 0276-1000. The Derating Factor is used starting with 5 loaded wires.

### Derating Factor:

<table>
<thead>
<tr>
<th>Number of loaded wires</th>
<th>Derating Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>0,75</td>
</tr>
<tr>
<td>7</td>
<td>0,65</td>
</tr>
<tr>
<td>10</td>
<td>0,55</td>
</tr>
<tr>
<td>14</td>
<td>0,50</td>
</tr>
<tr>
<td>19</td>
<td>0,45</td>
</tr>
<tr>
<td>24</td>
<td>0,40</td>
</tr>
</tbody>
</table>
Termination Styles

Contact blocks (insulation bodies with contacts) are interchangeable between receptacle and plug. As a rule the socket contact blocks are mounted in the part under power.

ODU offers the following contact termination styles:

- Solder
- Crimp
- PCB

Termination Styles for Turned Contacts

Solder Termination:

The contacts come mounted by the factory. The insulation body and the pre-assembled contacts are called a contact block.

Crimp Termination

A single contact is crimped to a single conductor. Subsequently, the crimped contact is pushed into the insulation body. Crimp contacts and insulation bodies are shipped separately.

Crimping creates a reliable, corrosion-free and durable connection between the contact and the conductor.

Crimping causes the crimp barrel of the contact and the conductor material to cold flow. It creates a gas-tight connection between contact and conductor.

The ODU MINI-SNAP generally requires the industry-standard 8-point crimp tool.

Printed Circuit Board (PCB) Termination:

PCB pins are used only for receptacles which are mounted directly to the PCB. The contacts are permanently installed in the insulation body.
**Conversion / AWG**

**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.

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

Stranded wires are made from wires with smaller gauge sizes (higher AWG gauge number). The AWG gauge number of the stranded wire is equal to that of a solid conductor of the same size wire. The cross section of the stranded conductor is the sum of cross sections of the single conductors.

For example, a AWG-20 stranded wire of 7 AWG-28 conductors has a cross section of 0.563 mm²; an AWG-20 stranded wire with 19 AWG-32 conductors has a cross section of 0.616 mm².

**Conversion Table AWG / mm²**

<table>
<thead>
<tr>
<th>Circular Conductor</th>
<th>AWG</th>
<th>Diameter</th>
<th>in</th>
<th>mm</th>
<th>mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 (1)</td>
<td>0,102</td>
<td>2,59</td>
<td>5,27</td>
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</tr>
<tr>
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<td>10 (37/26)</td>
<td>1,109</td>
<td>2,75</td>
<td>4,53</td>
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</tr>
<tr>
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<td>12 (1)</td>
<td>0,0808</td>
<td>2,05</td>
<td>3,31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12 (19/25)</td>
<td>0,0895</td>
<td>2,25</td>
<td>3,08</td>
<td></td>
</tr>
<tr>
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<td>12 (37/28)</td>
<td>0,0858</td>
<td>2,18</td>
<td>2,97</td>
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</tr>
<tr>
<td></td>
<td>14 (1)</td>
<td>0,0641</td>
<td>1,63</td>
<td>2,08</td>
<td></td>
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<tr>
<td></td>
<td>14 (19/27)</td>
<td>0,0670</td>
<td>1,70</td>
<td>1,94</td>
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<tr>
<td></td>
<td>14 (37/30)</td>
<td>0,0673</td>
<td>1,71</td>
<td>1,87</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 (1)</td>
<td>0,0508</td>
<td>1,29</td>
<td>1,31</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 (19/29)</td>
<td>0,0551</td>
<td>1,40</td>
<td>1,23</td>
<td></td>
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<tr>
<td></td>
<td>18 (11)</td>
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<td>1,02</td>
<td>0,82</td>
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</tr>
<tr>
<td></td>
<td>18 (19/30)</td>
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<td>1,22</td>
<td>0,96</td>
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<tr>
<td></td>
<td>20 (1)</td>
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<td>0,813</td>
<td>0,52</td>
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<tr>
<td></td>
<td>20 (7/28)</td>
<td>0,0366</td>
<td>0,93</td>
<td>0,56</td>
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<tr>
<td></td>
<td>20 (19/32)</td>
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<td>0,98</td>
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<tr>
<td></td>
<td>22 (1)</td>
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<td>0,64</td>
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<tr>
<td></td>
<td>22 (7/30)</td>
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<td>0,73</td>
<td>0,254</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22 (19/34)</td>
<td>0,0307</td>
<td>0,780</td>
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<tr>
<td></td>
<td>24 (1)</td>
<td>0,0197</td>
<td>0,50</td>
<td>0,196</td>
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<tr>
<td></td>
<td>24 (7/32)</td>
<td>0,023</td>
<td>0,585</td>
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<tr>
<td></td>
<td>24 (19/36)</td>
<td>0,0252</td>
<td>0,640</td>
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<tr>
<td></td>
<td>26 (11)</td>
<td>0,157</td>
<td>0,40</td>
<td>0,122</td>
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<tr>
<td></td>
<td>26 (7/34)</td>
<td>0,189</td>
<td>0,48</td>
<td>0,140</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26 (19/38)</td>
<td>0,192</td>
<td>0,487</td>
<td>0,15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28 (1)</td>
<td>0,126</td>
<td>0,32</td>
<td>0,08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28 (7/36)</td>
<td>0,115</td>
<td>0,381</td>
<td>0,089</td>
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</tr>
<tr>
<td></td>
<td>28 (19/40)</td>
<td>0,151</td>
<td>0,385</td>
<td>0,095</td>
<td></td>
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<tr>
<td></td>
<td>30 (11)</td>
<td>0,0998</td>
<td>0,250</td>
<td>0,0506</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 (7/38)</td>
<td>0,115</td>
<td>0,295</td>
<td>0,055</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 (19/42)</td>
<td>0,123</td>
<td>0,312</td>
<td>0,072</td>
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<tr>
<td></td>
<td>32 (1)</td>
<td>0,0800</td>
<td>0,203</td>
<td>0,032</td>
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<tr>
<td></td>
<td>32 (7/40)</td>
<td>0,094</td>
<td>0,240</td>
<td>0,035</td>
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<tr>
<td></td>
<td>32 (19/44)</td>
<td>0,100</td>
<td>0,254</td>
<td>0,044</td>
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<tr>
<td></td>
<td>34 (1)</td>
<td>0,0863</td>
<td>0,150</td>
<td>0,0201</td>
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<tr>
<td></td>
<td>34 (7/42)</td>
<td>0,0833</td>
<td>0,111</td>
<td>0,0266</td>
<td></td>
</tr>
<tr>
<td></td>
<td>36 (1)</td>
<td>0,0500</td>
<td>0,127</td>
<td>0,0127</td>
<td></td>
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<tr>
<td></td>
<td>36 (7/44)</td>
<td>0,064</td>
<td>0,163</td>
<td>0,0161</td>
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</tr>
<tr>
<td></td>
<td>38 (1)</td>
<td>0,0400</td>
<td>0,100</td>
<td>0,0078</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 (1)</td>
<td>0,0311</td>
<td>0,080</td>
<td>0,0050</td>
<td></td>
</tr>
<tr>
<td></td>
<td>42 (1)</td>
<td>0,0268</td>
<td>0,0700</td>
<td>0,0038</td>
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</tr>
<tr>
<td></td>
<td>44 (1)</td>
<td>0,0217</td>
<td>0,054</td>
<td>0,0023</td>
<td></td>
</tr>
</tbody>
</table>

(Font: Gore & Associates, Pleinfeld)
Housing Materials and Surface Finish

MINI-SNAP housings are made from brass and are nickel-plated with a matt-chromate surface finish (sand-blasted). Nickel-plated or black chromate-finished housings are available on special request.

Inside metal components are made from nickel-plated brass.

<table>
<thead>
<tr>
<th>Component Parts</th>
<th>Material</th>
<th>Surface Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back Nut</td>
<td>+ 1 µm Cu</td>
<td></td>
</tr>
<tr>
<td>Slotted Nut</td>
<td>+ 3-6 µm Ni</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ 0.3-1 µm matt chromate</td>
<td></td>
</tr>
<tr>
<td>Collet</td>
<td>+ 1 µm Cu</td>
<td></td>
</tr>
<tr>
<td>EMI-Ring</td>
<td>+ 3-6 µm Ni</td>
<td></td>
</tr>
<tr>
<td>Half-Shells</td>
<td>+ 0.3-1 µm matt chromate</td>
<td></td>
</tr>
<tr>
<td>Locking Washer</td>
<td>+ 1 µm Cu</td>
<td></td>
</tr>
<tr>
<td>Nut</td>
<td>+ 3-6 µm Ni</td>
<td></td>
</tr>
<tr>
<td>Retainer Ring</td>
<td>+ 0.3-1 µm matt chromate</td>
<td></td>
</tr>
<tr>
<td>Pin (solder or PCB)</td>
<td>+ 1 µm Cu</td>
<td></td>
</tr>
<tr>
<td>Socket (solder or PCB)</td>
<td>+ 3-6 µm Ni</td>
<td></td>
</tr>
<tr>
<td>Pin (crimp)</td>
<td>+ 0.3-1 µm matt chromate</td>
<td></td>
</tr>
<tr>
<td>Socket (crimp)</td>
<td>+ 1 µm Cu</td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ 3-6 µm Ni</td>
<td></td>
</tr>
</tbody>
</table>

Insulation Body Material (TÜV recognized)

<table>
<thead>
<tr>
<th></th>
<th>Norm</th>
<th>Unit</th>
<th>PBT</th>
<th>PTFE 1)</th>
<th>PEEK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dialectic Strength</td>
<td>DIN 53481</td>
<td>ASTM D-149</td>
<td>27</td>
<td>&gt; 50</td>
<td>19</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>--</td>
<td>--</td>
<td>-40 / +140</td>
<td>-100 / +260</td>
<td>-50 / +250</td>
</tr>
<tr>
<td>Flammability rating</td>
<td>UL-94</td>
<td>--</td>
<td>V-0</td>
<td>V-0</td>
<td>V-0</td>
</tr>
<tr>
<td>Creeping distance acc. to CTI</td>
<td>IEC 60112</td>
<td>(V)</td>
<td>275</td>
<td>600</td>
<td>175</td>
</tr>
</tbody>
</table>

1) PTFE (Teflon) is only used for Coax- and Triax Connectors
Electromagnetic Compatibility (EMC)

When discussing electromagnetic compatibility (EMC) one should not only consider the device or the circuit, but also include the network and the entire data communication link. This involves all connecting elements such as conductors and connectors. Electromagnetic interference from the outside into the connector can lead to system malfunctioning. The best way to prevent this is by providing a high-quality shield between the cable and the connector. In order to provide reliable EMC data to our customers we engaged the services of a certified test laboratory to investigate the EMC characteristics of the ODU MINI-SNAP. They tested for us Size 00, 0, 1, 2 and 3 MINI-SNAP connectors.

Measurements were conducted using the inductive wire or parallel wire method in accordance with test procedure VG 95214-6-2. In this set-up, the mated connector is connected on one end to a network analyzer and terminated on the other end with a suitable impedance. The inductive wire is then mounted in close proximity along the mated connector pair. The induction wire is a ribbon cable which permits to vary the level of induction by using more or less of the ribbon conductors.

Next, a signal with a frequency range of 10 kHz to 3 GHz is connected to the ribbon cable. The network analyzer is used to measure the amount of signal induced into the connector circuit. The result is shown as the shielding attenuation $A_T$ in dB. It is essential that all leads to the connector are shielded so that no signal can be induced into the circuit at any other place except the connector. The various attenuation values are plotted on a logarithmic scale as attenuation in dB vs. frequency.

An attenuation of better than -55 dB is generally required for reliable connector and system operation. It can be shown that our connectors will meet this requirement in all applications.

The following diagram is valid for all series and standard sizes.
Autoclaving of ODU MINI-SNAP Connectors

If required ODU can deliver MINI-SNAP connectors for the following sterilization process:
Steam-sterilization with pre-vacuum or gravitation-process. Connectors were tested with autoklave equipment with reference to DIN EN 13 060 at 134° C and 500 cycles.

Sterilization Curve:

For other sterilization-processes please contact our technical support team.
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 ist approved to different certifications: VDE, UL, UL wiring harness, SCA, VG and MIL.
In the scope of quality approval the sizes 0 and 3 have been submitted to environmental and mechanical tests acc. to MIL.
All tests have been passed.

Tests carried out:

<table>
<thead>
<tr>
<th>Definition</th>
<th>Nach Norm</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Temperature</td>
<td>MIL-STD 810 F / PV 501</td>
</tr>
<tr>
<td>Low Temperature</td>
<td>MIL-STD 810 F / PV 502</td>
</tr>
<tr>
<td>Temperature Shock</td>
<td>MIL-STD 810 F / PV 503</td>
</tr>
<tr>
<td>Humidity</td>
<td>MIL-STD 810 F / PV 507</td>
</tr>
<tr>
<td>Salt Fog</td>
<td>MIL-STD 810 F / PV 509 and MIL-STD 1344 A / Methode 1001.1</td>
</tr>
<tr>
<td>Shock</td>
<td>MIL-STD 810 F / PV 516</td>
</tr>
<tr>
<td>Vibration</td>
<td>MIL-STD 1344 A / Methode 2005.1 / IV</td>
</tr>
<tr>
<td>Water Tightness IP 68</td>
<td>IEC 60529</td>
</tr>
</tbody>
</table>
Technical Terms and Definitions

Air Gap
= Shortest distance between two conductive elements through the air.

Autoclavability
(See page 76)

AWG
(See page 73)

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
= The permanent attachment of a contact to a conductor by pressure deformation or by reshaping the crimp barrel around the conductor so that a good electrical and mechanical connection is established.
(See page 72)

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

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 unmating force.

Insulation Body
= Non-conductive part of a connector, to electrically and mechanically separate live parts and to protect against accidental touch.
Keying
= 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 (see page 26).

Lower Limit Temperature
= The lowest permissible temperature which a connector or a plug-in device is allowed to be operated.

Materials
The contacts are made of CuZn-alloy and gold-plated. The standard housings are made of brass with a matt-chromate surface finish. All other materials and surfaces on special request. (see page 74).

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 71).

Operating Temperature of the ODU MINI-SNAP
= Range between upper and lower temperature limits.
- 40 °C to + 120 °C (see page 8)

Print Connection
(see page 72)

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

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

Solder Termination
(see page 72 Termination Styles)

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 connections.

Upper Limit Temperature
= highest permissible temperature at which a connector or a plug-in device is allowed to operate. This temperature includes the self-heating and the ambient temperature. At ODU MINI-SNAP + 120 °C (see page 71).

Watertightness
(See page 69)

Wire
= Wires may be provided with an insulation cover, an electrical shielding. Cables or conductors may consist of one or more wires.
Connectors shown in this catalog are designed to operate at high voltages and high frequencies. Care must be taken to assure that no person can come in contact with live conductors during installation or operation of the connectors.

ODU assured that at the time of print all information in this catalog was correct. 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.
Please visit our websites

www.odu.de
www.odu-usa.com
www.odu-china.com
Additional ODU Push-Pull Series

**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 PC**
- made out of plastic
- keying with half-shells
- locking: FP push-pull principle using conical sleeves
- degree of protection: - IP 50, - IP 50+EMC protection - IP 67, - IP 67+EMC protection

**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
**ODU MINI-SNAP Summary of Technical Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Connector application</td>
<td></td>
</tr>
<tr>
<td>2) Environment</td>
<td></td>
</tr>
<tr>
<td>3) Connector Type</td>
<td>Plug, Receptacle, Inline Receptacle, 90° Plug, 90° receptacle</td>
</tr>
<tr>
<td>4) Special Version</td>
<td></td>
</tr>
<tr>
<td>5) Style</td>
<td></td>
</tr>
<tr>
<td>6) Size</td>
<td>0, 1, 1.5, 2, 3</td>
</tr>
<tr>
<td>7) Series</td>
<td>don’t care, F</td>
</tr>
<tr>
<td>8) Keying</td>
<td></td>
</tr>
<tr>
<td>9) Number of Positions</td>
<td></td>
</tr>
<tr>
<td>10) Termination</td>
<td>solder, crimp, PCB</td>
</tr>
<tr>
<td>11) Cross section of wire</td>
<td>mm mm AWG</td>
</tr>
<tr>
<td>12) Cable Dia.</td>
<td></td>
</tr>
<tr>
<td>13) Bend Sleeve (color)</td>
<td></td>
</tr>
<tr>
<td>14) Protection DIN EN 60529</td>
<td>IP 50 (Standard), IP 68 (watertight), other</td>
</tr>
<tr>
<td>15) Operating Temperature</td>
<td>°C max., °C min.</td>
</tr>
<tr>
<td>16) Electrical Specs:</td>
<td>Operating Voltage</td>
</tr>
<tr>
<td></td>
<td>V AC, V DC</td>
</tr>
<tr>
<td></td>
<td>Operating Current</td>
</tr>
<tr>
<td></td>
<td>Constant A, Short-term A, sec.</td>
</tr>
<tr>
<td>17) Chemical resistance against</td>
<td></td>
</tr>
<tr>
<td>18) Other requirements</td>
<td></td>
</tr>
<tr>
<td>19) Autoclavable, +134°C (see p. 82)</td>
<td>Yes, No</td>
</tr>
</tbody>
</table>

Number required: ________________________________

Production Quantity: ________________________________
The Part Number Key

1. Type
   \[ A = \text{Break-Apart-Plug} \]
   \[ G = \text{Receptacle} \]
   \[ K = \text{In-Line Receptacle} \]
   \[ S = \text{Straight Plug} \]
   \[ W = \text{Right-Angle Plug} \]

2. Style
   \[ 1 - 9 \] and \[ A \]
   \[ X = \text{Special} \]

3. Size
   \[ 0 - 3 \] and \[ A \]
   \[ A = 1,5 \]

4. Series
   \[ F \]

5. Coding (page 26)

6. Material/Surface - Housing (page 26)
    empty

7. empty

8. Material - Insulator (page 27)

9. + 10. Contact Insert (page 28 - 32)
   e.g. 18-way = \[ 18 \]

10. Contact Type/Surface (page 33)

11. Contact Diameter (page 33)
    \[ M = \text{mixed arrangement} \]

    14. for special Contact \[ 9 \]
    empty

13. + 17. Collet System (page 36)

14. + 19. Cable Bend Relief (page 38)

Example:

\[ G \ 5 \ 2 \ F \ 1 \ C \ - \ T \ 1 \ 6 \ L \ F \ D \ 0 \ - \ 0 \ 0 \ 0 \ 0 \]
Receptacle - Style 5 - Size 2 - Series F - Coding 1 - Brass matt chromate Housing -
PBT Insulator - 16-pos. - Socket (solder) 0.75 µm Au - Term. Cross Section AWG24/26

\[ S \ 2 \ 2 \ F \ 1 \ C \ - \ P \ 1 \ 6 \ M \ F \ D \ 0 \ - \ 7 \ 5 \ E \ S \]
Plug - Style 2 - Size 2 - Series F - Coding 1 - Brass matt chromate Housing -
PBT Insulator - 16-pos. - Pin (solder) 0.75 µm Au - Term. Cross Section AWG22 -
Cable Diameter 7.1-7.5 - Blue Cable Bend Relief - Material Silicone