SubConn and the MacArtney Underwater Technology Group have been supplying the world’s leading range of underwater pluggable electrical connectors to the demanding underwater industry for 40 years.
### Introduction
General information and background about SubConn® and the MacArtney Underwater Technology Group.

### SubConn®

#### Low Profile series
The SubConn® Low Profile series is designed to offer connectivity for underwater systems and equipment where space is restricted or a more compact solution is required.

### SubConn®

#### Micro Low Profile series
The SubConn® Micro Low Profile series was developed to suit the increasingly more compact design of underwater instruments, equipment and systems requiring restricted space or a compact solution.

#### Power series
The SubConn® Power series is designed to offer a high performance and dependable connector solution to accommodate the ever growing power requirements of underwater system operators and industries.

#### Circular series
The Circular series forms the basis of the technology that characterises most SubConn® products available today. First introduced in 1978, these connectors are available in various standard sizes and figurations.

#### Micro Circular series
Based on the original SubConn® Circular series, SubConn® Micro connectors were developed to suit the increasingly more compact design of underwater instruments, equipment and systems.

#### Specials
SubConn® holds extensive experience and expertise in supplying special connector solutions for multiple specific applications like pool cleaning or oceanographic sensors.

#### Penetrator series
The SubConn® Penetrator series is a fixed installation alternative to inline and bulkhead connectors. SubConn® Penetrators are primarily used for applications, direct signal and power feedthrough emphasising.

#### polyurethane cables
As standard, the majority of SubConn® connectors are supplied with chloroprene rubber cables, while the Ethernet and Coax series feature polyurethane (PUR) cables as standard.

#### additionl accessories
The SubConn® connectors are available with a full range of accessories held in stock with MacArtney.

### General technical information
Abbreviation list, mounting specifications, handling instructions, recommended torque on SubConn® connector thread sizes, corrosion and debonding information.

### Index
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Underwater and harsh environment connectors

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About SubConn®

Easily recognisable by their red locking sleeves and with a track record of 40 years at the service of maritime equipment operators worldwide, SubConn® underwater mateable and harsh environment connectors are regarded as an industry standard connectivity solution within most marine markets.

SubConn® connectors have always relied on a cost-effective, simple and rugged contact design and at present, hundreds of thousands of connectors are deployed throughout the world to interface and interconnect a countless range of marine and underwater applications within offshore oil and gas, military, ocean science, geophysical and nuclear sectors. To meet the needs of our customers, the SubConn® range has seen ongoing development over its entire lifespan. This way, SubConn® applications span from shallow water use to prolonged deployment under harsh conditions, at some of the deepest ocean locations on earth.

SubConn® connectors are manufactured in the USA at our modern production facilities located in Burwell, Nebraska. SubConn Inc. is certified according to ISO 9001:2008.

Standard, special and custom connectors
We recognise the fact that connectors are a component product which, in many cases, functions as an integral part of larger scale cable systems or instrumentation solutions. With this in mind, uncompromising quality, dependability, flexibility and local availability are key factors having built the success of SubConn® connectors. We pride ourselves on our wide range of standard connector solutions which are regularly being extended to meet new individual or generic industry requirements and standards.

In addition to the standard product range of rubber moulded circular and low profile connectors, the SubConn® concept has been adapted to produce a number of special application and custom connectors. These range from the successful high power connectors for subsea applications, field installable and oil filled harness connectors, geophysical telemetry connectors for transition zone applications, glass sphere modified connectors, proximity switches and a complete range of compatible metal shell bulkhead, flange mount connectors and penetrators. This way, product development and specialised engineering have played an important role in the growth of our company and product range.

We hope that you will regard this catalogue as a useful tool for facilitating the selection of the right connector solution to suit your requirements. In case you do not find a suitable solution within our standard range, please do not hesitate to contact us.

About MacArtney

MacArtney is a global supplier of underwater technology solutions specialising in the design, manufacture, sale and service of a wide range of systems to offshore oil and gas operators, subsea surveyors, the renewable energy sector, ocean science institutes, divers and navies across the world. We offer an extensive variety of advanced products and system solutions spanning from subsea cables and connectors to state-of-the-art integrated packages, including fibre optic telemetry, underwater cameras and lights, oceanographic instruments, marine winch systems and remotely operated towed vehicles. All the products supplied are designed and tested to supply high quality, efficiency and reliable performance in the challenging underwater environment.

MacArtney and SubConn®
In 1978 the MacArtney Group signed an exclusive agreement with the US based original equipment manufacturer, Loup Valley Machining and Manufacturing, to market and sell SubConn® underwater mateable electrical connectors on the global market.

Four decades later, MacArtney is a major shareholder and supports the entire SubConn® range of products which is supplied to numerous customers and users throughout the world. MacArtney holds large quantities of connectors in stock and with multiple operations present at strategic locations in North America, Europe, Asia Pacific, coupled with exclusive representative agreements with marine technology companies all over the world, MacArtney enables boundless and instant access to SubConn® connectors at local as well as global levels.

MacArtney is DS/EN ISO 9001:2015 certified and closely involved in the development and testing of the SubConn® range.

MacArtney SubConn® applications
Over the years, SubConn® products have been the primary provider of connectivity infrastructure to MacArtney underwater technology systems and solutions. SubConn® connectors are used on MacArtney EMO and NEXUS multiplexers, LUXUS cameras and lights, FOCUS and TRIAXUS remotely operated towed vehicles (ROTV), MacArtney MERMAC and CORMAC winch and handling systems and CEMAC offshore cable handling equipment. SubConn® connectors are also used for slip rings, underwater instrumentation systems, for large scale systems and solution packages for ocean science applications and for challenging offshore oil and gas, subsea, renewable energy, civil engineering, defence, fisheries and diving projects.
"We started to introduce SubConn® connectors to Chinese users 13 years ago. SubConn® connectors now provide high performance and reliable connection for tens of thousands of ocean instruments and items of equipment in China."

Jenny Song, General Manager
SeaTech China Co., Ltd.
The SubConn® Circular series forms the basis of the technology that characterises most SubConn® products available today. First introduced in 1978, these connectors are widely recognised as a dependable and rugged connectivity solution for underwater and harsh marine environment applications. SubConn® Circular connectors are available in various standard size configurations with 1 to 25 contacts.

The SubConn® Circular series offers the ability to combine signal and power within a single connector. SubConn® Circular connectors are manufactured from high-grade chloroprene rubber with different types of body material and feature a high depth rating. The connectors are available in different standard shell sizes with contacts rated at 600 V up to 10 A. SubConn® Circular connectors are available in bulkhead, inline and field installable overmould versions. All bulkhead connectors come with colour coded or numbered teflon (PTFE) leads.

For easy integration with systems and equipment, SubConn® Circular connectors are available with dedicated cables, locking sleeves, pressure proof dummy connectors and other accessories. All SubConn® cables are manufactured from flexible and water-resistant chloroprene rubber or polyurethane (PUR). The characteristic SubConn® locking sleeves are manufactured from injection moulded polyoxymethylene (POM) or stainless steel and come with stainless steel retaining snap rings.

Applications

- Offshore oil and gas, renewable energy and subsea systems
- Defence systems and equipment
- Oceanographic systems, equipment and instrumentation solutions
- Remotely Operated Vehicle (ROV) and Remotely Operated Towed Vehicle (ROTV) systems
- Underwater camera, video and lighting systems
- Ocean bottom seismic systems
- Diving systems and equipment

Options

- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths
SubConn® Circular
Mini 1 contact

**Connector specifications**

- **Voltage rating**: 600 V DC/AC rms
- **Current rating**: 10 A
- **Insulation resistance**: > 200 Mohm
- **Contact resistance**: < 0.01 ohm
- **Wet matings**: > 500
- **Temperature rating (water)**: - 4 to 60˚C, 25 to 140˚F
- **Temperature rating (air)**: - 40 to 60˚C, - 40 to 140˚F
- **Storage temperature rating**: - 40 to 60˚C, - 40 to 140˚F
- **Design depth rating**: 1,400 bar, 20,000 psi
- **Qualified pressure tested**: 800 bar, 11,600 psi

**Material specifications**

- **Connector body**: Chloroprene rubber
- **Contacts**: Gold plated brass UNS - C36000
- **Locking sleeves**: POM
- **Inline cable (60 cm, 2 ft)**: 18 AWG 0.82 mm² chloroprene rubber

**Inline cable colour code**

- Black

**Nominal cable outside diameter (OD)**

Chloroprene rubber cable 0.142", 3.6 mm
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Circular
2, 3, 4 and 5 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>2 contacts current rating</td>
<td>10 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>3, 4 and 5 contacts current rating</td>
<td>10 A per contact (max 30 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Design depth rating</td>
<td>1,400 bar, 20,000 psi</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

Material specifications

<table>
<thead>
<tr>
<th>Material</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body</td>
<td>Brass, stainless steel, titanium, anodised aluminium or PEEK</td>
</tr>
<tr>
<td>Contacts</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>Location pin</td>
<td>Stainless steel AISI 303</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM or stainless steel</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>2, 3 and 4 conductor inline cable</td>
<td>16 AWG 1.31 mm² chloroprene rubber</td>
</tr>
<tr>
<td>5 conductor inline cable</td>
<td>18 AWG 0.82 mm² chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead leads</td>
<td>18 AWG 0.82 mm² coloured PTFE</td>
</tr>
</tbody>
</table>

Face view (male)

Inline cable colour code

1 Black 2 White 3 Red 4 Green 5 Orange

Nominal cable outside diameter (OD)

2 conductor cable 0.365", 9.3 mm
3 conductor cable 0.385", 9.8 mm
4 conductor cable 0.410", 10.4 mm
5 conductor cable 0.465", 11.8 mm
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
# SubConn® Circular Splitconn

## 2 contacts

### Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>2 contacts current rating</td>
<td>10 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Design depth rating</td>
<td>1,400 bar, 20,000 psi</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
</tbody>
</table>

### Material specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Contacts</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>Location pin</td>
<td>Stainless steel AISI 303</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>2 conductor inline cable (60 cm, 2 ft)</td>
<td>18 AWG 0.82 mm² chloroprene rubber</td>
</tr>
</tbody>
</table>

### Face view (male)

![Face view (male)](image)

### Inline cable colour code

- 1 Black
- 2 White

### Nominal cable outside diameter (OD)

2 conductor cable 0.276", 7 mm
For more information see page 12/13

For more information see page 12/13

For more information see page 12/13

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
# SubConn® Circular
## 6, 8 and 10 contacts

### Connector specifications
- **Voltage rating**: 600 V DC/AC rms
- **Current rating**: 10 A per contact (max 50 A per connector)
- **Insulation resistance**: > 200 Mohm
- **Contact resistance**: < 0.01 ohm
- **Wet matings**: > 500
- **Temperature rating (water)**: - 4 to 60˚C, 25 to 140˚F
- **Temperature rating (air)**: - 40 to 60˚C, - 40 to 140˚F
- **Storage temperature rating**: - 40 to 60˚C, - 40 to 140˚F
- **Design depth rating**: 1,400 bar, 20,000 psi
- **Qualified pressure tested**: 800 bar, 11,600 psi
- **Depth rating PEEK**: 300 bar, 4,350 psi

### Material specifications
- **Connector body**: Chloroprene rubber
- **Bulkhead body**: Brass, stainless steel, titanium, anodised aluminium or PEEK
- **Contacts**: Gold plated brass UNS - C36000
- **Location pin**: Stainless steel AISI 303
- **O-rings**: Nitrile
- **Locking sleeves**: POM or stainless steel
- **Snap rings**: Stainless steel AISI 302
- **6 and 8 conductor inline cable (60 cm, 2 ft)**: 16 AWG 1.31 mm² chloroprene rubber
- **10 conductor inline cable (60 cm, 2 ft)**: 18 AWG 0.82 mm² chloroprene rubber
- **Bulkhead leads (30 cm, 1 ft)**: 18 AWG 0.82 mm² PTFE

### Face view (male)

![Face view (male)](image)

### Inline cable colour code
- 1 Black
- 2 White
- 3 Red
- 4 Green
- 5 Orange
- 6 Blue
- 7 White/black
- 8 Red/black
- 9 Green/black
- 10 Orange/black

### Nominal cable outside diameter (OD)
- 6 conductor cable 0.520”, 13.2 mm
- 8 conductor cable 0.555”, 14.1 mm
- 10 conductor cable 0.605”, 15.4 mm
Note:
AT only available in 6 and 8 Contacts

Cable OD:
Min 6mm
Max 16mm

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Circular Right Angle
6, 8 and 10 contacts

Connector specifications

- Voltage rating: 600 V DC/AC rms
- Current rating: 10 A per contact (max 50 A per connector)
- Insulation resistance: > 200 Mohm
- Contact resistance: < 0.01 ohm
- Wet mating: > 500
- Temperature rating (water): - 4 to 60°C, 25 to 140°F
- Temperature rating (air): - 40 to 60°C, - 40 to 140°F
- Storage temperature rating: - 40 to 60°C, - 40 to 140°F
- Design depth rating: 1,400 bar, 20,000 psi
- Qualified pressure tested: 800 bar, 11,600 psi

Material specifications

- Connector body: Chloroprene rubber
- Contacts: Brass UNS - C36000
- Location pin: AISI 303
- Locking sleeves: POM or stainless steel
- Snap rings: AISI 302
- 6 and 8 conductor inline cable (60 cm, 2 ft): 16 AWG 1.31 mm² chloroprene rubber
- 10 conductor inline cable (60 cm, 2 ft): 18 AWG 0.82 mm² chloroprene rubber

Face view (male)

Inline cable colour code

<table>
<thead>
<tr>
<th>1 Black</th>
<th>3 Red</th>
<th>5 Orange</th>
<th>7 White/black</th>
<th>9 Green/black</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 White</td>
<td>4 Green</td>
<td>6 Blue</td>
<td>8 Red/black</td>
<td>10 Orange/black</td>
</tr>
</tbody>
</table>

Nominal cable outside diameter (OD)

- 6 conductor cable 0.520", 13.2 mm
- 8 conductor cable 0.555", 14.1 mm
- 10 conductor cable 0.605", 15.4 mm
Note:
Locking Sleeve has
to be modified
to fit this connector

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Circular
12, 16 and 25 contacts

Connector specifications

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<thead>
<tr>
<th>Specification</th>
<th>12, 16 contacts</th>
<th>25 contacts</th>
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<tbody>
<tr>
<td>Voltage rating</td>
<td>600 V DC/AC rms</td>
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<tr>
<td>12 and 16 contacts current rating</td>
<td>10 A per contact (max 60 A per connector)</td>
<td>3 power contacts 10 A per contact, 22 signal contacts 5 A per contact (max 60 A per connector)</td>
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<tr>
<td>25 contacts current rating</td>
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<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
<td></td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
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<td>Wet matings</td>
<td>&gt; 500</td>
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<td>Temperature rating (water)</td>
<td>- 4 to 60˚C, 25 to 140˚F</td>
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<tr>
<td>12 and 16 contacts connector design depth rating</td>
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<tr>
<td>12, 16 and 25 contacts conn. qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
<td></td>
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<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
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Material specifications

<table>
<thead>
<tr>
<th>Connector body</th>
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<tbody>
<tr>
<td>Bulkhead body</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 and 16 contacts</td>
<td>Brass, stainless steel, titanium, anodised aluminium or PEEK</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>25 contacts</td>
<td>Contact 2, 4 and 6: Gold plated brass UNS - C36000</td>
<td>Contact 1, 3, 5, 7 - 25: Gold plated beryllium copper</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
<td></td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM or stainless steel</td>
<td></td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
<td></td>
</tr>
<tr>
<td>12 and 16 conductor inline cable (60 cm, 2 ft)</td>
<td>18 AWG 0.82 mm² chloroprene rubber</td>
<td>3 x 18 AWG 0.82 mm², 22 x 20 AWG 0.52 mm² polyurethane</td>
</tr>
<tr>
<td>25 conductor inline cable</td>
<td>18 AWG 0.82 mm² coloured PTFE</td>
<td>3 x 18 AWG 0.82 mm², 22 x 22 AWG 0.33 mm² white tagged PTFE</td>
</tr>
<tr>
<td>(60 cm, 2 ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 and 16 contact bulkhead leads (30 cm, 1 ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 contact bulkhead leads (30 cm, 1 ft)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Face view (male)

Inline cable colour code for 12 and 16 conductor

<table>
<thead>
<tr>
<th>Colour</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>2</td>
</tr>
<tr>
<td>Red</td>
<td>3</td>
</tr>
<tr>
<td>Green</td>
<td>4</td>
</tr>
<tr>
<td>Orange</td>
<td>5</td>
</tr>
<tr>
<td>Blue</td>
<td>6</td>
</tr>
<tr>
<td>White/black</td>
<td>7</td>
</tr>
<tr>
<td>Red/black</td>
<td>8</td>
</tr>
<tr>
<td>Green/black</td>
<td>9</td>
</tr>
<tr>
<td>Orange/black</td>
<td>10</td>
</tr>
<tr>
<td>Blue/black</td>
<td>11</td>
</tr>
<tr>
<td>Black/white</td>
<td>12</td>
</tr>
<tr>
<td>Red/white</td>
<td>13</td>
</tr>
<tr>
<td>White/Black</td>
<td>14</td>
</tr>
<tr>
<td>Blue/white</td>
<td>15</td>
</tr>
<tr>
<td>Black/white</td>
<td>16</td>
</tr>
<tr>
<td>Black/red</td>
<td>17</td>
</tr>
</tbody>
</table>

Inline cable colour code for 25 conductor

<table>
<thead>
<tr>
<th>Colour</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange</td>
<td>1</td>
</tr>
<tr>
<td>Black-18 AWG</td>
<td>2</td>
</tr>
<tr>
<td>Grey</td>
<td>3</td>
</tr>
<tr>
<td>Red-18 AWG</td>
<td>4</td>
</tr>
<tr>
<td>Green</td>
<td>5</td>
</tr>
<tr>
<td>Brown-18 AWG</td>
<td>6</td>
</tr>
<tr>
<td>Blue</td>
<td>7</td>
</tr>
<tr>
<td>White/Black</td>
<td>8</td>
</tr>
<tr>
<td>White</td>
<td>9</td>
</tr>
<tr>
<td>Purple</td>
<td>10</td>
</tr>
<tr>
<td>Blue</td>
<td>11</td>
</tr>
<tr>
<td>White/Yellow</td>
<td>12</td>
</tr>
<tr>
<td>White/Green</td>
<td>13</td>
</tr>
<tr>
<td>White/Blue</td>
<td>14</td>
</tr>
<tr>
<td>White/Purple</td>
<td>15</td>
</tr>
<tr>
<td>White/Yellow/Black</td>
<td>16</td>
</tr>
<tr>
<td>White/Grey</td>
<td>17</td>
</tr>
<tr>
<td>White/Brown/Black</td>
<td>18</td>
</tr>
<tr>
<td>White/Blue/Black</td>
<td>19</td>
</tr>
<tr>
<td>White/Orange/Black</td>
<td>20</td>
</tr>
<tr>
<td>White/Red</td>
<td>21</td>
</tr>
<tr>
<td>White/Blue/Black</td>
<td>22</td>
</tr>
<tr>
<td>White/Brown</td>
<td>23</td>
</tr>
<tr>
<td>White/Red/Black</td>
<td>24</td>
</tr>
<tr>
<td>White/White/Black</td>
<td>25</td>
</tr>
</tbody>
</table>

Nominal cable outside diameter (OD)

<table>
<thead>
<tr>
<th>Cable conductor</th>
<th>OD</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 conductor</td>
<td>0.605&quot;, 15.4 mm</td>
</tr>
<tr>
<td>16 conductor</td>
<td>0.704&quot;, 17.9 mm</td>
</tr>
<tr>
<td>25 conductor</td>
<td>0.589&quot;, 15.0 mm</td>
</tr>
</tbody>
</table>
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
"NORDIC DEFENCE INDUSTRIES A/S has used SubConn® connectors since the mid-nineties for our undersea mine disposal equipment, and find them to be extremely robust and reliable in the tough marine environment - both in arctic and subtropical climates."

Nordic Defence Industries A/S
To accommodate market demands for ever more flexible, dependable and cost-efficient underwater connectivity solutions, SubConn® Micro connectors are available.

The SubConn® Micro Circular series has enhanced sealing capability and utilise a uniform contact size and design. Based on the original SubConn® Circular series, SubConn® Micro Circular connectors were developed to suit the increasingly more compact design of underwater instruments, equipment and systems.

The SubConn® Micro Circular connectors are available with 2 to 21 contacts rated at 300 V from 5 to 10 A in the standard inline version and in bulkhead versions.

The SubConn® Micro Circular connectors are manufactured from high-grade neoprene and a variety of body material options and feature a high ocean depth rating. The SubConn® Micro Circular connectors have enhanced sealing capability and utilise a uniform contact size and design.

Applications
- Offshore oil and gas, renewable energy and subsea systems
- Defence systems and equipment
- Oceanographic systems, equipment and instrumentation solutions
- Remotely Operated Vehicle (ROV) and Remotely Operated Towed Vehicle (ROTV) systems
- Underwater camera, video and lighting systems
- Ocean bottom seismic systems
- Diving systems and equipment

Options
- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths
# SubConn® Micro Circular

## 1 contact

### Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>300 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>5 A</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating</td>
<td>700 bar, 10,000 psi</td>
</tr>
</tbody>
</table>

### Material specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Contacts</td>
<td>Female socket in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td></td>
<td>Male pin in gold plated beryllium copper</td>
</tr>
<tr>
<td>Inline cable (60 cm, 2 ft)</td>
<td>18 AWG 0.82 mm² chloroprene rubber</td>
</tr>
</tbody>
</table>

### Inline cable colour code

1. Black

### Nominal cable outside diameter (OD)

Chloroprene rubber cable 0.100", 2.54 mm
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
**SubConn® Micro Circular**

2, 3, 4, 5, 6 and 8 contacts and G2 2, 3 and 4 contacts

**Connector specifications**

- **Voltage rating**: 300 V DC/AC rms
- **2, 3 and 4 contacts current rating**: 10 A per contact (max 20 A per connector)
- **5, 6 and 8 contacts current rating**: 5 A per contact (max 20 A per connector)
- **G2 2, 3 and 4 contacts current rating**: 5 A per contact (max 20 A per connector)
- **Insulation resistance**: > 200 Mohm
- **Contact resistance**: < 0.01 ohm
- **Wet matings**: > 500
- **Temperature rating (water)**: - 4 to 60˚C, 25 to 140˚F
- **Temperature rating (air)**: - 40 to 60˚C, - 40 to 140˚F
- **Storage temperature rating**: -40 to 60˚C, -40 to 140˚F
- **Qualified pressure tested**: 800 bar, 11,600 psi
- **Depth rating PEEK**: 300 bar, 4,350 psi

**Material specifications**

- **Connector body**: Chloroprene rubber
- **Bulkhead body**: Brass, stainless steel, titanium, anodised aluminium or PEEK
- **PEEK bulkhead body**: PEEK-30
- **2, 3 and 4 contacts**: Gold plated brass UNS - C36000
- **5, 6, 8 contacts and G2 2, 3 and 4 contacts**: Female sockets in gold plated brass - UNS C36000
- **Male pins in gold plated beryllium copper**: 5 A per contact (max 20 A per connector)
- **Location pin**: Stainless steel AISI 303
- **O-rings**: Nitrile
- **Locking sleeves**: ABS or stainless steel
- **Snap rings**: Stainless steel AISI 302
- **2, 3 and 4 conductor inline cable (60 cm, 2 ft)**: 18 AWG 0.82 mm² chloroprene rubber
- **5, 6 and 8 conductor inline cable (60 cm, 2 ft)**: 20 AWG 0.52 mm² chloroprene rubber
- **G2 2, 3 and 4 conductor inline cable (60 cm, 2 ft)**: 20 AWG 0.52 mm² chloroprene rubber
- **2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)**: 20 AWG 0.52 mm² coloured PTFE
- **5, 6 and 8 contact bulkhead leads (30 cm, 1 ft)**: 22 AWG 0.33 mm² coloured PTFE
- **G2 2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)**: 20 AWG 0.52 mm² coloured PTFE

**Face view (male)**

- [Face view images]

**Inline cable colour code**

1. Black
2. White
3. Red
4. Green
5. Orange
6. Blue
7. White/black
8. Red/black

**Nominal cable outside diameter (OD)**

- **2 conductor cable 0.340”, 8.6 mm**: G2 2 conductor cable 0.230”, 6.1 mm
- **3 conductor cable 0.360”, 9.1 mm**: G2 3 conductor cable 0.250”, 6.4 mm
- **4 conductor cable 0.385”, 9.8 mm**: G2 4 conductor cable 0.260”, 6.6 mm
- **5 conductor cable 0.52 mm**: G2 5 conductor cable 0.312”, 7.9 mm
- **6 conductor cable 0.52 mm**: G2 6 conductor cable 0.312”, 7.9 mm
- **7 conductor cable 0.52 mm**: G2 7 conductor cable 0.312”, 7.9 mm
- **8 conductor cable 0.52 mm**: G2 8 conductor cable 0.312”, 7.9 mm

**Additional information**

Micro 2, 3 and 4 contacts in G2 version have the same contact size as 5, 6 and 8 contacts and are available as water blocked (WB).
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
# SubConn® Micro Circular Double O-ring

**2, 3, 4, 5, 6 and 8 contacts and G2 2, 3 and 4 contacts**

## Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>300 V DC/AC rms</td>
</tr>
<tr>
<td>2, 3 and 4 contacts current rating</td>
<td>10 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>5, 6 and 8 contacts current rating</td>
<td>5 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>G2 2, 3 and 4 contacts connector current rating</td>
<td>5 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

## Material specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body with 20 mm hex flats</td>
<td>Brass, titanium or anodised aluminium</td>
</tr>
<tr>
<td>Bulkhead body with 22 mm hex flats</td>
<td>Anodised aluminium or stainless steel</td>
</tr>
<tr>
<td>Bulkhead RA body</td>
<td>Aluminium or titanium</td>
</tr>
<tr>
<td>2, 3 and 4 contacts</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>5, 6, 8 contacts and G2 2, 3 and 4 contacts</td>
<td>Female sockets in gold plated brass UNS C36000</td>
</tr>
<tr>
<td>Location pin</td>
<td>Stainless steel AISI 303</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>ABS or stainless steel</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)</td>
<td>20 AWG 0.52 mm² coloured PTFE</td>
</tr>
<tr>
<td>5, 6 and 8 contact bulkhead leads (30 cm, 1 ft)</td>
<td>22 AWG 0.33 mm² coloured PTFE</td>
</tr>
<tr>
<td>G2 2, 3 and contact 4 bulkhead leads (30 cm, 1 ft)</td>
<td>20 AWG 0.52 mm² coloured PTFE</td>
</tr>
</tbody>
</table>

## Face view (male)

![Face view (male)](image)
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
# SubConn® Micro Circular

## 10, 12 and 16 contacts

### Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>300 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>5 A per contact (max 30 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

### Material specifications

- **Connector body**: Chloroprene rubber
- **Bulkhead body**: Brass, stainless steel, titanium, anodised aluminium or PEEK
- **Contacts**: Female sockets in gold plated brass UNS - C36000, Male pins in gold plated beryllium copper
- **O-rings**: Nitrile
- **Locking sleeves**: POM or stainless steel
- **Snap rings**: Stainless steel AISI 302
- **Inline cable (60 cm, 2 ft)**: 20 AWG 0.52 mm² chloroprene rubber
- **Bulkhead leads (30 cm, 1 ft)**: 20 AWG 0.52 mm² coloured PTFE

### Inline cable colour code

<table>
<thead>
<tr>
<th>Colour</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>2</td>
</tr>
<tr>
<td>Red</td>
<td>3</td>
</tr>
<tr>
<td>Green</td>
<td>4</td>
</tr>
<tr>
<td>Orange</td>
<td>5</td>
</tr>
<tr>
<td>Blue</td>
<td>6</td>
</tr>
<tr>
<td>White/black</td>
<td>7</td>
</tr>
<tr>
<td>Red/black</td>
<td>8</td>
</tr>
<tr>
<td>Green/black</td>
<td>9</td>
</tr>
<tr>
<td>Orange/black</td>
<td>10</td>
</tr>
<tr>
<td>Blue/black</td>
<td>11</td>
</tr>
<tr>
<td>Black/white</td>
<td>12</td>
</tr>
<tr>
<td>Red/white</td>
<td>13</td>
</tr>
<tr>
<td>Green/white</td>
<td>14</td>
</tr>
<tr>
<td>Blue/white</td>
<td>15</td>
</tr>
<tr>
<td>Black/red</td>
<td>16</td>
</tr>
</tbody>
</table>

### Nominal cable outside diameter (OD)

- 10 conductor cable: 0.406", 10.3 mm
- 12 conductor cable: 0.436", 11.0 mm
- 16 conductor cable: 0.472", 12.0 mm
## Drawing information

Dimensions in mm (1 mm = 0.03937 inch)

Threads in inches (1 inch = 25.4 mm)

---

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimensions</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCIL10F</td>
<td>L: 28 W: 56 H: 31.8</td>
<td></td>
</tr>
<tr>
<td>MCIL10M</td>
<td>L: 19 W: 31.5 H: 19</td>
<td></td>
</tr>
<tr>
<td>1/2-20 UNF - 2A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hex Flats 13/16&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCB10F</td>
<td>L: 41 W: 31.8 H: 80.2</td>
<td></td>
</tr>
<tr>
<td>MCB10M</td>
<td>L: 31.5 W: 69.7 H: 19</td>
<td></td>
</tr>
<tr>
<td>MCBHRA10F</td>
<td>L: 80.2 W: 31.8 H: 10.7</td>
<td></td>
</tr>
<tr>
<td>MCBHRA10M</td>
<td>L: 69.7 W: 31.8 H: 10.7</td>
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<tr>
<td>MCOM10F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCOM10M</td>
<td></td>
<td></td>
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<tr>
<td>OMBA</td>
<td>L: 90.7 W: 60.2 H: 41.5</td>
<td></td>
</tr>
<tr>
<td>OMBA</td>
<td>L: 90.7 W: 60.2 H: 41.5</td>
<td></td>
</tr>
<tr>
<td>MCPB0F10F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCPB0F10M</td>
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<td></td>
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<tr>
<td>MCDC10F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCDC10M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DLSA-F</td>
<td>L: 33.5 W: 24.5 H: 31.8</td>
<td></td>
</tr>
<tr>
<td>DLSA-M</td>
<td>L: 24 W: 31.5 H: 31.8</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

RA Body are not available in PEEK & Ti material.

---

- **Cable OD:**
  - Min 4 mm
  - Max 12 mm

- **O-Ring:**
  - Ø14.00 x 1.78 (2-015)

- **DLSA Snap Ring:**

- **1/2" Tygon Tube:**

---

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---

**Drawing no.:** DS/ISO 128

**Checked:** J GR 06-08-2013

**Sheet no.:** 1

**Reference:**

**Rev.:** 3rd edition

**Scale:** N/A
**SubConn® Micro Circular Double O-ring**

**10, 12 and 16 contacts**

**Connector specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>300 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>5 A per contact (max 30 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

**Material specifications**

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body</td>
<td>Brass, titanium, anodised aluminium or stainless steel</td>
</tr>
<tr>
<td>Contacts</td>
<td>Female sockets in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td></td>
<td>Male pins in gold plated beryllium copper</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM or stainless steel</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>Bulkhead leads (30 cm, 1 ft)</td>
<td>20 AWG 0.52 mm² coloured PTFE</td>
</tr>
</tbody>
</table>

**Face view (male)**

![Face view (male)](image-url)
Drawing information

Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
### SubConn® Micro Circular

#### 21 contacts

**Connector specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
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<td>300 V DC/AC rms</td>
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<tr>
<td>Current rating</td>
<td>5 A per contact (max 40 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
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**Material specifications**

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<th>Component</th>
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<tbody>
<tr>
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<tr>
<td>Bulkhead body</td>
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</tr>
<tr>
<td>Contacts</td>
<td>Female sockets in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td></td>
<td>Male pins in gold plated beryllium copper</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM or stainless steel</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>Inline cable (60 cm, 2 ft)</td>
<td>20 AWG 0.52 mm² PUR</td>
</tr>
<tr>
<td>Bulkhead leads (30 cm, 1 ft)</td>
<td>20 AWG 0.52 mm² white tagged PTFE</td>
</tr>
</tbody>
</table>

**Face view (male)**

![Face View](image)

**Inline cable colour code**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Grey</td>
<td>7</td>
<td>White/Black</td>
<td>13</td>
<td>White/Green</td>
<td>19</td>
<td>White/Orange/Black</td>
<td></td>
</tr>
<tr>
<td>2 Purple</td>
<td>8</td>
<td>White</td>
<td>14</td>
<td>White/Blue</td>
<td>20</td>
<td>White/Yellow/Black</td>
<td></td>
</tr>
<tr>
<td>3 Blue</td>
<td>9</td>
<td>White/Brown</td>
<td>15</td>
<td>White/Purple</td>
<td>21</td>
<td>White/Green/Black</td>
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</tr>
<tr>
<td>4 Green</td>
<td>10</td>
<td>White/Red</td>
<td>16</td>
<td>White/Grey</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Yellow</td>
<td>11</td>
<td>White/Orange</td>
<td>17</td>
<td>White/Brown/Black</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Orange</td>
<td>12</td>
<td>White/Yellow</td>
<td>18</td>
<td>White/Red/Black</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Nominal cable outside diameter (OD)**

21 conductor cable 0.578” 14.70 mm
“We receive excellent customer service through every aspect of our business relationship with SubConn.”

Faith Goguen, Purchasing Manager
EdgeTech
The SubConn® Low Profile series is designed to offer connectivity for underwater systems and equipment where space is restricted or a more compact solution is required. By means of the low profile layout users are able to assemble design optimised, streamlined and effective underwater systems with sensors, sonar heads and other types of equipment producing less drag.

SubConn® Low Profile connectors are manufactured from high-grade rubber with different types of body material available. They feature the same contact sizes as the Circular series and are available with 2 to 9 contacts rated at 600 V up to 10 A. The series includes bulkhead and inline versions featuring a high depth rating.

For easy integration with systems and equipment SubConn® Low Profile series connectors are available with dedicated cables, rubber straps and pressure-proof dummy connectors. All SubConn® cables are manufactured from flexible and water-resistant chloroprene rubber.

**Applications**
- Remotely Operated Vehicle (ROV) systems and instrumentation bottles
- Oceanographic systems, equipment and instrumentation solutions
- Defence systems and equipment
- Offshore oil and gas, renewable energy and subsea systems
- Underwater camera, video and lighting systems
- Diving systems and equipment

**Options**
- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths
SubConn® Low Profile
2 contacts

Connector specifications
- Single contact rating: 600 V DC/AC rms
- Current rating: 10 A per contact (max 20 A per connector)
- Insulation resistance: > 200 Mohm
- Contact resistance: < 0.01 ohm
- Wet matings: > 500
- Temperature rating (water): - 4 to 60°C, 25 to 140°F
- Temperature rating (air): - 40 to 60°C, - 40 to 140°F
- Storage temperature rating: - 40 to 60°C, - 40 to 140°F
- Qualified pressure tested: 800 bar, 11,600 psi
- Depth rating PEEK: 300 bar, 4,350 psi

Material specifications
- Connector body: Chloroprene rubber
- Bulkhead body: Brass, stainless steel, titanium, anodised aluminium or PEEK
- Contacts: Gold plated brass UNS - C36000
- Location pin: Stainless steel AISI 303
- O-rings: Nitrile
- Locking strap: Chloroprene rubber
- Inline cable (60 cm, 2 ft): 16 AWG 1.31 mm² chloroprene rubber
- Bulkhead leads (30 cm, 1 ft): 18 AWG 0.82 mm² white tagged PTFE

Face view (male)

Inline cable colour code
- 1 Black
- 2 White

Nominal cable outside diameter (OD)
- 2 conductor cable 0.365”, 9.3 mm
Low Profile

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
### SubConn® Low Profile

#### 3 and 4 contacts

<table>
<thead>
<tr>
<th><strong>Connector specifications</strong></th>
<th><strong>Material specifications</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single contact rating</strong></td>
<td><strong>Connector body</strong></td>
</tr>
<tr>
<td>600 V DC/AC rms</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td><strong>3 contacts current rating</strong></td>
<td><strong>Bulkhead body</strong></td>
</tr>
<tr>
<td>10 A per contact (max 30 A per connector)</td>
<td>Brass, stainless steel, titanium, anodised aluminium or PEEK</td>
</tr>
<tr>
<td><strong>4 contacts current rating</strong></td>
<td><strong>Contacts</strong></td>
</tr>
<tr>
<td>10 A per contact (max 40 A per connector)</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td><strong>Insulation resistance</strong></td>
<td><strong>O-rings</strong></td>
</tr>
<tr>
<td>&gt; 200 Mohm</td>
<td>Nitrile</td>
</tr>
<tr>
<td><strong>Contact resistance</strong></td>
<td><strong>Locking strap</strong></td>
</tr>
<tr>
<td>&lt; 0.01 ohm</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td><strong>Wet matings</strong></td>
<td><strong>Inline cable (60 cm, 2 ft)</strong></td>
</tr>
<tr>
<td>&gt; 500</td>
<td>16 AWG 1.31 mm² chloroprene rubber</td>
</tr>
<tr>
<td><strong>Temperature rating (water)</strong></td>
<td><strong>Bulkhead leads (30 cm, 1 ft)</strong></td>
</tr>
<tr>
<td>- 4 to 60°C, 25 to 140°F</td>
<td>18 AWG 0.82 mm² white tagged PTFE</td>
</tr>
<tr>
<td><strong>Temperature rating (air)</strong></td>
<td></td>
</tr>
<tr>
<td>- 40 to 60°C, - 40 to 140°F</td>
<td></td>
</tr>
<tr>
<td><strong>Storage temperature rating</strong></td>
<td></td>
</tr>
<tr>
<td>- 40 to 60°C, - 40 to 140°F</td>
<td></td>
</tr>
<tr>
<td><strong>Qualified pressure tested</strong></td>
<td></td>
</tr>
<tr>
<td>800 bar, 11,600 psi</td>
<td></td>
</tr>
<tr>
<td><strong>Depth rating PEEK</strong></td>
<td></td>
</tr>
<tr>
<td>300 bar, 4,350 psi</td>
<td></td>
</tr>
</tbody>
</table>

**Face view (male)**

![Face view (male)](image)

**Inline cable colour code**

1 Black  2 White  3 Red  4 Green

(3 conductor cable colour code: 1 black, 2 white, 3 green)

**Nominal cable outside diameter (OD)**

3 conductor cable 0.385", 9.8 mm
4 conductor cable 0.410", 10.4 mm
**Low Profile**

**Dimensions in mm** (1 mm = 0.03937 inch)
**Threads in inches** (1 inch = 25.4 mm)

**Drawing information**

Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Low Profile

5 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>10 A per contact (max 40 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
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<tr>
<td>Contact resistance</td>
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</tr>
<tr>
<td>Wet matings</td>
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</tr>
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<td>Temperature rating (water)</td>
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</tr>
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</tr>
<tr>
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<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

Material specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body</td>
<td>Brass, stainless steel, titanium, anodised aluminium or PEEK</td>
</tr>
<tr>
<td>Contacts</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking strap</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Inline cable (60 cm, 2 ft)</td>
<td>18 AWG 0.82 mm² chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead leads (30 cm, 1 ft)</td>
<td>18 AWG 0.82 mm² white tagged PTFE</td>
</tr>
</tbody>
</table>

Face view (male)

Inline cable colour code

1. Black  4. Orange
2. Red     5. Yellow

Nominal cable outside diameter (OD)

5 conductor cable 0.328”, 8.4 mm
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Low Profile
7 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Voltage rating</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>10 A per contact (max 40 A per connector)</td>
</tr>
<tr>
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<td>&gt; 200 Mohm</td>
</tr>
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<tr>
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<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
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<tr>
<td>Storage temperature rating</td>
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Material specifications

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<tbody>
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<td>Nitrile</td>
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<tr>
<td>Locking strap</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Inline cable (60 cm, 2 ft)</td>
<td>16 AWG 1.31 mm² chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead leads (30 cm, 1 ft)</td>
<td>18 AWG 0.82 mm² white tagged PTFE</td>
</tr>
</tbody>
</table>

Face view (male)

Inline cable colour code

<table>
<thead>
<tr>
<th>Number</th>
<th>Colour</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Black</td>
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<tr>
<td>2</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>Red</td>
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<tr>
<td>4</td>
<td>Green</td>
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<tr>
<td>5</td>
<td>Orange</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
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<tr>
<td>7</td>
<td>White/black</td>
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</tbody>
</table>

Nominal cable outside diameter (OD)

7 conductor cable 0.520”, 13.2 mm
**SubConn® Low Profile**

**9 contacts**

**Connector specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>10 A per contact (max 40 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
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</table>

**Material specifications**

<table>
<thead>
<tr>
<th>Specified Part</th>
<th>Description</th>
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<tbody>
<tr>
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<td>Bulkhead body</td>
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</tr>
<tr>
<td>Contacts</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking strap</td>
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</tr>
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<td>Inline cable (60 cm, 2 ft)</td>
<td>16 AWG 1.31 mm² chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead leads (30 cm, 1 ft)</td>
<td>18 AWG 0.82 mm² white tagged PTFE</td>
</tr>
</tbody>
</table>

**Face view (male)**

![Face view image]

**Inline cable colour code**

- 1 Black
- 2 White
- 3 Red
- 4 Green
- 5 Orange
- 6 Blue
- 7 White/black
- 8 Red/black
- 9 Green/black

**Nominal cable outside diameter (OD)**

- 9 conductor cable 0.590", 15.0 mm
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
## SubConn® Low Profile Reed Switch
### 2 contacts

### Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Reed switch glass body type</td>
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<tr>
<td>Switch voltage rating</td>
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<td>Contact rating</td>
<td>10 W max</td>
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<tr>
<td>Switch current rating</td>
<td>500 mA</td>
</tr>
<tr>
<td>Operation time</td>
<td>0.6 ms (maximum)</td>
</tr>
<tr>
<td>Release time</td>
<td>0.2 ms (maximum)</td>
</tr>
<tr>
<td>Capacitance</td>
<td>0.20 pF (typical)</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
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</tr>
<tr>
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</tr>
</tbody>
</table>

### Material specifications

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<tr>
<td>Contacts</td>
<td>Gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking strap</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Inline cable (60 cm, 2 ft)</td>
<td>16 AWG 1.31 mm² chloroprene rubber</td>
</tr>
</tbody>
</table>

### Inline cable colour code

1. Black
2. White

### Nominal cable outside diameter (OD)

2 conductor cable 0.365”, 9.3 mm
Drawing information

Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
"We have used the SubConn connectors in all of our submerged WaveRoller® devices and we are happy to say the product has successfully endured the challenging water-air interface. The technology is tested and proven reliable, an absolute requirement in any prototype project."

Juha Manninen, Automation Designer
AW-Energy Oy
The SubConn® Micro Low Profile series was developed to suit the increasingly more compact design of underwater instruments, equipment and systems where space is restricted or a more compact solution is required.

By means of the low profile layout users are able to assemble design optimised, streamlined and effective underwater systems with sensors, sonar heads and other types of equipment producing less drag.

SubConn® Micro Low Profile connectors are manufactured from high-grade rubber with different types of body material available. They feature the same contact sizes as the Micro series and are available in 3, 7 and 9 contacts rated at 300 V up to 5 A. The series includes bulkhead and inline versions featuring a high depth rating.

For easy integration with systems and equipment SubConn® Micro Low Profile series connectors are available with dedicated cables, rubber straps and pressure-proof dummy connectors. All SubConn® cables are manufactured from flexible and water-resistant chloroprene rubber.

Applications
- Offshore oil and gas, renewable energy and subsea systems
- Defence systems and equipment
- Oceanographic systems, equipment and instrumentation solutions
- Remotely Operated Vehicle (ROV) and Remotely Operated Towed Vehicle (ROTV) systems
- Underwater camera, video and lighting systems
- Ocean bottom seismic systems
- Diving systems and equipment

Options
- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths
SubConn® Micro Low Profile
3 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>300 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>5 A per contact (max 10 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60˚C, 25 to 140˚F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60˚C, - 40 to 140˚F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60˚C, - 40 to 140˚F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

Material specifications

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body</td>
<td>Brass or stainless steel</td>
</tr>
<tr>
<td>Contacts</td>
<td>Female sockets in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking strap</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Inline cable (60 cm, 2 ft)</td>
<td>20 AWG 0.52 mm² chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead leads (30 cm, 1 ft)</td>
<td>20 AWG 0.52 mm² white tagged PTFE</td>
</tr>
</tbody>
</table>

Face view (male)

Inline cable colour code

1. Black
2. White
3. Red

Nominal cable outside diameter (OD)

3 conductor cable 0.328”, 8.4 mm
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
**SubConn® Micro Low Profile**

**7 and 9 contacts**

**Connector specifications**

- **Voltage rating**: 300 V DC/AC rms
- **Current rating**: 5 A per contact (max 20 A per connector)
- **Insulation resistance**: > 200 Mohm
- **Contact resistance**: < 0.01 ohm
- **Wet matings**: > 500
- **Temperature rating (water)**: - 4 to 60°C, 25 to 140°F
- **Temperature rating (air)**: - 40 to 60°C, - 40 to 140°F
- **Storage temperature rating**: - 40 to 60°C, - 40 to 140°F
- **Qualified pressure tested**: 800 bar, 11,600 psi
- **Depth rating PEEK**: 300 bar, 4,350 psi

**Material specifications**

- **Connector body**: Chloroprene rubber
- **Bulkhead body**: Brass, stainless steel, titanium, anodised aluminium or PEEK
- **Contacts**: Female sockets in gold plated brass UNS - C36000, Male pins in gold plated beryllium copper
- **O-rings**: Nitrile
- **Locking strap**: Chloroprene rubber
- **Inline cable (60 cm, 2 ft)**: 20 AWG 0.52 mm² chloroprene rubber
- **Bulkhead leads (30 cm, 1 ft)**: 20 AWG 0.52 mm² white tagged PTFE

**Face view (male)**

![Face view (male)](image)

**Inline cable colour code**

<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>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>White</td>
<td>Red</td>
<td>Green</td>
<td>Orange</td>
<td>Blue</td>
<td>White/black</td>
<td>Red/black*</td>
<td>Green/black</td>
<td>Orange/black**</td>
</tr>
</tbody>
</table>

* Micro 7 contacts connector uses an 8 conductor cable (only 7 conductors are used)
** Micro 9 contacts connector uses a 10 conductor cable (only 9 conductors are used)

**Nominal cable outside diameter (OD)**

- 8 conductor cable 0.363”, 9.2 mm
- 10 conductor cable 0.406”, 10.3 mm

7 and 9 conductor cables are not available, therefore 8 and 10 conductor cables are to be used.
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
“The SubConn® brand has been extensively used by Valeport for both shallow and deep water product applications. Knowing it is universally accepted worldwide within the industry is important to us.”

Kevin Edwards, Sales & Marketing Manager
Valeport Limited
The SubConn® Metal Shell series represents an alternative to Circular series bulkhead connectors where an even more rugged, resilient and protected underwater connectivity solution is required.

SubConn® Metal Shell series connectors are manufactured from stainless steel and are available in three different shell sizes compatible with industry standards. Flange mountable and bulkhead (male and female) connectors are available as standard equipment and connector configuration ranges from 2 to 12 contacts rated at 300 to 600 V up to 5 to 10 A. SubConn® Metal Shell connectors are manufactured to mate with compatible standard inline and dummy connectors.

The connectors feature an integrated locking ring thread on the body and a special polyoxymethylene (POM) or stainless steel locking sleeve is used on all connectors. SubConn® Metal Shell connectors come with numbered teflon (PTFE) leads and feature a high depth rating.

**Applications**
- Mating rugged flange mounted connectors with inline harness cables and connectors
- Defence systems and equipment
- Remotely Operated Vehicle (ROV) systems
- Oceanographic systems, equipment and instrumentation solutions
- Underwater camera, video and lighting systems
- Ocean bottom cable and seismic systems
- Slip ring assemblies

**Options**
- Customer specified connector body material
- Customised mating harness cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Electromechanical stress terminations
- Certified pressure testing to specific ocean depths
SubConn® Metal Shell 1500
2, 3, 4, 5, 6 and 8 contacts and G2 2, 3 and 4 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>300 V DC/AC rms</td>
</tr>
<tr>
<td>2, 3 and 4 contacts current rating</td>
<td>10 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>5, 6 and 8 contacts current rating</td>
<td>5 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>G2 2, 3 and 4 contacts current rating</td>
<td>5 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
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<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
</tbody>
</table>

Material specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Connector housing</td>
<td>Stainless steel AISI 316 (other materials on request)</td>
</tr>
<tr>
<td>Contacts</td>
<td>Female sockets in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td>Location pin</td>
<td>Male pins in gold plated beryllium copper</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>Stainless steel AISI 303</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)</td>
<td>20 AWG 0.52 mm² coloured PTFE</td>
</tr>
<tr>
<td>5, 6 and 8 contact bulkhead leads (30 cm, 1 ft)</td>
<td>22 AWG 0.33 mm² coloured PTFE</td>
</tr>
<tr>
<td>G2 2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)</td>
<td>20 AWG 0.52 mm² coloured PTFE</td>
</tr>
</tbody>
</table>

Face view (male)

![Face view image]
For more information see page 26/27

For more information see page 26/27

Metal Shell

For more information see page 26/27

Metal Shell

For more information see page 26/27

Metal Shell

MCDLS Snap Ring

O-Ring
ø19.0 x 2.5

O-Ring
ø19.0 x 2.5

O-Ring
ø19.0 x 2.5

615

615

615

41.5

22

41

3.2

1500 Series

JGR 07-08-2013

Sheet no.

Drawing information

Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Metal Shell 2000
2, 3, 4 contacts and Micro 10 and 12 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2, 3 and 4 contacts voltage rating</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>10 and 12 contacts voltage rating</td>
<td>300 V DC/AC rms</td>
</tr>
<tr>
<td>2, 3 and 4 contacts current rating</td>
<td>10 A per contact (max 30 A per connector)</td>
</tr>
<tr>
<td>10 and 12 contacts current rating</td>
<td>5 A per contact (max 30 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
</tbody>
</table>

Material specifications

| Connector body                                | Chloroprene rubber                                |
| Connector housing                             | Stainless steel AISI 316 (other materials on request) |
| 2, 3 and 4 contacts                           | Brass UNS - C36000                                 |
| 10 and 12 contacts                            | Female sockets in gold plated brass UNS - C36000  |
| Location pin                                  | Stainless steel AISI 303                            |
| O-rings                                       | Nitrile                                            |
| Locking sleeves                               | POM or stainless steel                             |
| Snap rings                                    | Stainless steel AISI 302                            |
| 2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)| 18 AWG 0.82 mm² white tagged PTFE                  |
| 10 and 12 contact bulkhead leads (30 cm, 1 ft)| 20 AWG 0.52 mm² white tagged PTFE                  |

Face view (male)
Snap ring placement

With male inline connector - snap ring in outer groove

With female inline connector - snap ring in inner groove

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
## SubConn® Metal Shell 2400
### 6, 8 and 10 contacts

### Connector specifications
- **Voltage rating**: 600 V DC/AC rms
- **Current rating**: 10 A per contact (max 50 A per connector)
- **Insulation resistance**: > 200 Mohm
- **Contact resistance**: < 0.01 ohm
- **Wet matings**: > 500
- **Temperature rating (water)**: - 4 to 60°C, 25 to 140°F
- **Temperature rating (air)**: - 40 to 60°C, - 40 to 140°F
- **Storage temperature rating**: - 40 to 60°C, - 40 to 140°F
- **Qualified pressure tested**: 800 bar, 11,600 psi

### Material specifications
- **Connector body**: Chloroprene rubber
- **Connector housing**: AISI 316 (other materials on request)
- **Contacts**: Brass UNS - C36000
- **Location pin**: Stainless steel AISI 303
- **O-rings**: Nitrile
- **Locking sleeves**: POM or stainless steel
- **Snap rings**: Stainless steel AISI 302
- **Bulkhead leads (30 cm, 1 ft)**: 18 AWG 0.82 mm² white tagged PTFE

### Face view (male)
![Face view (male)](image-url)
Snap ring placement

With male inline connector - snap ring in outer groove

With female inline connector - snap ring in inner groove

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
“At Baggerbedrijf de Boer - Dutch Dredging, we know that working with mother nature requires environmental concern and safety and we try to live up to the latest standards in this field. As part of this effort, we use SubConn® connectors to provide connectivity and optimal reliability for our dredging equipment operating in harsh marine environments.”

Casper Schilder, Technical Purchase Manager
Baggerbedrijf de Boer - Dutch Dredging
SubConn® Power series

The SubConn® Power series offers a high-performance, dependable connector solution to accommodate the ever-growing power requirements of underwater system operators and industries. The series comprises five standard connectors, supported by a number of custom-made solutions.

All based on the proven SubConn® connector and contact design, the SubConn® Power series includes a single contact power connector, three battery charging connectors (2, 3 and 4 contacts) and a 4-contact high power connector. The single contact power connector is designed for use with a selection of cable sizes and can be operated at up to 3 kV and 250 A. The battery charging connectors are suitable for carrying up to 25 A per contact. The 4-contact high power connector is suitable for 600 V at 50 A per contact and is supplied in standard SubConn® inline and bulkhead configurations.

For easy integration with systems and equipment, SubConn® Power series connectors are available with dedicated cables, polyoxymethylene (POM) or stainless steel locking sleeves and pressure-proof dummy connectors. All standard SubConn® cables for the SubConn® Power series are of the flexible and water-resistant chloroprene rubber.

Applications

- Power supply for offshore oil and gas, renewable energy and subsea systems
- Power supply for remotely operated vehicles (ROV) and subsea trenching machines
- Marine battery pack charging
- Power supply for underwater pump units
- Hazardous environment power supply

Options

- Customised harness cables and direct moulding to compatible polyurethane (PUR) cables
- Customer specified connector body material and cable lengths
- Field installable versions for all SubConn® Power series connectors
- Certified pressure testing to specific ocean depths
**SubConn® Power**

**1 contact**

**Connector specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>inline and bulkhead (1 KV version) 1 KV DC/AC rms</td>
</tr>
<tr>
<td>Current rating</td>
<td>inline, overmould and bulkhead (1 KV version) 250 A</td>
</tr>
<tr>
<td>Voltage rating</td>
<td>overmould and bulkhead (3 KV version) 3 KV DC/AC rms</td>
</tr>
<tr>
<td>Current rating (3 KV version)*</td>
<td>90 A</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60˚C, 25 to 140˚F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60˚C, - 40 to 140˚F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60˚C, - 40 to 140˚F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
</tbody>
</table>

**Material specifications**

<table>
<thead>
<tr>
<th>Material</th>
<th>Connector body</th>
<th>Bulkhead body</th>
<th>Contacts</th>
<th>Adapter</th>
<th>O-rings</th>
<th>Locking sleeves</th>
<th>Snap rings</th>
<th>Inline cable (60 cm, 2 ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chloroprene rubber</td>
<td>Brass, stainless steel or titanium</td>
<td>Brass UNS - C36000</td>
<td>Brass UNS - C36000</td>
<td>Nitrile</td>
<td>POM or stainless steel</td>
<td>Stainless steel AISI 302</td>
<td>1/0 AWG 53.46 mm² chloroprene rubber</td>
</tr>
</tbody>
</table>

**Inline cable colour code**

1. Black

**Nominal cable outside diameter (OD)**

1 conductor cable 0.6" to 0.85", 15.0 mm to 22.0 mm

**Additional information**

* Only if the bulkhead is mounted in non conducting oil
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
**SubConn® Power Battery**

2, 3 and 4 contacts

**Connector specifications**

- **Voltage rating**: 600 V DC/AC rms
- **Current rating**: 25 A per contact (max 50 A per connector)
- **Insulation resistance**: > 200 Mohm
- **Contact resistance**: < 0.01 ohm
- **Wet matings**: > 500
- **Temperature rating (water)**: - 4 to 60˚C, 25 to 140˚F
- **Temperature rating (air)**: - 40 to 60˚C, - 40 to 140˚F
- **Storage temperature rating**: - 40 to 60˚C, - 40 to 140˚F
- **Design depth rating**: 1,400 bar, 20,000 psi
- **Qualified pressure tested**: 800 bar, 11,600 psi

**Material specifications**

- **Connector body**: Chloroprene rubber
- **Bulkhead body**: Brass, stainless steel, titanium or anodised aluminium
- **Contacts**: Gold plated brass UNS - C36000
- **Location pin**: Stainless steel AISI 303
- **O-rings**: Nitrile
- **Locking sleeves**: POM or stainless steel
- **Snap rings**: Stainless steel AISI 302
- **2 and 3 conductor inline cable (60 cm, 2 ft)**: 10 AWG 5.26 mm² chloroprene rubber
- **4 conductor inline cable (60 cm, 2 ft)**: 12 AWG 3.30 mm² chloroprene rubber
- **2 and 3 contact bulkhead leads (30 cm, 1 ft)**: 10 AWG 5.26 mm² white tagged PTFE
- **4 contact bulkhead leads (30 cm, 1 ft)**: 12 AWG 3.31 mm² white tagged PTFE

**Face view (male)**

![Face view image]

**Inline cable colour code**

1 Black 2 White 3 Red 4 Green

(3 conductor cable colour code: 1 black, 2 white, 3 green)

**Nominal cable outside diameter (OD)**

- 2 conductor cable 0.640”, 16.3 mm
- 3 conductor cable 0.671”, 17.0 mm
- 4 conductor cable 0.660”, 16.8 mm
**Drawing information**

Dimensions in mm (1 mm = 0.03937 inch)

Threads in inches (1 inch = 25.4 mm)
# SubConn® High Power

## 4 contacts

### Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating (water)</td>
<td>50 A per contact (max 200 A per connector)</td>
</tr>
<tr>
<td>Current rating (air)</td>
<td>28 A per contact (max 112 A per connector)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Design depth rating</td>
<td>1,400 bar, 20,000 psi</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

### Material specifications

<table>
<thead>
<tr>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body</td>
<td>Brass, stainless steel, titanium or anodised aluminium</td>
</tr>
<tr>
<td>Contacts</td>
<td>Brass UNS - C36000</td>
</tr>
<tr>
<td>Location pin</td>
<td>Stainless steel AISI 303</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM or stainless steel</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>Inline cable (60 cm, 2 ft)</td>
<td>8 AWG 8.36 mm² chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead leads (30 cm, 1 ft)</td>
<td>10 AWG 5.26 mm² tagged PTFE</td>
</tr>
</tbody>
</table>

### Face view (male)

![Face view (male)](image)

### Inline cable colour code

<table>
<thead>
<tr>
<th>Colour</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Black</td>
<td></td>
</tr>
<tr>
<td>2 White</td>
<td></td>
</tr>
<tr>
<td>3 Red</td>
<td></td>
</tr>
<tr>
<td>4 Green</td>
<td></td>
</tr>
</tbody>
</table>

### Nominal cable outside diameter (OD)

4 conductor cable 0.715”, 18.2 mm
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
“Some years ago, we had several suppliers of connectors but ever since we chose MacArtney as our go-to supplier for underwater connectivity, our deployment success rate greatly improved and we have been able to fully concentrate on the further development of the TrawlCamera.”

Kári á Torkilsheyggi
JT Electric
The SubConn® Ethernet series marked the first high speed underwater communications system to offer true Ethernet type performance. The series is developed and manufactured to accommodate the demand for gigabit data speed, signal and power for increasingly capable and compact underwater systems. The series includes different types of Ethernet and combined power and Ethernet connector options in circular, metal shell and low profile configurations.

All SubConn® Ethernet connectors are capable of Gigabit speed performance and feature a high depth rating. Utilising a reconfigured version of the proven SubConn® contact and socket design, SubConn® Ethernet connectors are set to maximise data flow while eliminating cross talk and noise. With power contacts rated for 600 V at 4 A, SubConn® combined power and Ethernet connectors allow signal and power supply to be unified in one high performance solution.

SubConn® Ethernet connectors are available with specially designed SubConn® Ethernet or combined power and Ethernet cables capable of Gigabit speed data transfer up to a distance of 75 metres. This flexible and water-resistant cable is manufactured from polyurethane (PUR). SubConn® Ethernet connectors come with colour-coded leads and are available with dummy connectors and injection moulded polyoxymethylene (POM) or stainless steel locking sleeves.

Applications
- Remotely Operated Vehicle (ROV) and Remotely Operated Towed Vehicle (ROTV) systems
- Oceanographic systems, equipment and instrumentation solutions
- Offshore oil and gas, renewable energy and subsea systems
- Defence systems and equipment
- Underwater camera and video systems
- Underwater control systems

Options
- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths
**SubConn® Ethernet Circular**

**8 contacts**

**Connector specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>250 V DC/AC rms</td>
</tr>
<tr>
<td>Data rate</td>
<td>1 Gbit/s (up to 75 m)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>600 bar, 8,700 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

**Material specifications**

<table>
<thead>
<tr>
<th>Component</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body</td>
<td>Brass, stainless steel, titanium, anodised aluminium or PEEK</td>
</tr>
<tr>
<td>Contacts</td>
<td>Female sockets in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td></td>
<td>Male pins in gold plated beryllium copper</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM or stainless steel</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>Inline cable (100 cm, 3.3 ft)</td>
<td>4 pair 24 AWG, 0.20 mm² PUR</td>
</tr>
<tr>
<td>Bulkhead leads (100 cm, 3.3 ft)</td>
<td>CAT 5E patch cable incl. RJ 45 connector (not installed)</td>
</tr>
</tbody>
</table>

**Face view (male)**

![Face view (male)](image)

**Inline cable colour code**

- 1-2 Brown, Brown/white*  
- 3-4 Blue, Blue/white*  
- 5-6 Orange, Orange/white*  
- 7-8 Green, Green/white*

* Twisted pairs

**Nominal cable outside diameter (OD)**

PUR cable 0.410", 10.4 mm

**Additional information**

Inline connector is available in shallow water version.

Standard RJ45 cannot be mounted on inline cable and will require a RJ45 Phoenix connector or equivalent.
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)

Sheets:
Reference:
Rev.:
Checked:
Drawing no.:
Tol.:
Scale:
Matr.:

Ethernet 8
Pin

DIL8F DIL8M
DBH8F DBH8M
DOM8F DOM8M
DDC8F DDC8M
DPBOF8F DPBOF8M
OMBA
O- Ring

1/2" Tygon Tube

DLSA Snap Ring

0.42 x 1.78 (2-014)

7/16 - 20 UNF - 2A

Hex Flats 3/4"
SubConn® Power Ethernet Circular
13 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating on data wire</td>
<td>600 V DC/AC rms</td>
</tr>
<tr>
<td>Voltage rating on power wire</td>
<td>250 V DC/AC rms</td>
</tr>
<tr>
<td>Current rating on power wire</td>
<td>4 A per contact (max 16 A per connector)</td>
</tr>
<tr>
<td>Data rate</td>
<td>1 Gbit/s (up to 75 m)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60˚C, 25 to 140˚F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60˚C, - 40 to 140˚F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60˚C, - 40 to 140˚F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>600 bar, 8,700 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

Material specifications

<table>
<thead>
<tr>
<th>Connector body</th>
<th>Chloroprene rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulkhead body</td>
<td>Brass, stainless steel, titanium, anodised aluminium or PEEK</td>
</tr>
<tr>
<td>Contacts</td>
<td>Female sockets in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td></td>
<td>Male pins in gold plated beryllium copper</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking sleeves</td>
<td>POM or stainless steel</td>
</tr>
<tr>
<td>Snap rings</td>
<td>Stainless steel AISI 302</td>
</tr>
<tr>
<td>Inline cable (100 cm, 3.3 ft)</td>
<td>4 pair 24 AWG, 0.20 mm² PUR</td>
</tr>
<tr>
<td></td>
<td>Power conductors 4 x 18 AWG, 0.82 mm²</td>
</tr>
<tr>
<td></td>
<td>Screen: Tinned copper braid</td>
</tr>
<tr>
<td>Bulkhead leads (100 cm, 3.3 ft)</td>
<td>CAT 5E patch cable, 5 x 20 AWG, 0.52 mm² with coloured wires incl. RJ 45 connector (not installed)</td>
</tr>
</tbody>
</table>

Face view (male)

Inline cable colour code

<table>
<thead>
<tr>
<th>Colour Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Black</td>
</tr>
<tr>
<td>2</td>
<td>Screen (orange wire on bulkhead)</td>
</tr>
<tr>
<td>3</td>
<td>White</td>
</tr>
<tr>
<td>4-5</td>
<td>Brown, Brown/white*</td>
</tr>
<tr>
<td>6-7</td>
<td>Blue, Blue/white*</td>
</tr>
<tr>
<td>8-9</td>
<td>Orange, Orange/white*</td>
</tr>
<tr>
<td>10-11</td>
<td>Green, Green/white*</td>
</tr>
<tr>
<td>12</td>
<td>Red</td>
</tr>
<tr>
<td>13</td>
<td>Green</td>
</tr>
</tbody>
</table>

Nominal cable outside diameter (OD)

PUR cable 0.550", 13.97 mm

Additional information

Standard RJ45 cannot be mounted on inline cable and will require a RJ45 Phoenix connector or equivalent.
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Ethernet Low Profile
9 contacts

Connector specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage rating</td>
<td>250 V DC/AC rms</td>
</tr>
<tr>
<td>Data rate</td>
<td>1 Gbit/s (up to 75 m)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
</tr>
<tr>
<td>Contact resistance</td>
<td>&lt; 0.01 ohm</td>
</tr>
<tr>
<td>Wet matings</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Temperature rating (water)</td>
<td>-4 to 60°C, 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>-40 to 60°C, -40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>600 bar, 8,700 psi</td>
</tr>
<tr>
<td>Depth rating PEEK</td>
<td>300 bar, 4,350 psi</td>
</tr>
</tbody>
</table>

Material specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Bulkhead body</td>
<td>Brass, stainless steel, titanium, anodised aluminium or PEEK</td>
</tr>
<tr>
<td>Contacts</td>
<td>Female sockets in gold plated brass UNS - C36000</td>
</tr>
<tr>
<td></td>
<td>Male pins in gold plated beryllium copper</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Locking straps</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Inline cable (100 cm, 3.3 ft)</td>
<td>4 pair 24 AWG, 0.20 mm² PUR</td>
</tr>
<tr>
<td></td>
<td>Screen: Tinned copper braid</td>
</tr>
<tr>
<td>Bulkhead leads (100 cm, 3.3 ft)</td>
<td>CAT 5E patch cable incl. RJ 45 connector (not installed)</td>
</tr>
</tbody>
</table>

Face view (male)

Inline cable colour code

<table>
<thead>
<tr>
<th>Pair</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Brown, Brown/white*</td>
</tr>
<tr>
<td>3-4</td>
<td>Blue, Blue/white*</td>
</tr>
<tr>
<td>5-6</td>
<td>Orange, Orange/white*</td>
</tr>
<tr>
<td>7-8</td>
<td>Green, Green/white*</td>
</tr>
<tr>
<td>9</td>
<td>Screen (orange wire on bulkhead)</td>
</tr>
</tbody>
</table>

Nominal cable outside diameter (OD)

PUR cable 0.410", 10.4 mm

Additional information

Standard RJ45 cannot be mounted on inline cable and will require a RJ45 Phoenix connector or equivalent.
SubConn® Power Ethernet Low Profile
13 contacts

Connector specifications
- Voltage rating: 600 V DC/AC rms
- Voltage rating on data wire: 250 V DC/AC rms
- Current rating on power wire: 4 A per contact (max 16 A per connector)
- Data rate: 1 Gbit/s (up to 75 m)
- Insulation resistance: > 200 Mohm
- Contact resistance: < 0.01 ohm
- Wet matings: > 500
- Temperature rating (water): - 4 to 60°C, 25 to 140°F
- Temperature rating (air): - 40 to 60°C, - 40 to 140°F
- Storage temperature rating: - 40 to 60°C, - 40 to 140°F
- Qualified pressure tested: 600 bar, 8,700 psi
- Depth rating PEEK: 300 bar, 4,350 psi

Material specifications
- Connector body: Chloroprene rubber
- Bulkhead body: Brass, stainless steel or titanium
- Contacts: Female sockets in gold plated brass UNS - C36000, Male pins in gold plated beryllium copper
- O-rings: Nitrile
- Locking straps: Chloroprene rubber
- Inline cable (100 cm, 3.3 ft): 4 pair 24 AWG, 0.20 mm² PUR, Power conductors 4 x 18 AWG, 0.82 mm², Screen: Tinned copper braid
- Bulkhead leads (100 cm, 3.3 ft): CAT 5E patch cable, 5 x 20 AWG, 0.52 mm² with coloured wires incl. RJ45 connector (not installed)

Face view (male)

Inline cable colour code
- 1 Black
- 2 Screen (orange wire on bulkhead)
- 3 White
- 4-5 Brown, Brown/white*
- 6-7 Blue, Blue/white*
- 8-9 Orange, Orange/white*
- 10-11 Green, Green/white*
- 12 Red
- 13 Green
* Twisted pairs

Nominal cable outside diameter (OD)
- PUR cable 0.550", 13.97 mm

Additional information
- Standard RJ45 cannot be mounted on inline cable and will require a RJ45 Phoenix connector or equivalent.
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
**SubConn® Ethernet Metal Shell 2000**

**8 contacts**

**Connector specifications**
- **Voltage rating**: 250 V DC/AC rms
- **Data rate**: 1 Gbit/s (up to 75 m)
- **Insulation resistance**: > 200 Mohm
- **Contact resistance**: < 0.01 ohm
- **Wet matings**: > 500
- **Temperature rating (water)**: - 4 to 60°C, 25 to 140°F
- **Temperature rating (air)**: - 40 to 60°C, - 40 to 140°F
- **Storage temperature rating**: - 40 to 60°C, - 40 to 140°F
- **Qualified pressure tested**: 600 bar, 8,700 psi

**Material specifications**
- **Connector body**: Chloroprene rubber
- **Connector housing**: Stainless steel AISI 316 (other materials on request)
- **Contacts**: Female sockets in gold plated brass UNS - C36000, Male pins in gold plated beryllium copper
- **O-rings**: Nitrile
- **Locking sleeves**: POM or stainless steel
- **Snap rings**: Stainless steel AISI 302
- **Bulkhead leads (100 cm, 3.3 ft)**: CAT 5E patch cable incl. RJ 45 connector (not installed)

**Face view (male)**

![Face view](image)

**Wire colour code**
- 1-2 Brown, Brown/white*
- 3-4 Blue, Blue/white*
- 5-6 Orange, Orange/white*
- 7-8 Green, Green/white*

* Twisted pairs
Snap ring placement

With male inline connector - snap ring in outer groove
With female inline connector - snap ring in inner groove

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® Ethernet Metal Shell 2000
13 contacts

Connector specifications

- Voltage rating: 600 V DC/AC rms
- Voltage rating on data wire: 250 V DC/AC rms
- Current rating on power wire: 4 A per contact (max 16 A per connector)
- Data rate: 1 Gbit/s (up to 75 m)
- Insulation resistance: > 200 Mohm
- Contact resistance: < 0.01 ohm
- Wet matings: > 500
- Temperature rating (water): - 4 to 60˚C, 25 to 140˚F
- Temperature rating (air): - 40 to 60˚C, - 40 to 140˚F
- Storage temperature rating: - 40 to 60˚C, - 40 to 140˚F
- Qualified pressure tested: 600 bar, 8,700 psi

Material specifications

- Connector body: Chloroprene rubber
- Connector housing: Stainless steel AISI 316 (other materials on request)
- Contacts: Female sockets in gold plated brass UNS - C36000
- Male pins in gold plated beryllium copper
- O-rings: Nitrile
- Locking sleeves: POM or stainless steel
- Snap rings: Stainless steel AISI 302
- Bulkhead leads (100 cm, 3.3 ft): CAT 5E patch cable, 4 x 20 AWG, 0.52 mm² with coloured wires incl. RJ 45 connector (not installed)

Face view (male)

Wire colour code

<table>
<thead>
<tr>
<th>1 Black</th>
<th>2 Screen (orange wire on bulkhead)</th>
<th>3 White</th>
<th>4-5 Brown, Brown/white*</th>
<th>6-7 Blue, Blue/white*</th>
<th>8-9 Orange, Orange/white*</th>
<th>10-11 Green, Green/white*</th>
<th>12 Red</th>
<th>13 Green</th>
</tr>
</thead>
</table>

* Twisted pairs
For more information see page 76/77

Snap ring placement

With male inline connector - snap ring in outer groove
With female inline connector - snap ring in inner groove

Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
“Seamor Marine selected the quality SubConn® connector products to integrate into our ROV systems. For several years the SubConn® products have performed flawlessly and we are very excited with the recent product innovations such as the Coax connector product line.

We look forward to our continued working relationship with SubConn, and to having them as a preferred vendor for our connector solutions.”

Seamor Marine
The SubConn® Coax series is primarily used for facilitating the transmission of high-definition (HD) video signal within and between underwater systems and for interfacing HD video based equipment such as cameras and telemetry systems. The SubConn® Coax connectors feature a high depth rating and fully harness the rugged quality and basic SubConn® design that has been trusted by marine industry operators for decades.

The SubConn® Coax series embraces two primary connector models including a coax-only connector option and a combined coax and electric connector option with six electric contacts for handling power and signal on interfaced equipment. The latter option enables users to fully control and power equipment using only a single connector, hereby allowing for design optimisation of underwater systems. Both connector types are available with an impedance of 50 or 75 ohms.

SubConn® Coax connectors are dry mate only and cannot take open face pressure.

SubConn® Coax connectors come with colour-coded leads and are often supplied with dummy connectors and injection moulded polyoxymethylene (POM) or stainless steel locking sleeves (required). In addition, SubConn® Coax connectors are available with specially designed SubConn® coax- or combined power and coax cable manufactured from flexible and water-resistant polyurethane (PUR).

**Applications**
- Offshore oil and gas, renewable energy and subsea systems
- Defence systems and equipment
- Oceanographic systems, equipment and instrumentation solutions
- Remotely Operated Vehicle (ROV) and Remotely Operated Towed Vehicle (ROTV) systems
- Underwater camera, video and lighting systems
- Underwater telemetry systems
- Antenna applications
- Diving systems and equipment

**Options**
- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths
Underwater and harsh environment connectors

SubConn® HF Coax
50 ohm Coax and Coax/Electric

Connector specifications

<table>
<thead>
<tr>
<th>Voltage rating on electric contacts</th>
<th>300 V DC/AC rms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current rating on electric contacts</td>
<td>5 A per contact (max 20 A per connector)</td>
</tr>
<tr>
<td>Video types</td>
<td>Recommended for Composite, SDI, HD-SDI and 3G-SDI video</td>
</tr>
<tr>
<td>Frequency*</td>
<td>0.3 GHz 0.6 GHz 0.9 GHz 1.2 GHz 1.5 GHz 1.8 GHz 2.1 GHz 2.4 GHz 2.7 GHz 3.0 GHz</td>
</tr>
<tr>
<td>Attenuation*</td>
<td>5.0 dB 7.7 dB 9.9 dB 11.6 dB 13.4 dB 15.3 dB 17.3 dB 19.3 dB 21 dB 22.5 dB</td>
</tr>
</tbody>
</table>

Material specifications

- Connector body: Chloroprene rubber
- Bulkhead body: Brass, stainless steel, titanium or anodised aluminium
- Power contacts: Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
- Coax contacts: Gold plated contacts
- O-rings: Nitrile
- Locking sleeves: POM or stainless steel
- Snap rings: Stainless steel AISI 302
- Inline cable (60 cm, 2 ft): PUR jacket cable with RG58 coax or RG58 coax and 6 x 20 AWG, 0.52 mm² conductors
- Coax bulkhead leads (100 cm 3.3 ft): RG316 coax
- Coax and 6-contact bulkhead leads (100 cm 3.3 ft): RG316 coax and 6 x 20 AWG, 0.52 mm² coloured PTFE wires

Face view (male)

Inline cable colour code

| 1 Black | 3 Red | 5 Orange |
| 2 White | 4 Green | 6 Blue |

Nominal cable outside diameter (OD)

- RG58 PUR cable: 0.230", 5.85 mm
- RG58 and 6-conductor PUR cable: 0.385", 9.80 mm

Additional information

- All frequency and attenuation values are based on a 10 meter cable assembly test including 2 bulkhead connectors (50 ohm).
- BNC connector for RG316 coax leads use Amphenol 031-315-RFX or equivalent.
- BNC connector for RG58 coax cable use Amphenol 112116 or equivalent.

SubConn® Coax connectors are dry mate only, and cannot take open face pressure.
- Locking sleeves are required. No greasing in the actual coax part.
- Minimum bending radius on inline cable is 100 mm.
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
SubConn® HF Coax
75 ohm Coax and Coax/Electric

Connector specifications

| Voltage rating on electric contacts | 300 V DC/AC rms |
| Current rating on electric contacts | 5 A per contact (max 20 A per connector) |
| Video types | Recommended for Composite, SDI, HD-SDI and 3G-SDI video |

| Frequency | 0.9 GHz | 1.2 GHz | 1.5 GHz | 1.8 GHz | 2.1 GHz | 2.4 GHz | 2.7 GHz | 3.0 GHz |
| Attenuation | 6.3 dB | 7.4 dB | 8.6 dB | 9.9 dB | 11.3 dB | 12.8 dB | 14.5 dB | 15.7 dB |

Recommended max frequency 3.0 GHz
Insulation resistance > 200 Mohm
Contact resistance < 0.01 ohm
Wet matings N/A (dry mating only)
Temperature rating (water) - 4 to 60°C, 25 to 140°F
Temperature rating (air) - 40 to 60°C, -40 to 140°F
Storage temperature rating - 40 to 60°C, -40 to 140°F
Qualified pressure tested 600 bar, 8,700 psi

Material specifications

| Connector body | Chloroprene rubber |
| Bulkhead body | Brass, stainless steel, titanium or anodised aluminium |
| Power contacts | Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper |
| Coax contacts | Gold plated contacts |
| O-rings | Nitrile |
| Locking sleeves | POM or stainless steel |
| Snap rings | Stainless steel AISI 302 |
| Inline cable (60 cm, 2 ft) | PUR jacket cable with Mini-RG59 coax or Mini-RG59 coax and 6 x 20 AWG, 0.52 mm² conductors |
| Coax bulkhead leads (100 cm 3.3 ft) | RG179 coax |
| Coax and 6-contact bulkhead leads (100 cm 3.3 ft) | RG179 coax and 6 x 20 AWG, 0.52 mm² coloured PTFE wires |

Face view (male)

Inline cable colour code

| 1 Black | 2 White | 3 Red | 4 Green | 5 Orange | 6 Blue |

Nominal cable outside diameter (OD)

| Mini-RG59 PUR cable 0.230", 5.85 mm |
| Mini-RG59 and 6-conductor PUR cable 0.385", 9.80 mm |

Additional information

*All frequency and attenuation values are based on a 10 meter cable assembly test including 2 bulkhead connectors (75 ohm).
BNC connector for RG179 coax leads use Amphenol 112133 or equivalent.
BNC connector for Mini-RG59 coax cable use Belden 1855ABHD3 or equivalent.

SubConn® Coax connectors are dry mate only, and cannot take open face pressure.
Locking sleeves are required. No greasing in the actual coax part.
Minimum bending radius on inline cable is 100 mm.
SubConn
DEPENDABILITY AT EVERY LEVEL

HF75CXILF

HF75CXILM

HF75CXIL6F

HF75CXIL6M

1/2-20 UNF - 2A

Hex Flats 13/16"

HF75CXBHF

HF75CXBHM

HF75CXBH6F

HF75CXBH6M

HF75CXDCF

HF75CXDCM

HF75CXDC6F

HF75CXDC6M

33.5

Ø 5.5

DLSA-F

DLSA-M

D.LSA Snap Ring

91

Drawing information

Dimensions in mm (1 mm = 0.03937 inch)

Threads in inches (1 inch = 25.4 mm)
SubConn® Specials

SubConn Inc. holds extensive experience and expertise in supplying special connector solutions for a broad range of specific customer applications ranging from swimming pool cleaning equipment, through oceanographic sensors to advanced naval systems.

All SubConn® Specials are based on the proven SubConn® contact design and effectively address almost any underwater challenge. SubConn® Specials perfectly integrate with existing or newly developed customer systems and over the years, several SubConn® Specials have progressed to become the standard connectivity solution for specific applications.

SubConn Inc. and MacArtney engineers are always keen to address any unique and complex connectivity challenge faced by system developers and operators. All design and solution enquiries are welcome and supported by a process of knowledge sharing and dialogue. SubConn® aims to craft and deliver a cutting-edge solution.

SubConn® Specials can also be supplied as complete connectivity solutions with dedicated chloroprene rubber or polyurethane (PUR) cables, custom mouldings, assemblies, locking sleeves, snap ring or strap based locking systems and dummy connectors.
Applications

- Offshore oil and gas, renewable energy and subsea systems
- Defence systems and equipment
- Oceanographic systems, equipment and instrumentation solutions
- Remotely Operated Vehicle (ROV) and Remotely Operated Towed Vehicle (ROTV) systems
- Underwater camera, video and lighting systems
- Underwater telemetry systems
- Diving systems and equipment
- Other wet environment, marine and underwater applications

Options

- Customised connectors and cable assembly designs
- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths
“Achieving safe and reliable connection and sealing of instruments is a key to success in any survey operation. At deep water, high pressure and extreme temperature variations are serious issues. YMG uses SubConn® connectivity solutions, as they warrant excellent performance and reliability under these harsh conditions.”

Dr. Andrey A Tarasenko, Chief Designer (R&D and Science) with the Russian State Scientific Centre Yuzhmorgeologiya (YMG)
The SubConn® Penetrator series is a fixed installation alternative to inline and bulkhead connectors. SubConn® Penetrators are primarily used for applications placing emphasis on direct signal and power feedthrough above the flexibility provided by a mateable connector interface.

SubConn® Penetrators are manufactured from chloroprene rubber and based on industry standard bulkhead threads which can be delivered in different materials. The series comprises five standard shell sizes in straight or right angle configurations. This allows for an extensive combination of solutions.

SubConn® Penetrator designs are not strictly limited to the standard versions and custom solutions can be delivered. For instance, it is possible to combine power and signal within a single unit.

All SubConn® Penetrators are water blocked to 800 bar and are often delivered with dedicated SubConn® cables made from flexible and water-resistant chloroprene rubber or polyurethane (PUR).

Applications
- Remotely Operated Vehicle (ROV) and subsea trencher systems
- Underwater camera, video and lighting systems
- Diving systems and equipment
- Defence systems and equipment
- Oceanographic systems, equipment and instrumentation solutions
- Ocean bottom cable and seismic systems
- Underwater telemetry systems

Options
- Customer specified penetrator body material
- Chloroprene and polyurethane (PUR) cables and mouldings
- Customised body designs
- Certified pressure testing to specific ocean depths
SubConn® Penetrator
Water Blocked Straight

Connector specifications
- Voltage rating (all penetrators): 300/600 V DC/AC rms (depends on cable)
- Current rating: Depends on wire and conductor size
- Insulation resistance: > 200 Mohm
- Temperature rating (water): - 4 to 60°C, - 25 to 140°F
- Temperature rating (air): - 40 to 60°C, - 40 to 140°F
- Storage temperature rating: - 40 to 60°C, - 40 to 140°F
- Qualified pressure tested: 800 bar, 11,600 psi

Material specifications
- Penetrator body: Chloroprene rubber
- Penetrator metal part: Brass, stainless steel
- Wire and conductor size: 18 AWG, 0.82 mm² to 22 AWG, 0.33 mm² (depends on wire quantity)
- Penetrator wire leads (30 cm, 1 ft): PTFE
- Cable outside diameter: Depends on penetrator and cable type
- O-rings: Nitrile
- Inline cable length: Customer specified
- Inline cable type: Customer specified (SubConn® cables only)

Inline cable colour code
Depends on corresponding SubConn® connector and cable type.
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
## SubConn® Penetrator
### Water Blocked Right Angle

**Connector specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td>Voltage rating (all penetrators)</td>
<td>300/600 V DC/AC rms (depends on cable)</td>
</tr>
<tr>
<td>Current rating</td>
<td>Depends on wire and conductor size</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>&gt; 200 Mohm</td>
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<tr>
<td>Temperature rating (water)</td>
<td>- 4 to 60°C, - 25 to 140°F</td>
</tr>
<tr>
<td>Temperature rating (air)</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Storage temperature rating</td>
<td>- 40 to 60°C, - 40 to 140°F</td>
</tr>
<tr>
<td>Qualified pressure tested</td>
<td>800 bar, 11,600 psi</td>
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</table>

**Material specifications**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
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<tbody>
<tr>
<td>Penetrator body</td>
<td>Chloroprene rubber</td>
</tr>
<tr>
<td>Penetrator metal part</td>
<td>Brass, stainless steel</td>
</tr>
<tr>
<td>Wire and conductor size</td>
<td>18 AWG, 0.82 mm² to 22 AWG, 0.33 mm² (depends on wire quantity)</td>
</tr>
<tr>
<td>Penetrator wire leads (30 cm, 1 ft)</td>
<td>PTFE</td>
</tr>
<tr>
<td>Cable outside diameter</td>
<td>Depends on penetrator and cable type</td>
</tr>
<tr>
<td>O-rings</td>
<td>Nitrile</td>
</tr>
<tr>
<td>Inline cable length</td>
<td>Customer specified</td>
</tr>
<tr>
<td>Inline cable type</td>
<td>Customer specified (SubConn® cables only)</td>
</tr>
</tbody>
</table>

**Inline cable colour code**

Depends on corresponding SubConn® connector and cable type.
Drawing information
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)
“We’ve used SubConn® connectors for years on various products, including our Model 180 electrical slip rings, and find them robust and reliable in the tough marine environment.”

Focal Technologies Corp. (MOOG Components Group)
All SubConn® connectors and penetrators can be supplied with dedicated underwater cables of various types and lead configurations. As standard, the majority of SubConn® connectors is supplied with chloroprene rubber cables, while the Ethernet and Coax series, among others, feature polyurethane (PUR) cables as standard.

All SubConn® connector products can also be delivered with special PUR type cables that are specifically designed, manufactured and tested for use with SubConn® connectors.

SubConn holds the entire range of rugged, special PUR cables in stock including several different power and signal lead combinations and dimensions.

When procured in conjunction with SubConn® connectors or penetrators, this broad range of special cable options allows the customer to assemble the optimal underwater connectivity solution for any task or application.

Furthermore, SubConn is among the few companies within the industry mastering the advanced technique of moulding rubber connectors to PUR cables, hereby allowing customers to obtain even more flexible, efficient and rugged connectivity solutions.
SubConn® polyurethane cables - overview

**Single conductor cables**

- **Type: P1C1/0#**
  1 conductor, 1/0 AWG
  Nominal cable OD: 0.606", 15.4 mm

- **Type: P1C16#**
  6 conductors, 16 AWG
  Nominal cable OD: 0.365", 9.28 mm

- **Type: P2C20#**
  2 conductors, 20 AWG
  Nominal cable OD: 0.294", 7.47 mm

- **Type: P2C22#-a**
  8 conductors, 22 AWG
  Nominal cable OD: 0.250", 6.35 mm

- **Type: P2C20#/3C18#**
  22 conductors, 20 AWG
  3 conductors, 18 AWG
  Nominal cable OD: 0.589", 14.96 mm

- **Type: P3C16#**
  10 conductors, 16 AWG
  Nominal cable OD: 0.570", 14.48 mm

- **Type: P5C20#**
  5 conductors, 20 AWG
  Nominal cable OD: 0.256", 6.50 mm

- **Type: P6C16#**
  6 conductors, 16 AWG
  Nominal cable OD: 0.365", 9.28 mm

- **Type: P8C22#-a**
  8 conductors, 22 AWG
  Nominal cable OD: 0.250", 6.35 mm

- **Type: P8C20#**
  8 conductors, 20 AWG
  Nominal cable OD: 0.354", 9.00 mm

- **Type: P8C20#**
  8 conductors, 20 AWG
  Nominal cable OD: 0.354", 9.00 mm

- **Type: P10C18#-a**
  10 conductors, 18 AWG
  Nominal cable OD: 0.420", 10.67 mm

- **Type: P10C18#-b**
  10 conductors, 18 AWG
  Nominal cable OD: 0.380", 9.65 mm

- **Type: P10C16#**
  10 conductors, 16 AWG
  Nominal cable OD: 0.570", 14.48 mm

- **Type: P10C18#-a**
  10 conductors, 18 AWG
  Nominal cable OD: 0.420", 10.67 mm

- **Type: P10C18#-b**
  10 conductors, 18 AWG
  Nominal cable OD: 0.380", 9.65 mm

- **Type: P10C20#**
  10 conductors, 20 AWG
  Nominal cable OD: 0.354", 9.00 mm

- **Type: P21C20# OS**
  Overall screen with foil and drain wire
  Nominal cable OD: 0.589", 14.96 mm

- **Type: P2C20#**
  2 conductors, 20 AWG
  Nominal cable OD: 0.294", 7.47 mm

- **Type: P8C16#**
  8 conductors, 16 AWG
  Nominal cable OD: 0.472", 11.9 mm

- **Type: P10C18#-a**
  10 conductors, 18 AWG
  Nominal cable OD: 0.420", 10.67 mm

- **Type: P10C18#-b**
  10 conductors, 18 AWG
  Nominal cable OD: 0.380", 9.65 mm

- **Type: P21C20# OS**
  Overall screen with foil and drain wire
  Nominal cable OD: 0.589", 14.96 mm

- **Type: P22C20#/3C18#**
  22 conductors, 20 AWG
  3 conductors, 18 AWG
  Nominal cable OD: 0.589", 14.96 mm
Polyurethane cables

Type: P4C20# OS
4 conductors, 20 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.315", 8.00 mm

Type: P3C16# OS
3 conductors, 16 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.285", 7.24 mm

Type: P16C20# OS
16 conductors, 20 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.415", 10.55 mm

Type: P3C18# OS
3 conductors, 18 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.259", 6.58 mm

Type: P3C12# OS
3 conductors, 12 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.450", 11.43 mm

Type: P3C10# OS
3 conductors, 10 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.500", 12.70 mm

Type: P3C12# OS-PP
4 conductors, 8 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.652", 16.55 mm

Type: P4C8# OS-PP
4 conductors, 8 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.652", 16.55 mm

Type: P8C10# OS
8 conductors, 16 AWG
Braided tinned copper shield
Nominal cable OD: 0.438", 11.3 mm

Type: P16C22# OS
16 conductors, 22 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.415", 10.55 mm

Type: P16C16# OS
16 conductors, 16 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.560", 14.23 mm

Type: P16C20# OS
16 conductors, 20 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.409", 10.40 mm
Underwater and harsh environment connectors

**Type: P2TSP20#**
2 twisted screened pairs, 20 AWG
Screens with foil and drain wire
Nominal cable OD: 0.335", 8.50 mm

**Type: P4TSP18#**
4 twisted screened pairs, 18 AWG
Screens with foil and drain wire
Nominal cable OD: 0.500", 12.70 mm

**Type: P3TSP22#/1TSP18#**
3 twisted screened pairs, 22 AWG
1 twisted screened pair, 18 AWG
Screens with foil and drain wire
Nominal cable OD: 0.400", 10.16 mm

**Type: P3TSP20#**
3 twisted pairs, 20 AWG
Screens with foil and drain wire
Nominal cable OD: 0.400", 10.16 mm

**Type: P4TSP20#**
4 twisted screened pairs, 20 AWG
Screens with foil and drain wire
Nominal cable OD: 0.409", 10.40 mm

**Type: P8TSP20#**
8 twisted screened pairs, 20 AWG
Screens with foil and drain wire
Nominal cable OD: 0.508", 12.90 mm

**Type: P/HFCX75**
1 Coax, 75 Ω
Nominal cable OD: 0.220", 7.75 mm

**Type: P/HFCX75/6C20#**
6 conductors, 20 AWG
1 Coax, 75 Ω
Nominal cable OD: 0.386", 9.80 mm

**Type: P/HFCX50**
1 Coax, 50 Ω
Nominal cable OD: 0.220", 5.59 mm

**Type: P/HFCX50/6C20#**
6 conductors, 20 AWG
1 Coax, 50 Ω
Nominal cable OD: 0.382", 9.70 mm

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Coax cables

Shielded twisted pair cables

www.macartney.com
Type: P7TP22/2C18#
7 twisted pairs, 22 AWG
2 conductors, 18 AWG
Nominal cable OD: 0.480", 12.20 mm

Type: P1TSP20/5C20#
1 twisted screened pair, 20 AWG
5 conductors, 20 AWG
Nominal cable OD: 0.339", 8.62 mm

Type: P7TP22/2C18#
7 twisted pairs, 22 AWG
2 conductors, 18 AWG
Nominal cable OD: 0.480", 12.20 mm

Type: D/P4TP24# SW
4 twisted pairs, 24 AWG
Shallow water version
Nominal cable OD: 0.380", 9.65 mm
Depth rating 300 m only

Type: D/P-P4TP24#/4C18#
4 twisted pairs, 24 AWG
Overall screen on TP with copper braiding
4 conductors, 18 AWG
Nominal cable OD: 0.550", 13.97 mm

Type: D/P4TP22#/4C18# OS
4 twisted pairs, 22 AWG
4 conductors, 18 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.520", 13.2 mm

Type: D/P4TP24#
4 twisted pairs, 24 AWG
Overall copper braiding
Nominal cable OD: 0.409", 10.40 mm

Type: D/P4TP24#
4 twisted pairs, 24 AWG
Shallow water version
Nominal cable OD: 0.380", 9.65 mm
Depth rating 300 m only

Type: D/P4TP22#/4C18#
4 twisted pairs, 24 AWG
Overall screen on TP with copper braiding
4 conductors, 18 AWG
Nominal cable OD: 0.550", 13.97 mm

Type: D/P4TP24#
4 twisted pairs, 24 AWG
Overall copper braiding
Nominal cable OD: 0.409", 10.40 mm

Type: D/P4TP24#
4 twisted pairs, 24 AWG
Shallow water version
Nominal cable OD: 0.380", 9.65 mm
Depth rating 300 m only

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4 twisted pairs, 24 AWG
Overall copper braiding
Nominal cable OD: 0.409", 10.40 mm

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4 twisted pairs, 24 AWG
Shallow water version
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Depth rating 300 m only

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Nominal cable OD: 0.520", 13.2 mm

Type: D/P4TP24#
4 twisted pairs, 24 AWG
Overall copper braiding
Nominal cable OD: 0.409", 10.40 mm
"Falmouth Scientific (FSI) has been using SubConn® connectors for many years on our standard current, wave, and tide meters, in our system solutions, and on many custom development projects. We can always rely on SubConn to provide a cost-effective product with exceptional quality and reliability."

Falmouth Scientific (FSI)
SubConn® additional accessories

SubConn Inc. and the MacArtney Underwater Technology Group have been supplying the world’s leading range of underwater pluggable electrical connectors to the demanding underwater industry for decades.

All SubConn® accessories are held in stock with MacArtney. The connectors are available with a full range of accessories including locking sleeves and straps, snap rings, nuts, washers, o-rings, boots, grease and field splicing kit sets.

We aim to be accessible around the world and around the clock. World-wide office locations, an extensive distributor network spread across the globe and 24/7 phone service enable us to offer global access to local support.
Locking sleeves

Locking sleeves are available in a range of colours in POM or ABS and in stainless steel AISI 316.
Blank plugs

Blank plugs are available in stainless steel AISI 316 or brass UNS-C36000.
Nuts and washers

Nuts and washers can be supplied in stainless steel AISI 316 or brass UNS-C36000.

---

**Hex Flats 9/16”**

Hex Flats 9/16”

---

**Hex Flats 11/16”**

Hex Flats 11/16”

---

**Hex Flats 3/4”**

Hex Flats 3/4”

---

**Hex Flats 15/16”**

Hex Flats 15/16”

---

**Hex Flats 1-1/8”**

Hex Flats 1-1/8”

---

**Hex Flats 1-5/16”**

Hex Flats 1-5/16”

---

**Drawing information**

Dimensions in mm (1 mm = 0.03937 inch)

Threads in inches (1 inch = 25.4 mm)
Products for handling

Isopropyl

General cleaning and removal of any accumulated sand or mud on a connector should be performed using spray based contact cleaner (isopropyl alcohol).

Loctite

MacArtney offers Loctite 5910 and Loctite 243 for locking of connectors:

- Always use Loctite 5910 to lock non-metallic (PEEK) connectors
- For locking metallic connectors, the use of Loctite 243 is recommended

Molykote 44

MacArtney offers Molykote 44 Medium in two sizes (10 ml and 100 ml), connectors must be greased with Molykote 44 Medium before every mating.
“Cost effective and with excellent performance, SubConn® is the first choice for our deep ocean applications.”

Ocean University of China
SubConn® connectors are designed, manufactured and tested for use in harsh marine environments. Operators are encouraged to read this section carefully and to follow the recommendations and instructions, in order to sustain the performance and extend the lifespan of their SubConn® connectors.

- Abbreviation list
- Mounting specifications for Metal Shell
- SubConn® connector body material types
- Recommended torque on SubConn® connector threads sizes
- Recommended mounting hole
- American wire gauge (AWG) to metric
- General cable information
- General cable assembly information
- General termination information
- Hoses for pressure balanced oil filled connectors
- Recommended oil for pressure balanced systems
- General rubber information
- Mounting procedure for Low Profile strap
- SubConn® handling instructions
- Information on debonding and corrosion
## Abbreviation list

### Connectors

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<td>MCBHRA2F</td>
<td>MC BH RA 2 F</td>
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<table>
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<tr>
<th>D</th>
<th>Data (Ethernet)</th>
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<tr>
<td>LP</td>
<td>Low Profile</td>
</tr>
<tr>
<td>MC</td>
<td>Micro</td>
</tr>
<tr>
<td>HP</td>
<td>High Power</td>
</tr>
<tr>
<td>RS</td>
<td>Reed Switch</td>
</tr>
<tr>
<td>HF</td>
<td>High Frequency</td>
</tr>
<tr>
<td>50CX</td>
<td>50 Ohm Coax</td>
</tr>
<tr>
<td>75CX</td>
<td>75 Ohm Coax</td>
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<thead>
<tr>
<th>BH</th>
<th>Bulkhead</th>
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<tr>
<td>IL</td>
<td>Inline</td>
</tr>
<tr>
<td>OM</td>
<td>Overmould</td>
</tr>
<tr>
<td>AT</td>
<td>Attachable</td>
</tr>
<tr>
<td>DC</td>
<td>Dummy</td>
</tr>
<tr>
<td>PBOF</td>
<td>Pressure Balanced Oil Filled</td>
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<th>RA</th>
<th>Right Angle</th>
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<tr>
<td>S</td>
<td>SplitConn</td>
</tr>
<tr>
<td>V</td>
<td>VentConn</td>
</tr>
<tr>
<td>B</td>
<td>Battery</td>
</tr>
<tr>
<td>M</td>
<td>Mini</td>
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<table>
<thead>
<tr>
<th>Number of contacts</th>
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<tbody>
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<table>
<thead>
<tr>
<th>F</th>
<th>Female sockets</th>
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<tbody>
<tr>
<td>M</td>
<td>Male pins</td>
</tr>
<tr>
<td>H</td>
<td>Hermaphroditic</td>
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<thead>
<tr>
<th>SS</th>
<th>Stainless Steel</th>
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<tbody>
<tr>
<td>AS</td>
<td>Anodized Aluminium</td>
</tr>
<tr>
<td>TI</td>
<td>Titanium</td>
</tr>
<tr>
<td>UNS32550</td>
<td>Super Duplex</td>
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<tr>
<td>NM</td>
<td>Non Metallic</td>
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<table>
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<tr>
<th>G2</th>
<th>2nd Generation</th>
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<tr>
<td>WB</td>
<td>Water Blocked</td>
</tr>
<tr>
<td>2 O-ring</td>
<td>Double O-ring</td>
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<tr>
<td>GP</td>
<td>Gold plated contacts</td>
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### Locking sleeves (LS)

<table>
<thead>
<tr>
<th>DLS</th>
<th>DLS A - F</th>
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<tr>
<td>POM</td>
<td></td>
</tr>
<tr>
<td>Brass</td>
<td></td>
</tr>
<tr>
<td>ABS</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Stainless steel</td>
<td></td>
</tr>
<tr>
<td>Micro POM Dual way</td>
<td></td>
</tr>
<tr>
<td>Micro Stainless Steel</td>
<td>Dual way</td>
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</table>

<table>
<thead>
<tr>
<th>A</th>
<th>2, 3, 4, and 5 contacts</th>
</tr>
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<tbody>
<tr>
<td>Micro 10, 12 and 16 contacts</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>B</th>
<th>1, 6, 8,10 and 21 contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>12, 16 and 25 contacts</td>
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</table>

<table>
<thead>
<tr>
<th>F</th>
<th>½ pair female</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>½ pair male</td>
</tr>
<tr>
<td>H</td>
<td>½ pair hermaphroditic</td>
</tr>
</tbody>
</table>

- Complete pair
Metal Shell connectors

Locking sleeves (LS)

D Data (Ethernet)

BCR Bulkhead connector receptable

FCR Flange connector receptable

20xx Shell size (series)

xx04 Number of contacts

F Female socket

M Male pins

AS Anodized Aluminium

TI Titanium

LS POM

SSLS Stainless steel

2000 Shell size (series)

1500 Metal Shell series uses MCDLS locking sleeves
Mounting specifications for Metal Shell

**FCR 1500 series**

**FCR 2000 series**

**FCR 2400 series**

**BCR 1500 series**

**BCR 2000 series**

**BCR 2400 series**
SubConn® connector body material types

- **Brass**: UNS-C36000
- **Aluminium**: 6061, hard anodised
- **Stainless steel**: AISI 316
- **Titanium**: Grades 5 (GR5)
- **PEEK**: PEEK 30

Other materials available on request
- **Gold plating**: Electroless nickel per MIL-C-26074B, 0.0001-0.00012 thickness
  - Hard gold per ASTM B488-01, .000030 thick minimum

Recommended torque on SubConn® threads sizes

<table>
<thead>
<tr>
<th>Type</th>
<th>Material</th>
<th>lb - ft</th>
<th>Rec. Torque - Nm</th>
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<tbody>
<tr>
<td>3/8” - 24 UNF</td>
<td>Brass, aluminium</td>
<td>2.9</td>
<td>4.0</td>
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<tr>
<td></td>
<td>Stainless steel, titanium</td>
<td>4.4</td>
<td>6.0</td>
</tr>
<tr>
<td></td>
<td>PEEK</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>7/16” - 20 UNF</td>
<td>Brass, aluminium</td>
<td>7.4</td>
<td>10.0</td>
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<tr>
<td></td>
<td>Stainless steel, titanium</td>
<td>10.3</td>
<td>14.0</td>
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<tr>
<td></td>
<td>PEEK</td>
<td>3.1</td>
<td>4.2</td>
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<tr>
<td>1/2” - 20 UNF</td>
<td>Brass, aluminium</td>
<td>11.0</td>
<td>15.0</td>
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<td></td>
<td>Stainless steel, titanium</td>
<td>15.5</td>
<td>21.0</td>
</tr>
<tr>
<td></td>
<td>PEEK</td>
<td>3.8</td>
<td>5.2</td>
</tr>
<tr>
<td>5/8” - 18 UNF</td>
<td>Brass, aluminium</td>
<td>21.4</td>
<td>29.0</td>
</tr>
<tr>
<td></td>
<td>Stainless steel, titanium</td>
<td>30.2</td>
<td>41.0</td>
</tr>
<tr>
<td></td>
<td>PEEK</td>
<td>7.4</td>
<td>10.0</td>
</tr>
<tr>
<td>3/4” - 16 UNF</td>
<td>Brass, aluminium</td>
<td>32.4</td>
<td>44.0</td>
</tr>
<tr>
<td></td>
<td>Stainless steel, titanium</td>
<td>46.5</td>
<td>63.0</td>
</tr>
<tr>
<td></td>
<td>PEEK</td>
<td>11.0</td>
<td>15.0</td>
</tr>
<tr>
<td>7/8” - 14 UNF</td>
<td>Brass, aluminium</td>
<td>44.3</td>
<td>60.0</td>
</tr>
<tr>
<td></td>
<td>Stainless steel, titanium</td>
<td>59.0</td>
<td>80.0</td>
</tr>
<tr>
<td></td>
<td>PEEK</td>
<td>14.7</td>
<td>20.0</td>
</tr>
<tr>
<td>1” - 14 UNF</td>
<td>Brass, aluminium</td>
<td>55.0</td>
<td>75.0</td>
</tr>
<tr>
<td></td>
<td>Stainless steel, titanium</td>
<td>74.0</td>
<td>100.0</td>
</tr>
<tr>
<td></td>
<td>PEEK</td>
<td>18.5</td>
<td>25.0</td>
</tr>
</tbody>
</table>

A range of nuts and washers are available in stainless steel and brass for all thread-sizes mentioned above

Please consult the additional accessories list.
# Recommended mounting hole

## Single o-ring

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Hole size (d)</th>
<th>Tolerance</th>
<th>Surface size (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/8&quot;</td>
<td>ø 0.374&quot;, 9.5 mm</td>
<td>+/- 0.1</td>
<td>ø 0.984&quot;, 25.0 mm</td>
</tr>
<tr>
<td>7/16&quot;</td>
<td>ø 0.445&quot;, 11.3 mm</td>
<td>+/- 0.1</td>
<td>ø 0.984&quot;, 25.0 mm</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>ø 0.504&quot;, 12.8 mm</td>
<td>+/- 0.1</td>
<td>ø 0.984&quot;, 25.0 mm</td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>ø 0.629&quot;, 16.0 mm</td>
<td>+/- 0.1</td>
<td>ø 1.181&quot;, 30.0 mm</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>ø 0.807&quot;, 20.5 mm</td>
<td>+/- 0.1</td>
<td>ø 1.574&quot;, 40.0 mm</td>
</tr>
<tr>
<td>1&quot;</td>
<td>ø 1.024&quot;, 26.0 mm</td>
<td>+/- 0.1</td>
<td>ø 1.968&quot;, 50.0 mm</td>
</tr>
<tr>
<td>7/8&quot;</td>
<td>ø 0.886&quot;, 22.5 mm</td>
<td>+/- 0.1</td>
<td>ø 1.574&quot;, 40.0 mm</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>ø 1.516&quot;, 38.5 mm</td>
<td>+/- 0.1</td>
<td>ø 2.165&quot;, 55.0 mm</td>
</tr>
</tbody>
</table>

## Double o-ring

<table>
<thead>
<tr>
<th>Thread size</th>
<th>Hole size (d1)</th>
<th>Tolerance</th>
<th>Hole depth (d2)</th>
<th>Tolerance</th>
<th>Surface size (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7/16&quot;</td>
<td>ø 0.47&quot;, ø12 mm</td>
<td>H8</td>
<td>ø 0.41&quot;, 10.5 mm</td>
<td>+/- 0.1</td>
<td>ø 0.984&quot;, 25.0 mm</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>ø 0.55&quot;, ø14 mm</td>
<td>H8</td>
<td>ø 0.52&quot;, 13.2 mm</td>
<td>+/- 0.1</td>
<td>ø 0.984&quot;, 25.0 mm</td>
</tr>
<tr>
<td>5/8&quot;</td>
<td>ø 0.685&quot;, ø17,4 mm</td>
<td>H8</td>
<td>ø 0.36&quot;, 9.2 mm</td>
<td>+/- 0.1</td>
<td>ø 1.181&quot;, 30.0 mm</td>
</tr>
</tbody>
</table>
American wire gauge (AWG) to metric

<table>
<thead>
<tr>
<th>AWG</th>
<th>mm²</th>
<th>AWG</th>
<th>mm²</th>
<th>AWG</th>
<th>mm²</th>
<th>AWG</th>
<th>mm²</th>
<th>AWG</th>
<th>mm²</th>
<th>AWG</th>
<th>mm²</th>
</tr>
</thead>
<tbody>
<tr>
<td>2/0</td>
<td>67.40</td>
<td>4</td>
<td>24.14</td>
<td>9</td>
<td>6.63</td>
<td>14</td>
<td>2.08</td>
<td>19</td>
<td>0.65</td>
<td>24</td>
<td>0.20</td>
</tr>
<tr>
<td>1/0</td>
<td>53.46</td>
<td>5</td>
<td>16.76</td>
<td>10</td>
<td>5.26</td>
<td>15</td>
<td>1.65</td>
<td>20</td>
<td>0.52</td>
<td>25</td>
<td>0.16</td>
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<tr>
<td>1</td>
<td>42.39</td>
<td>6</td>
<td>13.29</td>
<td>11</td>
<td>4.17</td>
<td>16</td>
<td>1.31</td>
<td>21</td>
<td>0.41</td>
<td>26</td>
<td>0.13</td>
</tr>
<tr>
<td>2</td>
<td>33.61</td>
<td>7</td>
<td>10.55</td>
<td>12</td>
<td>3.31</td>
<td>17</td>
<td>1.04</td>
<td>22</td>
<td>0.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>26.65</td>
<td>8</td>
<td>8.36</td>
<td>13</td>
<td>2.63</td>
<td>18</td>
<td>0.82</td>
<td>23</td>
<td>0.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

General cable information

- Nominal cable bending radius = 15 x cable OD
- All special polyurethane (PUR) cable specifications can be found online at www.macartney.com

General cable assembly information

- All cable assemblies are measured from rubber connector face to rubber connector face
- Our standard cable assembly tolerances
  - +/- 1.5" (38.1 mm) <3 m length and +/- 3% >3 m
  - Lower tolerances need approval from the production
  - Min. assembly length 8" (203 mm)

General termination information

- Maximum wire size for micro contacts is 18 AWG
- Maximum 2 screens or conductors can be terminated per contact
“Our experience of using SubConn® products spans more than a decade. During this period the products delivered an outstanding track record with very high reliability. We now utilise the products in every new subsea design requiring connectors as well as in upgrades to existing equipment. We are excited about the new additions to the SubConn® product range and have great prospects for the future of subsea engineering, especially with industry partners like SubConn®.”

Council for Scientific and Industrial Research (CSIR), Maritime & Subsea Design – South Africa
Hoses for pressure balanced oil filled connectors

MacArtney holds a stock of recommended hoses for Pressure Balanced Oil Filled (PBOF) connectors.

- Versilon™ hose type C-210-A with 1/2" ID and 5/8" OD
- Versilon™ hose type C-210-A with 5/8" ID and 13/16" OD
- Versilon™ hose type C-210-A with 25.4 mm ID and 31.8 mm OD

Note: Please remember to order clamps at the same time as hoses.

Recommended oil for pressure balanced systems

- Recommended oil in oil compensated system
- DC 200 / 350 or PMX-200 / 350

General rubber information

The measurements made on all rubber parts are nominal values due to the fact that rubber shrinks during hardening.

Mounting procedure for Low Profile strap

Step 1

Step 2

Step 3

Step 4
SubConn® handling instructions

Follow these instructions carefully to ensure correct use of your SubConn® connectors.

Handling

■ Always apply grease before mating
■ Disconnect by pulling straight, not at an angle
■ Do not pull on the cable and avoid sharp bends at cable entry
■ When using a bulkhead connector, ensure that there are no angular loads
■ Make sure to apply the recommended torque when tightening bulkhead nuts (see page 117)
■ SubConn® connectors should not be exposed to extended periods of heat or direct sunlight. If a connector becomes very dry, it should be soaked in fresh water before use

Greasing products

Molykote 44 Medium
WD-40 or similar products
Compound or similar greasing products

Greasing and mating above water (dry mate)

■ Connectors must be greased with Molykote 44 Medium before every mating
■ A layer of grease corresponding to minimum 1/10 of socket depth should be applied to the female connector
■ The inner edge of all sockets should be completely covered, and a thin transparent layer of grease left visible on the face of the connector
■ After greasing, fully mate the male and female connector in order to secure optimal distribution of grease on pins and in sockets
■ To confirm that grease has been sufficiently applied, de-mate and check for grease on every male pin. Then re-mate the connector

Greasing and mating under water (wet mate)

■ Connectors must be greased with Molykote 44 Medium before every mating
■ A layer of grease corresponding to approximately 1/3 of socket depth should be applied to the female connector
■ All sockets should be completely sealed, and a transparent layer of grease left visible on the face of the connector
■ After greasing, fully mate the male and female connector and remove any excess grease from the connector joint
Cleaning

Cleaning products

* General cleaning and removal of any accumulated sand or mud on a connector should be performed using spray based contact cleaner (isopropyl alcohol)
* New grease must be applied again prior to mating

Use of Loctite

* Always use Loctite 5910 to lock non-metallic (PEEK) connectors
* For locking metallic connectors, the use of Loctite 243 is recommended

Scan to access SubConn® greasing and cleaning instruction videos
"We have used the SubConn® connectors in many of our projects from weather buoy networks to prototype research projects. Their ease of use and maintenance in difficult conditions has been vital to the success of our projects and allows great confidence in both quality and results."

Declan Murray, OSIS Technician
P&O Maritime Services
Information on debonding and corrosion

The reason for the debonding of metal connectors with chloroprene rubber or polyurethane heads installed in a cathodically protected system is the natural development of hydroxide. Hydroxide is generated on the cathode when the polarity tension exceeds 400 mV (Cu/CuSO₄) and the aqueous environment is of an alkaline character.

The electro-chemical process of hydroxide

\[ \text{O}_2 + 2\text{H}_2\text{O} + 4\text{e} \rightarrow 4\text{OH}^- \]

Hydroxide causes a local increase in the pH value and paint/primer is generally broken down in highly alkaline environments. When an electrical connection has been made between the cathode and the anode, the usual electrochemical cathodic process begins; the generation of hydroxide - this is where the debonding begins.

The natural electrochemical sub-process of water disassociation when in contact with cathodic protection creates gas bubbles of hydroxide or hydrogen. At this stage it is almost impossible to detect the debonding of the polymer tongue from the metal surface. The cathodic sub-process will now be established under the surface of polymers and a total debonding is impending.

The velocity of the de-bonding depends on the following conditions

- Blend potential (> -400 mV will induce the generation of hydroxide)
- Primer dielectric properties
- Medium alkalinity (a high level of alkalinity increases the number of reactive products)
- Medium temperature (a high temperature means a speedy reaction time and will often be able to neutralise a lower level of oxygen)
- Current intensity (a high current intensity increases the quantity of developed hydroxide)

In relation to the phenomenon of debonding, there is a considerable difference between a corrosion-resistant steel alloy and a brass alloy. Corrosion-resistant alloys such as stainless steel AISI 304 - 18/8, AISI 316 - 18/12/2.5, AISI 310 - 24/20, smo254 achieve their rust resistance by means of an alloy characteristic film. This oxide alloy, which is only a few Ångström thick, is formed naturally when the metal surface comes into contact with oxygen or products rich in oxygen. Brass, which consists of copper (primary constituent) and zinc, is naturally resistant to seawater. The oxide film of the copper is somewhat thicker and bears a faint resemblance to ordinary copper oxide (CuOH) in its structure and size. The copper oxide is green and familiar to most.

If rust-resistant alloys are applied as a connecting material, the aforementioned oxide film must be removed before applying the primer. In those areas where the natural oxide film encounters a primed/treated surface, it may cause issues of interference. Specifically, the corrosion-resistant material will attempt to form its natural oxide film under the primer. In this way, the oxide film can lift off the primer, which is the same condition that can be observed in ordinary corrosion of iron constructions. When the electrolyte comes into contact with the rust-resistant surface as described above, the rust-resistant alloy will start to form its natural oxide film assuming that the oxide or oxidant elements are available. The result will be a quick debonding caused by the natural oxide formation of the rust-resistant exposed surface.

The application of a more seawater resistant material than (for example) stainless steel AISI 316 will result in a more stable oxide formation.

Cathodic protection and galvanic conditions will advance and stabilise the formation of the protecting oxide film. This relation is not observed on brass connectors. Brass is (naturally) sufficiently electronegative to seawater, and so does not form an oxide film as with the rust-resistant alloys. Thus, brass alloys do not have the same secondary reaction pattern that characterises the corrosion-proof alloys. Consequently, oxidation of brass does not advance the debonding process.
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