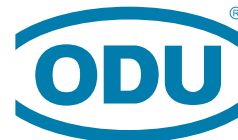


A PERFECT ALLIANCE.



## ODU AMC<sup>®</sup> EASY-CLEAN

Rugged miniature circular connector  
with Easy-Clean function

EASY-CLEAN  
BREAK-AWAY



ODU AMC<sup>®</sup> EASY-CLEAN

ODU AMC<sup>®</sup>

ODU AMC<sup>®</sup> HIGH-DENSITY

ODU THREADED CONNECTOR

# ODU AMC®

---

## FEATURES

- Low weight and compact design
- Easy handling
- Watertight
- Blind mateable
- Robust
- EMC shielding
- Robust mechanical and optical coding
- Resist all kinds of extremes like dust, temperature, humidity, corrosion, radiation and shock vibration

---

## APPLICATIONS

- Communication systems (PTT, PRR)
  - Rugged computers and hand-helds
  - Power supply
  - Unmanned systems
  - Optical devices
  - Nightvision systems
  - Software defined radions
  - Defence and security
- 



All shown connectors are according to IEC 61984:2008 (VDE 0627:2009); connectors without breaking capacity (COC).

ODU AMC® Easy-Clean is UL-listed under file E110586.

Issue: 2020-03

Printed on certified recycled paper.



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# A PERFECT ALLIANCE

**Creating connections, building alliances, collaborating into the future:** Whether two technical components come together to form a unit or people come together to strive for great results – the key is to aspire to achieve superb results. This goal drives our work. **Perfect connections that inspire and deliver on the promises.**



## ODU GROUP OVERVIEW

- Almost 80 years of experience in connector technology
- Over 2,300 employees worldwide
- Sales subsidiaries in China, Denmark, France, Germany, Hong Kong, Italy, Japan, Korea, Romania, Sweden, UK and the US as well as 5 production and logistics sites
- All technologies under one roof: Design and development, machine tool and special machine construction, injection, stamping, turning, surface technology, assembly and cable assembly

## CERTIFICATES & APPROVALS

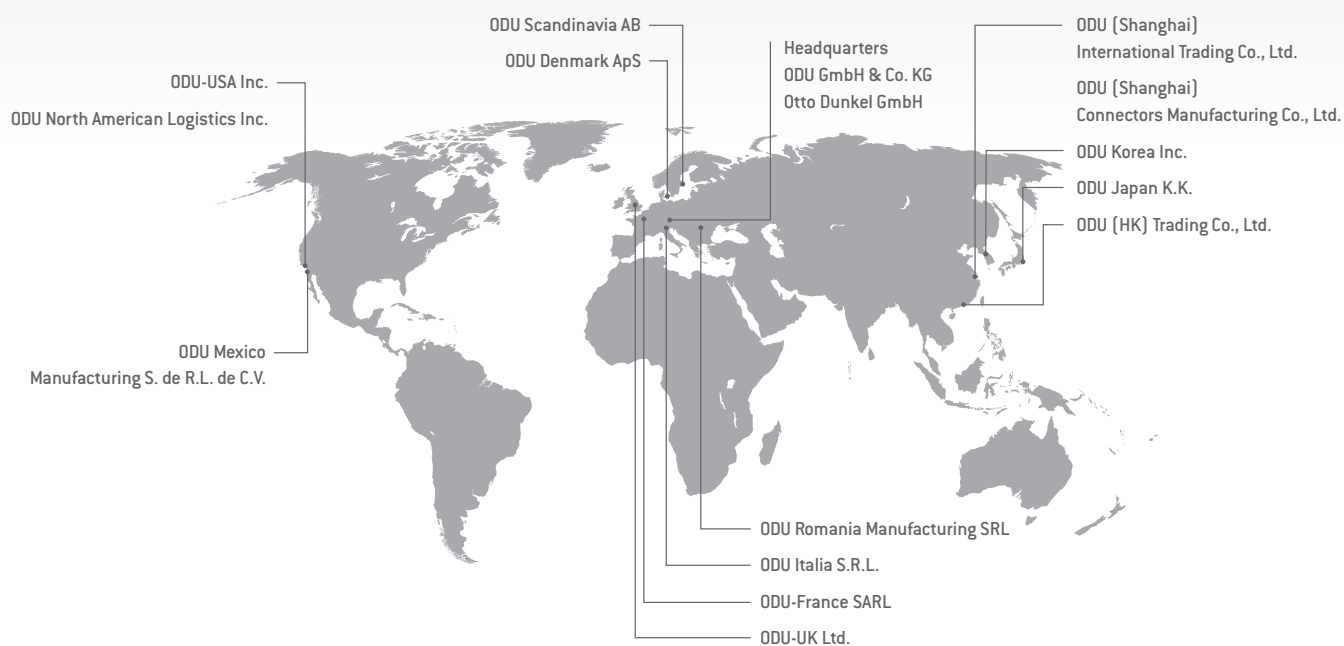
- ISO 9001
- IATF 16949
- ISO 13485
- ISO 14001
- ISO 50001
- Wide range of UL, CSA, VG and VDE approvals
- UL Wiring Harnesses certified

For a complete list of our certifications and approvals, please visit our website.





## WORLDWIDE CUSTOMER PROXIMITY

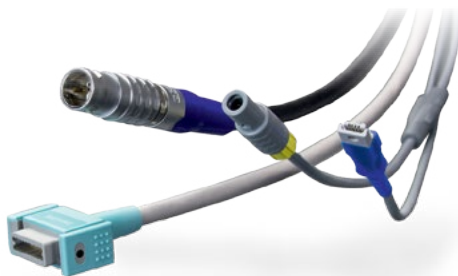


# CONNECTIONS THAT LIVE UP TO ANY REQUIREMENT



## ELECTRICAL CONTACTS

- Versatile contact technologies
- Outstanding reliability and durability
- Current-carrying capacity of up to 2,400 A
- Rugged and universal contact systems
- Stamping technology for customer-specific high volume solutions
- Very high vibration resistance
- Low, stable contact resistance



## CABLE ASSEMBLY

- Complete system solutions from one source based on years of expertise
- State-of-the-art production facilities with 100 % end testing
- Cable assembly available for ODU products
- Overmolding in silicone, hot-melt and high-pressure procedures
- Customer-specific labeling and cable printing
- Wide range of standard cables and accessories available
- Prototype, small series and high volume production
- Rapid prototyping



## CIRCULAR CONNECTORS

- Circular connector series in robust metal or plastic housing
- Contacts for soldering, crimping and PCB termination
- Different locking systems available: Push-Pull and Screw-Locking options or Break-Away function for quick release
- 2 up to 55 contacts
- Protection classes IP50 to IP69
- Autoclavable for medical applications
- Hybrid inserts for combined transmission
- Including cable assembly – system solution from one source



## APPLICATION AND CUSTOMER-SPECIFIC SOLUTIONS

- Contacts, connectors and cable assemblies for the highest technical requirements as well as special applications
- First-class implementation expertise
- High level of vertical manufacturing – all competences and key technologies under one roof
- Expert advice based on mutual partnership
- Short development and production paths



## MODULAR CONNECTORS

- Application-specific hybrid interface
- For manual mating and automatic docking
- Flexible modular construction and highest packing density
- For the transmission of signals, power, high current, high voltage, HF signals (coax), media, high-speed data or fiber optics
- Variety of locking options available
- Mating cycles scalable as required from 10,000 to over 100,000 (1 million)
- Including cable assembly – system solution from one source



## MASS INTERCONNECT SOLUTIONS

- For testing printed circuit boards (PCBs) and electronically assembled units
- Innovative engagement option: electromechanical version
- 8 tensioning points stop the frame distorting
- Very high flexibility thanks to ODU-MAC® modules
- Adapter frame (ITA) with tolerance compensation
- Including cable assembly – system solution from one source



## HEAVY DUTY CONNECTORS

- Extremely durable even under extreme / harsh environments
- High vibration resistance
- Up to 400 A (higher currents upon request)



## PRINTED CIRCUIT BOARDS CONNECTORS

- Maximum flexibility in application designs
- High resilience and outstanding quality
- Including cable assembly – system solution from one source



# OUR KNOW-HOW FOR YOUR SUCCESS

Customers rely on ODU technology wherever first-class, high-performance connector solutions are required.

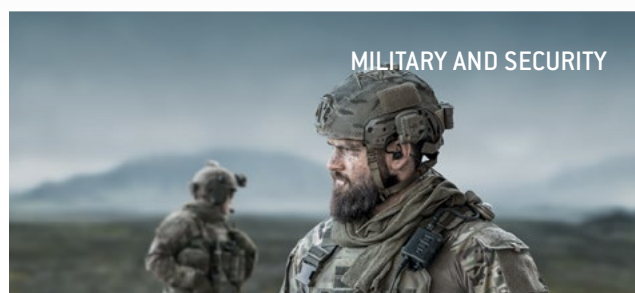
All our skills go into our products to ensure your success.

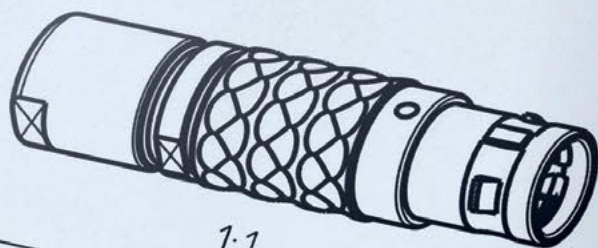
In addition to the top quality, reliable stability and maximum flexibility our products also stand for **dynamics, reliability, safety, precision, efficiency and sustainability.**

---

## HIGH PERFORMANCE CONNECTOR TECHNOLOGY FOR DEMANDING KEY MARKETS

---





|                     |                |
|---------------------|----------------|
| S12L_C-P03MSNO-9900 | > 9.0 - 9.9 mm |
| S12L_C-P03MSNO-9200 | > 8.0 - 9.2 mm |
| S12L_C-P03MSNO-8200 | > 7.0 - 8.2 mm |
| S12L_C-P03MSNO-7200 | > 6.0 - 7.2 mm |
| S12L_C-P03MSNO-6200 | > 5.0 - 6.2 mm |
| S12L_C-P03MSNO-5200 | > 4.0 - 5.2 mm |
| S12L_C-P03MSNO-4200 | > 3.0 - 4.2 mm |
| S12L_C-P03MSNO-3200 | > 2.0 - 3.2 mm |
| S12L_C-P03MSNO-2200 | > 1.0 - 2.2 mm |
| S12L_C-P03MSNO-1200 | > 0.5 - 1.2 mm |

## MORE THAN A CONNECTION

Contacts, connectors and cable assembly system solutions meeting the most demanding technical market requirements – ODU's connector solutions and value-added services are characterized by their exclusive focus on meeting the customer's needs.

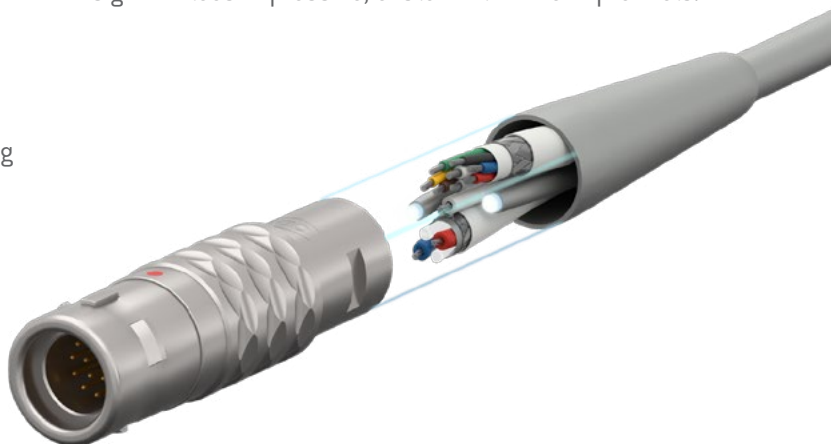
- Precise implementation of application-specific requirements regarding design, functionality, cost and exclusivity
- Modified connector solutions derived from standard products
- One-to-one local expertise and fair, friendly consulting
- Short development and production paths

## DEVELOPMENT OF CUSTOM SOLUTIONS

Demands that can't be pigeon-holed call for creative specialists who think outside the box. ODU offers the type of expertise that focuses solely on the specific requirements of our customers.

For every development order we get, we not only perform a thorough check to make sure it's feasible, we intensively incorporate our customers in the ongoing design process.

This guarantees impressive, custom-fit final end products.





ODU AMC® EASY-CLEAN





## PRODUCT INFORMATION

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# ODU AMC<sup>®</sup> INTRODUCTION

## A CONNECTOR THAT YOU CAN DEPEND ON

ODU AMC<sup>®</sup> is a rugged miniature connector solution for extreme environments. The connectors are waterproof when mated and unmated, offer robust mechanical coding with a visual indicator, and are EMI shielded.

The connectors have been designed and tested to survive many of the factors detrimental to the performance of connectors in harsh environments, including: sand and dust, extreme temperatures, humidity, corrosion, solar radiation, shock, vibration and torque.

Whether in extreme environments or under high mechanical stress, ODU connectors ensure reliable electrical communication, even in the most demanding conditions.

The ODU AMC<sup>®</sup> is available in a wide range of sizes and contact inserts. You can choose between four versions – Push-Pull, Break-Away, Easy-Clean and High-Density.



## ODU AMC<sup>®</sup> EASY-CLEAN PRODUCT FEATURES

### VARIOUS SIZES AND CONFIGURATIONS AVAILABLE

- 3 standard connector shell sizes
- Plug outer diameter 11.9 mm to 15.9 mm
- 4 to 19 contacts
- International protection class IP6K8 and IP6K9K

### MATERIALS AND APPLICABILITY

The ODU AMC<sup>®</sup> connector series uses PEEK as the insulator material.

The housings are made of aluminum, and plated with ruthenium over nickel (see page 65 for more information).

Operating temperature range: –51 °C to +125 °C. This rugged and versatile connector series is ideal for defense & security applications as well as industrial electronics.

### COMPLETE SYSTEM SOLUTION

Every connection has a unique cable requirement. Make no compromise when it comes to the quality of the complete interconnect system. ODU gives you the complete system solution from one source, without the need for an intermediary supplier. Services include:

- 100 % outgoing inspection
- EN ISO 14644-1:2015 clean room assembly available
- Factory-automated equipment and processes (cutting, stripping, etc.)
- Low- and high-pressure overmolding
- Ultrasonic welding
- EMI shielded enclosure assembly
- Custom labeling
- Various potting options for sealed systems
- Overmolded cable transitions (1-to-2, 1-to-3, etc.)

# ODU AMC® EASY-CLEAN CONNECTORS

## PRODUCT RANGE AND SOLUTIONS

|   | Coding         | Size | No. of possible mechanical codings | Plug diameter in mm | Max. cable diameter in mm | Number of max. contacts | Solder | PCB | International protection class A <sup>1</sup> |
|---|----------------|------|------------------------------------|---------------------|---------------------------|-------------------------|--------|-----|---|
| <b>ODU AMC® EASY-CLEAN</b><br> | Pin and groove | 0    | 4                                  | 11.9                | 5.5                       | 7                       | •      | •   | up to IP6K9K                                  |
|   |                | 1    |                                    | 13.9                | 6.5                       | 16                      |        |     |   |
|   |                | 1,5  |                                    | 15.9                | 8.0                       | 19                      |        |     |   |

<sup>1</sup> International protection class in mated condition

## RELATED PRODUCTS OF THE ODU CIRCULAR CONNECTOR SERIES



- High speed data technology
- Secure Push-Pull locking and Break-Away function
- Contacts for solder and PCB termination
- International protection class IP6K8K and IP6K9K
- Small and compact design
- High-contact density
- High-speed data transmission capable
- Break-Away function
- International protection class IP6K8
- With dual-locking option
- High reliability for harsh environments
- Screw locking with ratchet mechanism half turn to fully mate
- High vibration resistant
- International protection class IP6K8
- More mating cycles than most MIL spec. connectors
- Circular Push-Pull connector with metal housing
- Wide variety of contact configurations and combinations
- International protection class IP50 and IP68

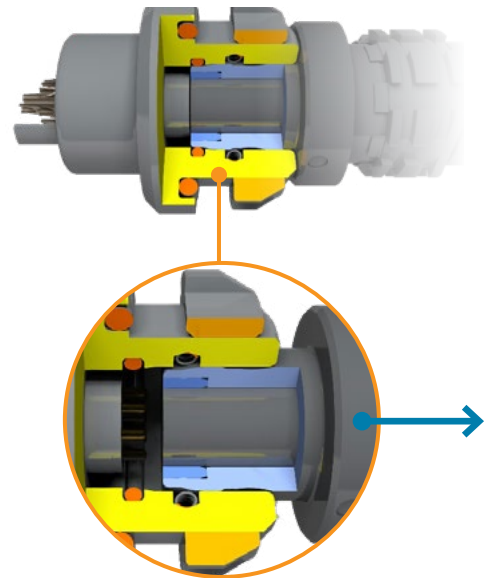
# ODU AMC<sup>®</sup> EASY-CLEAN LOCKING MECHANISM – THE PERFECT CONNECTION

ODU offers you high-quality connectors and comprehensive service for the complete assembly. From connectors to watertight potting, we provide the complete system as an one-stop-shop solution.

## BREAK-AWAY FUNCTION

The Break-Away function allows connectors to be mated and unmated in fractions of a second. As a safety measure, features in the connector allow the plug and receptacle to separate when the connector is in axial tension.

During the mating process, locking tabs on the plug align with corresponding grooves in the receptacle, but the geometry of the locking tabs is such that the connectors will separate when the specific retention force of the mechanism is exceeded. As a result, disconnection of the system can be triggered by pulling on the plug connector, the receptacle connector or cables attached to either.



## FOR YOUR NOTES



ODU AMC® EASY-CLEAN

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# CONFIGURATION GUIDELINE

Correct configuring – step by step

---

# BIT BY BIT TO THE PERFECT CONNECTION

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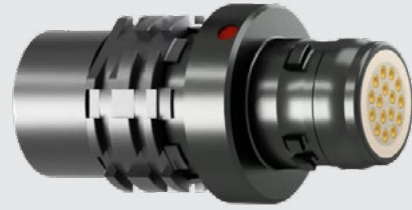
ODU offers you high-quality connectors and comprehensive service for the complete assembly.  
From connectors to watertight potting, we provide the complete system from a single source.





# SAMPLE CONFIGURATION STEP BY STEP

The perfect product for you in just a few steps. These step-by-step instructions show you how to configure your own individual product with the ODU part number key based on a sample configuration.



Break-Away Plug / size 1 / AMC® series YR / coding A / connector plug housing ruthenium over aluminium / insulator PEEK / 16 contacts / solder flat contact / contact diameter 0.6 / termination cross section AWG 26

## STEP 1: SERIES (SEE POSITION 4)

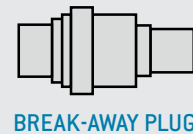
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
|   |   |   | Y |   |   | — |   |   |    |    |    |    |    | —  | R  |    | 0  |    |



## STEP 2: TYPE/STYLE (SEE POSITIONS 1, 2, 16, 17 AND 19)

PAGE 25 – 29

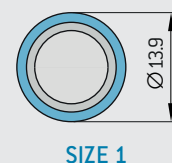
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
| A | 1 |   | Y |   |   | — |   |   |    |    |    |    |    | —  | R  | 0  | 0  | 0  |



## STEP 3: SIZE (SEE POSITION 3)

PAGE 32 – 37

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



## STEP 4: CODING (SEE POSITION 5)

PAGE 30

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



## STEP 5: HOUSING MATERIAL (SEE POSITION 6)

PAGE 30

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



# YOUR WAY TO AN INDIVIDUAL CONNECTION:

## HOW TO CONFIGURE WITH THE PART NUMBER KEY

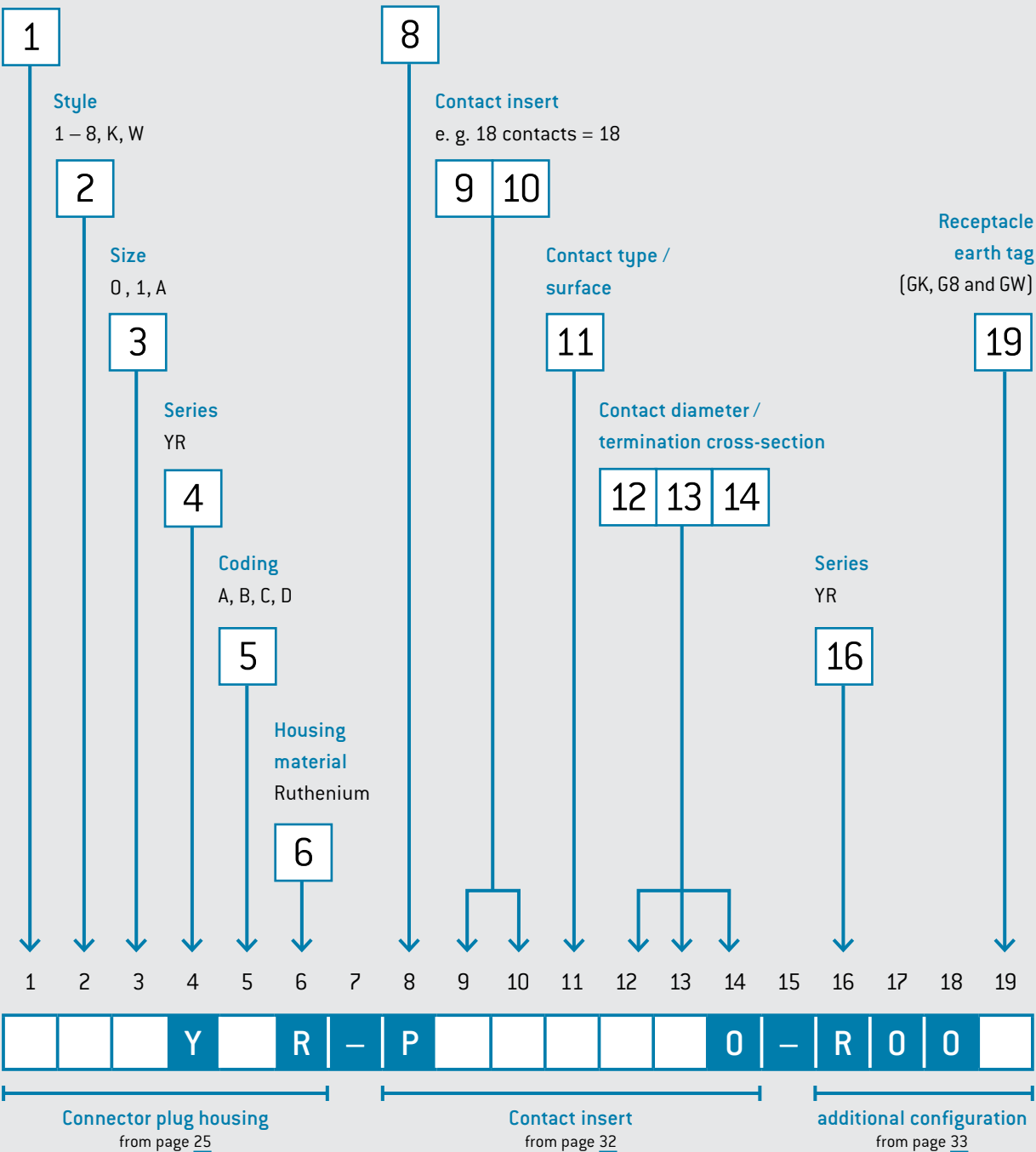
This shows you how ODU's part number key is composed. In the first part of the configuration, select the connector plug housing (such as style and size) of the connector. In the middle part of the part number key, you configure the contact insert and then the cable entry.

### Type

- A = Break-Away connector
- G = Receptacle / panel mounted plug
- K = In-line receptacle

### Material insulator

[PEEK = standard]



## STEP 6: INSULATOR MATERIAL (SEE POSITION 8)

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



## STEP 7: CONTACT INSERT (SEE POSITIONS 9 AND 10)

PAGE 32 – 37

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



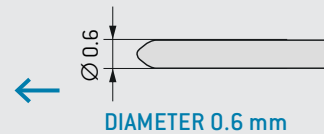
## STEP 8: CONTACT TYPE / SURFACE (SEE POSITION 11)

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



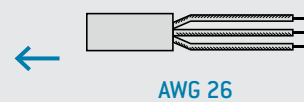
## STEP 9: CONTACT DIAMETER (SEE POSITION 12)

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



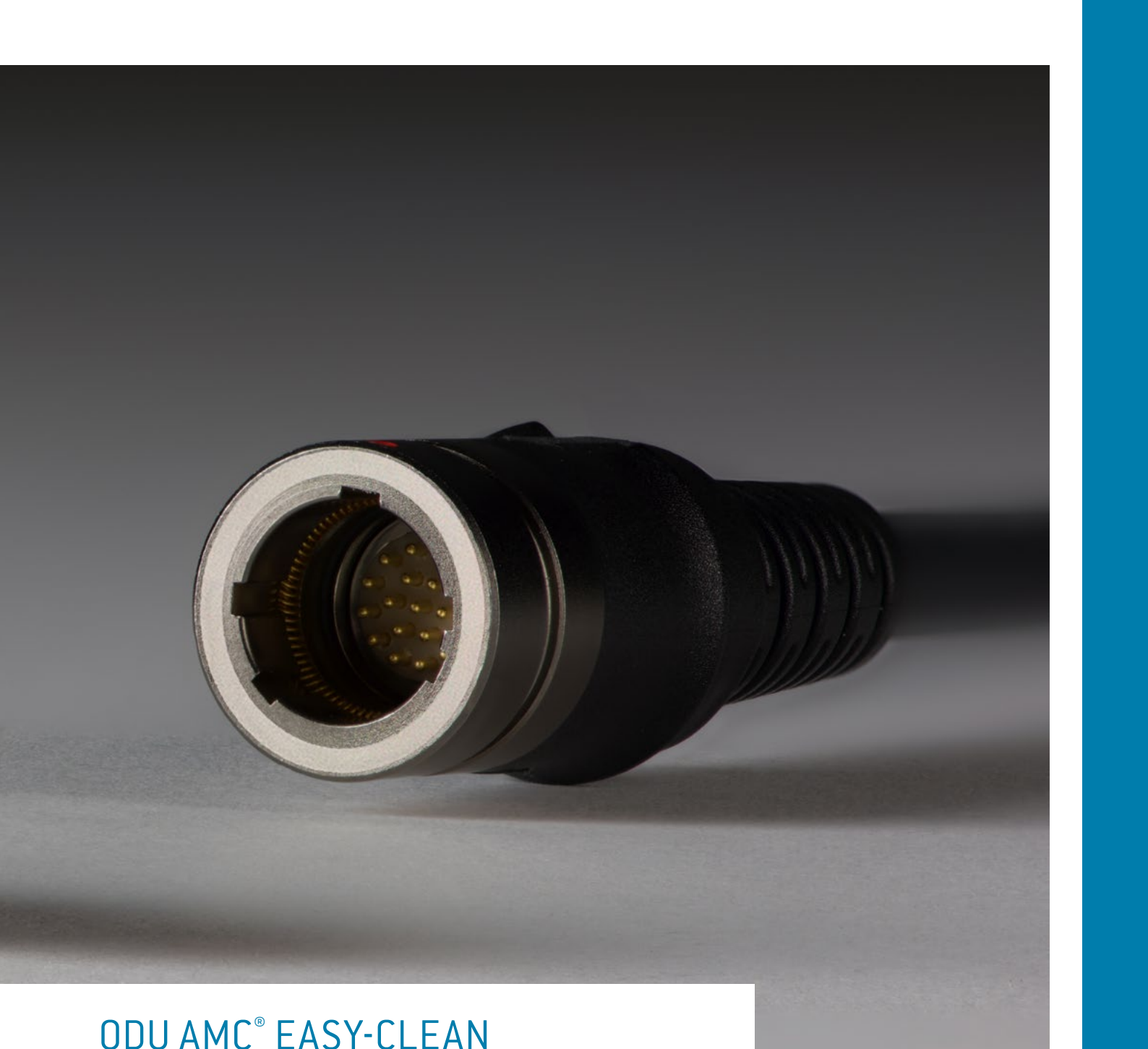
## STEP 10: TERMINATION CROSS-SECTION (SEE POSITIONS 13)

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





ODU AMC® EASY-CLEAN



# ODU AMC® EASY-CLEAN

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| Receptacles .....                            | <a href="#">28</a> |
| Coding possibilities .....                   | <a href="#">30</a> |
| Housing material .....                       | <a href="#">30</a> |
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| Protection caps .....                        | <a href="#">38</a> |

# SUMMARY ODU AMC® EASY-CLEAN

ODU AMC® Easy-Clean use pin and groove coding and additional to mechanical also optical color coding. These robust circular connectors can be configured in variety ways.

- Mechanical coding over pin and groove
- 4 to 19 contacts
- Up to 3 sizes
- Protection class IP6K8 and IP6K9K
- 5,000 mating cycles
- Spring loaded contacts for solder and print termination

## IN-LINE RECEPTACLE

P. 27

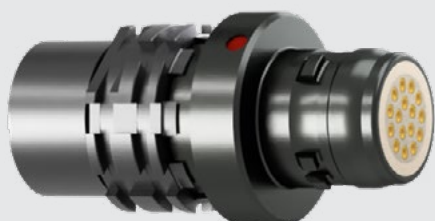
K 1



## BREAK-AWAY PLUG

P. 25

A 1



## RECEPTACLES

P. 28

G K



## PANEL PLUG REAR MOUNT

P. 26

G W



G 8



For assembly instructions please refer to our website: [www.odu-connectors.com/downloads](http://www.odu-connectors.com/downloads)

**STYLE 1**

| Size |   | L1<br>mm | L2<br>mm | L3<br>mm | D1<br>mm | AF A<br>mm | Max<br>Ø-max <sup>1</sup><br>mm |
|------|---|----------|----------|----------|----------|------------|---------------------------------|
| 0    | 0 | 23.5     | 3.0      | 15.0     | 11.9     | 9          | 5.5                             |
| 1    | 1 | 26.9     | 3.5      | 18.4     | 13.9     | 11         | 6.5                             |
| 1.5  | A | 27.5     | 3.5      | 18.5     | 15.9     | 12         | 8.0                             |

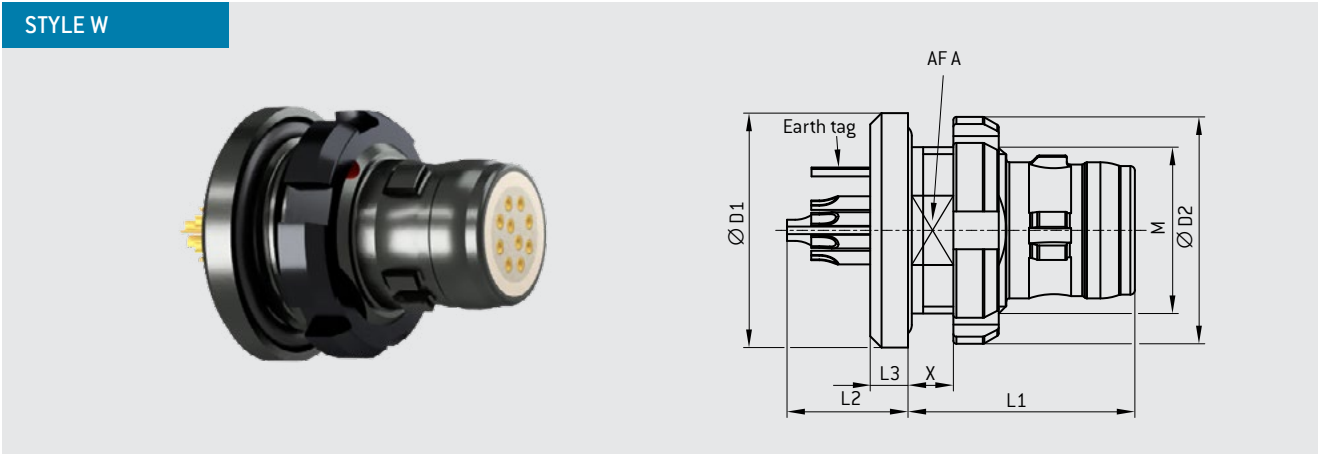
- Technical data see page [42](#)
- Contact configuration see page [32](#)
- Cable assembly information see ODU instruction 010.645.001.000.004 (available at [www.odu-connectors.com/downloads/assembly-instructions/](http://www.odu-connectors.com/downloads/assembly-instructions/))

<sup>1</sup> Based on cable with one braided shield

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

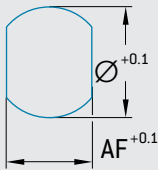


# PANEL PLUG REAR MOUNT



| Size |   | L1<br>mm | L2<br>mm | L3<br>mm | X<br>max<br>mm | D1<br>mm | D2<br>mm | AF A<br>mm | M<br>mm | Panel cut out<br>AF<br>mm | Ø<br>mm |
|------|---|----------|----------|----------|----------------|----------|----------|------------|---------|---------------------------|---------|
| 0    | 0 | 15.0     | 6.4      | 2.5      | 3.0            | 13.2     | 12.8     | 9.2        | 10×0.5  | 9.3                       | 10.1    |
| 1    | 1 | 15.0     | 8.0      | 2.5      | 3.5            | 15.5     | 15.0     | 10.0       | 11×0.75 | 10.1                      | 11.1    |
| 1.5  | A | 16.5     | 9.7      | 4.0      | 3.5            | 17.5     | 17.9     | 13.0       | 14×0.75 | 13.1                      | 14.1    |

Panel cut out



## NUTDRIVER FOR SLOTTED NUT

| Size    | Number              | Torque<br>Nm |
|---------|---------------------|--------------|
| 0       | 700.098.005.000.000 | 0.8          |
| 1       | 701.098.001.000.000 | 1.0          |
| 1.5 (A) | 701.098.002.000.000 | 3.0          |

## TECHNICAL DATA

- Technical data see page 42
- Contact configuration and PCB layout see page 32

12345678910111213141516171819

G

W

Y

R

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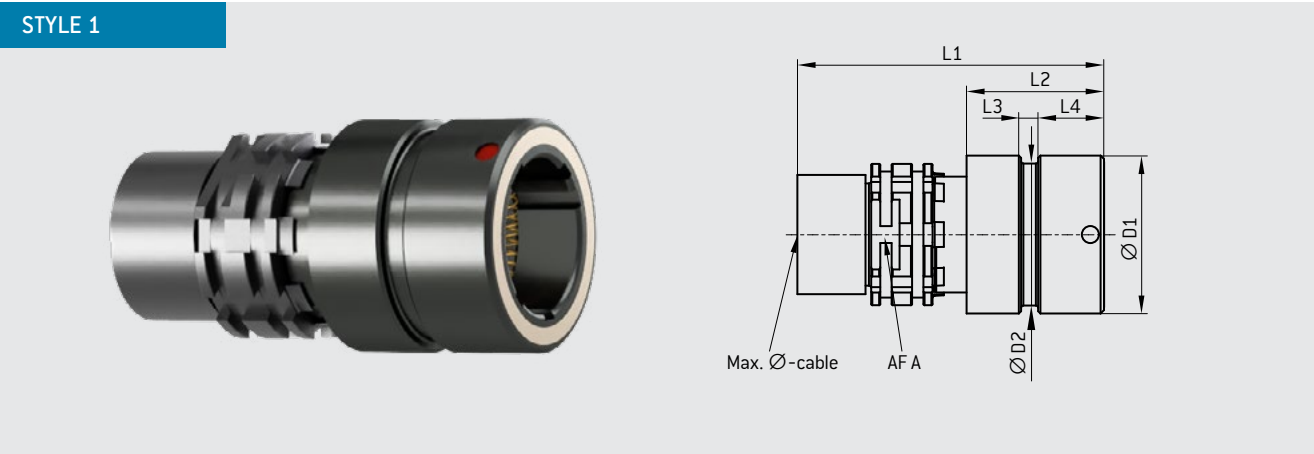
R

0

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L

# IN-LINE RECEPTACLE



| Size |   | L1   | L2   | L3  | L4  | D1   | D2   | AF A | Max<br>Ø-cable <sup>1</sup> |
|------|---|------|------|-----|-----|------|------|------|-----------------------------|
|      |   | mm   | mm   | mm  | mm  | mm   | mm   | mm   | mm                          |
| 0    | 0 | 25.0 | 13.0 | 1.5 | 5.8 | 11.9 | 10.5 | 9    | 5.5                         |
| 1    | 1 | 27.0 | 12.1 | 1.5 | 5.8 | 13.9 | 12.5 | 11   | 6.5                         |
| 1.5  | A | 27.0 | 12.0 | 1.5 | 5.8 | 15.9 | 14.5 | 12   | 8.0                         |

TECHNICAL DATA

- Technical data see page 42
- Contact configuration see page 32
- Cable assembly information see ODU instruction 010.645.001.000.003 (available at [www.odu-connectors.com/downloads/assembly-instructions/](http://www.odu-connectors.com/downloads/assembly-instructions/))

<sup>1</sup> Based on cable with one braided shield

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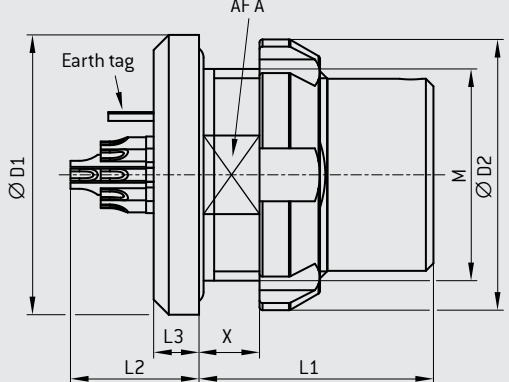
0

0

# RECEPTACLE

STYLE K

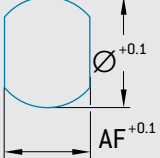




For installation from rear of panel – low profile inside the device

| Size |   | L1<br>mm | L2<br>max<br>mm | L3<br>mm | X<br>max<br>mm | D1<br>mm | D2<br>mm | AF A<br>mm | M<br>mm   | Panel cut out |      |
|------|---|----------|-----------------|----------|----------------|----------|----------|------------|-----------|---------------|------|
| 0    | 0 | 15.5     | 7.3             | 2.5      | 7.0            | 15.5     | 15.0     | 10         | 11 × 0.75 | 10.1          | 11.1 |
| 1    | 1 | 15.5     | 7.4             | 3.0      | 4.0            | 18.5     | 17.9     | 13         | 14 × 1    | 13.1          | 14.1 |
| 1.5  | A | 16.5     | 8.2             | 3.0      | 5.5            | 18.9     | 17.9     | 13         | 14 × 0.75 | 13.1          | 14.1 |

Panel cut out



## NUTDRIVER FOR SLOTTED NUT

| Size    | Number              | Torque<br>Nm |
|---------|---------------------|--------------|
| 0       | 700.098.001.000.000 | 1.0          |
| 1       | 701.098.002.000.000 | 3.0          |
| 1.5 (A) | 701.098.002.000.000 | 3.0          |

## TECHNICAL DATA

- Technical data see [page 42](#)
- Contact configuration see [page 32](#)

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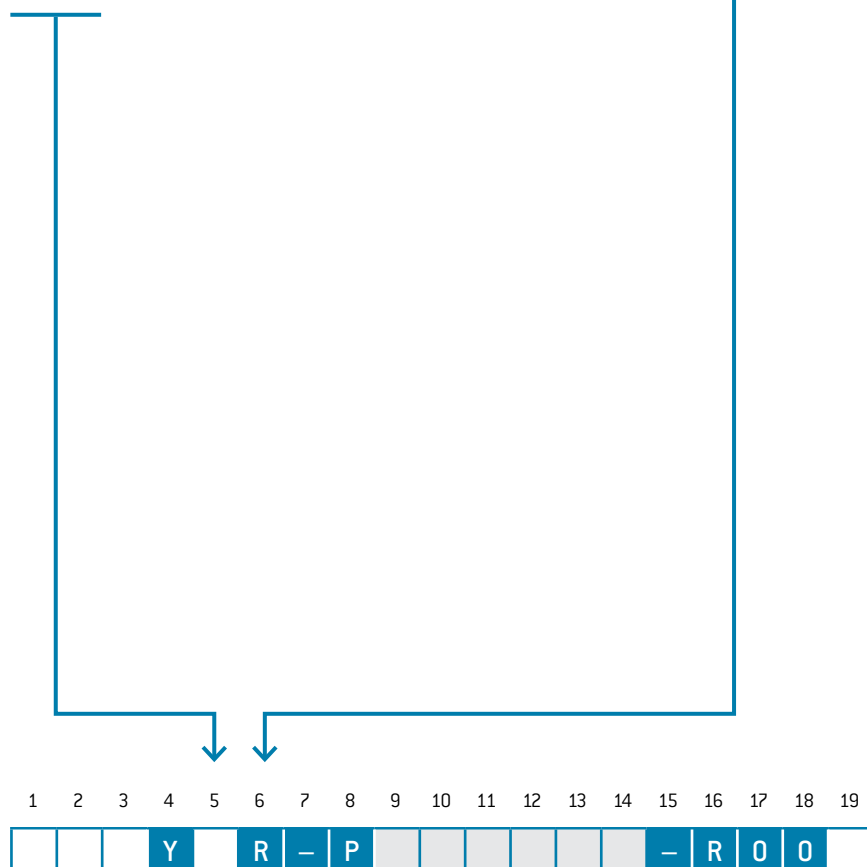


## CODING POSSIBILITIES

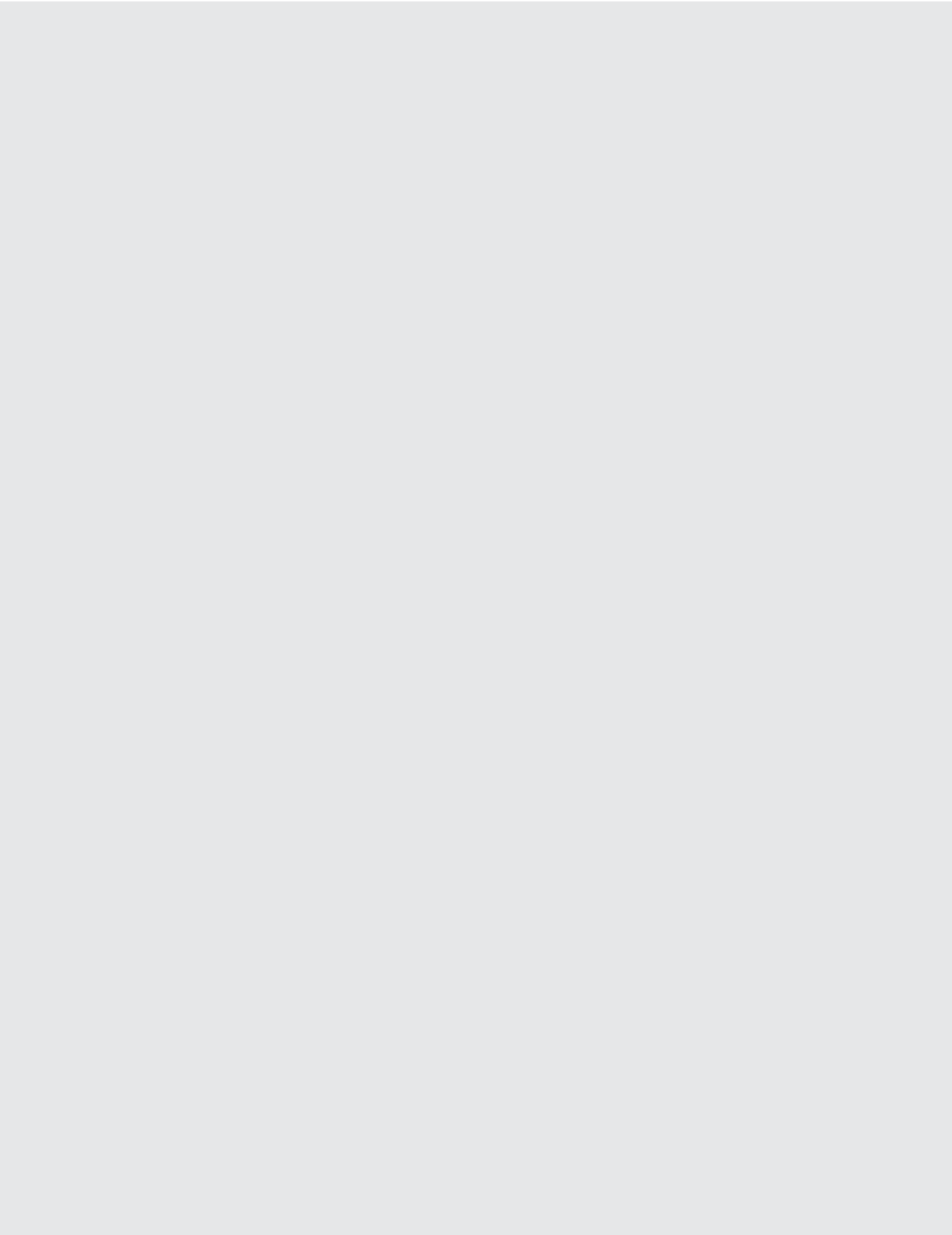
## HOUSING MATERIAL

| Coding | Plug front view   | Color coding  | Color       |
|--------|---|---|-------------|
| A      |    |    | Light brown |
| B      |    |    | Red         |
| C      |   |   | Blue        |
| D      |  |  | Green       |

|        |  |
|--------|--|
| Coding | Housing material                                   |
| R      | Aluminium EN-6023<br>Ruthenium over electroless Ni |



# FOR YOUR NOTES

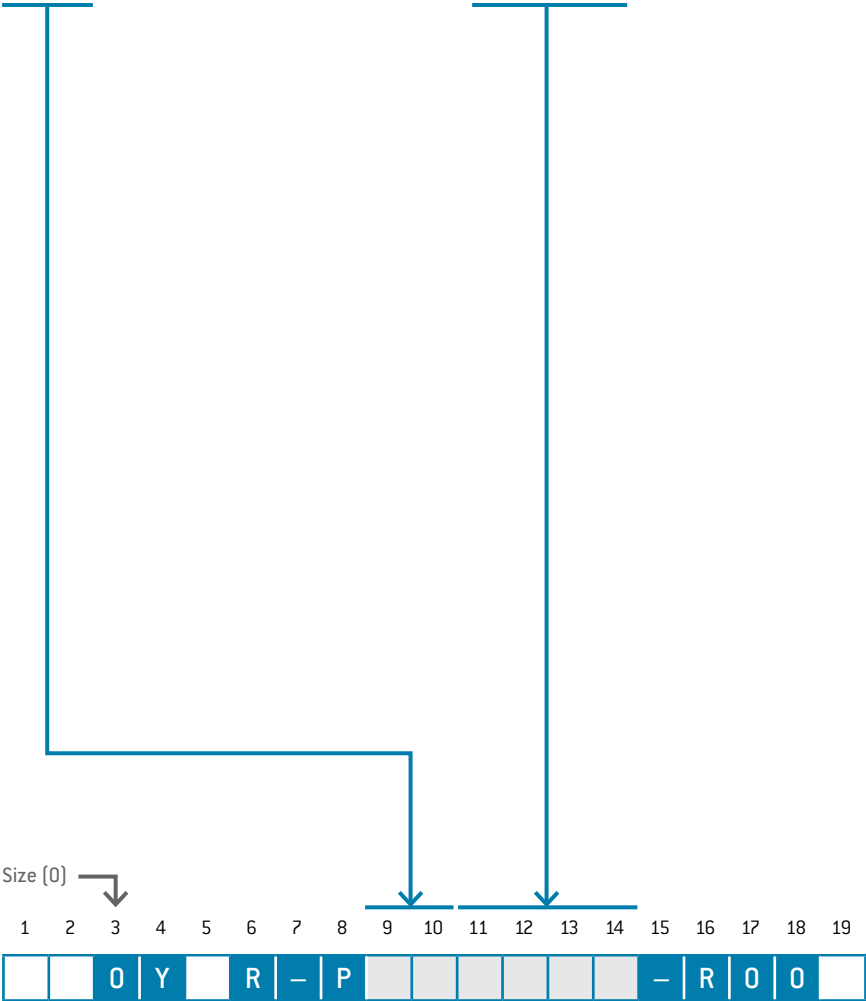


# CONTACT CONFIGURATIONS

## SIZE 0

| Number of contacts <sup>1</sup> |   | Available connector styles |    |    | Contact type        |             | Part number key |   |   |   | Contact diameter | Single contact nominal current <sup>2</sup> | Test voltage <sup>3</sup><br>Contact to contact | Nominal voltage <sup>4</sup> | Termination diameter | Termination cross section |      |
|---------------------------------|---|----------------------------|----|----|---------------------|-------------|-----------------|---|---|---|------------------|---|---|------------------------------|----------------------|---------------------------|------|
|                                 |   |                            |    |    |                     | Termination |                 |   |   |   | mm               | A   | kVeff   | kVrms                        | mm                   | AWG                       | mm²  |
| 0                               | 4 | A1                         | —  | —  | Flat contact        | Solder      | W               | D | D | 0 | 0.6              | 2.0   | 0.600   | 0.200                        | 0.65                 | 26                        | 0.15 |
|                                 |   | —                          | —  | —  |                     | Print       | U               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |
|                                 |   | G8                         | GK | K1 | Spring load contact | Solder      | X               | D | D | 0 |                  |   |   |                              | 0.65                 | 26                        | 0.15 |
|                                 |   |                            |    | —  |                     | Print       | V               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |
| 0                               | 7 | A1                         | GW | —  | Flat contact        | Solder      | W               | D | D | 0 | 0.6              | 2.0   | 0.600   | 0.200                        | 0.65                 | 26                        | 0.15 |
|                                 |   | —                          |    | —  |                     | Print       | U               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |
|                                 |   | G8                         | GK | K1 | Spring load contact | Solder      | X               | D | D | 0 |                  |   |   |                              | 0.65                 | 26                        | 0.15 |
|                                 |   |                            |    | —  |                     | Print       | V               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |

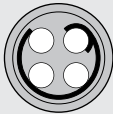
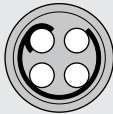
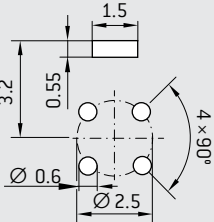


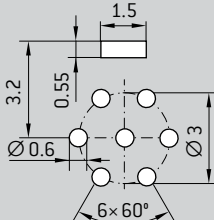
<sup>1</sup> Other contact configurations on request.  
<sup>2</sup> Derating factor see page 47  
<sup>3</sup> SAE AS 13441:2004 method 3001.1  
<sup>4</sup> Max. operating voltage at NN (sea level) acc. to SAE AS 13441:2004 method 3001.1  
Further information on page 48





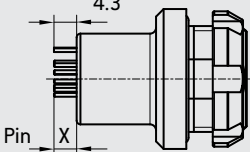
# PCB LAYOUT PRINT CONTACTS

## SIZE 0

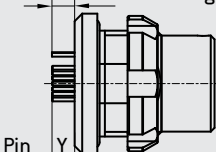
| View on termination area   |  | Number of contacts |   | Length earth tag and pin |                   |                   |
|--|--|--------------------|---|--------------------------|-------------------|-------------------|
| Spring load contact piece  | Flat-contact piece   |                    |   | G8<br>Pin X<br>mm        | GK<br>Pin Y<br>mm | GW<br>Pin Z<br>mm |
|   |   | 4 pos.             |   | 4.3                      | 4.3               | 3.0               |
|  |  | 7 pos.             |  | 4.3                      | 4.3               | 3.0               |

LENGTH EARTH TAG AND PIN

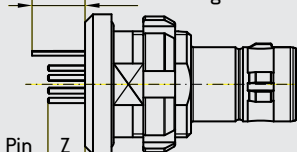
G8



GK



GW

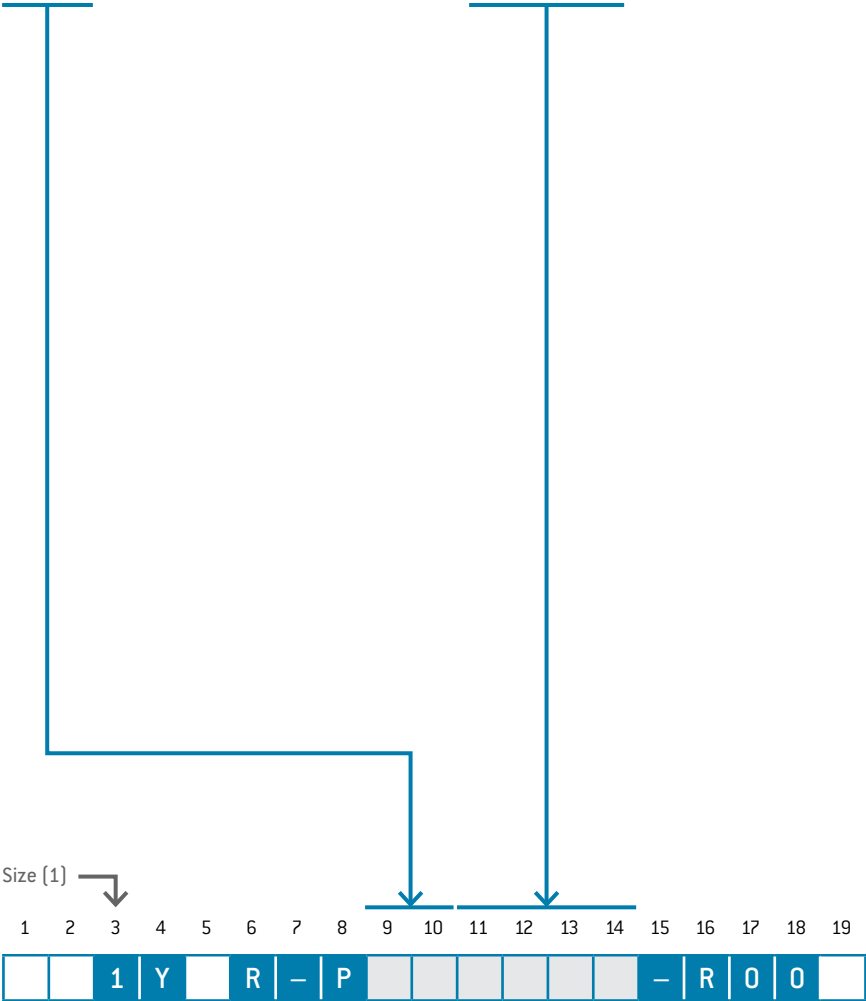


# CONTACT CONFIGURATIONS

## SIZE 1

| Number of contacts <sup>1</sup> |   | Available connector styles |    |    | Contact type        |             | Part number key |   |   |   | Contact diameter | Single contact nominal current <sup>2</sup> | Test voltage <sup>3</sup><br>Contact to contact | Nominal voltage <sup>4</sup> | Termination diameter | Termination cross section |      |
|---------------------------------|---|----------------------------|----|----|---------------------|-------------|-----------------|---|---|---|------------------|---|---|------------------------------|----------------------|---------------------------|------|
|                                 |   |                            |    |    |                     | Termination |                 |   |   |   | mm               | A   | kVeff   | kVrms                        | mm                   | AWG                       | mm²  |
| 1                               | 0 | A1                         | GW | —  | Flat contact        | Solder      | W               | D | D | 0 | 0.6              | 2.0   | 0.600   | 0.200                        | 0.65                 | 26                        | 0.15 |
|                                 |   | —                          |    | —  |                     | Print       | U               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |
|                                 |   | G8                         | GK | K1 | Spring load contact | Solder      | X               | D | D | 0 |                  |   |   |                              | 0.65                 | 26                        | 0.15 |
|                                 |   |                            |    | —  |                     | Print       | V               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |
| 1                               | 6 | A1                         | GW | —  | Flat contact        | Solder      | W               | D | D | 0 | 0.6              | 2.0   | 0.600   | 0.200                        | 0.65                 | 26                        | 0.15 |
|                                 |   | —                          |    | —  |                     | Print       | U               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |
|                                 |   | G8                         | GK | K1 | Spring load contact | Solder      | X               | D | D | 0 |                  |   |   |                              | 0.65                 | 26                        | 0.15 |
|                                 |   |                            |    | —  |                     | Print       | V               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |

<sup>1</sup> Other contact configurations on request.  
<sup>2</sup> Derating factor see page 47  
<sup>3</sup> SAE AS 13441:2004 method 3001.1  
<sup>4</sup> Max. operating voltage at NN (sea level) acc. to SAE AS 13441:2004 method 3001.1  
Further information on page 48



# PCB LAYOUT PRINT CONTACTS

## SIZE 1

| View on termination area  |                    | Number of contacts |  | Length earth tag and pin |                   |                   |
|---------------------------|--------------------|--------------------|--|--------------------------|-------------------|-------------------|
| Spring load contact piece | Flat-contact piece |                    |  | G8<br>Pin X<br>mm        | GK<br>Pin Y<br>mm | GW<br>Pin Z<br>mm |
|                           |                    | 10 pos.            |  | 3.9                      | 3.9               | 3.0               |
|                           |                    | 16 pos.            |  | 3.9                      | 3.9               | 3.0               |

LENGTH EARTH TAG AND PIN

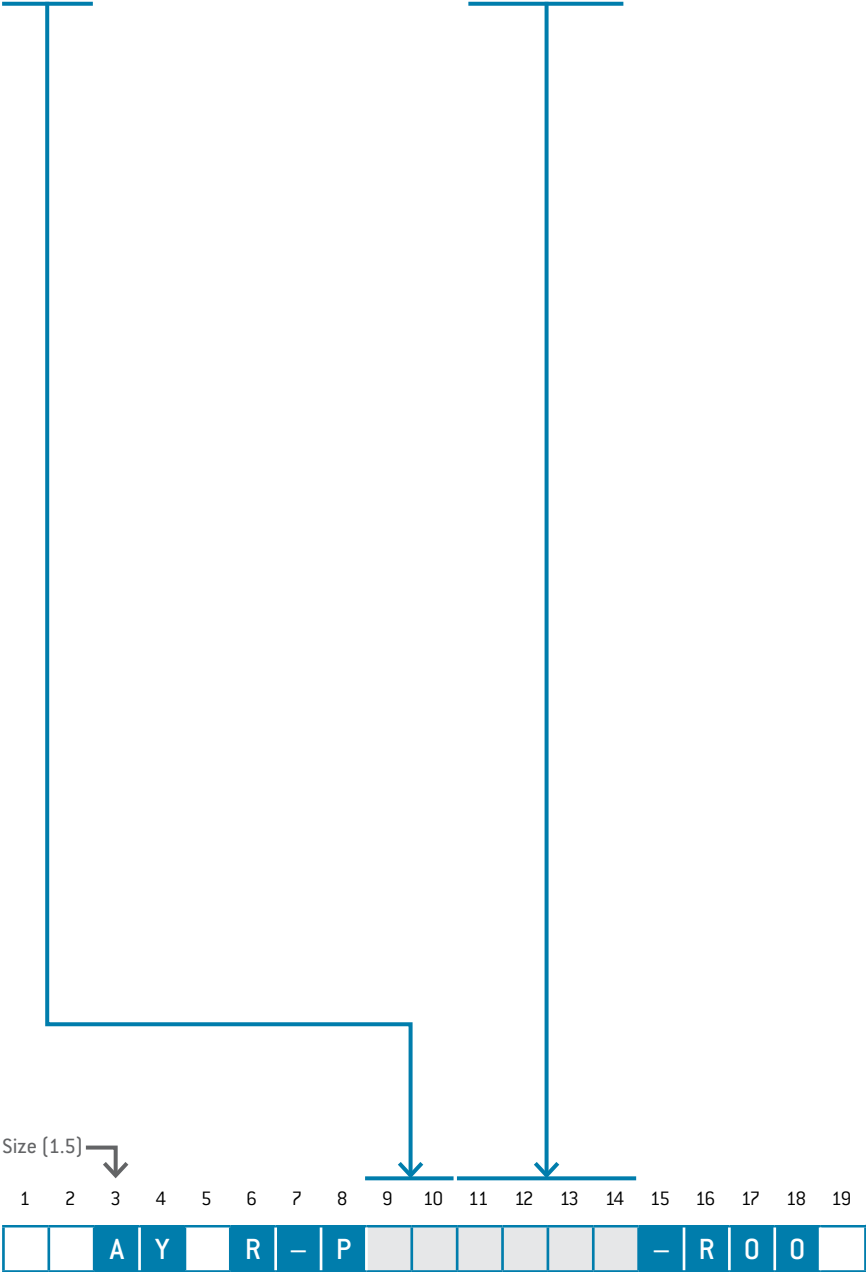
|               |               |               |
|---------------|---------------|---------------|
| <div>G8</div> | <div>GK</div> | <div>GW</div> |
|---------------|---------------|---------------|

# CONTACT CONFIGURATIONS

## SIZE 1.5

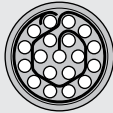
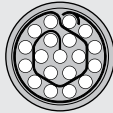
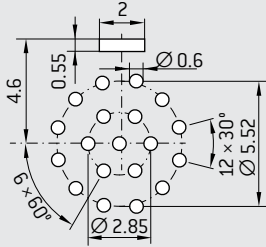
| Number of contacts <sup>1</sup> |   | Available connector styles |    |    | Contact type        |             | Part number key |   |   |   | Contact diameter | Single contact nominal current <sup>2</sup> | Test voltage <sup>3</sup><br>Contact to contact | Nominal voltage <sup>4</sup> | Termination diameter | Termination cross section |      |
|---------------------------------|---|----------------------------|----|----|---------------------|-------------|-----------------|---|---|---|------------------|---|---|------------------------------|----------------------|---------------------------|------|
|                                 |   |                            |    |    |                     | Termination |                 |   |   |   | mm               | A   | kVeff   | kVrms                        | mm                   | AWG                       | mm²  |
| 1                               | 9 | A1                         | GW | —  | Flat contact        | Solder      | W               | D | D | 0 | 0.6              | 2.0   | 0.600   | 0.200                        | 0.65                 | 26                        | 0.15 |
|                                 |   | —                          |    | —  |                     | Print       | U               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |
|                                 |   | G8                         | GK | K1 | Spring load contact | Solder      | X               | D | D | 0 |                  |   |   |                              | 0.65                 | 26                        | 0.15 |
|                                 |   |                            |    | —  |                     | Print       | V               | D | 0 | 0 |                  |   |   |                              | 0.5                  | —                         | —    |

<sup>1</sup> Other contact configurations on request  
<sup>2</sup> Derating factor see page 47  
<sup>3</sup> SAE AS 13441:2004 method 3001.1  
<sup>4</sup> Max. operating voltage at NN (sea level) acc. to SAE AS 13441:2004 method 3001.1  
Further information on page 48

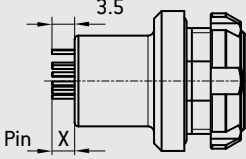
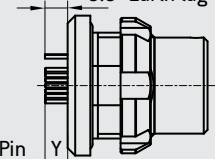
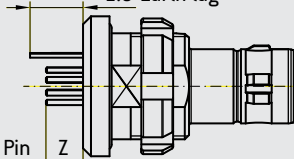


# PCB LAYOUT PRINT CONTACTS

## SIZE 1.5

| View on termination area  |   | Number of contacts |  | Length earth tag and pin |                   |                   |
|---|---|--------------------|--|--------------------------|-------------------|-------------------|
| Spring load contact piece   | Flat-contact piece  |                    |  | G8<br>Pin X<br>mm        | GK<br>Pin Y<br>mm | GW<br>Pin Z<br>mm |
|  |  | 19 pos.            |  | 3.5                      | 3.5               | 1.5               |

LENGTH EARTH TAG AND PIN

|   |  |   |
|---|--|---|
| <div>G8</div>  | <div>GK</div>  | <div>GW</div>  |
|---|--|---|

# DUST PROTECTION CAPS

## ENVIRONMENTAL AND ELECTRICAL CHARACTERISTICS

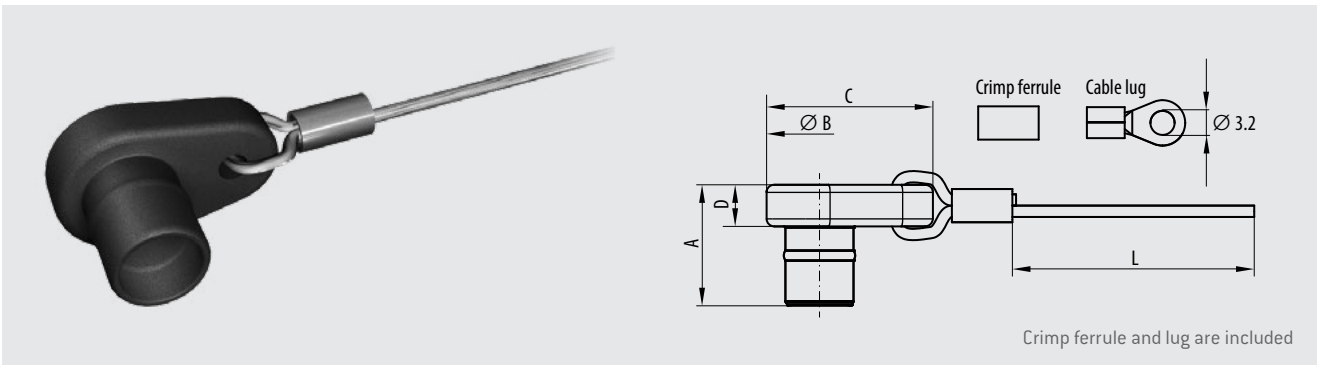
| Type                    | Performance       | Standard                                    |
|-------------------------|-------------------|---|
| Protection              | IP5K0             | ISO 20653:2013                              |
| Operating temperature   | −51 °C to +125 °C | IEC 60512-11-9:2002<br>IEC 60512-11-10:2002 |
| Shielding effectiveness | > 55 dB           | VG 95214-11                                 |

## MATERIAL

| Part               | Material            | Flammability |
|--------------------|---------------------|--------------|
| Cap                | Conductive silicone | UL94 (V1)    |
| Lanyard            | Aramid              | UL94 (V0)    |
| Crimp ferrule, lug | Brass, copper       |              |

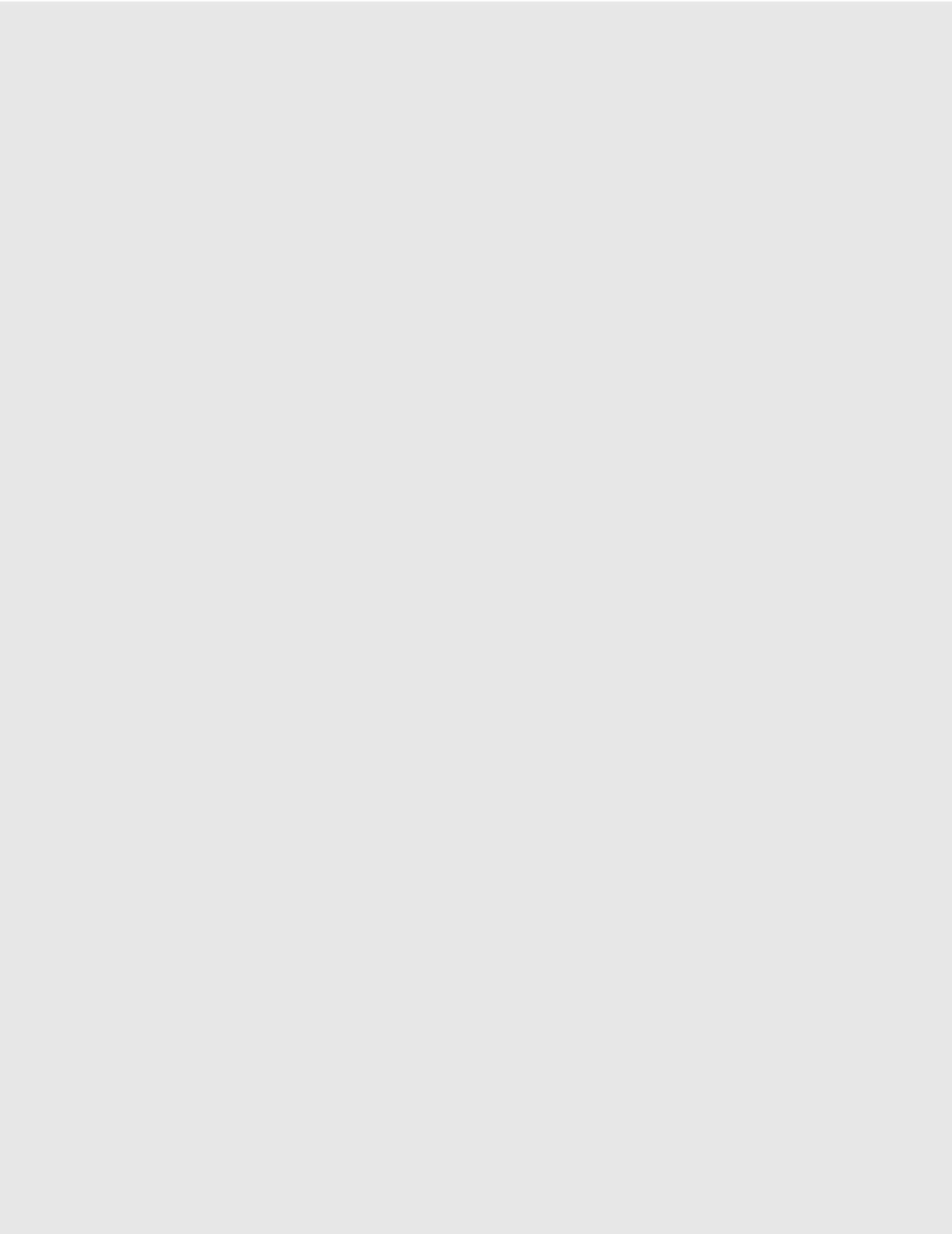
Assembly information including tools see ODU instruction 010.645.001.000.005  
(available at [www.odu-connectors.com/downloads/assembly-instructions](http://www.odu-connectors.com/downloads/assembly-instructions))

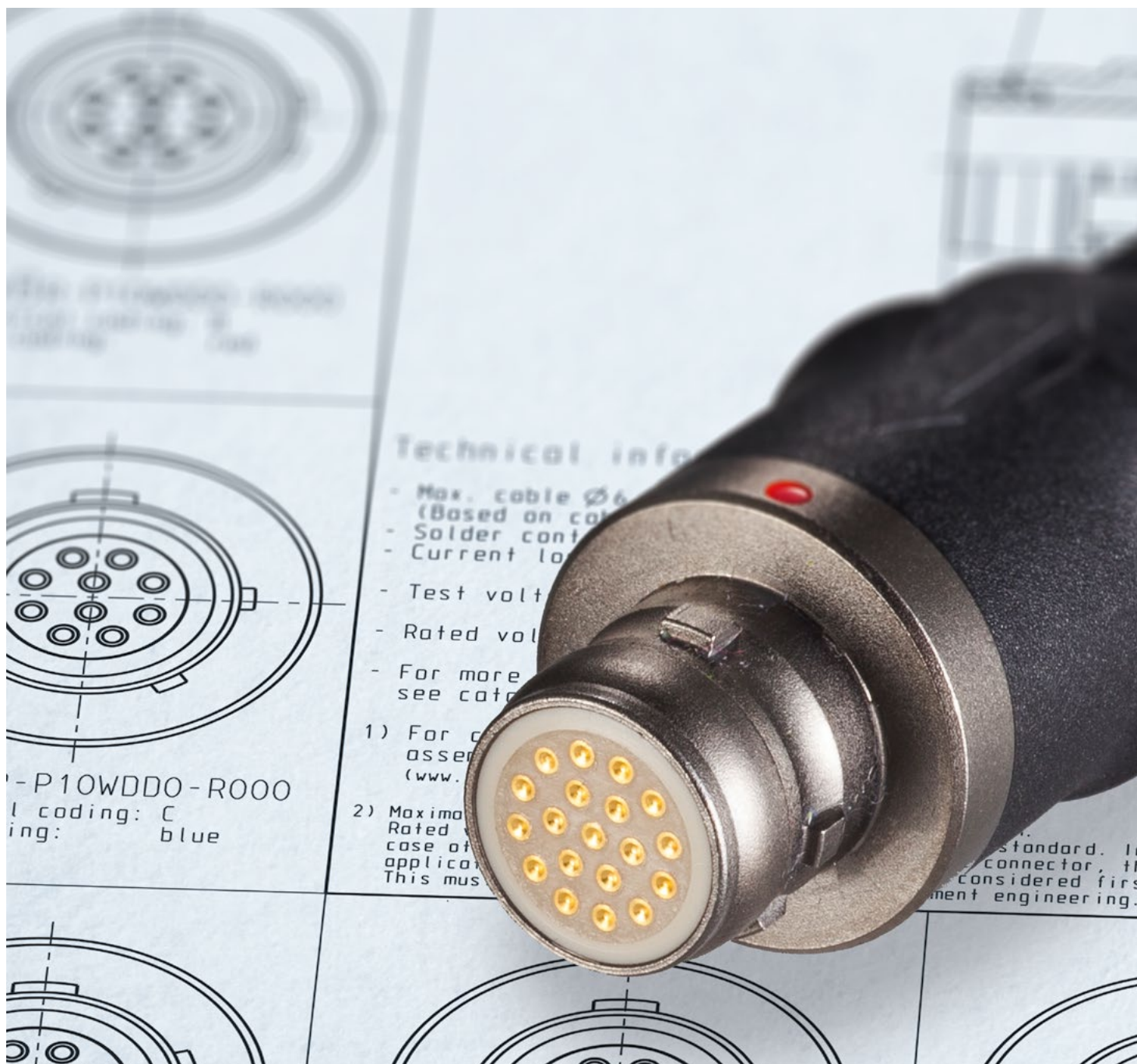
## FOR RECEPTACLES G8 AND GK AND IN-LINE RECEPTACLE K1



| Size | Part number         | Dimensions in mm |      |      |     |     |
|------|---------------------|------------------|------|------|-----|-----|
|      |                     | A                | B    | C    | D   | L   |
| 0    | 700.645.097.002.945 | 15.5             | 12.0 | 20.0 | 5.5 | 200 |
| 1    | 701.645.097.002.945 | 16.0             | 14.0 | 22.0 | 5.5 | 200 |
| 1.5  | 715.645.097.002.945 | 15.3             | 15.0 | 23.0 | 5.5 | 200 |

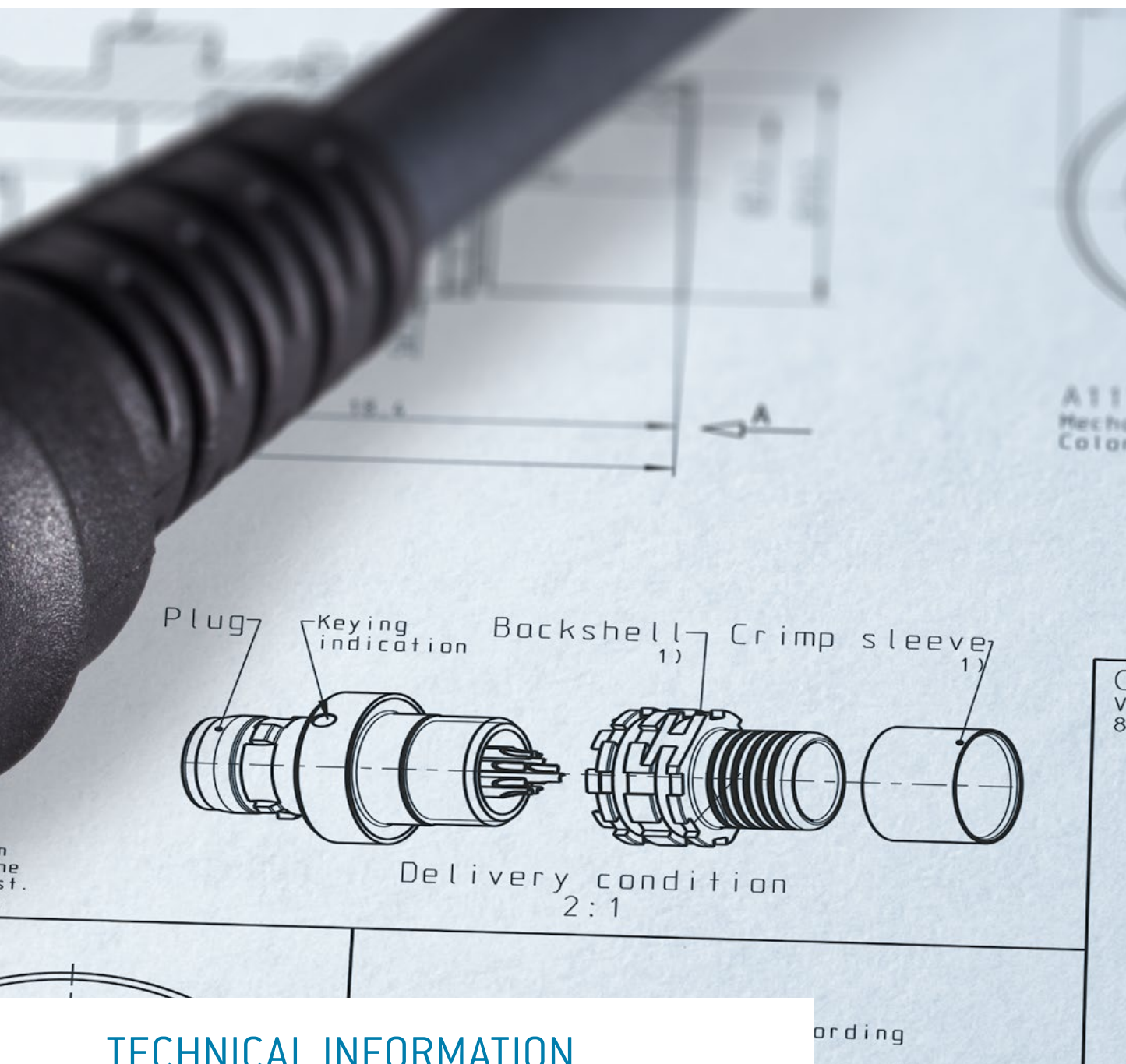
# FOR YOUR NOTES





ODU AMC® EASY-CLEAN





## TECHNICAL INFORMATION

|  |                    |
|--|--------------------|
| Technical data .....                   | <a href="#">42</a> |
| Protection .....                       | <a href="#">44</a> |
| International protection classes ..... | <a href="#">45</a> |
| Spring loaded contact .....            | <a href="#">46</a> |
| Current load contact .....             | <a href="#">47</a> |
| Operating voltage .....                | <a href="#">48</a> |
| Conversion / AWG .....                 | <a href="#">50</a> |
| Technical terms .....                  | <a href="#">51</a> |

# TECHNICAL DATA

## ENVIRONMENTAL AND TESTING

| Type                               | Performance                                    | Standard   |
|------------------------------------|--|--|
| Tightness                          | IPX8 / 1m 120 min<br>IPX9K                     | ISO 20653:2013 /<br>MIL-STD-810G:2008 512.5<br>ISO 20653: 2013       |
| Sand and dust                      | Blowing sand and dust<br>IP6KX (settling dust) | MIL-STD-810G:2008 510.5<br>Procedure I / II<br>ISO 20653:2013        |
| Operating temperature              | −51 °C up to +125 °C <sup>1</sup>              | IEC 60512-11-9:2002<br>IEC 60512-11-10:2002                          |
| Thermal shock                      | −65 °C up to +150 °C                           | EIA 364-32-E, IEC 60068-2-14   |
| Humidity cyclic                    | 85 % up to 95 %,<br>28 °C up to 71 °C          | MIL-STD-1344A Method 1002.2<br>Type III, IEC 60068-2-38              |
| Low pressure (rapid decompression) | 59.1 kPa to 18.8 kPa                           | AECTP 300, 312 Procedure III<br>(STANAG 4370)                        |
| Low pressure                       | 57.2 kPa, −55 °C                               | MIL-STD-810G:2008 500.5<br>IEC 60068-2-40                            |
| Icing                              | Rime ice 6 mm                                  | MIL-STD-810G:2008 521.3  |
| Corrosion resistance               | 96 h salt mist,<br>5 % salt solution,<br>35 °C | EIA-364-26B STANAG<br>4370, AECTP 300-309<br>MIL-STD-810G:2008 509.5 |
| Mould growth                       | European fungus                                | IEC 60068-2-10:2005  |
| Solar radiation                    |  | IEC 60068-2-5:2018   |
| Chemical endurance                 | Several substances <sup>2</sup>                | ISO 16750-5:2010-04  |

<sup>1</sup> Including temperature rise due to contact load

<sup>2</sup> Substances listed at ODU datasheet 009.410.021.000.000

RoHS 2011/65/EC recognized

## MECHANICAL DATA

| Type                 | Performance   | Standard                               |
|----------------------|---|--|
| Mechanical endurance | 5,000 mating cycles <sup>1</sup>  | IEC 60512-5-9-a<br>EIA-364-09          |
| Vibration            |   | MIL-STD 1344 Method 2005<br>EIA-364-28 |
| Shock                | 100 g amplitude,<br>half sine pulse of 3 ms,<br>no discontinuity > 1 µs | MIL-STD 1344 Method 2004<br>EIA-364-27 |

<sup>1</sup> 5,000 mating cycles, dependent on the specific application

## ELECTRICAL DATA

| Type   | Performance   | Standard           |
|--|---|--------------------|
| Contact resistance (fig. 1) over 5,000 mating cycles | Contact diameter / resistance<br>Ø 0.6 mm pogo pin<br>< 20 mΩhm | IEC 60512-2-1:2002 |
| Shell resistance (fig. 2)                            | < 10 mΩhm   | IEC 60512-2-1:2002 |
| Insulation resistance                                | > 100 MΩhm  | IEC 60512-3-1:2002 |

## MEASUREMENT POINTS

FIG. 1

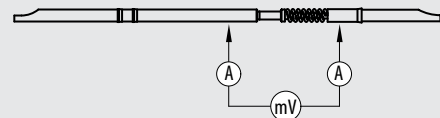
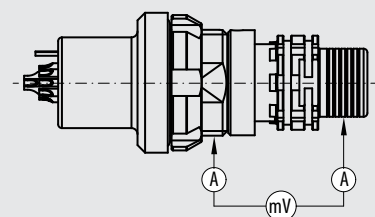


FIG. 2



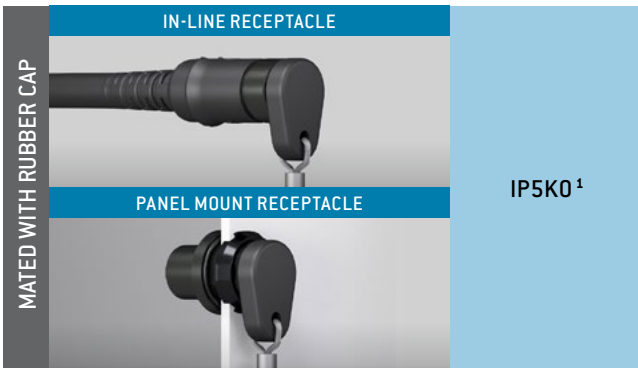
## MATERIAL AND SURFACE TREATMENTS

| Type                       | Material                   | Standard        |        | Surface  | Standard     | Flammability    |
|----------------------------|----------------------------|-----------------|--------|--|--------------|-----------------|
|                            |                            | EU              | US     |  |              |                 |
| Housing (conductive parts) | Aluminium AlMgSiSn1Bi      | EN-AW 6023      |        | Ruthenium over electroless nickel                      |              |                 |
| Nut                        | Aluminium AlMgSiSn1Bi      | EN-AW 6023      |        | Black anodized   |              |                 |
| Backshell                  | Aluminium AlMgSiSn1Bi      | EN-AW 6023      |        | Electroless nickel                                     | SAE-AMS2404  |                 |
| EMI-locking ring           | Stainless steel            | CW102C (2.1248) |        | Electrodeposited gold                                  |              |                 |
| Crimp sleeve               | CuZn38Pb1.5                | CW608N (2.0371) | C35300 | Electrodeposited nickel                                |              |                 |
| Color ring                 | PSU                        |                 |        |  |              | UL94 (V0)       |
| Insulator                  | PEEK                       |                 |        |  |              | UL94 (V0)       |
| Pin contact (pogo-pin)     | Copper alloy, CuBe, steel, |                 |        | 1.27 µm gold over electro-deposited nickel (on piston) | MIL-G-45204D |                 |
| Socket contact             | Copper alloy               | CW614N (2.0401) | C38500 | 1.27 µm gold over electrodeposited nickel              | MIL-G-45204D |                 |
| O-rings                    | FVMQ (floursilikon)        |                 |        |  |              |                 |
| Potting                    | Potting compound           |                 |        |  |              | UL94 (V0)       |
| Overmolding material       | TPU                        |                 |        |  |              | UL94 (HB)       |
| Shrink boots               | Polyester-elastomere       |                 |        |  |              | Acc. to VG95343 |

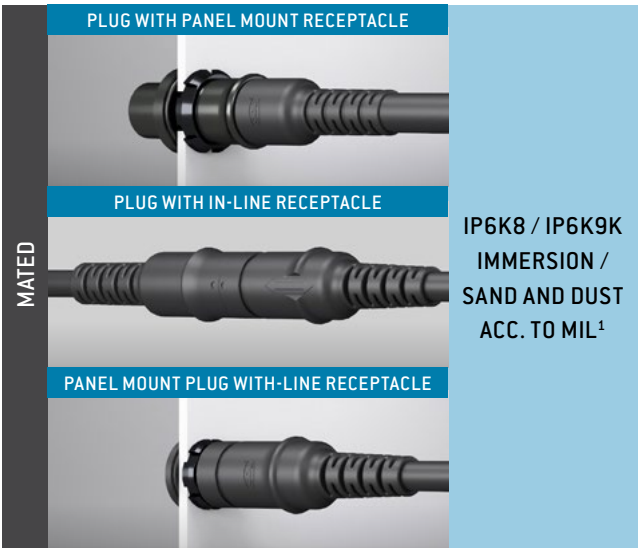


# PROTECTION OF ODU AMC® EASY-CLEAN

IP RATING ACC. TO ISO 20653:2013  
IMMERSION ACC. TO MIL-STD-810G 512.5  
SAND AND DUST ACC. TO MIL-STD-810G 510.5








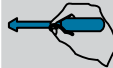







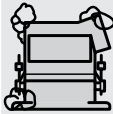



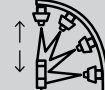
<sup>1</sup> Full protection  
<sup>2</sup> Contact area not protected



The protection is only assured when backshell potted during cable assembly, according to ODU AMC® assembly instructions.

# INTERNATIONAL PROTECTION CLASSES

ISO 20653:2013 (VDE 0470-1:2014-09)

| Code letters<br>(International Protection) |  | First code number<br>(Degrees of protection against access to hazardous parts<br>respectively against solid foreign objects) |   | Second code number<br>(Degrees of protection against water) |  |  |   |
|--|--|--|---|---|--|--|---|
| IP   |  | 6  |   | 5   |  |  |   |
| Code no.                                   | Protection against access to hazardous parts /<br>Protection against ingress of solid foreign objects    |  |   | Code no.  | Protection against harmful effects<br>due to the ingress of water              |  |   |
| 0  | No protection  |   | No protection against contact /<br>No protection against solid foreign objects  | 0   | No protection<br>against water   | No protection against water  |   |
| 1  | Protection against<br>contact with the<br>back of hand (no<br>protection against<br>intentional contact) |   | Test probe with diameter 50 mm<br>shall not penetrate completely and<br>maintain sufficient distance from<br>hazardous parts.               | 1   | Protection against<br>dripping water   |    | Vertical drips shall not have any harmful<br>effects or impair performance.   |
| 2  | Protection against<br>finger contact   |   | Jointed test finger with diameter<br>12.5 mm may penetrate completely,<br>but shall maintain a sufficient<br>distance from hazardous parts. | 2   | Protection against<br>dripping water<br>[tilted]                               |    | Vertical drips shall not have any harmful effects<br>or impair performance when the enclosure is<br>tilted at any angle up to 15° on either side of<br>the vertical                             |
| 3  | Protection against<br>penetration of tools<br>[e.g. screwdrivers]  |   | Test probe with diameter 2.5 mm,<br>may penetrate completely, but shall<br>maintain a sufficient distance from<br>hazardous parts.          | 3   | Protection against<br>spray water  |  | Water spray at an angle up to 60° on either side<br>of the vertical shall have no harmful effects or<br>impair performance  |
| 4  | Protection against<br>granular foreign<br>objects  |   | Test probe with diameter 1.0 mm,<br>may penetrate completely, but shall<br>maintain a sufficient distance from<br>hazardous parts           | 4   | Protection against<br>splashing water  |  | Water which splashes against the enclosure<br>from any direction shall not have any harmful<br>effects or impair performance  |
|  |  |  |   | 4K  | Protection against<br>splashing water with<br>increased pressure               |  | Water which splashes against the enclosure<br>from any direction with increased pressure<br>shall not have any harmful effects or impair<br>performance   |
| 5K   | Protection against<br>dust   |   | Dust shall only penetrate in quanti-<br>ties which do not impair performance<br>and safety.   | 5   | Protection against<br>high-velocity<br>water                                   |  | Water which is directed against the enclosure<br>from any direction as a jet shall not have any<br>harmful effects or impair performance  |
|  |  |  |   | 6   | Protection against<br>powerful<br>water jet                                    |  | Water which is directed against the enclosure<br>from any direction as a strong jet shall not have<br>any harmful effects or impair performance   |
| 6K   | Protection against<br>ingress of dust  |   | Dust shall not penetrate  | 6K  | Protection against<br>strong high-velocity<br>water with increased<br>pressure |  | Water which is directed against the enclosure<br>from any direction as a strong jet with<br>increased pressure shall not have any harmful<br>effects or impair performance                      |
|  |  |  |   | 7   | Protection against<br>the effects of<br>temporary immersion<br>in water        |  | Water shall not penetrate in a quantity causing<br>harmful effects or impair performance if the en-<br>closure is immersed in water temporarily under<br>specified pressure and time conditions |
|  |  |  |   | 8   | Protection against<br>the effects of con-<br>tinuous immersion<br>in water     |  | Water shall not penetrate in a quantity causing<br>harmful effects if the enclosure is continuously<br>immersed in water under conditions which shall<br>be specified by the manufacturer       |
|  |  |  |   | 9K  | Protection against<br>water during<br>high-pressure/<br>steam-jet cleaning     |  | Water which is directed against the enclosure<br>from any direction shall not have any harmful<br>effects or impair performance   |

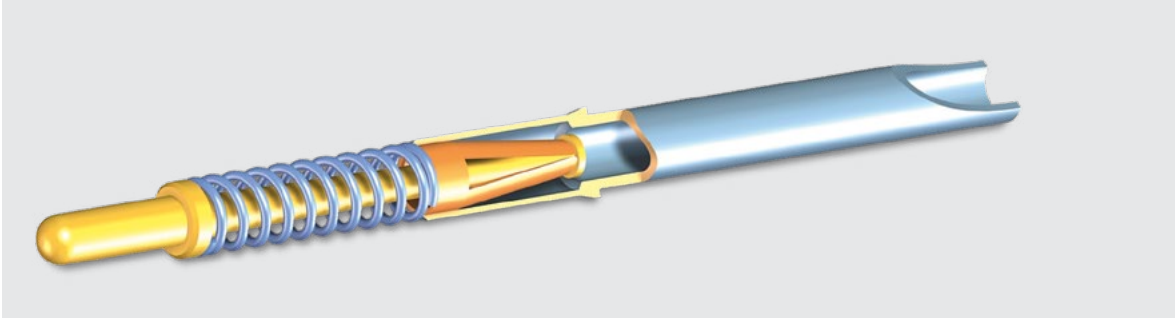
# SPRING LOADED CONTACT

The contacts within the ODU AMC® Easy-Clean series are patented spring loaded contacts made by a leading swiss manufacturer.

|               |         |                            |
|---------------|---------|----------------------------|
| Mating cycles | > 5,000 |                            |
| Material      | Piston  | Gold plated machined brass |
|               | Barrel  | Tin plated machined brass  |
|               | Spring  | Stainless steel            |
|               | CIIP    | Gold plated BeCu C17200    |

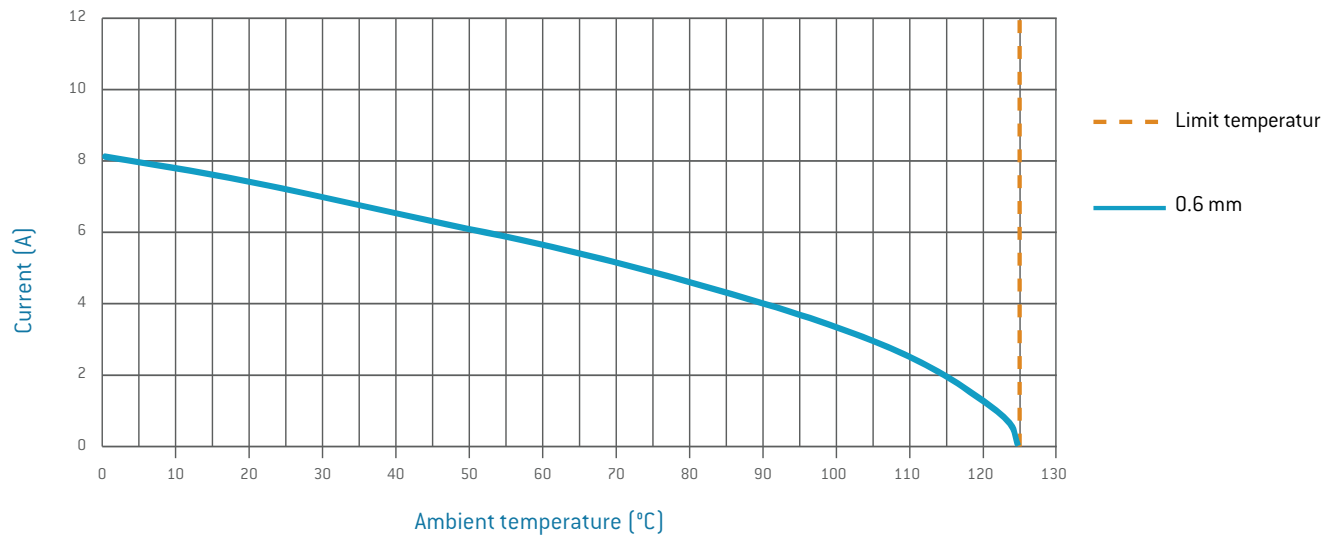
|                    | Plug | Receptacle |
|--------------------|------|------------|
| Solder termination | ●    | ●          |
| PCB termination    | ●    | ●          |

Information on diameters, terminal types and current-carring capacity can be found after the inserts.



# CURRENT LOAD OF SPRING LOADED CONTACT

## NOMINAL SINGLE CONTACT CURRENT LOAD FOR SPRING LOAD CONTACT (PISTON DIAMETER 0.6 mm)



### UPPER LIMIT TEMPERATURE OF SPRING LOAD CONTACT: +125 °C

In the case of multi-position connectors and cables, the heating is greater than it is with individual contacts. For that reason, it is calculated with a derating factor.

For connectors, the derating factors for multi-core cables pursuant to VDE 0298-4:2013-06 are applied. The derating factor is factored in at 5 live wires and up.

### DERATING CURVE

The corrected current-carrying capacity curve, derived from the base curve determined ( $0.8 \times$  measured current). It factors in manufacturing tolerances as well as uncertainties in temperature measurement and measurement arrangement. See derating measurement method.

### DERATING FACTOR

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

# OPERATING VOLTAGE

## ACC. TO SAE AS 13441-METHOD 3001.1

The values acc. to SAE AS 13441:2004-method 3001.1 comply with MIL-Std. 1344 – method 3001.

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.  $\frac{1}{3}$  of this value is the corresponding operating voltage.

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

Suitable safety precautions must be taken in order to ensure that personnel do not come into contact with live conductors during installation and operation.

All entries were reviewed with maximum care before this catalogue was printed.

ODU reserves the right to make changes in accordance with the current state of the art without advance notice, and without being obligated to provide replacement deliveries or to continue production of older designs.

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|                   |  |
|-------------------|--|
| Test voltage      | Break-down voltage $\times 0.75$             |
| Operating voltage | Break-down voltage $\times 0.75 \times 0.33$ |

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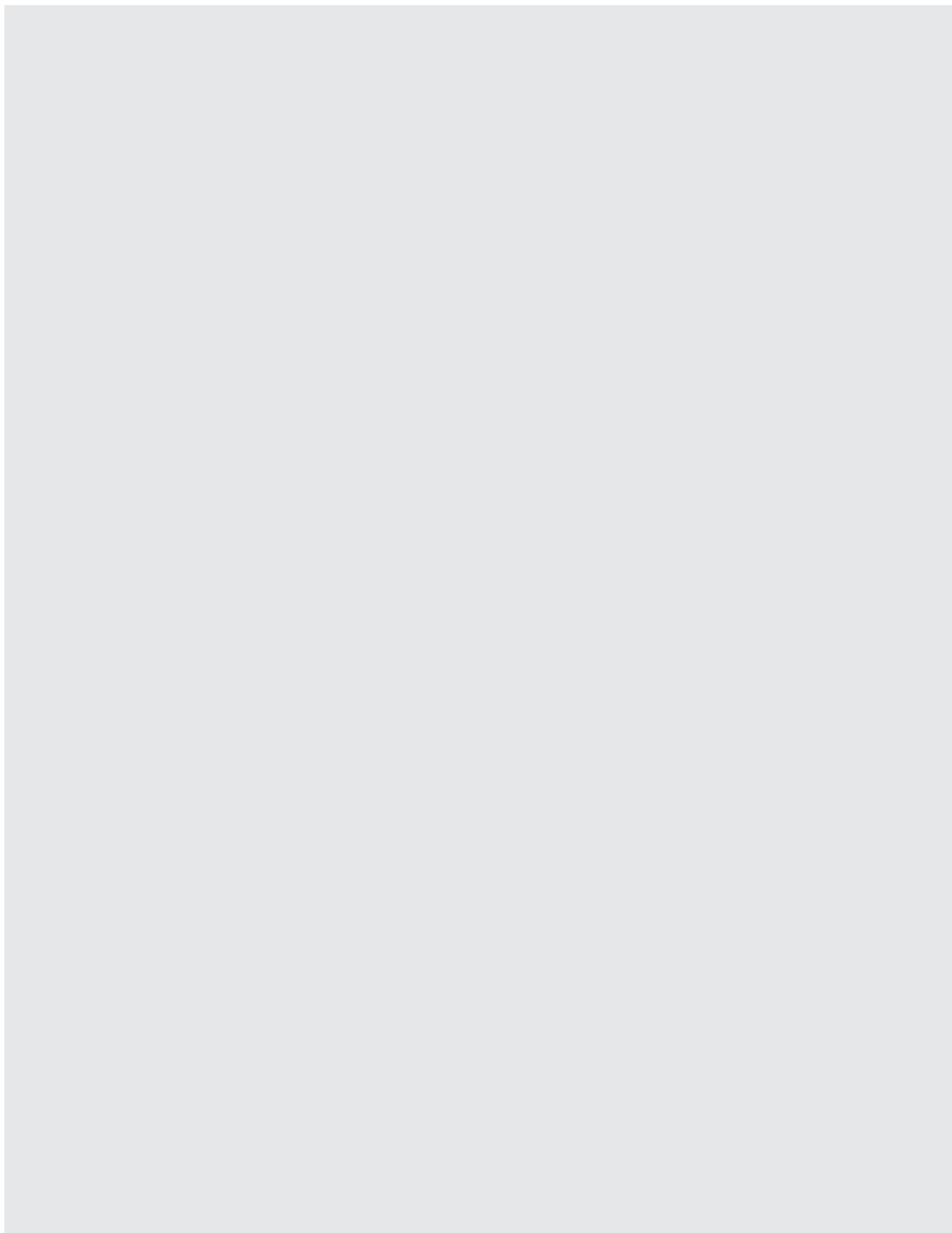
### CAUTION

Electrical appliances: for various applications the safety requirements regarding the operating voltage is even more severe!

The relevant datas in such cases for the operating voltage are the creepage and clearance distances. For any advise how to chose the proper connector please consult us and indicate the safty standard which your product has to meet.



## FOR YOUR NOTES



# CONVERSIONS / AWG (AMERICAN WIRE GAUGE)

| Circular wire |          |       |                                  |                   |                           |
|---------------|----------|-------|----------------------------------|-------------------|---------------------------|
| AWG           | Diameter |       | Cross-section<br>mm <sup>2</sup> | Weight<br>kg / km | Max. resistance<br>Ω / km |
|               | Inch     | mm    |                                  |                   |                           |
| 10 (1)        | 0.1019   | 2.590 | 5.26                             | 46.77             | 3.45                      |
| 10 (37/26)    | 0.1150   | 2.921 | 4.74                             | 42.10             | 4.13                      |
| 12 (1)        | 0.0808   | 2.050 | 3.31                             | 29.41             | 5.45                      |
| 12 (19/25)    | 0.0930   | 2.362 | 3.08                             | 27.36             | 6.14                      |
| 12 (37/28)    | 0.0910   | 2.311 | 2.97                             | 26.45             | 6.36                      |
| 14 (1)        | 0.0641   | 1.630 | 2.08                             | 18.51             | 8.79                      |
| 14 (19/27)    | 0.0730   | 1.854 | 1.94                             | 17.23             | 9.94                      |
| 14 (37/30)    | 0.0735   | 1.867 | 2.08                             | 18.870            | 10.50                     |
| 16 (1)        | 0.0508   | 1.290 | 1.31                             | 11.625            | 13.94                     |
| 16 (19/29)    | 0.0590   | 1.499 | 1.23                             | 10.928            | 15.70                     |
| 18 (1)        | 0.0403   | 1.020 | 0.823                            | 7.316             | 22.18                     |
| 18 (19/30)    | 0.0052   | 1.321 | 0.963                            | 8.564             | 20.40                     |
| 20 (1)        | 0.0320   | 0.813 | 0.519                            | 4.613             | 35.10                     |
| 20 (7/28)     | 0.0390   | 0.991 | 0.563                            | 5.003             | 34.10                     |
| 20 (19/32)    | 0.0420   | 1.067 | 0.616                            | 5.473             | 32.00                     |
| 22 (1)        | 0.0253   | 0.643 | 0.324                            | 2.883             | 57.70                     |
| 22 (7/30)     | 0.0288   | 0.732 | 0.324                            | 2.965             | 54.80                     |
| 22 (19/34)    | 0.0330   | 0.838 | 0.382                            | 3.395             | 51.80                     |
| 24 (1)        | 0.0201   | 0.511 | 0.205                            | 1.820             | 91.20                     |
| 24 (7/32)     | 0.0250   | 0.635 | 0.227                            | 2.016             | 86.00                     |
| 24 (19/36)    | 0.0270   | 0.686 | 0.241                            | 2.145             | 83.30                     |
| 26 (1)        | 0.0159   | 0.404 | 0.128                            | 1.139             | 147.00                    |
| 26 (7/34)     | 0.0200   | 0.508 | 0.141                            | 1.251             | 140.00                    |
| 26 (19/38)    | 0.0220   | 0.559 | 0.154                            | 1.370             | 131.00                    |
| 28 (1)        | 0.0126   | 0.320 | 0.0804                           | 0.715             | 231.00                    |
| 28 (7/36)     | 0.0160   | 0.406 | 0.0889                           | 0.790             | 224.00                    |
| 28 (19/40)    | 0.0170   | 0.432 | 0.0925                           | 0.823             | 207.00                    |
| 30 (1)        | 0.0100   | 0.254 | 0.0507                           | 0.450             | 374.00                    |
| 30 (7/38)     | 0.0130   | 0.330 | 0.0568                           | 0.505             | 354.00                    |
| 30 (19/42)    | 0.0123   | 0.312 | 0.0720                           | 0.622             | 310.00                    |
| 32 (1)        | 0.0080   | 0.203 | 0.0324                           | 0.288             | 561.00                    |
| 32 (7/40)     | 0.0110   | 0.279 | 0.0341                           | 0.303             | 597.10                    |
| 32 (19/44)    | 0.0100   | 0.254 | 0.0440                           | 0.356             | 492.00                    |
| 34 (1)        | 0.0063   | 0.160 | 0.0201                           | 0.179             | 951.00                    |
| 34 (7/42)     | 0.0070   | 0.180 | 0.0222                           | 0.197             | 1,491.00                  |
| 36 (1)        | 0.0050   | 0.127 | 0.0127                           | 0.1126            | 1,519.00                  |
| 36 (7/44)     | 0.0060   | 0.150 | 0.0142                           | 0.1263            | 1,322.00                  |

The American Wire Gauge (AWG) is based on the principle that the cross-section of the wire changes by 26 % from one gauge number to the next. The AWG numbers decrease as the wire diameter increases, while the AWG numbers increase as the wire diameter decreases. This only applies to solid wire.

However, stranded wire is predominately used in practice. This has the advantage of a longer service life under bending and vibration as well as greater flexibility in comparison with solid wire.

Stranded wires are made of multiple, smaller-gauge wires (higher AWG number). The stranded wire then receives the AWG numbers of a solid wire with the next closest cross-section to that of the stranded wire. In this case, the cross-section of the stranded wire refers to the sum of the copper cross-sections of the individual wires.

Accordingly, strands with the same AWG number but different numbers of wires differ in cross-section. For instance, an AWG 20 strand of 7 AWG 28 wires has a cross-section of 0.563 mm<sup>2</sup>, while an AWG 20 strand of 19 AWG 32 wires has a cross-section of 0.616 mm<sup>2</sup>.

Source: ASTM

# TECHNICAL TERMS

## AMBIENT TEMPERATURE

Temperature of the air or other medium in which a piece of equipment is intended to be used in (IEC 44/709/CDV:2014 (VDE 0113-1:2019-06)).

## AWG

American Wire Gauge. See page [50](#).

## BASE CURVE

A current-carrying capacity curve metrologically determined according to the method described in IEC 60512-5-2:2002 (DIN EN 60512-5-2:2003-01) depending on the permissible limit temperature of the materials.

## CHEMICAL RESISTANCE

Many secondary processing procedures use adhesives, cleaning agents or other chemicals on our products. Contact with unsuitable chemicals may have an adverse effect on the mechanical and electrical properties of the insulation and housing materials which specified properties may not be able to withstand. Please observe our processing suggestions and technical instructions in this catalogue.

## CLEARANCE DISTANCE

The shortest distance in the air between two conductive parts.

## CODING (ORIENTATION)

Arrangement with which differing polarization of otherwise identical connectors prevents interchangeability. This is a good idea if two or more identical connectors are attached to the same device. See also compatible connectors, see page [30](#).

## CONNECTORS

Also known as connectors without contact rating (COC): (IEC 61984:2008 (VDE 0627:2009-11)). An element which enables electrical conductors to be connected and is intended to create and/or separate connections with a suitable counterpart.

## CONNECTOR WITHOUT BREAKING CAPACITY (COC)

Connector which is not deemed to be engaged or disengaged in normal use when live or under load.

## CONTACT RESISTANCE

Total resistance value measured from terminal to terminal. In this case, the resistance is significantly lower than the contact resistance. The specifications are average values.

## CORES

Electrical conductor, solid wire or multi-wire strand, with insulation as well as any conductive layers. Cables or leads may have one or more cores.

## CREEPAGE DISTANCES

The shortest distance between two conductive parts along the surface of a solid insulation material. This factors in all elevations and recesses in the insulator, as long as defined minimum dimensions are on hand.

## CRIMP BARREL

A terminal sleeve which can accommodate one or more conductor and be crimped by a crimping tool.

## CRIMP CONNECTION (CRIMP TERMINATION)

The permanent, non-detachable and solder-free mounting of a contact to a conductor via deforming or shaping under pressure to make a good electrical and mechanical connection. Executed with crimping tool, press or automatic crimping machine.

## CRIMPING AREA

The specified area of the crimp barrel in which the crimp termination is executed by means of deforming or shaping the barrel under pressure around the conductor.

## DEGREE OF POLLUTION

The effect of pollution is factored in as degree of pollution when measuring clearance and creepage distances. Four degrees of pollution are defined for the micro-environment: IEC 60664-1:2007 (VDE 0110-1:2008-01).

## DELIVERY FORM

Connectors can be delivered in assembled form or as individual parts.

# TECHNICAL TERMS

## DERATING CURVE

See page [47](#).

## DERATING FACTOR

According to VDE 0298-4:2013-06, with connectors and cables over 5 contacts, the heating is greater than it is with individual contacts. For that reason, the aforementioned standard is calculated with a derating factor.

## DERATING MEASUREMENT METHOD IEC 60512-5-2:2002 (DIN EN 60512-5-2:2003-01)

Measurement method to determine the current-carrying capacity of connectors in consideration of the maximum permissible limit temperature. See page [47](#).

## FIXED CONNECTORS

Intended for mounting on a fixed surface such as a frame, dock, device or wall (with ODU also receptacle or panel mounted plug).

## FREE CONNECTORS

Intended for mounting on free ends of mobile leads and cables (with ODU also connectors, plugs, in-line receptacles).

## INSULATOR

Part of a connector which separates conductive parts with different potentials from one another; usually identical to the contact carrier.

## LOWERMOST LIMIT TEMPERATURE

The lowest permissible temperature at which a connector may be operated.

## MATERIALS (STANDARD MODEL)

See page [43](#).

## MATING AND DEMATING FORCE

The force required to fully mate or demate pluggable elements without the influence of a coupling or locking device.

## MATING CYCLES

Mechanical actuation of connectors via push and pull action. A mating cycle consists of one mating and demating action. ODU's standard value for the ODU AMC® series is 5,000 mating cycles.

## MAX. CONTINUOUS CURRENT

The metrologically determined amperage at room temperature (approx. 20 °C) which increases the contact temperature to the limit temperature. The values specified in the catalog apply to either individual contacts or completely assembled inserts / modules, as indicated.

## NOMINAL SINGLE CONTACT CURRENT LOAD

The current-carrying capacity which each individual contact can be loaded with on its own. See page [47](#).

## NOMINAL VOLTAGE

The voltage which the manufacturer specifies for a connector and which the operating and performance features relate to.

## OPERATING TEMPERATURE FOR ODU AMC® EASY-CLEAN

Range between the uppermost and lowermost temperature limits; –51 °C to +125 °C. See page [42](#).

## PCB (A.K.A. "PRINTED CIRCUIT BOARD")

A PCB is a carrier for electronic components. It serves the purposes of mechanical mounting and electrical connection.

## PCB TERMINATION

Production of a conductive connection between the PCB and an element in through-hole assembly, THT (through-hole technology).

## RATED CURRENT (NOMINAL CURRENT)

See page [47](#).

# TECHNICAL TERMS

## SOLDER CONNECTION (SOLDER TERMINATION)

Termination technology in which a molten additional metal [solder] with a lower melting point than the base materials to be connected is used to attach two metallic materials to one another.

## TIGHTNESS IEC 60529:2013 (VDE 0470-1:2014-09)

See protection classes on page [45](#).

## TERMINATION CROSS-SECTION

The specified cross-sections correspond to a “fine-wire” conductor structure pursuant to DIN EN 60228:2005-09 (VDE 0295:2005-09; class 5) or a “fine-wire” conductor structure (7/19 wire) according to AWG (ASTM B258:2014).

## TERMINATION TECHNOLOGIES

Methods for connecting the leads to the electro-mechanical element, such as solder-free connections pursuant to IEC 60352 (DIN EN 60352): crimp, screw connection etc. or soldering connection. See page [46](#).

## TEST VOLTAGE

The voltage which a conductor can withstand under defined conditions without dielectric breakdown or flashover.

## UPPERMOST LIMIT TEMPERATURE

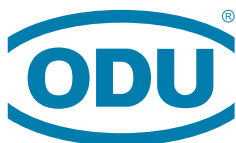
The maximum permissible temperature at which a connector may be operated. It includes contact heating through current-carrying capacity.

## WIRE

Wires (solid conductors) are available with an insulator sleeve and/or electrical shielding. Cables or conductors may be made up of one or more wires.

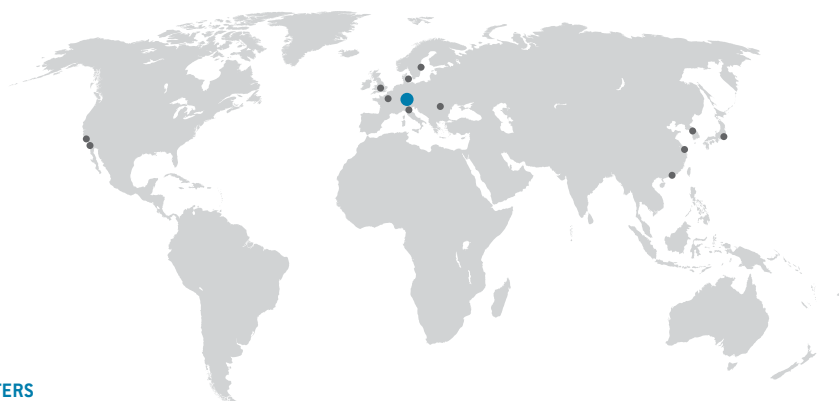
## GENERAL NOTE

The connectors listed in this catalogue are intended for use in high voltage and frequency ranges. Suitable precautionary measures must be taken to ensure that people do not come into contact with live conductors during installation and operation. All entries in this catalogue were thoroughly reviewed before printing. ODU reserves the right to make changes based on the current state of knowledge without prior notice without being obliged to provide replacement deliveries or refinements of older designs.



A PERFECT ALLIANCE.

## ODU GROUP WORLDWIDE



### HEADQUARTERS

#### ODU GmbH & Co. KG

Pregelstraße 11, 84453 Mühldorf a. Inn, Germany

Phone: +49 8631 6156-0, Fax: +49 8631 6156-49, E-mail: [sales@odu.de](mailto:sales@odu.de)

### SALES LOCATIONS

#### ODU (Shanghai)

International Trading Co., Ltd.

Phone: +86 21 58347828-0

E-mail: [sales@odu.com.cn](mailto:sales@odu.com.cn)

[www.odu.com.cn](http://www.odu.com.cn)

#### ODU Italia S.R.L.

Phone: +39 331 8708847

E-mail: [sales@odu-italia.it](mailto:sales@odu-italia.it)

[www.odu-italia.it](http://www.odu-italia.it)

#### ODU Scandinavia AB

Phone: +46 176 18262

E-mail: [sales@odu.se](mailto:sales@odu.se)

[www.odu.se](http://www.odu.se)

#### ODU (HK) Trading Co., Ltd.

Phone: +852 5439-9036

E-mail: [sales@odu.hk](mailto:sales@odu.hk)

[www.odu.hk](http://www.odu.hk)

#### ODU Japan K.K.

Phone: +81 3 6441 3210

E-mail: [sales@odu.co.jp](mailto:sales@odu.co.jp)

[www.odu.co.jp](http://www.odu.co.jp)

#### ODU-UK Ltd.

Phone: +44 330 002 0640

E-mail: [sales@odu-uk.co.uk](mailto:sales@odu-uk.co.uk)

[www.odu-uk.co.uk](http://www.odu-uk.co.uk)

#### ODU Denmark ApS

Phone: +45 2233 5335

E-mail: [sales@odu-denmark.dk](mailto:sales@odu-denmark.dk)

[www.odu-denmark.dk](http://www.odu-denmark.dk)

#### ODU Korea Inc.

Phone: +82 2 6964 7181

E-mail: [sales@odu-korea.kr](mailto:sales@odu-korea.kr)

[www.odu-korea.kr](http://www.odu-korea.kr)

#### ODU-USA Inc.

Phone: +1 805 484-0540

E-mail: [sales@odu-usa.com](mailto:sales@odu-usa.com)

[www.odu-usa.com](http://www.odu-usa.com)

#### ODU-France SARL

Phone: +33 1 3935-4690

E-mail: [sales@odu.fr](mailto:sales@odu.fr)

[www.odu.fr](http://www.odu.fr)

#### ODU Romania Manufacturing SRL

Phone: +40 269 704638

E-mail: [sales@odu-romania.ro](mailto:sales@odu-romania.ro)

[www.odu-romania.ro](http://www.odu-romania.ro)

#### Further information and specialized representatives can be found at:

[www.odu-connectors.com/contact](http://www.odu-connectors.com/contact)

### PRODUCTION AND LOGISTICS SITES

**Germany** Otto Dunkel GmbH

**China** ODU (Shanghai) Connectors Manufacturing Co., Ltd.

**Mexico** ODU Mexico Manufacturing S. de R.L. de C.V.

**Romania** ODU Romania Manufacturing SRL

**USA** ODU North American Logistics Inc.



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