



**SubConn**<sup>®</sup>  
DEPENDABILITY AT EVERY LEVEL

# Underwater and harsh environment connectors

4th  
edition



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Specifications are subject to change without prior notice.



*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 more than 45 years.*

<p><b>Introduction</b></p> <p>General information and background about SubConn® and the MacArtney Underwater Technology Group.</p> <p style="text-align: right;"><b>4-7</b></p>	<p><b>SubConn® Circular series</b></p> <p>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.</p> <p style="text-align: right;"><b>9-21</b></p>	<p><b>SubConn® Micro Circular series</b></p> <p>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.</p> <p style="text-align: right;"><b>23-35</b></p>
<p><b>SubConn® Low Profile series</b></p> <p>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.</p> <p style="text-align: right;"><b>37-49</b></p>	<p><b>SubConn® Micro Low Profile series</b></p> <p>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.</p> <p style="text-align: right;"><b>51-55</b></p>	<p><b>SubConn® Metal Shell series</b></p> <p>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.</p> <p style="text-align: right;"><b>57-63</b></p>
<p><b>SubConn® Power series</b></p> <p>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.</p> <p style="text-align: right;"><b>65-71</b></p>	<p><b>SubConn® Ethernet series</b></p> <p>The SubConn® Ethernet series marked the first highspeed underwater communications system to offer true Ethernet type performance. Accommodates the demand for Gigabit data speed.</p> <p style="text-align: right;"><b>73-87</b></p>	<p><b>SubConn® Coax series</b></p> <p>The SubConn® Coax connector series is primarily used for facilitating the transmission of HD video signal within and between underwater systems and for interfacing HD video based equipment.</p> <p style="text-align: right;"><b>89-93</b></p>
<p><b>SubConn® Nano</b></p> <p>The SubConn® Nano Connector utilises the trusted design principles of the SubConn® Circular and Micro Circular series. This ultra-compact and versatile connector delivers powerful performance across various underwater applications.</p> <p style="text-align: right;"><b>95-97</b></p>	<p><b>SubConn® Specials</b></p> <p>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.</p> <p style="text-align: right;"><b>98-99</b></p>	<p><b>SubConn® Penetrator series</b></p> <p>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.</p> <p style="text-align: right;"><b>101-105</b></p>
<p><b>SubConn® polyurethane cables</b></p> <p>As standard, the majority of SubConn® connectors are supplied with synthetic rubber cables, while the Ethernet and Coax series feature polyurethane (PUR) cables as standard, together with a vast majority of special connectors.</p> <p style="text-align: right;"><b>107-111</b></p>	<p><b>SubConn® additional accessories</b></p> <p>The SubConn® connectors are available with a full range of accessories held in stock with MacArtney.</p> <p style="text-align: right;"><b>113-117</b></p>	<p><b>Technical information</b></p> <p>Abbreviation list, mounting specifications, connector body material, recommended torque on different thread sizes, qualification and acceptance test, general information, handling instructions, corrosion and debonding information.</p> <p style="text-align: right;"><b>119-135</b></p>

## MacArtney world wide operations

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## MacArtney local distributors

### Europe

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Germany	J. Bornhöft Industriegeräte GmbH	info@bornhoeft.de	+49 (0) 431 23 70 95 0
Poland	Escort Sp. z o.o.	arek.m@escort.com.pl	+ 48 91 431 04 00
Portugal	Qualitas Instruments Lda.	info@qualitasinstruments.com	+351 91 899 1777
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Sweden	Marine Survey & Consulting AB	cecilia@marinesurvey.se	+46 (0) 13 151517

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Turkey	Berkin Engineering	info@berkinengineering.com	+90 532 353 95 70
United Arab Emirates	Unique System FZE	info@uniquegroup.com	+971 65 130 333

### Asia

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India	Deekay Marine Service Pvt Ltd.	sales@deekaymarine.com	+91 22 28341261
Japan	Marimex Japan K.K.	mjkid@marimex.co.jp	+81 3 5858 8467
South Korea	GeoTech System Corp	info@geotechssystem.com	+82 2 2068 3070
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## About SubConn®

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

SubConn® connectors have always relied on a cost-effective, simple and rugged contact design. At present, millions of SubConn® 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, renewable, fishery, and nuclear sectors. To meet our customers' needs, 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 in Burwell and Ord, Nebraska.

### 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 building the success of SubConn® connectors. We pride ourselves on our wide range of standard connector solutions regularly extended to meet new, individual or generic industry requirements.

The SubConn® concept has been adapted to produce a number of special application and custom connectors in addition to the standard product range of rubber moulded circular and low profile 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 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 provide 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 the Americas, Europe, Asia Pacific, coupled with exclusive representative agreements with marine technology companies all over the world, MacArtney enables unlimited and instant access to SubConn® connectors at local as well as global levels.

MacArtney is ISO 9001 certified and closely involved in developing and testing the SubConn® range.

### MacArtney SubConn® applications

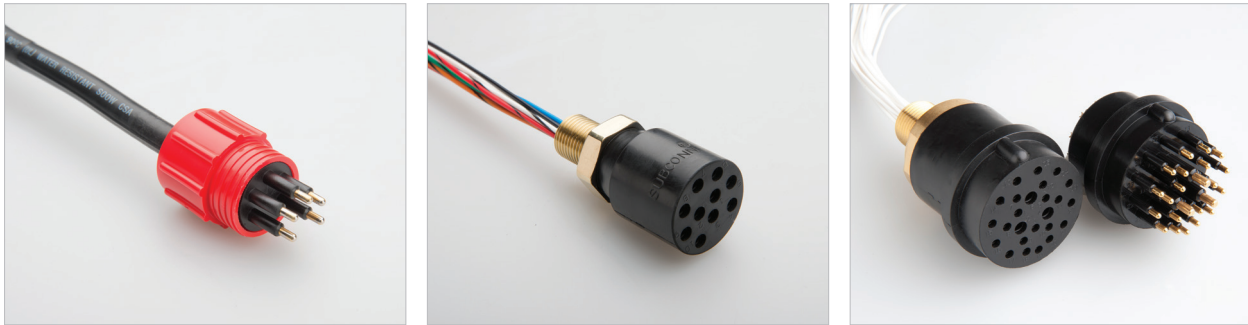
Over the years, SubConn® products have been the primary provider of connectivity infrastructure to MacArtney underwater technology systems and solutions. SubConn® connectors are used on MacArtney EMO and NEXUS multiplexers, LUXUS cameras and lights, FOCUS and TRIAXUS remotely operated towed vehicles (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, large-scale systems and solution packages for ocean science applications, and challenging offshore oil and gas, subsea, renewable energy, civil engineering, and defence, fisheries and diving projects.

**Quote**

*"SubConn® products earn a good reputation with their long-term reliable performance. After more than a decade of promotion and market testing, SubConn® has been widely accepted by Chinese customers and become the standard model selection in China's Marine Industry."*

*Zhang Yi, General Manager  
SeaTech China Co., Ltd.*

# SubConn® Circular series



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, Pressure Balanced Oil Filled (PBOF) 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 synthetic 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 (open face rated)
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

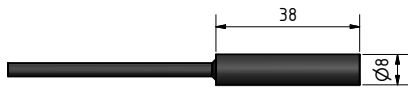
Connector body	Chloroprene rubber
Contacts	Gold plated brass UNS - C36000
Locking sleeves	POM
Inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber

### Inline cable colour code

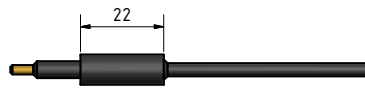
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### Nominal cable outside diameter (OD)

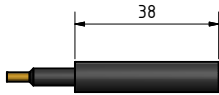
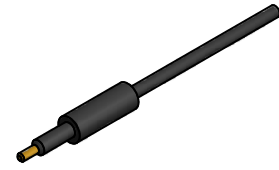
Synthetic rubber cable 0.142", 3.6 mm



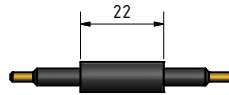
ILM1F



ILM1M



OMM1F



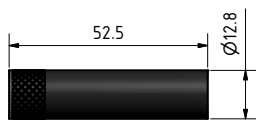
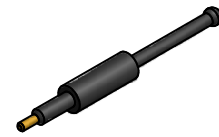
OMM1M



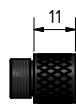
DCM1F



DCM1M



DLSM1-F



DLSM1-M



### 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

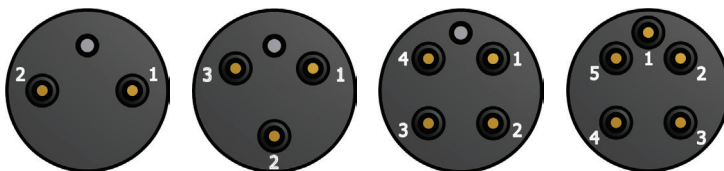
### Connector specifications

Voltage rating	600 V DC/AC rms
2 contacts current rating	10 A per contact (max 20 A per connector)
3, 4 and 5 contacts current rating	10 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
2, 3 and 4 conductor inline cable (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber
5 conductor inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber
Bulkhead and PBOF leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)



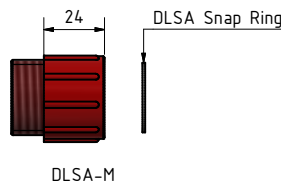
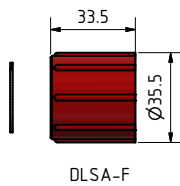
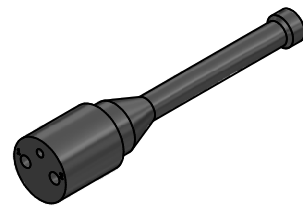
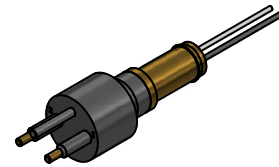
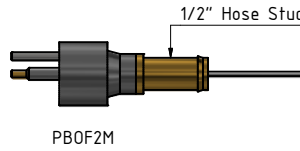
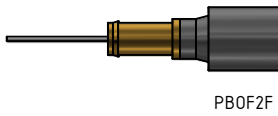
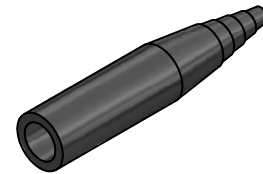
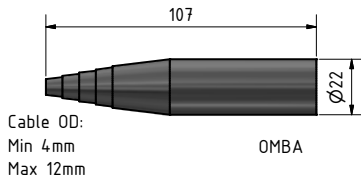
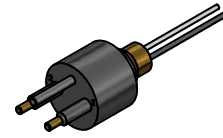
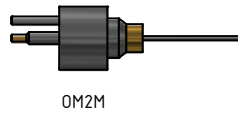
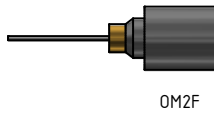
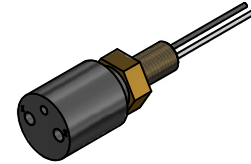
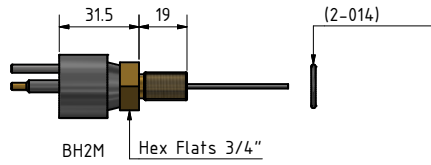
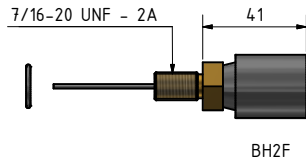
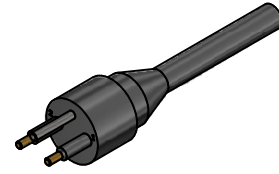
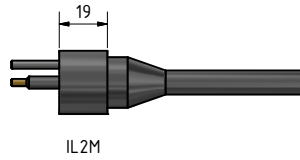
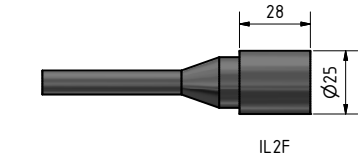
### Inline cable colour code

1 Black	4 Green
2 White	5 Orange
3 Red	

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

### 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

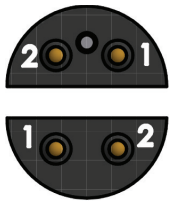
### Connector specifications

Voltage rating	600 V DC/AC rms
2 contacts current rating	10 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
Location pin	Stainless steel AISI 303
Locking sleeves	POM
Snap rings	Stainless steel AISI 302
2 conductor inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber

### Face view (male)



### Inline cable colour code

- 1 Black
- 2 White

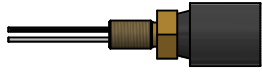
### Nominal cable outside diameter (OD)

2 conductor cable 0.276", 7 mm



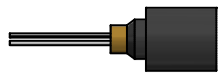
For more information  
see page 12/13

IL4F



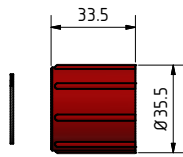
For more information  
see page 12/13

BH4F



For more information  
see page 12/13

OM4F



DLSA-F



ILS2M-1



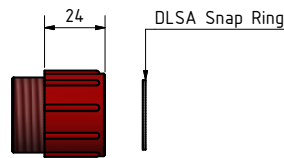
ILS2M



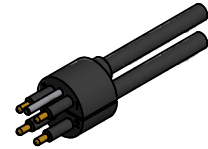
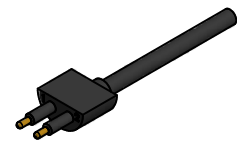
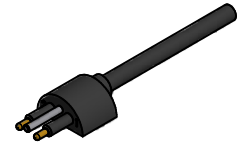
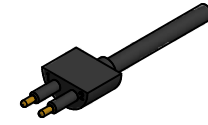
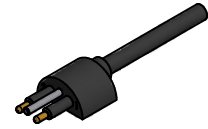
DCS2M-1



DCS2M



DLSA-M



**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 (open face rated)
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 (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber
10 conductor inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber
Bulkhead and PBOF leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)

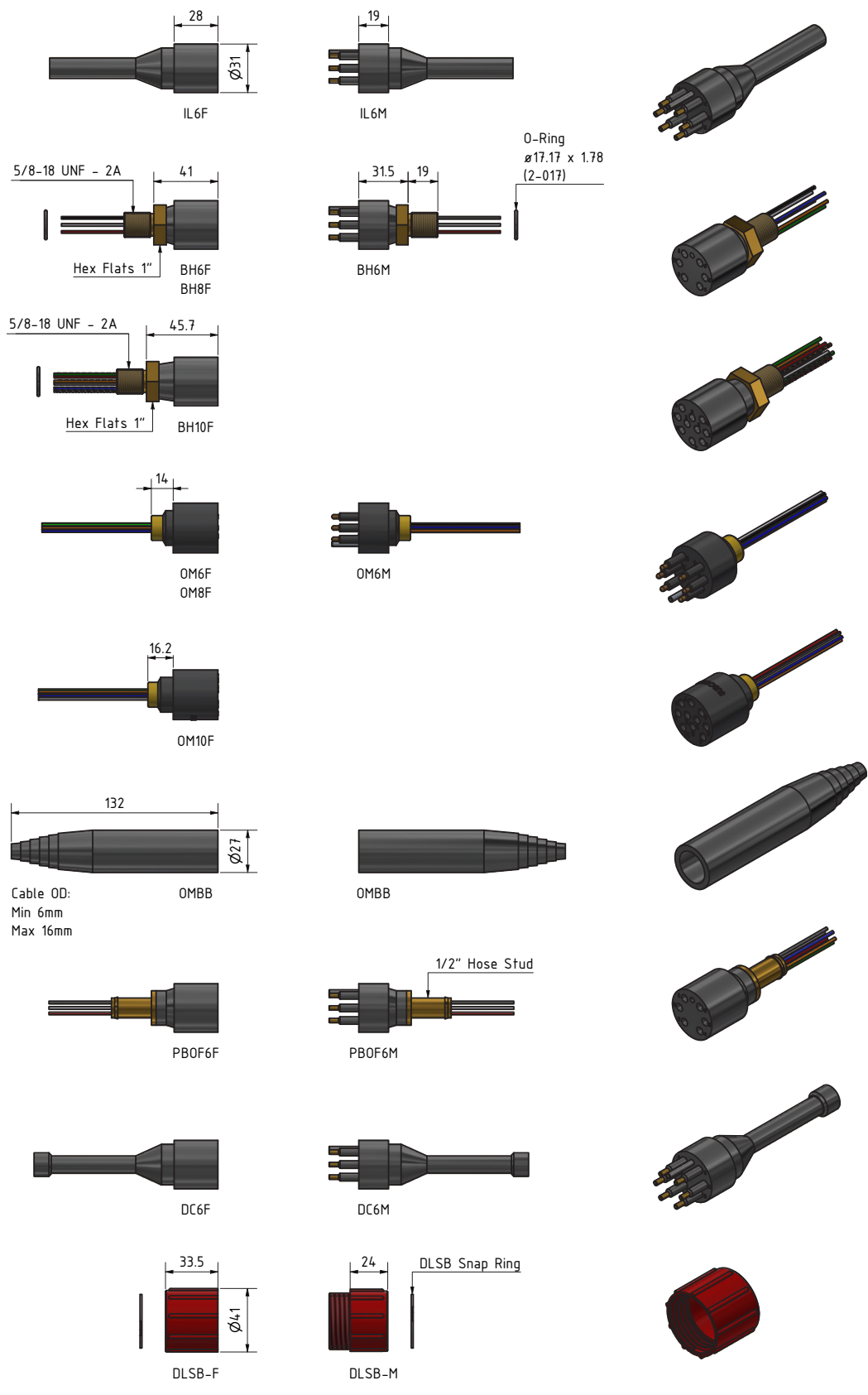


### Inline cable colour code

1 Black	4 Green	7 White/black	10 Orange/black
2 White	5 Orange	8 Red/black	
3 Red	6 Blue	9 Green/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



Subject to change without notice. Visit [MacArtney.com](http://MacArtney.com) for latest revision

**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 matings	> 500 (open face rated)
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 (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber
10 conductor inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber

### Face view (male)

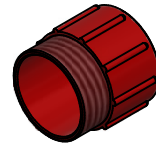
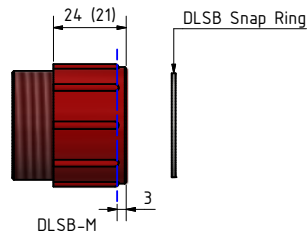
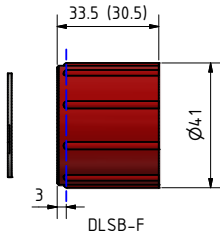
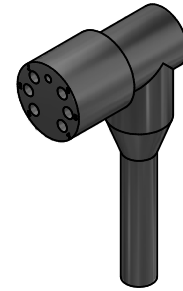
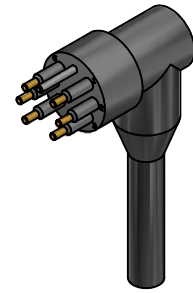
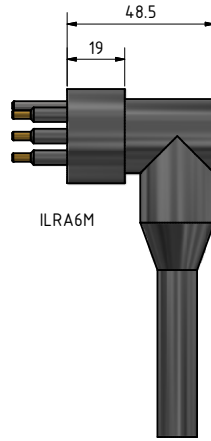
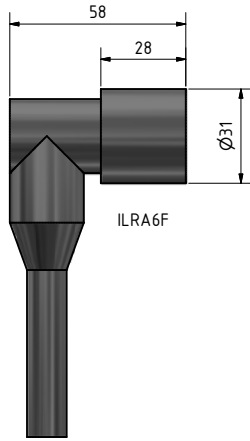


### Inline cable colour code

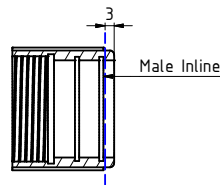
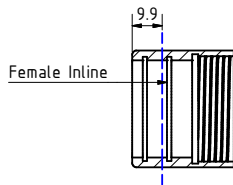
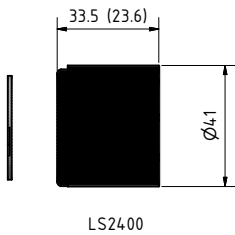
1 Black	3 Red	5 Orange	7 White/black	9 Green/black
2 White	4 Green	6 Blue	8 Red/black	10 Orange/black

### 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:  
Locking Sleeve has  
to be modified to 30.5/21  
to fit this RA connector



Note:  
When used with Metal Shell  
2400 Locking Sleeve has  
to be modified to 23.6/30.5  
to fit this RA 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

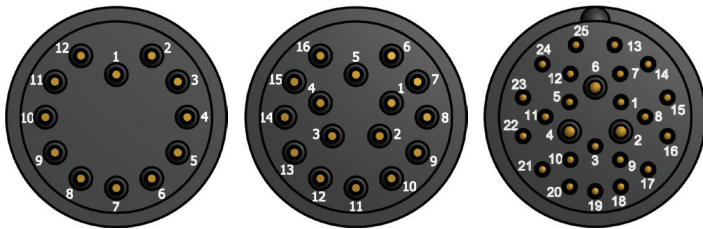
### Connector specifications

Voltage rating	600 V DC/AC rms
12 and 16 contacts current rating	10 A per contact (max 60 A per connector)
25 contacts current rating	3 power contacts 10 A per contact, 22 signal contacts 5 A per contact (max 60 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
12 and 16 contacts connector design depth rating	1,400 bar, 20,000 psi
12, 16 and 25 contacts conn. 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
12 and 16 contacts	Gold plated brass UNS - C36000
25 contacts	Contact 2, 4 and 6: gold plated brass UNS - C36000 Contact 1, 3, 5, 7 - 25: gold plated beryllium copper
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
12 and 16 conductor inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber
25 conductor inline cable (2 ft, 60 cm)	3 x 18 AWG, 0.82 mm <sup>2</sup> , 22 x 20 AWG, 0.52 mm <sup>2</sup> polyurethane
12 and 16 contact bulkhead and PBOF leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
25 contact bulkhead and PBOF leads (1 ft, 30 cm)	3 x 18 AWG, 0.82 mm <sup>2</sup> , 22 x 22 AWG, 0.33 mm <sup>2</sup> white tagged PTFE
12 and 16 contact OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)



### Inline cable colour code for 12 and 16 conductor

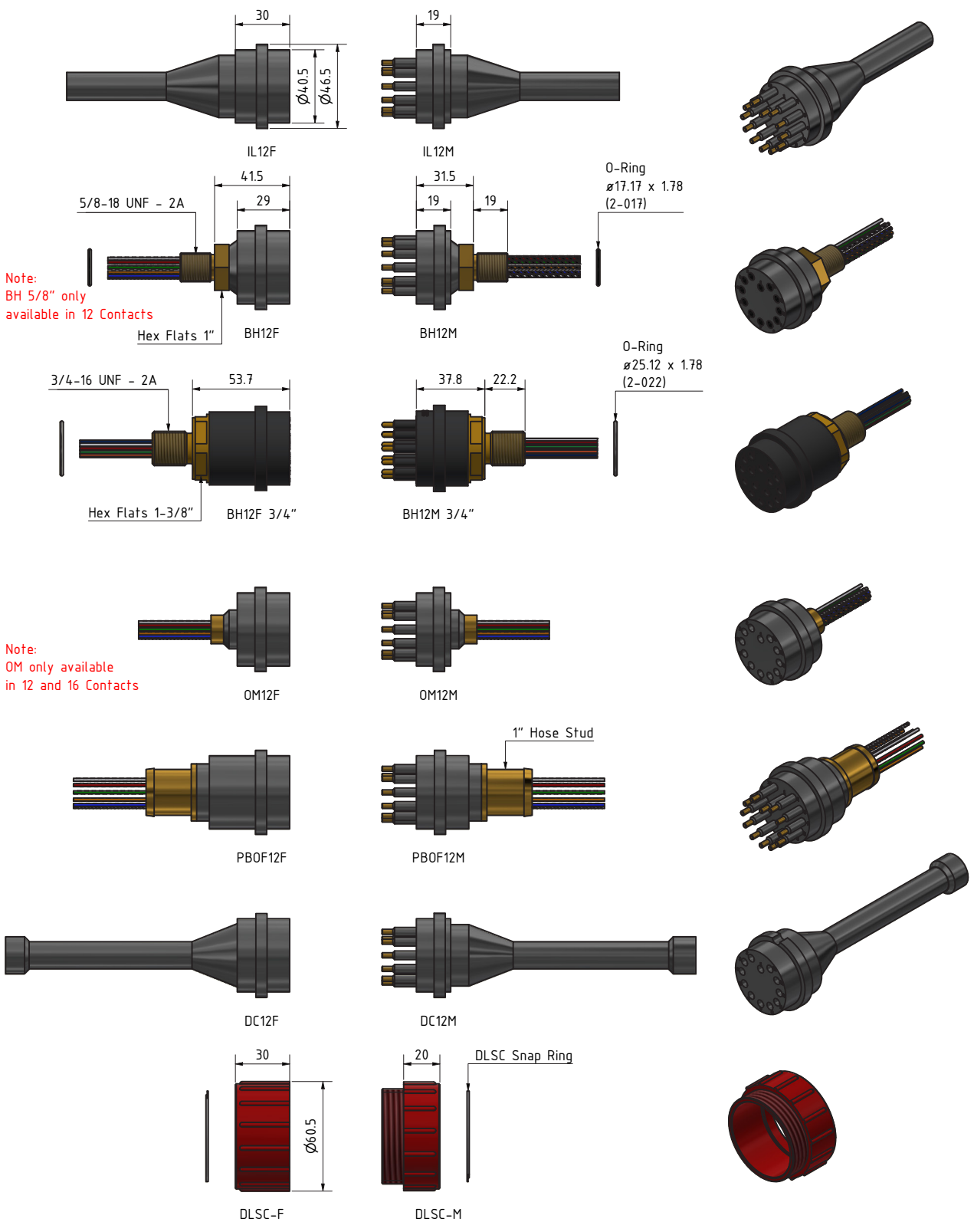
1 Black	5 Orange	9 Green/black	13 Red/white
2 White	6 Blue	10 Orange/black	14 Green/white
3 Red	7 White/black	11 Blue/black	15 Blue/white
4 Green	8 Red/black	12 Black/white	16 Black/red

### Inline cable colour code for 25 conductor

1 Orange	6 Brown-18 AWG	11 Blue	16 White/grey	21 White/green/black
2 Black-18 AWG	7 Yellow	12 White/yellow	17 White/brown/black	22 White/blue/black
3 Grey	8 White/black	13 White/green	18 White/red/black	23 White/brown
4 Red-18 AWG	9 White	14 White/blue	19 White/orange/black	24 White/red
5 Green	10 Purple	15 White/purple	20 White/yellow/black	25 White/orange

### Nominal cable outside diameter (OD)

12 conductor cable 0.605", 15.4 mm
16 conductor cable 0.704", 17.9 mm
25 conductor cable 0.589", 15.0 mm



**Drawing information**

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



**Quote**

*"We standard fit the SubConn® range of connectors in all of our underwater sensor solutions. Whether the sensor is depth rated to 1,000, 6,000 or 11,000 meters - we trust SubConn® to provide a long-lasting and dependable connection solution."*

*Ben Grant, Managing Director  
Impact Subsea Ltd*

# SubConn® Micro Circular series



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 in different standard shell sizes, with 1 to 21 contacts rated at 300 V from 5 to 10 A. SubConn® Micro Circular connector are available in bulkhead, inline, Pressure Balanced Oil Filled (PBOF) and field installable over mould versions. All bulkhead connectors come with colour coded or numbered Teflon (PTFE) leads.

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

Voltage rating	300 V DC/AC rms
Current rating	5 A
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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

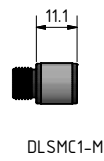
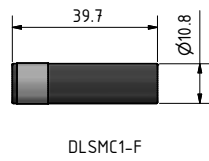
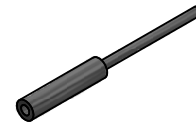
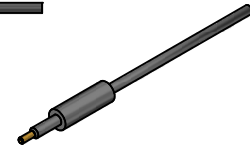
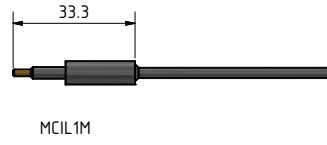
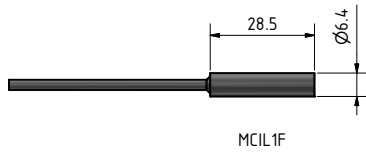
Connector body	Chloroprene rubber
Contacts	Female socket in gold plated brass UNS - C36000 Male pin in gold plated beryllium copper
Inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber

### Inline cable colour code

1 Black

### Nominal cable outside diameter (OD)

Synthetic 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 (open face rated)
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
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 (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber
5, 6 and 8 conductor inline cable (2 ft, 60 cm)	20 AWG, 0.52 mm <sup>2</sup> synthetic rubber
G2 2, 3 and 4 conductor inline cable (2 ft, 60 cm)	20 AWG, 0.52 mm <sup>2</sup> synthetic rubber
2, 3 and 4 contact bulkhead and PBOF leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE
5, 6 and 8 contact bulkhead and PBOF leads (1 ft, 30 cm)	22 AWG, 0.33 mm <sup>2</sup> coloured PTFE
G2 2, 3 and 4 contact bulkhead and PBOF leads (1ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)



### Inline cable colour code

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

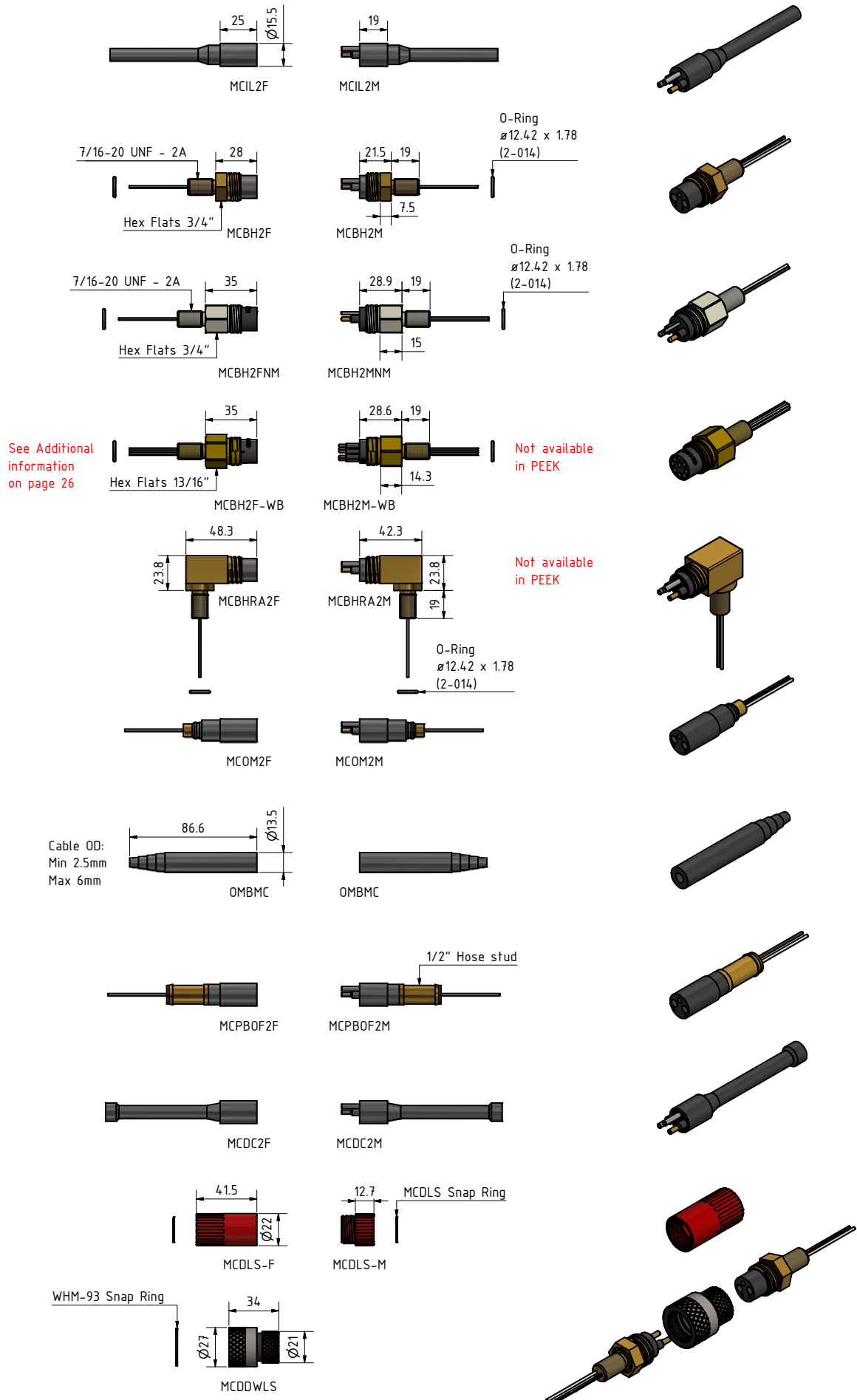
\*\* (3 conductor cable colour code: 1 black, 2 white, 3 green)

### Nominal cable outside diameter (OD)

2 conductor cable 0.340", 8.6 mm	G2 2 conductor cable 0.230", 6.1 mm	5 conductor cable 0.312", 7.9 mm
3 conductor cable 0.360", 9.1 mm	G2 3 conductor cable 0.250", 6.4 mm	6 conductor cable 0.315", 8.0 mm
4 conductor cable 0.385", 9.8 mm	G2 4 conductor cable 0.260", 6.6 mm	8 conductor cable 0.363", 9.2 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).



See Additional information on page 26

Not available in PEEK

Not available in PEEK

Subject to change without notice. Visit MacaArtnet.com for latest revision

**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

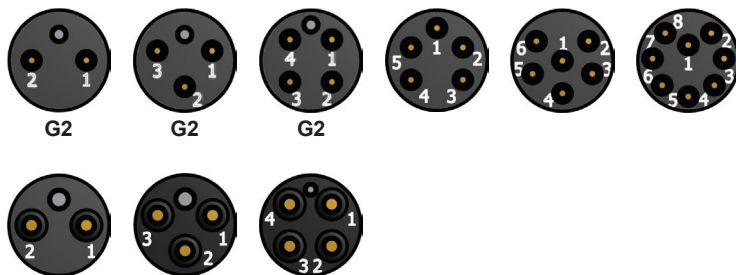
## Connector specifications

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 connector current rating	5 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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 with 20 mm hex flats	Brass, titanium or anodised aluminium
Bulkhead body with 22 mm hex flats	Anodised aluminium or stainless steel
Bulkhead RA body	Aluminium or titanium
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
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 contact bulkhead leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE
5, 6 and 8 contact bulkhead leads (1 ft, 30 cm)	22 AWG, 0.33 mm <sup>2</sup> coloured PTFE
G2 2, 3 and contact 4 bulkhead leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

## Face view (male)





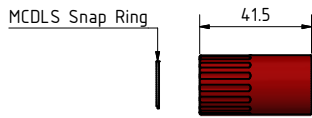
For more information see page 26/27

MCIL2M  
MCOM2M  
MCPBOF2M  
MCDC2M

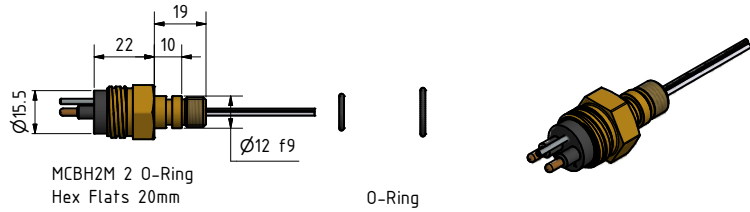


For more information see page 26/27

MCIL2F  
MCOM2F  
MCPBOF2F  
MCDC2F

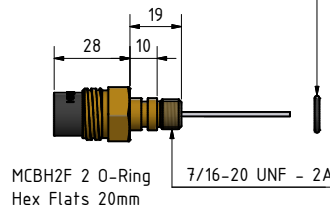


MCDLS-F



MCBH2M 2 O-Ring  
Hex Flats 20mm

O-Ring  
ø9.25 x 1.78  
(2-012)



MCBH2F 2 O-Ring  
Hex Flats 20mm

7/16-20 UNF - 2A

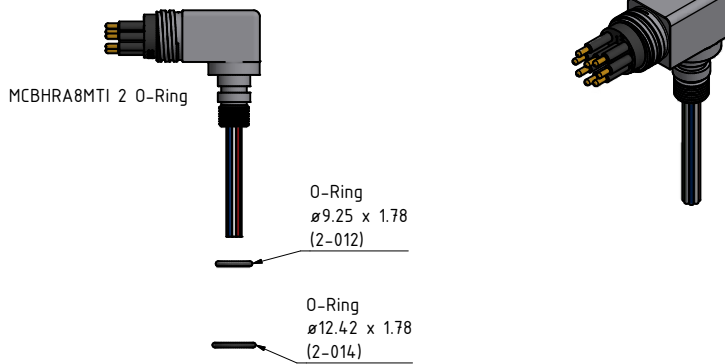
O-Ring  
ø13.34 x 1.8  
(5-1014)



MCBH2MSS 2 O-Ring  
Hex Flats 22mm



MCBH2FSS 2 O-Ring  
Hex Flats 22mm



MCBHRA8MTI 2 O-Ring

O-Ring  
ø9.25 x 1.78  
(2-012)

O-Ring  
ø12.42 x 1.78  
(2-014)

### 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

Voltage rating	300 V DC/AC rms
Current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0,01 ohm
Wet matings	> 500 (open face rated)
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 sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Inline cable (2 ft, 60 cm)	20 AWG, 0.52 mm <sup>2</sup> synthetic rubber
Bulkhead and PBOF leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)

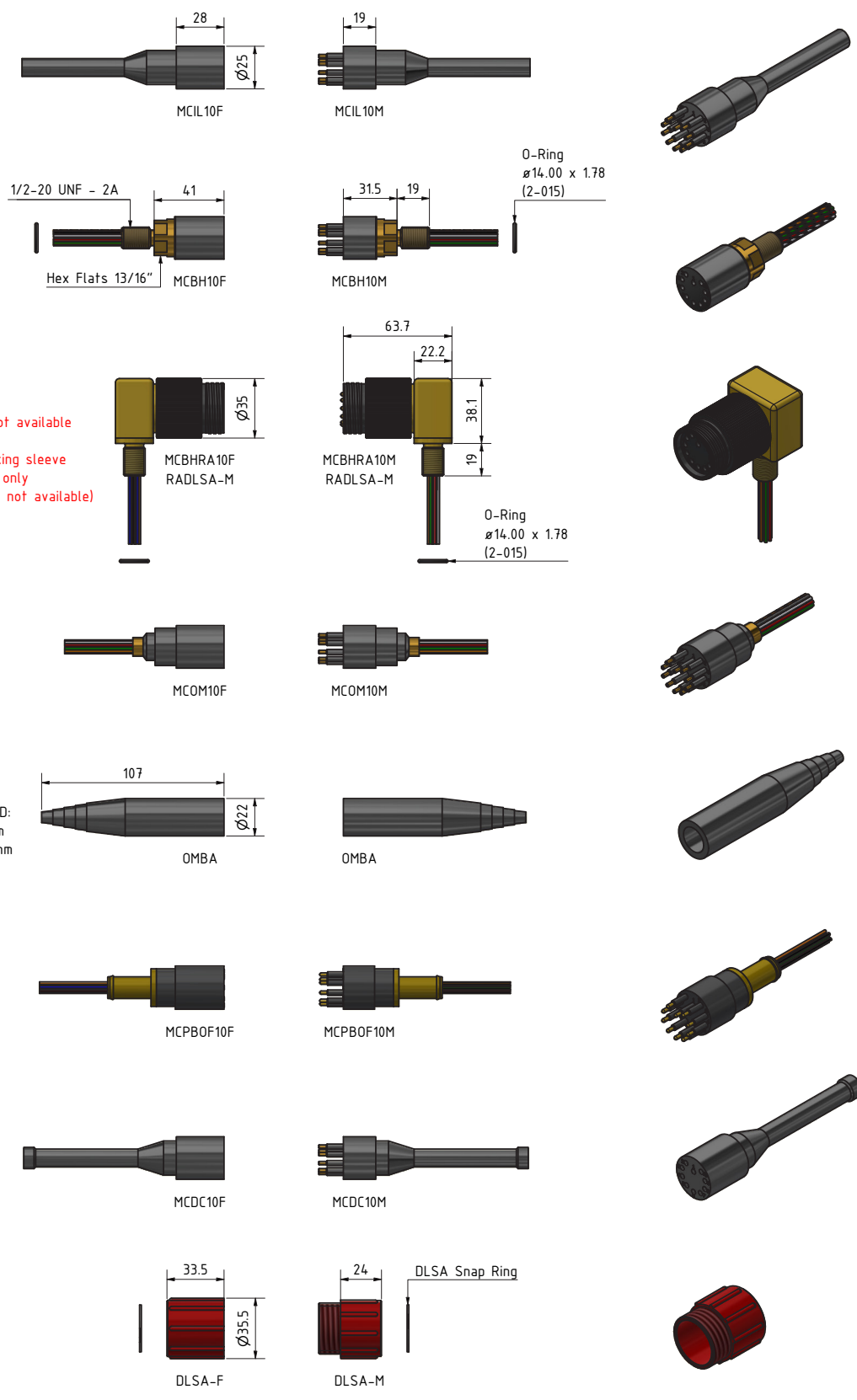


### Inline cable colour code

1 Black	5 Orange	9 Green/black	13 Red/white
2 White	6 Blue	10 Orange/black	14 Green/white
3 Red	7 White/black	11 Blue/black	15 Blue/white
4 Green	8 Red/black	12 Black/white	16 Black/red

### 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



Note:  
RA are not available in PEEK.  
RADLSA-M locking sleeve in colour black only (female version not available)

Subject to change without notice. Visit [MacArtney.com](http://MacArtney.com) for latest revision

**Drawing information**

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



# SubConn® Micro Circular Double O-ring 10, 12 and 16 contacts

## Connector specifications

Voltage rating	300 V DC/AC rms
Current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
Bulkhead body	Brass, titanium, anodised aluminium or stainless steel
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 (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

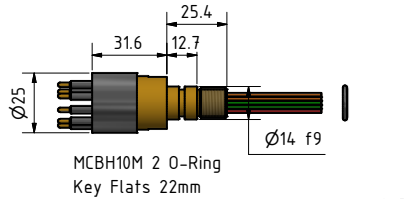
## Face view (male)



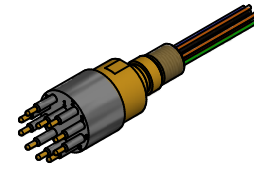


For more information  
see page 30/31

MCIL10F  
MCOM10F  
MCPBOF10F  
MCDC10F



MCBH10M 2 O-Ring  
Key Flats 22mm

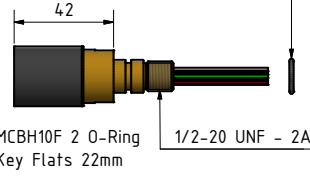


O-Ring  
ø10.82 x 1.78  
(2-013)

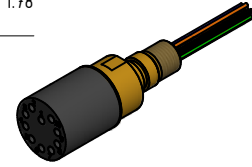


For more information  
see page 30/31

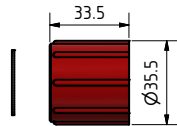
MCIL10M  
MCOM10M  
MCPBOF10M  
MCDC10M



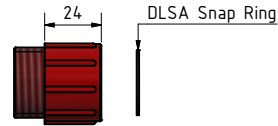
MCBH10F 2 O-Ring  
Key Flats 22mm



O-Ring  
ø15.6 x 1.78  
(2-016)



DLSA-F



DLSA-M

DLSA Snap Ring



### 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

Voltage rating	300 V DC/AC rms
Current rating	5 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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 sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Inline cable (2 ft, 60 cm)	20 AWG, 0.52 mm <sup>2</sup> PUR
Bulkhead and PBOF leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> white tagged PTFE
OM leads (3", 7 cm)	20 AWG, 0.52 mm <sup>2</sup> white tagged PTFE

### Face view (male)

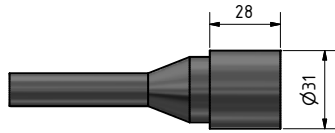


### Inline cable colour code

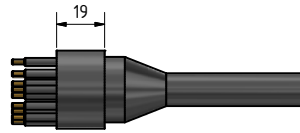
1 Grey	7 White/black	13 White/green	19 White/orange/black
2 Purple	8 White	14 White/blue	20 White/yellow/black
3 Blue	9 White/brown	15 White/purple	21 White/green/black
4 Green	10 White/red	16 White/grey	
5 Yellow	11 White/orange	17 White/brown/black	
6 Orange	12 White/yellow	18 White/red/black	

### Nominal cable outside diameter (OD)

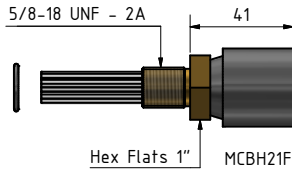
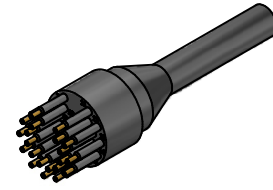
21 conductor cable 0.578", 14.70 mm



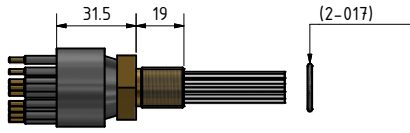
MCIL21F



MCIL21M

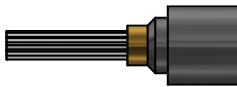
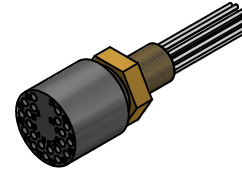


MCBH21F

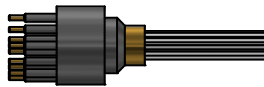


MCBH21M

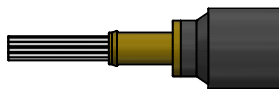
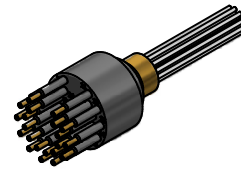
O-Ring  
Ø17.2 x 1.78  
(2-017)



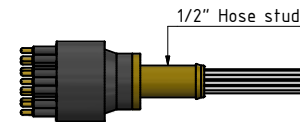
MCOM21F



MCOM21M

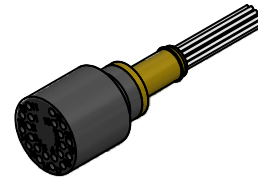


MCPBOF21F



MCPBOF21M

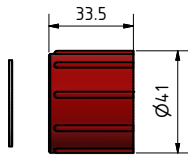
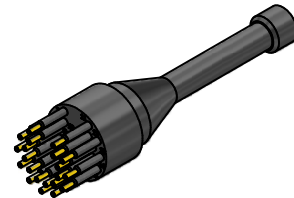
1/2" Hose stud



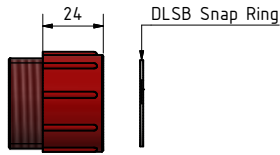
MDC21F



MDC21M

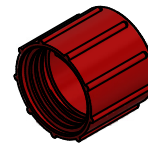


DLSB-F



DLSB-M

DLSB Snap Ring



**Drawing information**

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



**Quote**

*"SubConn Inc. continues to be a reliable vendor for all of our connector needs."*

*Ellen Orlando  
EdgeTech*

# 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. 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, inline and field installable overmould 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 synthetic 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 (open face rated)
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 (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber
Bulkhead leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)

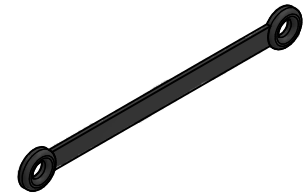
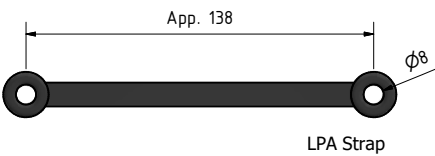
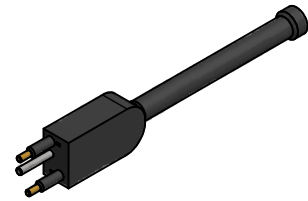
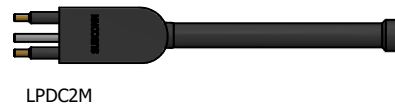
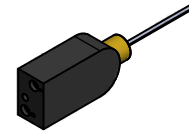
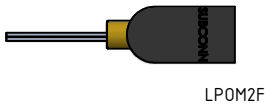
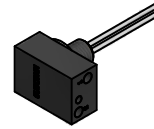
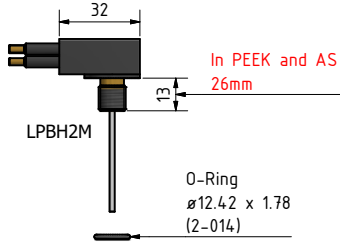
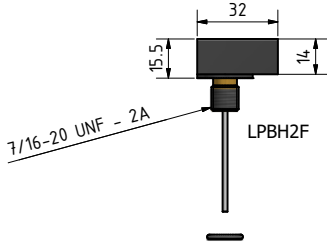
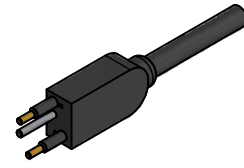
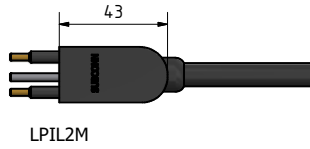
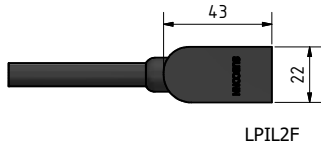


### Inline cable colour code

- 1 Black
- 2 White

### Nominal cable outside diameter (OD)

2 conductor cable 0.365", 9.3 mm



### 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

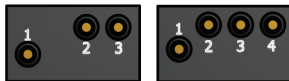
### Connector specifications

Single contact rating	600 V DC/AC rms
3 contacts current rating	10 A per contact (max 30 A per connector)
4 contacts current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
O-rings	Nitrile
Locking strap	Chloroprene rubber
Inline cable (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber
Bulkhead leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)

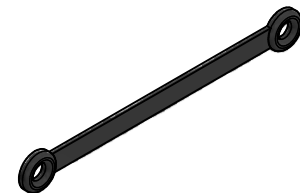
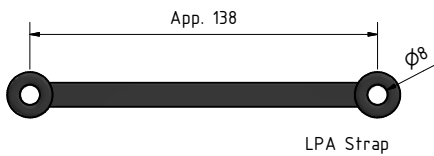
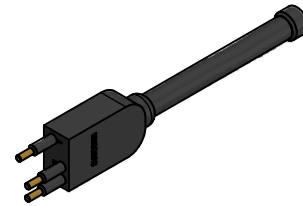
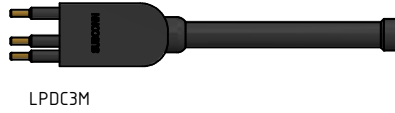
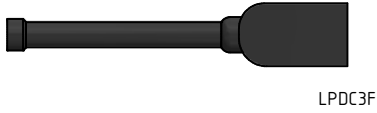
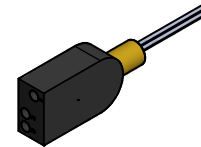
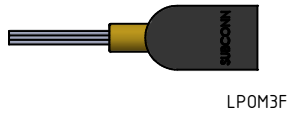
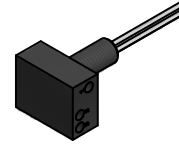
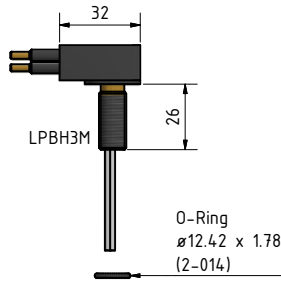
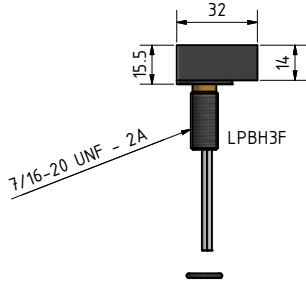
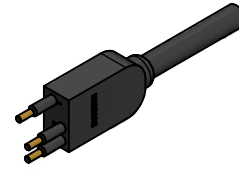
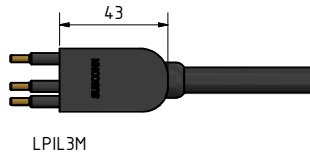
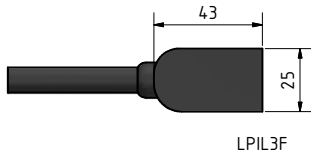


### Inline cable colour code

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



**Drawing information**

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



# SubConn® Low Profile

## 5 contacts

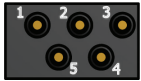
### Connector specifications

Voltage rating	600 V DC/AC rms
Current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
O-rings	Nitrile
Locking strap	Chloroprene rubber
Inline cable (2 ft, 60 cm)	18 AWG, 0.82 mm <sup>2</sup> synthetic rubber
Bulkhead leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)

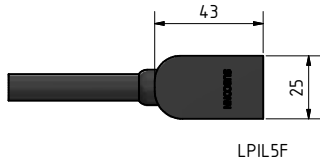


### Inline cable colour code

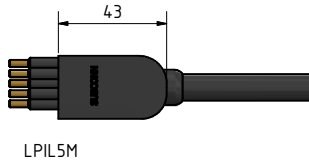
1 Black	4 Green
2 White	5 Orange
3 Red	

### Nominal cable outside diameter (OD)

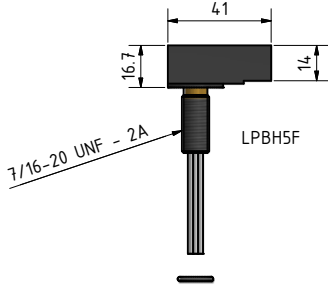
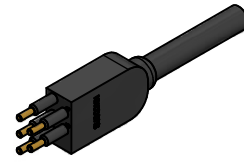
5 conductor cable 0.465", 11.8 mm



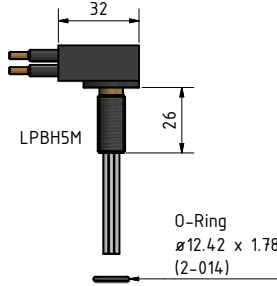
LPIL5F



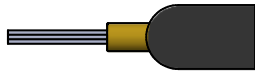
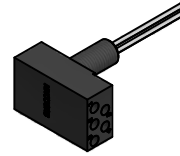
LPIL5M



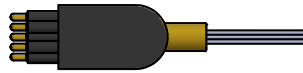
LPBH5F



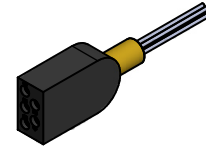
LPBH5M



LPOM5F



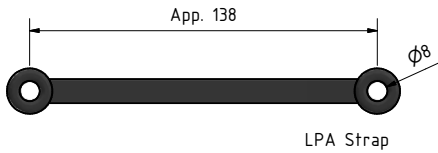
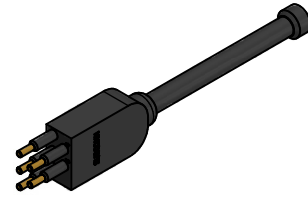
LPOM5M



LPDC5F



LPDC5M



LPA Strap



**Drawing information**

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



# SubConn® Low Profile

## 7 contacts

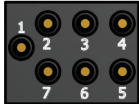
### Connector specifications

Voltage rating	600 V DC/AC rms
Current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
O-rings	Nitrile
Locking strap	Chloroprene rubber
Inline cable (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber
Bulkhead leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)

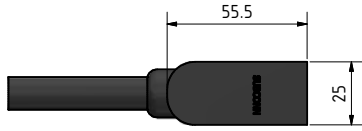


### Inline cable colour code

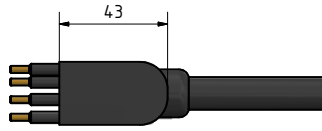
1 Black	3 Red	5 Orange	7 White/black
2 White	4 Green	6 Blue	

### Nominal cable outside diameter (OD)

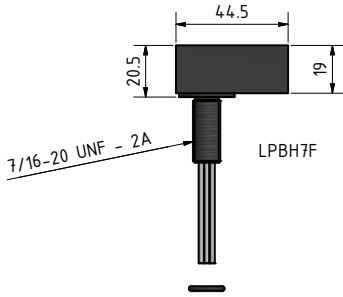
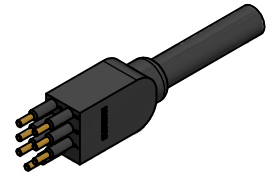
7 conductor cable 0.520", 13.2 mm



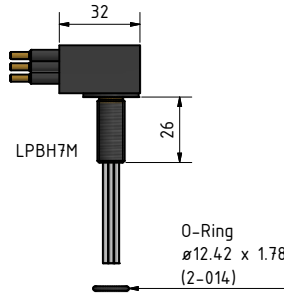
LPIL7F



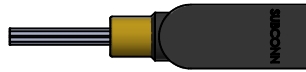
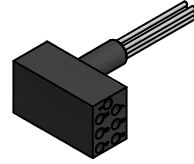
LPIL7M



LPBH7F



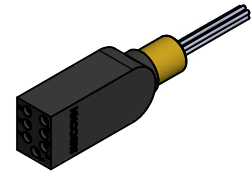
LPBH7M



LPOM7F



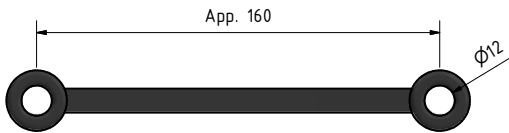
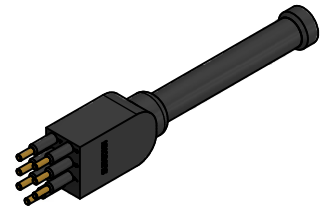
LPOM7M



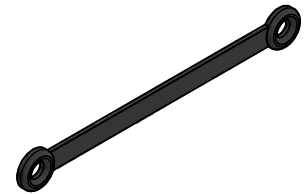
LPDC7F



LPDC7M



LPB Strap



**Drawing information**

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



# SubConn® Low Profile

## 9 contacts

### Connector specifications

Voltage rating	600 V DC/AC rms
Current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
O-rings	Nitrile
Locking strap	Chloroprene rubber
Inline cable (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber
Bulkhead leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	18 AWG, 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)

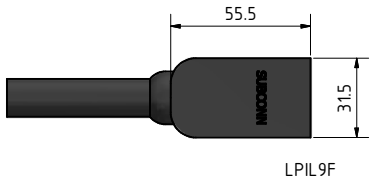


### Inline cable colour code

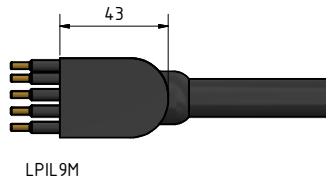
1 Black	4 Green	7 White/black
2 White	5 Orange	8 Red/black
3 Red	6 Blue	9 Green/black

### Nominal cable outside diameter (OD)

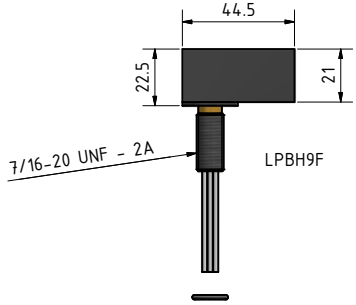
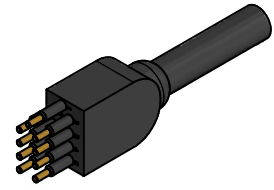
9 conductor cable 0.590", 15.0 mm



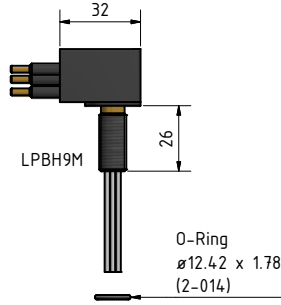
LPIL9F



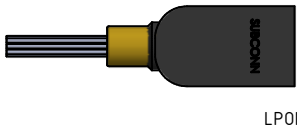
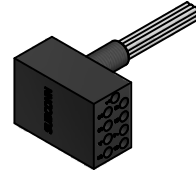
LPIL9M



LPBH9F



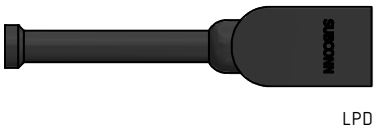
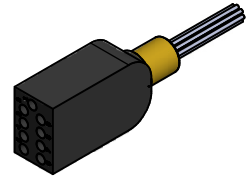
LPBH9M



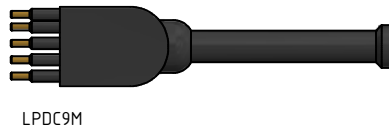
LPOM9F



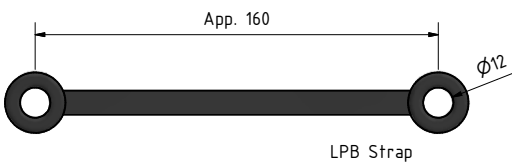
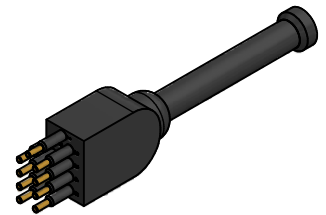
LPOM9M



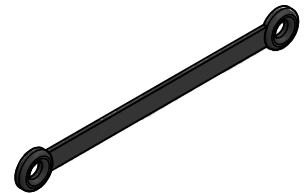
LPDC9F



LPDC9M



LPB Strap



**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

Reed switch glass body type	HE559-ND
Switch voltage rating	200 V DC
Contact rating	10 W max
Switch current rating	500 mA
Operation time	0.6 ms (maximum)
Release time	0.2 ms (maximum)
Capacitance	0.20 pF (typical)
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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
Depth rating	300 bar, 4,350 psi

### Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass or stainless steel
Contacts	Gold plated brass UNS - C36000
O-rings	Nitrile
Locking strap	Chloroprene rubber
Inline cable (2 ft, 60 cm)	16 AWG, 1.31 mm <sup>2</sup> synthetic rubber

### Face view (male)

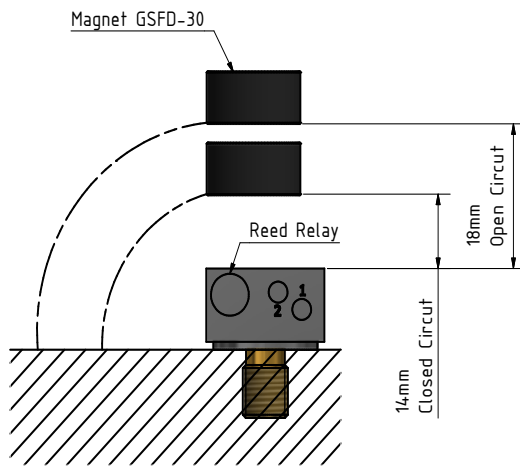
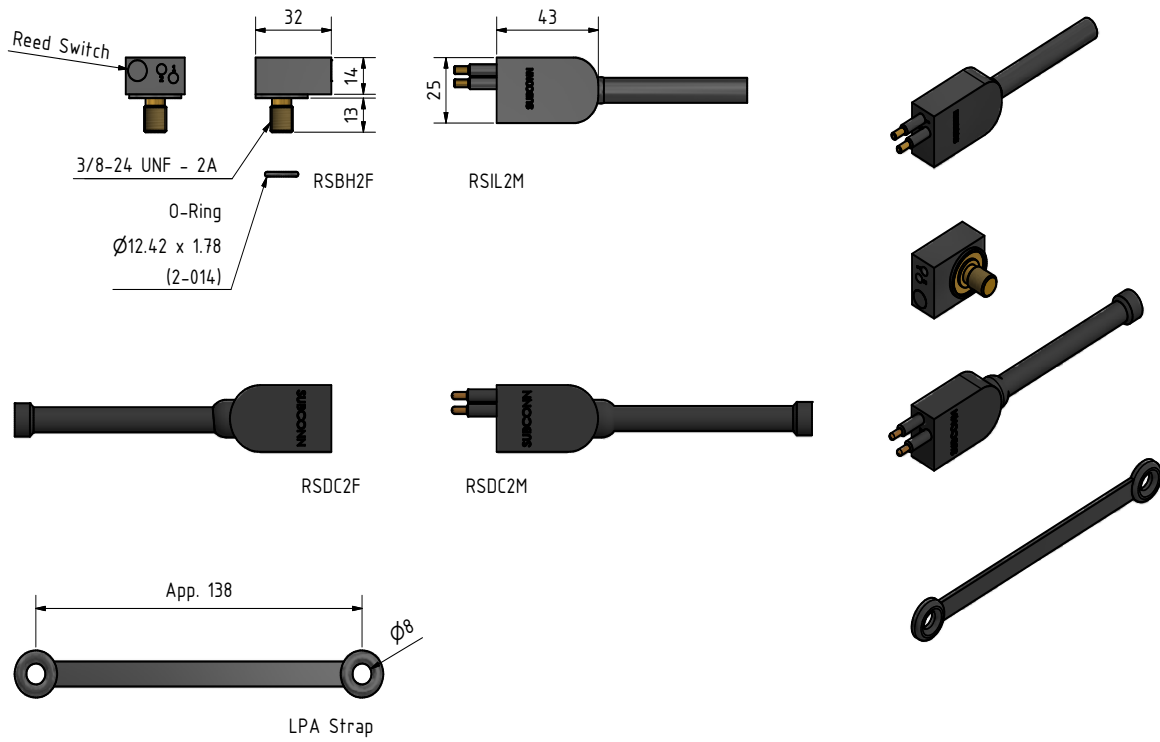


### Inline cable colour code

- 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)

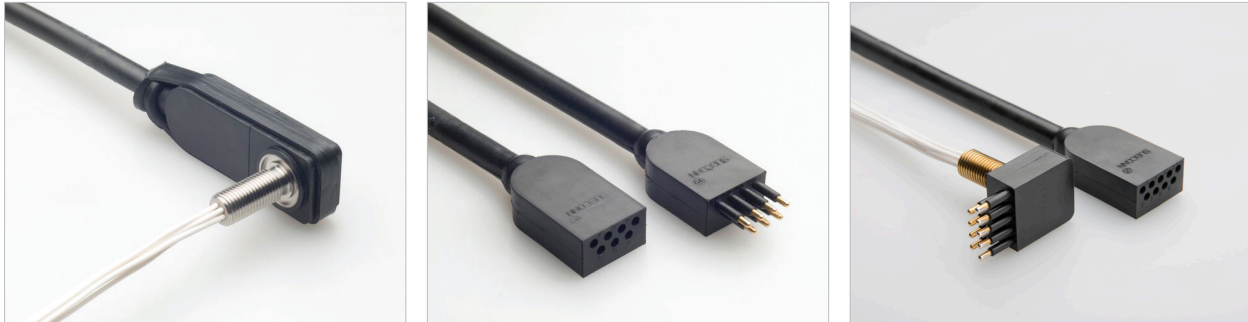


**Quote**

*"Cabled infrastructures offer unprecedented opportunity for ocean monitoring and innovative scientific experiments in the deep sea. High reliability and high availability of power and data distribution systems are the key for success"*

*Mario Sedita, Giuseppe Cannizzaro and Nunzio Randazzo  
INFN*

# 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 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, inline and some field installable overmould 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 synthetic 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

Voltage rating	300 V DC/AC rms
Current rating	5 A per contact (max 10 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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 or stainless steel
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 (2 ft, 60 cm)	20 AWG, 0.52 mm <sup>2</sup> synthetic rubber
Bulkhead leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)

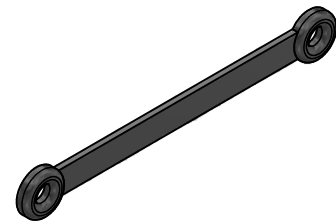
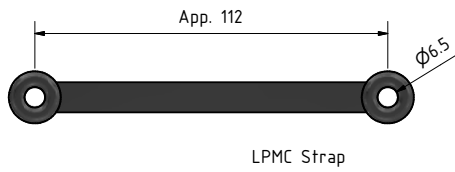
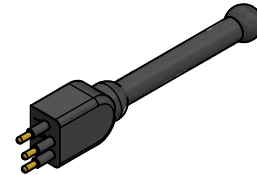
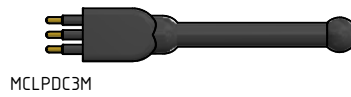
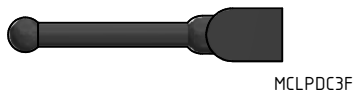
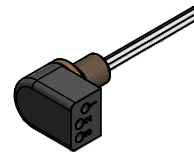
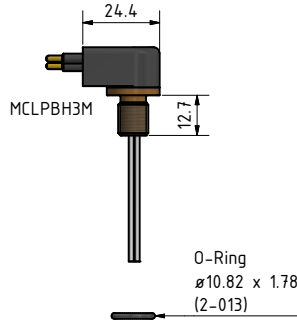
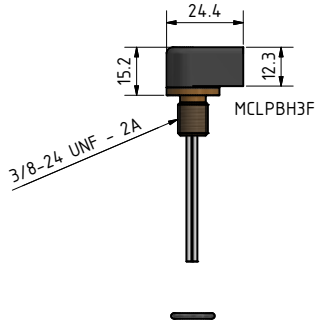
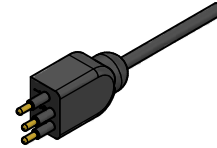
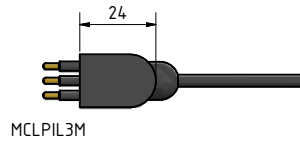
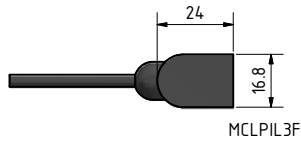


### Inline cable colour code

- 1 Black
- 2 White
- 3 Red

### Nominal cable outside diameter (OD)

3 conductor cable 0.250", 6.35 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

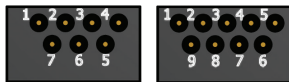
### Connector specifications

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 (open face rated)
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 (2 ft, 60 cm)	20 AWG, 0.52 mm <sup>2</sup> synthetic rubber
Bulkhead leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE
OM leads (3", 7 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)



### Inline cable colour code

1 Black	3 Red	5 Orange	7 White/black	9 Green/black
2 White	4 Green	6 Blue	8 Red/black*	10 Orange/black**

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

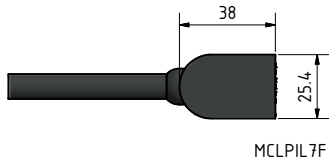
\*\* Micro 9 contacts connector uses a 10 conductor cable (only 9 conductors are used)

### Nominal cable outside diameter (OD)

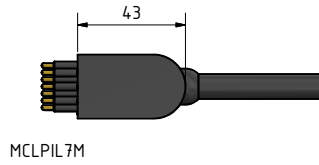
8 conductor cable 0.363", 9.2 mm

10 conductor cable 0.406", 10.3 mm

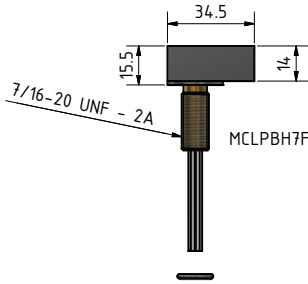
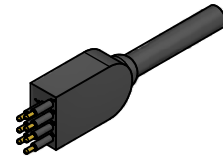
7 and 9 conductor cables are not available, therefore 8 and 10 conductor cables are to be used



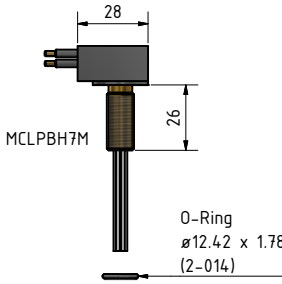
MCLPIL7F



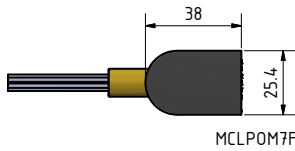
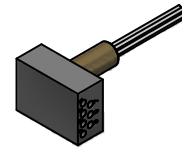
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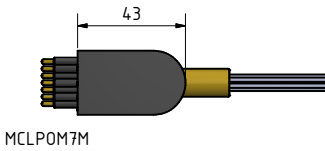
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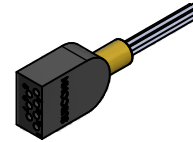
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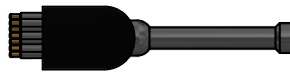
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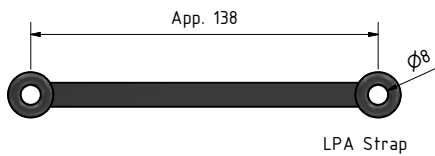
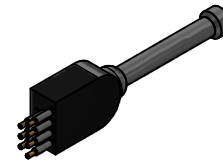
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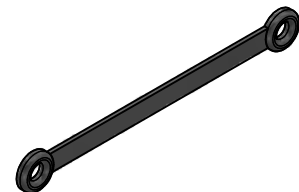
MCLPDC7F



MCLPDC7M



LPA Strap



**Drawing information**

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



**Quote**

*"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)*

# SubConn® Metal Shell series



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

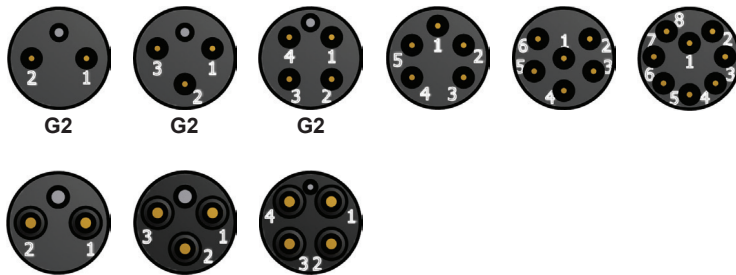
### Connector specifications

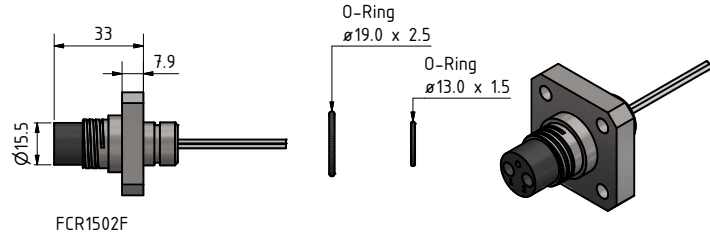
Voltage rating	300 V DC/AC rms
2, 3 and 4 contacts current rating	10 A per contact (max 20 A per connector)
5, 6 and 8 contacts current rating	5 A per contact (max 20 A per connector)
G2 2, 3 and 4 contacts current rating	5 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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	Stainless steel AISI 316 (other materials on request)
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
Location pin	Stainless steel AISI 303
Locking sleeves	ABS or stainless steel
Snap rings	Stainless steel AISI 302
2, 3 and 4 contact bulkhead leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE
5, 6 and 8 contact bulkhead leads (1 ft, 30 cm)	22 AWG, 0.33 mm <sup>2</sup> coloured PTFE
G2 2, 3 and 4 contact bulkhead leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

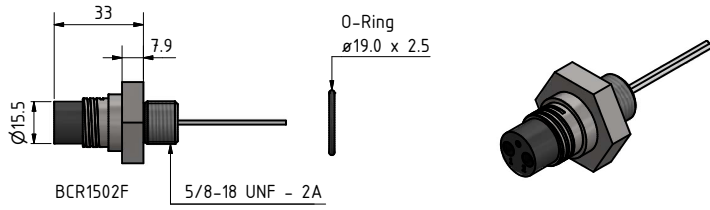
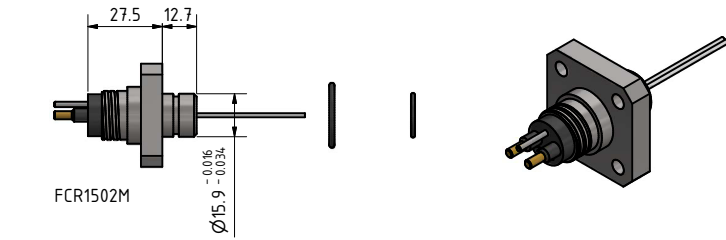
### Face view (male)





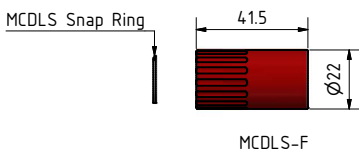
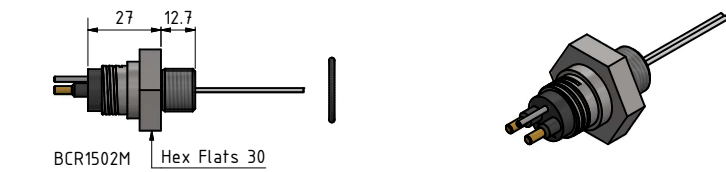
For more information see page 26/27

MCIL2F  
MCOM2F  
MCPBOF2F  
MCDC2F



For more information see page 26/27

MCIL2M  
MCOM2M  
MCPBOF2M  
MCDC2M



### 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

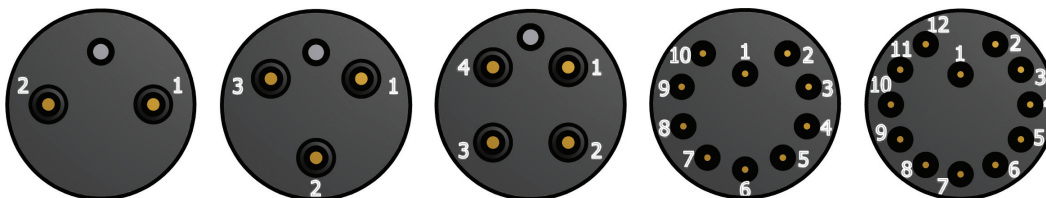
### Connector specifications

2, 3 and 4 contacts voltage rating	600 V DC/AC rms
10 and 12 contacts voltage rating	300 V DC/AC rms
2, 3 and 4 contacts current rating	10 A per contact (max 30 A per connector)
10 and 12 contacts current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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	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
	Male pins in gold plated beryllium copper
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 (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> white tagged PTFE
10 and 12 contact bulkhead leads (1 ft, 30 cm)	20 AWG, 0.52 mm <sup>2</sup> white tagged PTFE

### Face view (male)





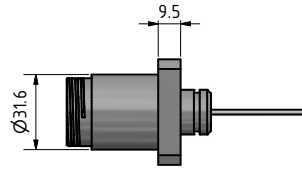
For more information  
see page 12/13-30/31

IL2F  
OM2F  
PBOF2F  
DC2F

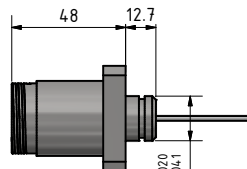


For more information  
see page 12/13-30/31

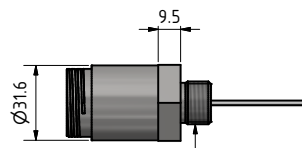
IL2M  
OM2M  
PBOF2M  
DC2M



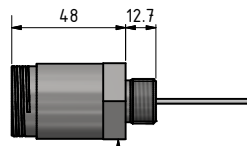
FCR2002F



FCR2002M



BCR2002F



BCR2002M

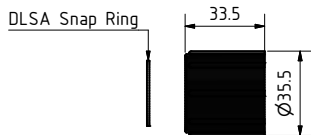
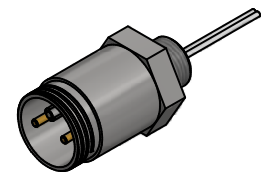
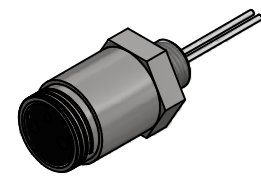
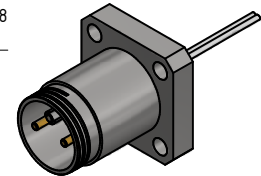
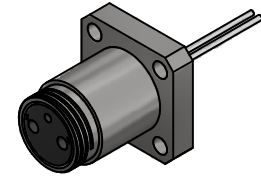
O-Ring  
ø22.22 x 2.62

O-Ring  
ø15.6 x 1.78  
(2-016)

O-Ring  
ø22.22 x 2.62

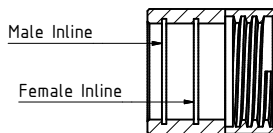
3/4-16 UNF - 2A

Hex Flats 32



LS2000

### 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

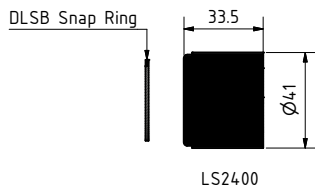
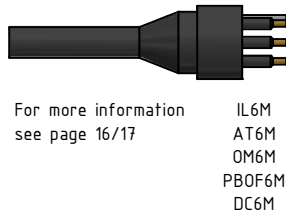
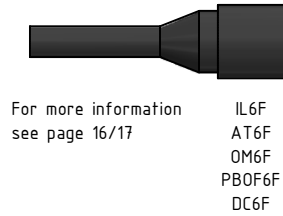
Voltage rating	600 V DC/AC rms
Current rating	10 A per contact (max 50 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature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

### Material specifications

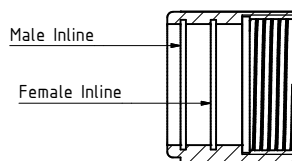
Connector body	Chloroprene rubber
Connector housing	Stainless steel AISI 316 (other materials on request)
Contacts	Brass UNS - C36000
Location pin	Stainless steel AISI 303
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Bulkhead leads (1 ft, 30 cm)	18 AWG, 0.82 mm <sup>2</sup> white tagged PTFE

### Face view (male)





### Snap ring placement

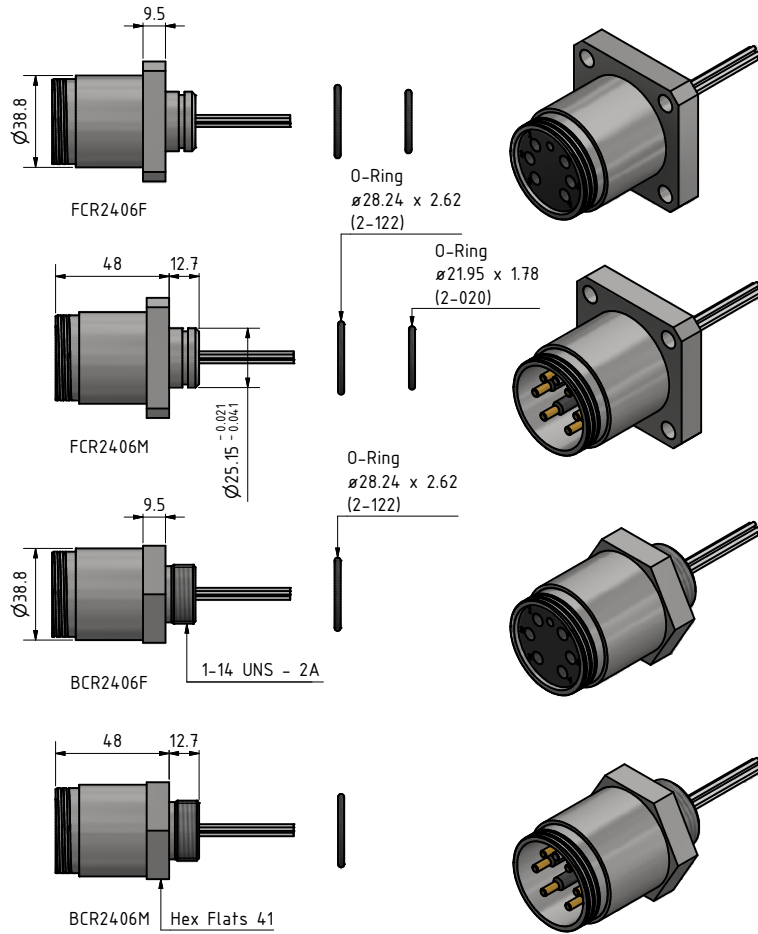


With male inline connector - snap ring in outer groove

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)



**Quote**

*“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 600 V 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® bulkhead, inline, Pressure Balanced Oil Filled (PBOF) (except 1 pin version) and field installable overmould versions.

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 synthetic 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

#### 1 kV version:

Voltage rating

Inline and bulkhead - 1kV DC/AC rms

Current rating

Inline and bulkhead - 250 A

#### 3 kV version:

Voltage rating

Overmould and bulkhead - 3kV DC/AC rms

Current rating

Overmould and bulkhead - 90 A

Insulation resistance

> 200 Mohm

Contact resistance

< 0.01 ohm

Wet matings

> 500 (open face rated)

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

Bulkhead body

Brass, stainless steel or titanium

Contacts

Brass UNS - C36000

Adapter

Brass UNS - C36000

O-rings

Nitrile

Locking sleeves

POM or stainless steel

Snap rings

Stainless steel AISI 302

Inline cable (2 ft, 60 cm)

1/0 AWG, 53.46 mm<sup>2</sup> synthetic rubber

### Inline cable colour code

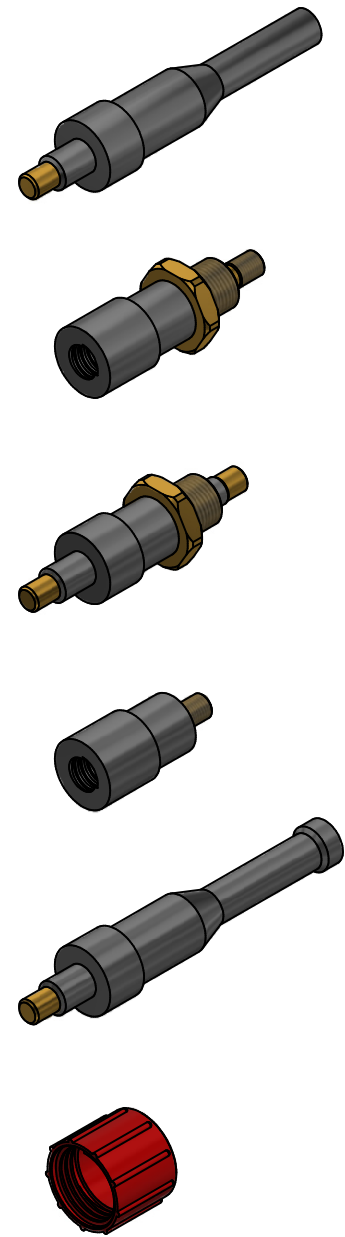
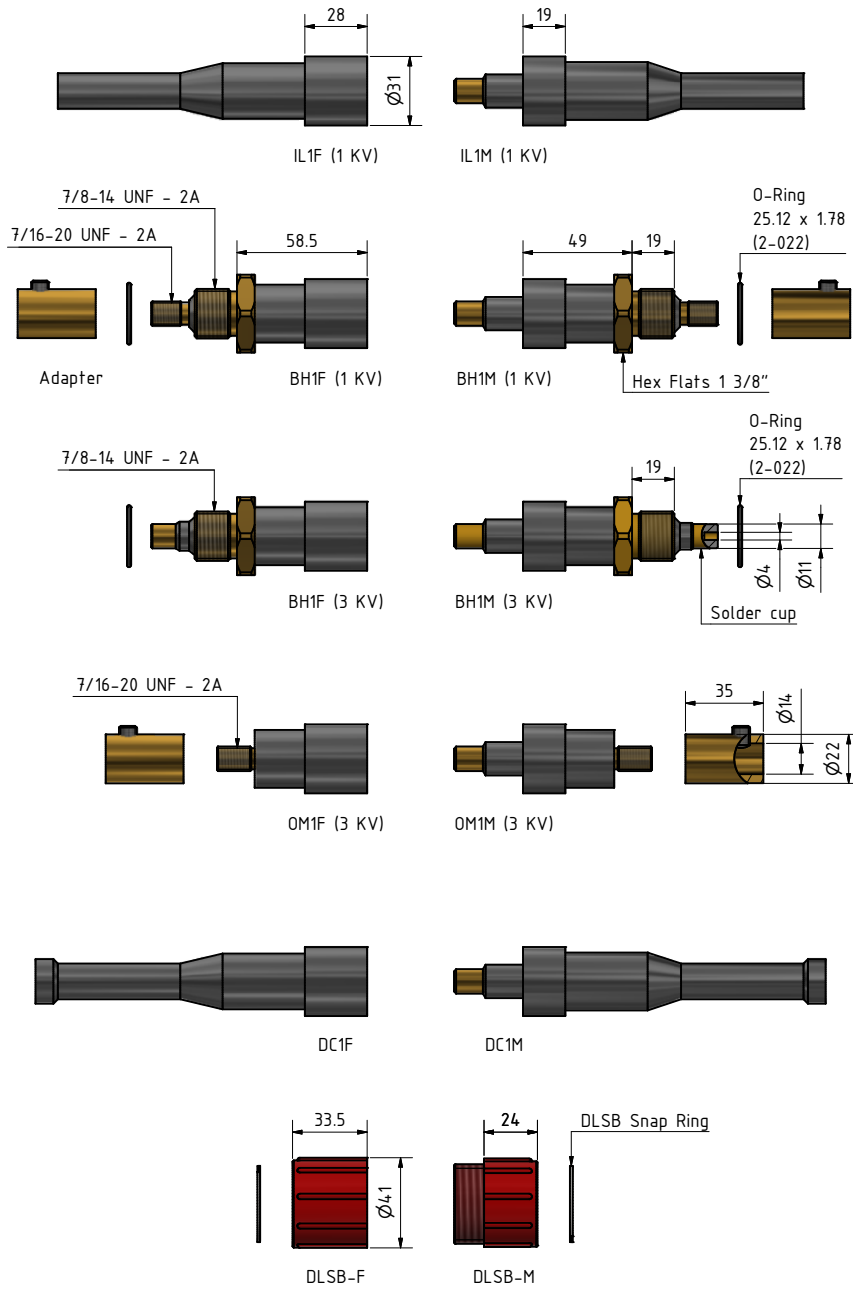
1 Black

### 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

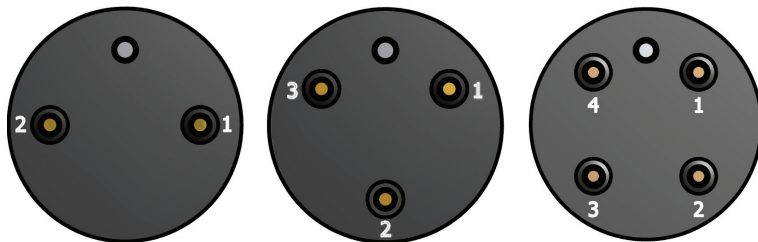
### Connector specifications

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 (open face rated)
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
2 and 3 conductor inline cable (2 ft, 60 cm)	10 AWG, 5.26 mm <sup>2</sup> synthetic rubber
4 conductor inline cable (2 ft, 60 cm)	12 AWG, 3.30 mm <sup>2</sup> synthetic rubber
2 and 3 contact bulkhead and PBOF leads (1 ft, 30 cm)	10 AWG, 5.26 mm <sup>2</sup> white tagged PTFE
2 and 3 contact OM leads (3", 7 cm)	10 AWG, 5.26 mm <sup>2</sup> white tagged PTFE
4 contact bulkhead and PBOF leads (1 ft, 30 cm)	12 AWG, 3.31 mm <sup>2</sup> white tagged PTFE
4 contact OM leads (3", 7 cm)	12 AWG, 3.31 mm <sup>2</sup> white tagged PTFE

### Face view (male)

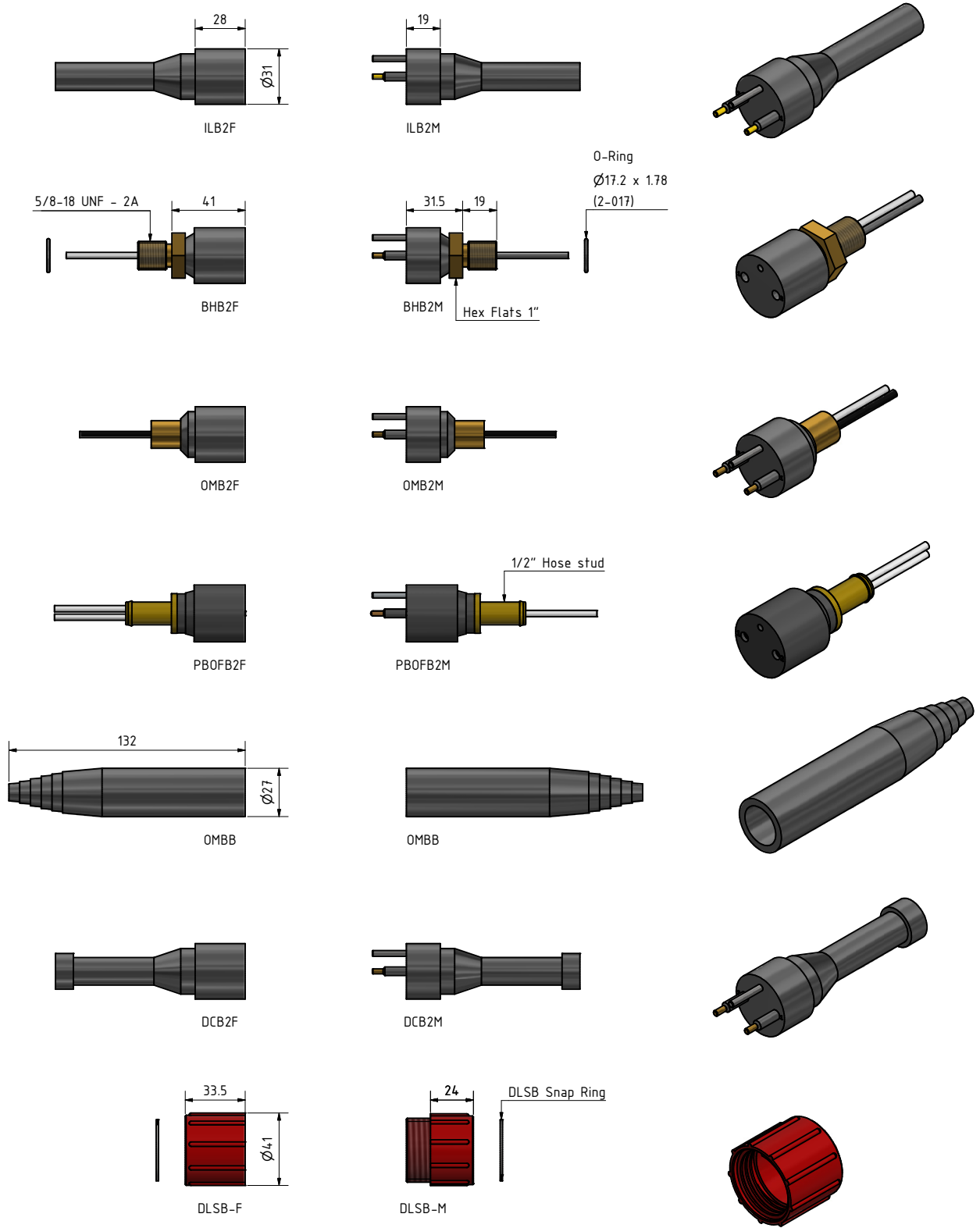


### Inline cable colour code

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

Voltage rating	600 V DC/AC rms
Current rating (water)	50 A per contact (max 200 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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 or anodised aluminium
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
Inline cable (2 ft, 60 cm)	8 AWG, 8.36 mm <sup>2</sup> synthetic rubber
Bulkhead and PBOF leads (1 ft, 30 cm)	10 AWG, 5.26 mm <sup>2</sup> tagged PTFE
OM leads (3", 7 cm)	10 AWG, 5.26 mm <sup>2</sup> tagged PTFE

### Face view (male)

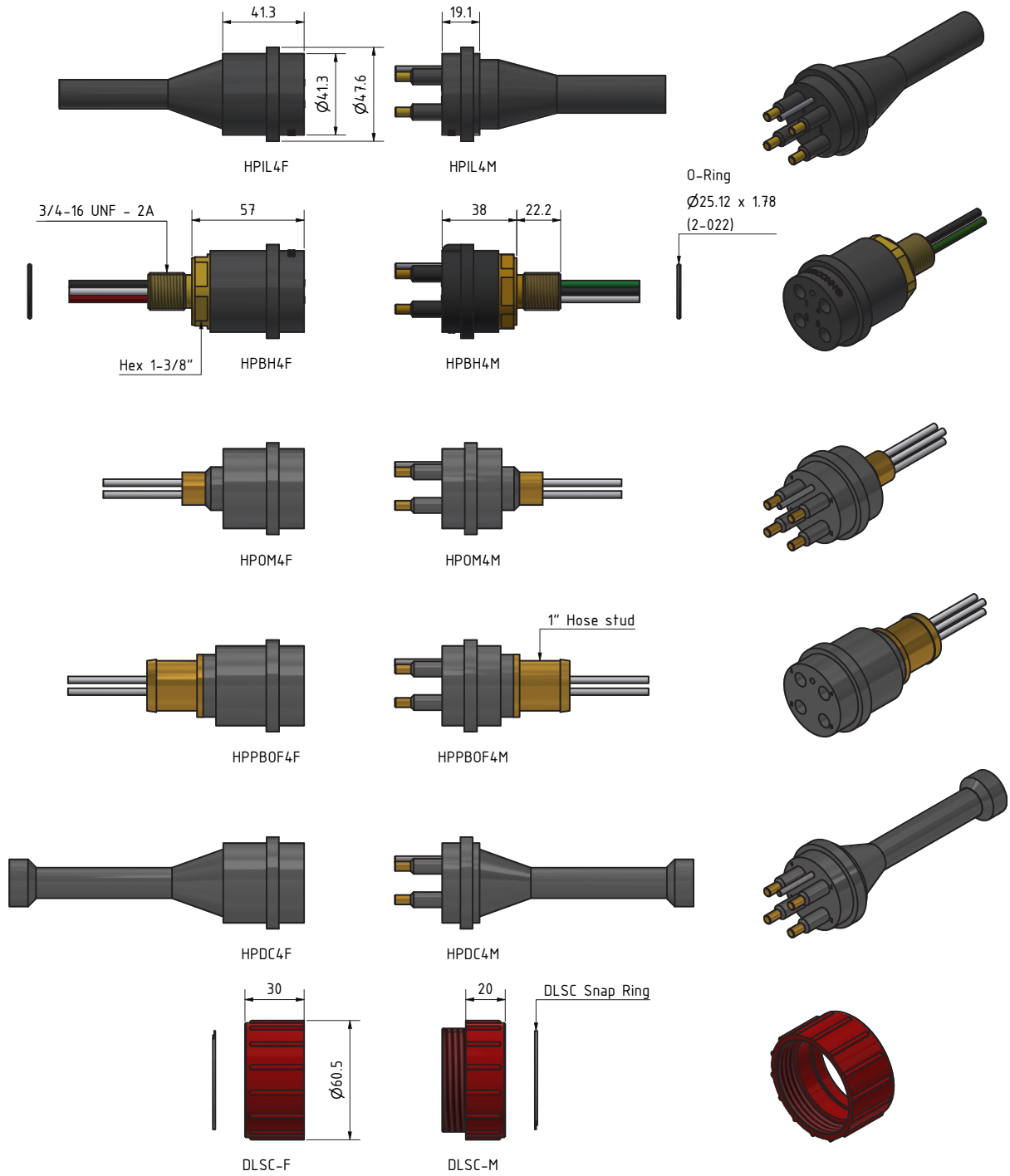


### Inline cable colour code

1 Black                      2 White                      3 Red                      4 Green

### 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)



**Quote**

*"Over the years, LH-Camera has, with great satisfaction, used more than a thousand SubConn® connectors in the production of underwater cameras and lights. It is vital for us that our products will operate in harsh environments."*

*Brian Hansen COO  
LH-Camera Denmark*

# SubConn® Ethernet series



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 in bulkhead, inline, Pressure Balanced Oil Filled (PBOF) and field installable overmould versions, together with 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

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 (open face rated)
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, 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 (3.3 ft, 100 cm)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR
Bulkhead and PBOF leads (3.3 ft, 100 cm)	CAT 5E patch cable incl. RJ 45 connector incl. on bulkhead (not installed)
OM leads (3") , 7 cm	CAT 5E patch cable

### Face view (male)



### Inline cable colour code

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

\* Twisted pairs

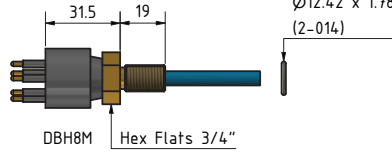
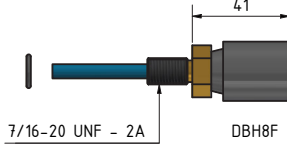
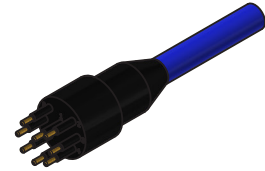
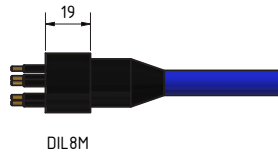
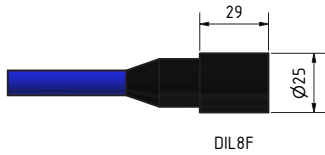
### Nominal cable outside diameter (OD)

PUR cable 0.410", 10.4 mm

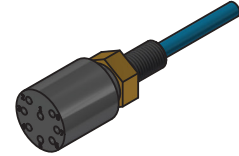
### Additional information

Inline connector is available in shallow water version.

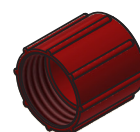
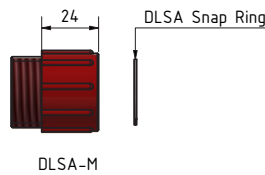
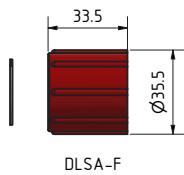
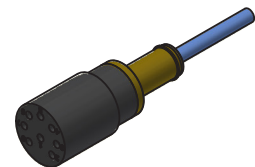
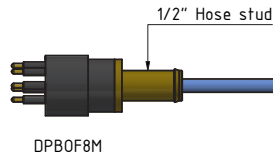
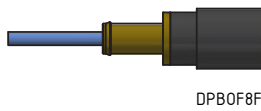
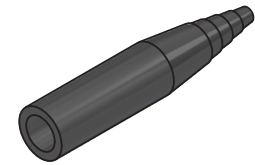
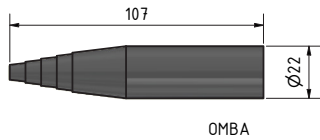
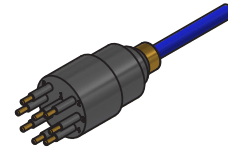
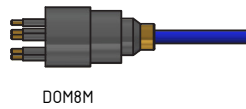
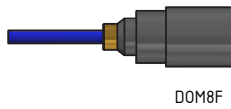
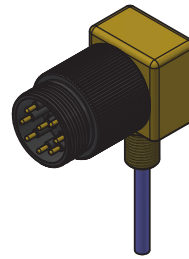
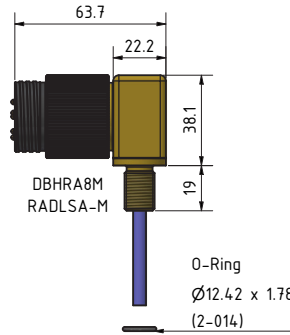
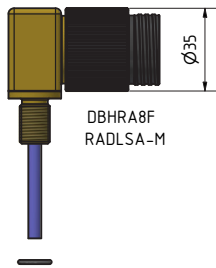
Standard RJ45 cannot be mounted on inline cable and will require a RJ45 Phoenix connector or equivalent.



O-Ring  
Ø12.42 x 1.78  
(2-014)



Note:  
RA body are not available  
in PEEK.  
RADLSA-M locking sleeve  
in colour black only  
(female version not available)



**Drawing information**

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



# SubConn® Power Ethernet Circular

## 13 contacts

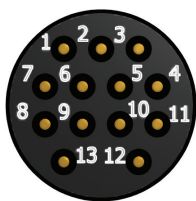
### Connector specifications

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 (open face rated)
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, 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 (3.3 ft, 100 cm)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR Power conductors 4 x 18 AWG, 0.82 mm <sup>2</sup> Screen: Tinned copper braid
Bulkhead and PBOF leads (3.3 ft, 100 cm)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE. RJ 45 connector incl. on bulkhead (not installed)
OM leads (3", 7 cm)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)



### Inline cable colour code

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

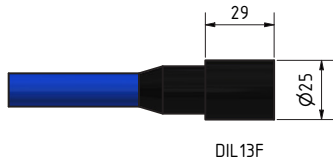
\* Twisted pairs

### Nominal cable outside diameter (OD)

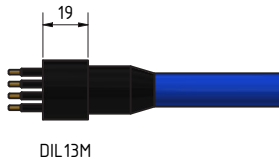
PUR cable 0.550", 13.97 mm

### Additional information

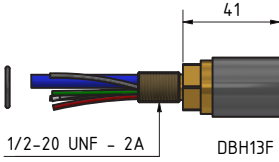
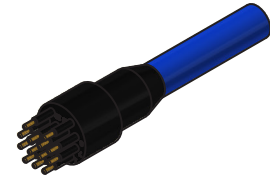
Standard RJ45 cannot be mounted on inline cable and will require a RJ45 Phoenix connector or equivalent.



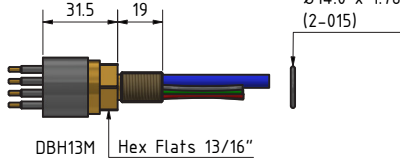
DIL13F



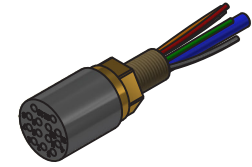
DIL13M



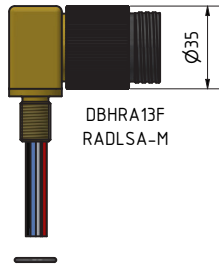
DBH13F



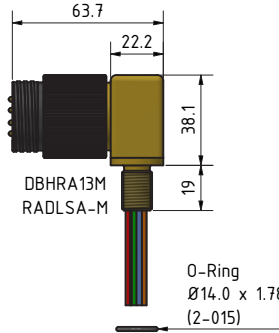
DBH13M



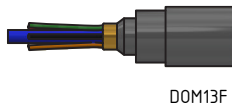
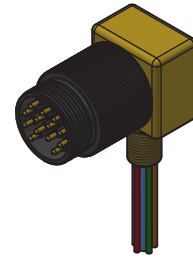
Note:  
RA body are not available in PEEK.  
RADLSA-M locking sleeve in colour black only (female version not available)



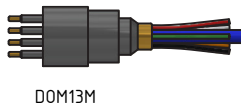
DBHRA13F  
RADLSA-M



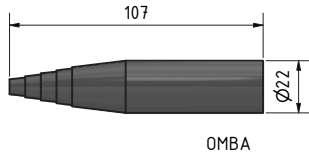
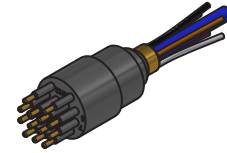
DBHRA13M  
RADLSA-M



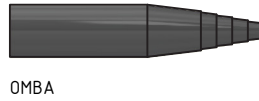
DOM13F



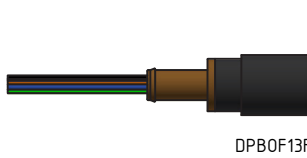
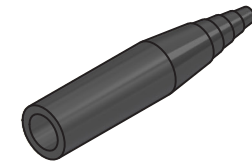
DOM13M



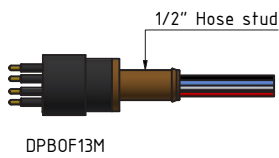
OMBA



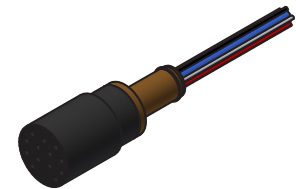
OMBA



DPB0F13F



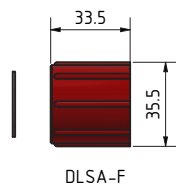
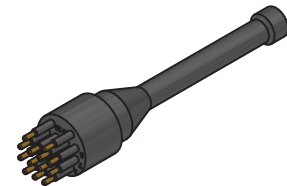
DPB0F13M



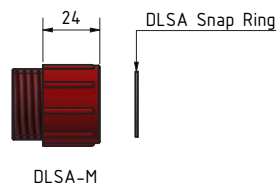
DDC13F



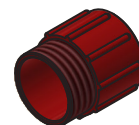
DDC13M



DLSA-F



DLSA-M



**Drawing information**

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



# SubConn® Ethernet Circular

## Double O-ring, 8 and 13 contacts

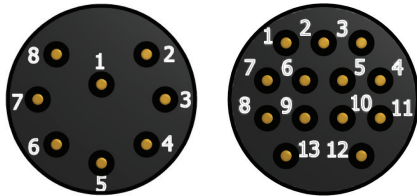
### Connector specifications

Voltage rating	600 V DC/AC rms (13 contacts only)
Voltage rating on data wire	250 V DC/AC rms
Current rating on power wire	4 A per contact (max 16 A per connector) (13 contacts only)
Data rate	1 Gbit/s
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500 (open face rated)
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, anodised aluminium
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 (3.3 ft, 100 cm)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE (13 contacts only) incl. RJ 45 connector (not installed)

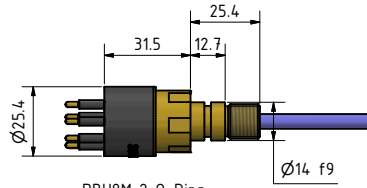
### Face view (male)



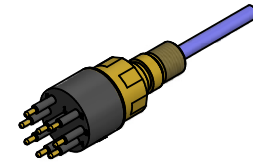


For more information  
see page 74/75

DIL8F  
DOM8F  
DPBOF8F  
DDC8F



DBH8M 2 O-Ring  
Hex Flats 22mm

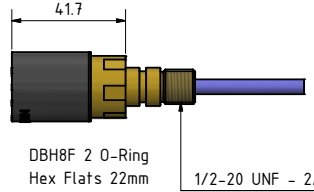


O-Ring  
ø10.82 x 1.78  
(2-013)



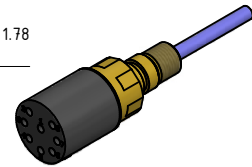
For more information  
see page 74/75

DIL8M  
DOM8M  
DPBOF8M  
DDC8M



DBH8F 2 O-Ring  
Hex Flats 22mm

O-Ring  
ø15.6 x 1.78  
(2-016)

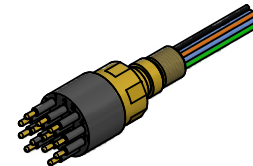


For more information  
see page 76/77

DIL13F  
DOM13F  
DPBOF13F  
DDC13F



DBH13M 2 O-Ring  
Hex Flats 22mm

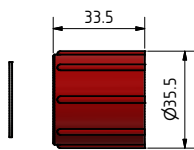
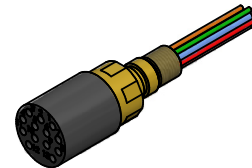


For more information  
see page 76/77

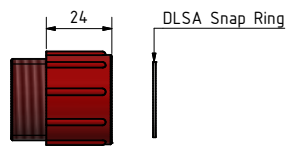
DIL13M  
DOM13M  
DPBOF13M  
DDC13M



DBH13F 2 O-Ring  
Hex Flats 22mm



DLSA-F



DLSA-M

DLSA Snap Ring



### 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

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 (open face rated)
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, 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 straps	Chloroprene rubber
Inline cable (3.3 ft, 100 cm)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR Screen: Tinned copper braid
Bulkhead leads (3.3 ft, 100 cm)	CAT 5E patch cable incl. RJ 45 connector (not installed)

### Face view (male)



### Inline cable colour code

1-2 Brown, Brown/white*	7-8 Green, Green/white*
3-4 Blue, Blue/white*	9 Screen (black wire on bulkhead)
5-6 Orange, Orange/white*	

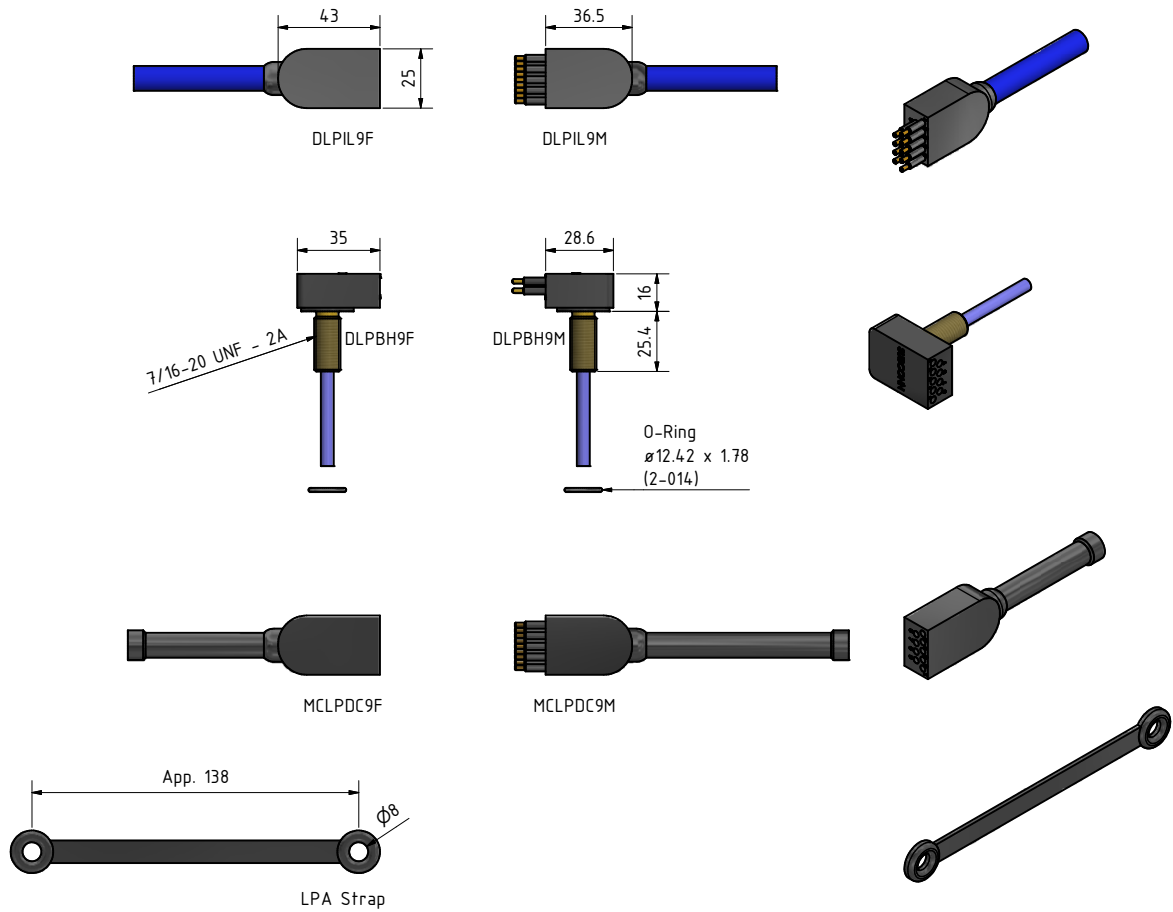
\* Twisted pairs

### 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.



**Drawing information**

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



# SubConn® Power Ethernet Low Profile

## 13 contacts

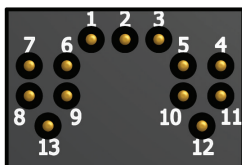
### Connector specifications

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 (open face rated)
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 (3.3 ft, 100 cm)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR Power conductors 4 x 18 AWG, 0.82 mm <sup>2</sup> Screen: Tinned copper braid
Bulkhead leads (3.3 ft, 100 cm)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE incl. RJ 45 connector (not installed)

### Face view (male)



### Inline cable colour code

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

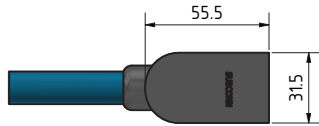
\* Twisted pairs

### Nominal cable outside diameter (OD)

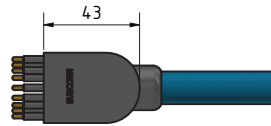
PUR cable 0.550", 13.97 mm

### Additional information

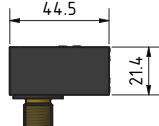
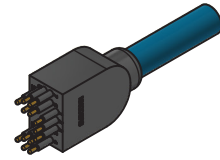
Standard RJ45 cannot be mounted on inline cable and will require a RJ45 Phoenix connector or equivalent.



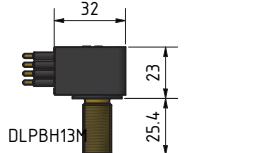
DLPIL13F



DLPIL13M

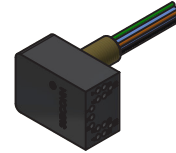


DLPBH13F



DLPBH13M

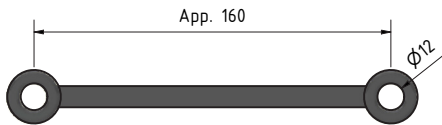
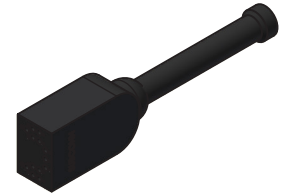
O-Ring  
Ø14.00 x 1.78  
(2-015)



DLPDC13F



DLPDC13M



LPB Strap



### 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 (open face rated)
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 (3.3 ft, 100 cm)	CAT 5E patch cable incl. RJ 45 connector (not installed)

### Face view (male)



### Wire colour code

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

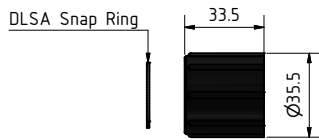
\* Twisted pairs



For more information see page 74/75 DIL8F

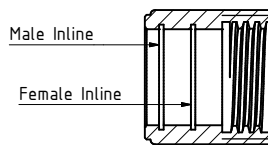


For more information see page 74/75 DIL8M



LS2000

### Snap ring placement

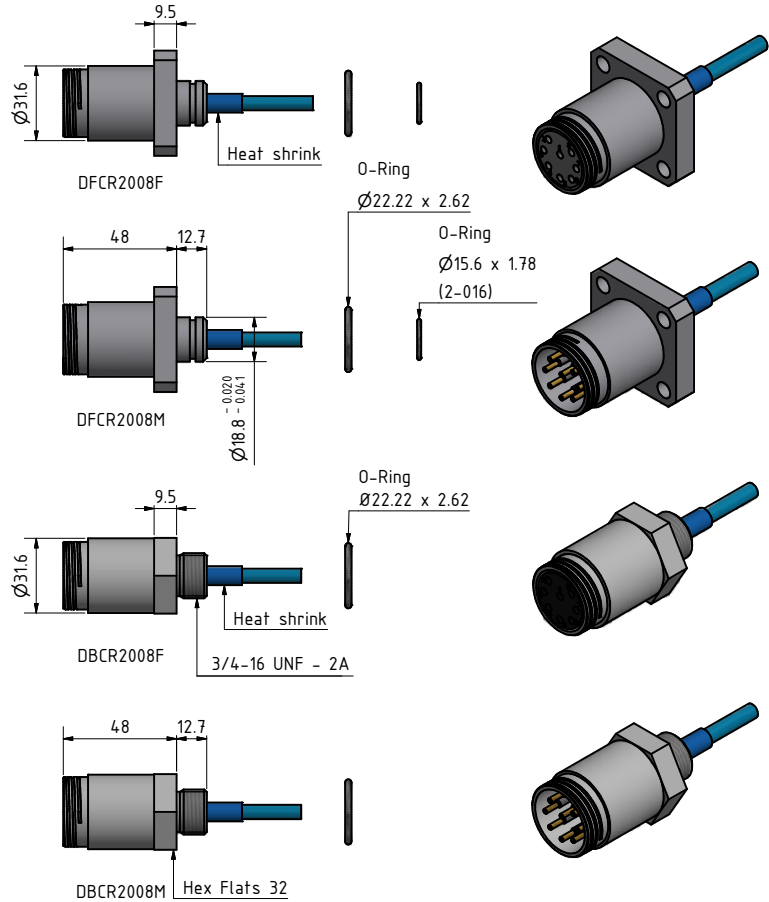


With male inline connector - snap ring in outer groove

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

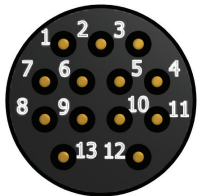
### Connector specifications

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 (open face rated)
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 (3.3 ft, 100 cm)	CAT 5E patch cable, 4 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE incl. RJ 45 connector (not installed)

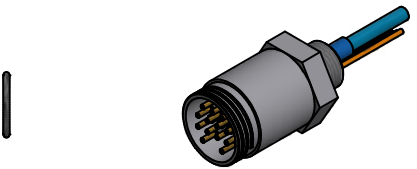
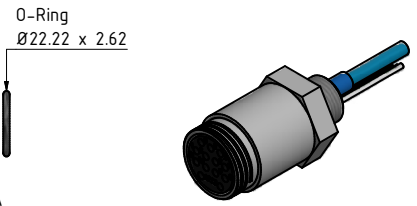
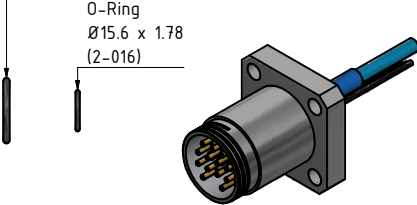
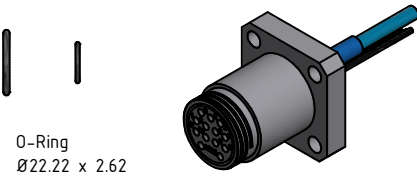
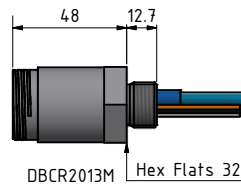
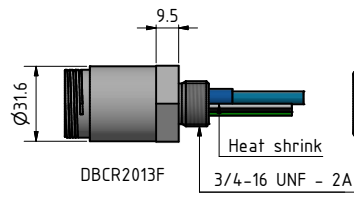
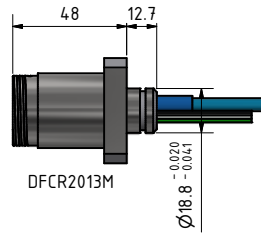
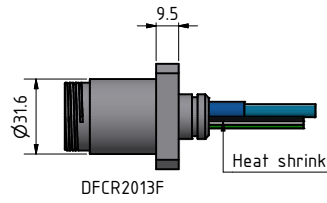
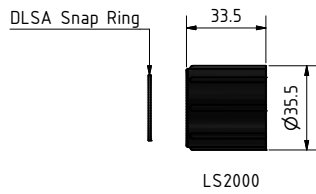
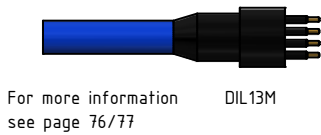
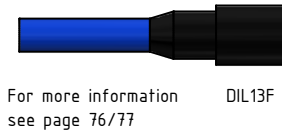
### Face view (male)



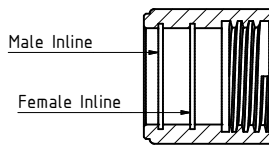
### Wire colour code

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

\* 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)



**Quote**

*"I'm very happy to learn about the company's expansion and faster delivery times. I love the product and recommend your systems whenever I can to the people here at WHOI. Thank you very much."*

*Stephen Gagnon  
WHOI*

# SubConn® Coax series



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 ohm.

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

# SubConn® HF Coax

## 50 ohm Coax

### Connector specifications

Voltage rating on coax insert only	800 V, max nominal voltage acc. to MIL									
Frequency*	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
Attenuation*	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
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
Coax contacts	Gold plated contacts
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Inline cable (2 ft, 60 cm)	PUR jacket cable with RG58 coax
Coax bulkhead leads (3.3 ft, 100 cm)	RG316 coax

### Face view (male)



### Nominal cable outside diameter (OD)

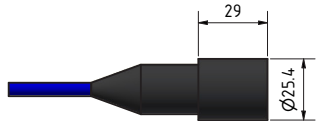
RG58 PUR cable 0.220", 5.59 mm

### Additional information

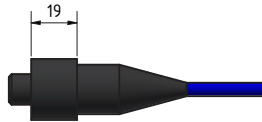
\*All frequency and attenuation values are based on a 10 meter cable assembly test including 2 bulkhead connectors (50 ohm).  
BNC connector for RG316 coax leads use Amphenol 031-315-RFX or equivalent.  
BNC connector for RG58 coax cable use Amphenol 112116 or equivalent.

Recommended SMB termination for Coax, see pages 128-129

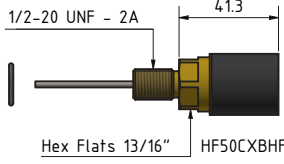
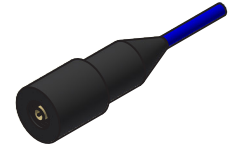
SubConn® Coax connectors are designed for dry mating only. The Coax series is not suitable for open-face pressure or waterblock applications. Locking sleeves are required. Avoid greasing the actual coax part. The minimum bending radius for inline cables is 100 mm.



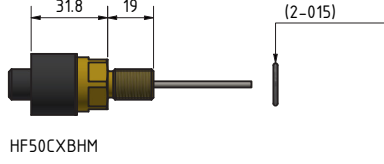
HF50CXILF



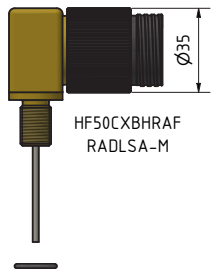
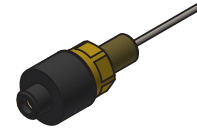
HF50CXILM



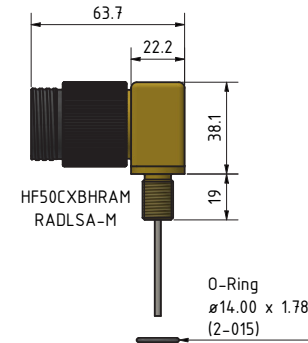
HF50CXBHF



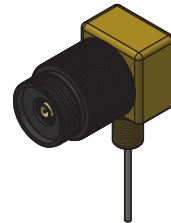
HF50CXBHM



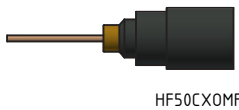
HF50CXBHRAF  
RADLSA-M



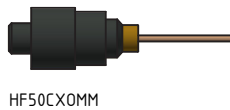
HF50CXBHRAM  
RADLSA-M



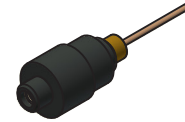
Note:  
RA body are not available  
in PEEK.  
RADLSA-M locking sleeve  
in colour black only  
(female version not available)



HF50CX0MF



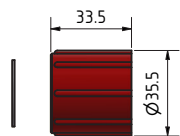
HF50CX0MM



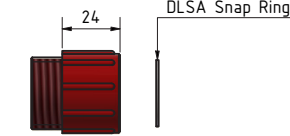
HF50CXDCF



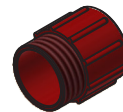
HF50CXDCM



DLSA-F



DLSA-M



### Drawing information

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

# SubConn® HF Coax

## 50 ohm 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)									
Voltage rating on coax	800 V, max nominal voltage acc. to MIL									
Frequency*	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
Attenuation*	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
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 (2 ft, 60 cm)	RG58 coax and 6 x 20 AWG, 0.52 mm <sup>2</sup> conductors
Coax and 6-contact bulkhead leads (3.3 ft, 100 cm)	RG316 coax and 6 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)



### Inline cable colour code

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

### Nominal cable outside diameter (OD)

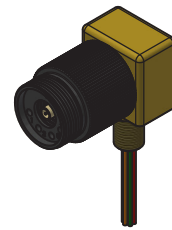
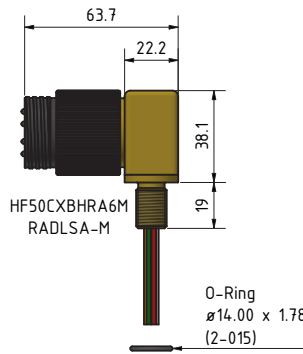
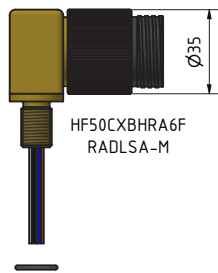
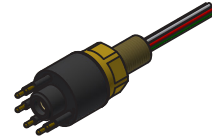
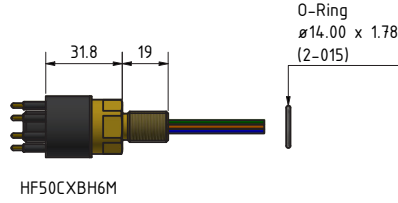
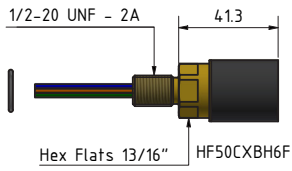
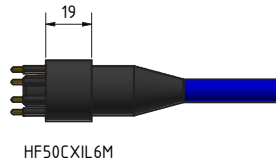
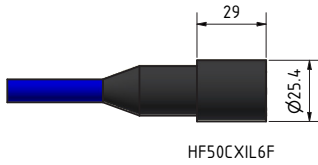
RG58 and 6-conductor PUR cable 0.382", 9.70 mm

### Additional information

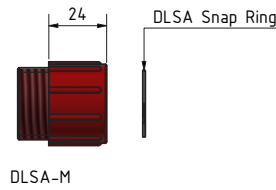
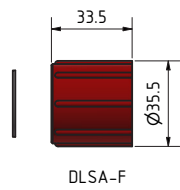
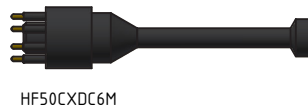
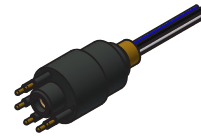
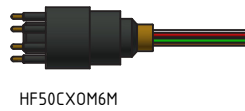
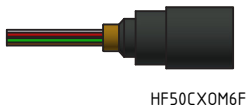
\*All frequency and attenuation values are based on a 10 meter cable assembly test including 2 bulkhead connectors (50 ohm).  
BNC connector for RG316 coax leads use Amphenol 031-315-RFX or equivalent.  
BNC connector for RG58 coax cable use Amphenol 112116 or equivalent.

Recommended SMB termination for Coax, see pages 128-129

SubConn® Coax connectors are designed for dry mating only. The Coax series is not suitable for open-face pressure or waterblock applications. Locking sleeves are required. Avoid greasing the actual coax part. The minimum bending radius for inline cables is 100 mm.



Note:  
RA body are not available  
in PEEK.  
RADLSA-M locking sleeve  
in colour black only  
(female version not available)



### Drawing information

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



# SubConn® HF Coax

## 75 ohm Coax

### Connector specifications

Voltage rating on coax insert only	930 V, max nominal voltage acc. to MIL							
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
Coax contacts	Gold plated contacts
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Inline cable (2 ft, 60 cm)	PUR jacket cable with Mini-RG59 coax
Coax bulkhead leads (3.3 ft, 100 cm)	RG179 coax

### Face view (male)



### Nominal cable outside diameter (OD)

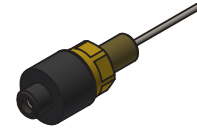
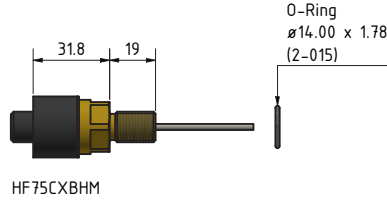
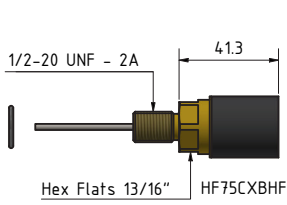
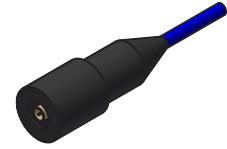
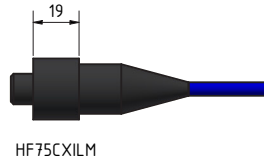
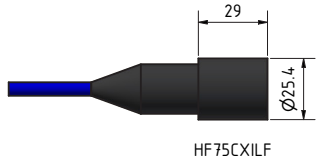
Mini-RG59 PUR cable 0.220", 5.59 mm

### Additional information

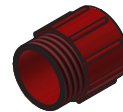
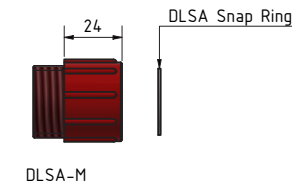
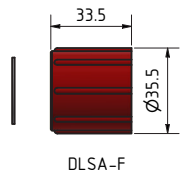
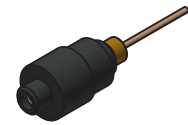
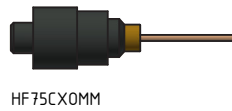
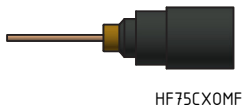
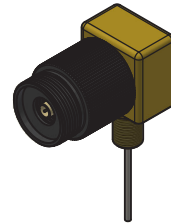
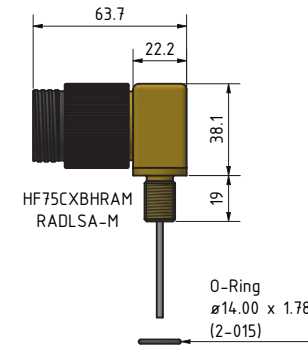
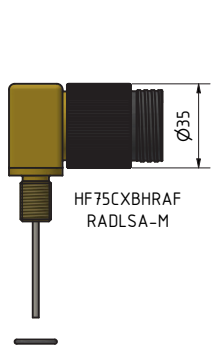
\*All frequency and attenuation values are based on a 10 meter cable assembly test including 2 bulkhead connectors (75 ohm).  
 BNC connector for RG179 coax leads use Amphenol 112133 or equivalent.  
 BNC connector for Mini-RG59 coax cable use Belden 1855ABHD3 or equivalent.

Recommended SMB termination for Coax, see pages 128-129

SubConn® Coax connectors are designed for dry mating only. The Coax series is not suitable for open-face pressure or waterblock applications. Locking sleeves are required. Avoid greasing the actual coax part. The minimum bending radius for inline cables is 100 mm.



Note:  
RA body are not available  
in PEEK.  
RADLSA-M locking sleeve  
in colour black only  
(female version not available)



### Drawing information

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



# SubConn® HF Coax

## 75 ohm 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)							
Voltage rating on coax insert only	930 V, max nominal voltage acc. to MIL							
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 (2 ft, 60 cm)	Mini-RG59 coax and 6 x 20 AWG, 0.52 mm <sup>2</sup> conductors
Coax and 6-contact bulkhead leads (3.3 ft, 100 cm)	RG179 coax and 6 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)



### Inline cable colour code

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

### Nominal cable outside diameter (OD)

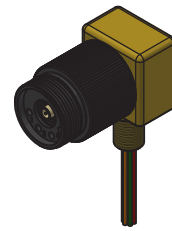
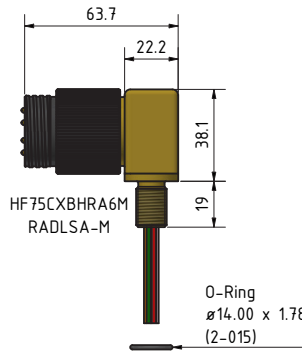
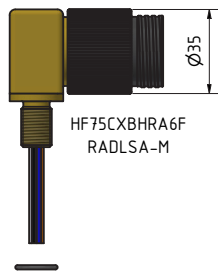
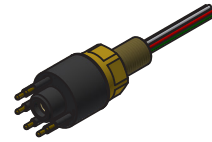
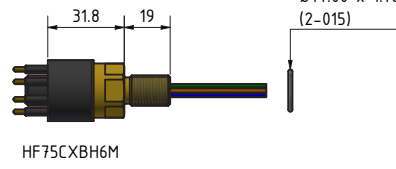
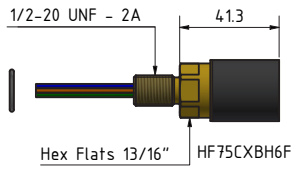
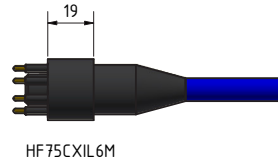
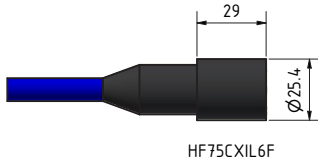
Mini-RG59 and 6-conductor PUR cable 0.382", 9.70 mm

### Additional information

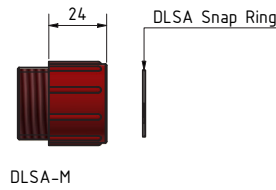
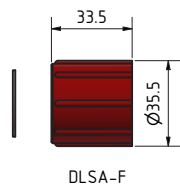
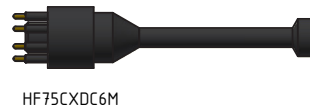
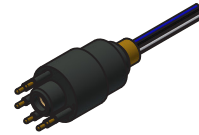
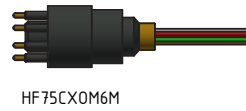
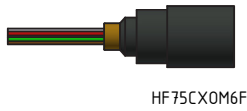
\*All frequency and attenuation values are based on a 10 meter cable assembly test including 2 bulkhead connectors (75 ohm).  
BNC connector for RG179 coax leads use Amphenol 112133 or equivalent.  
BNC connector for Mini-RG59 coax cable use Belden 1855ABHD3 or equivalent.

Recommended SMB termination for Coax, see pages 128-129

SubConn® Coax connectors are designed for dry mating only. The Coax series is not suitable for open-face pressure or waterblock applications. Locking sleeves are required. Avoid greasing the actual coax part.  
The minimum bending radius for inline cables is 100 mm.



Note:  
RA body are not available in PEEK.  
RADLSA-M locking sleeve in colour black only (female version not available)



**Drawing information**

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



**Quote**

*"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*

# SubConn® Nano series



To accommodate market demands for even more compact underwater connectivity solutions, the SubConn® range is extended with the SubConn® Nano connector.

The SubConn® Nano connector utilises the trusted design principles of the SubConn® Circular and Micro Circular series and has been designed with enhanced sealing capability while incorporating a uniform contact size and design. Developed to meet the evolving needs of underwater instruments, sensors, equipment, and systems, this connector represents a significant advancement in compact connectivity solutions.

The SubConn® Nano connector is  $\varnothing 12.7$  mm /  $\frac{1}{2}$ " with a titanium shell housing and 6 contacts rated at 300V and 3 A. It is available in flange (FCR), bulkhead (BCR), inline/attachable, moulded versions. All BCR and FCR connectors come with colour-coded Teflon (PTFE) leads.

The SubConn® Nano is a splash/wet-mate connector. Manufactured from high-grade titanium and neoprene to withstand deep ocean depths and open-face pressure ratings. The 2.5-turn locking sleeve has been specially developed for seamless mating and prevention of anti-seizing.

## Applications

- Signal and data telemetry
- Lower voltage and power transmission
- Small sensor packages
- Remotely Operated Vehicles (ROVs), Remotely Operated Towed Vehicles (ROTVs), and Autonomous Underwater Vehicles (AUVs)
- Underwater cameras, videos and lighting systems
- Ocean bottom seismic systems
- Diving systems and equipment

## Options

- Customised cable harnesses and direct moulding to selected polyurethane (PUR) cables
- Available in straight and right-angled configurations
- Customer-specified cable lengths
- Certified pressure testing

# SubConn® Nano

## 6 contacts

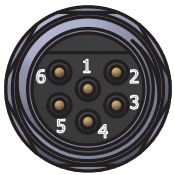
### Connector specifications

Voltage rating	300 V DC/AC rms
Contacts current rating	3 A per contact (max 10 A per connector)
Insulation resistance	200 Mohm
Contact resistance	< 0.01 ohm
Wet/splash 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	700 bar
Open face rated	700 bar

### Material specifications

Connector body	Chloroprene rubber, Titanium
Bulkhead body	Titanium
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
O-rings	Nitrile
Locking sleeves	Anodized titanium
Bulkhead leads (12")	24 AWG, PTFE
Inline cable	Data cable - type 1735CC

### Face view (male)



### Inline cable colour code

1-2 Black/white*	3-4 Red/Green*	5-6 Orange/Blue*
------------------	----------------	------------------

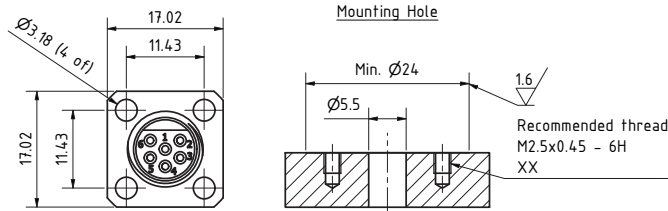
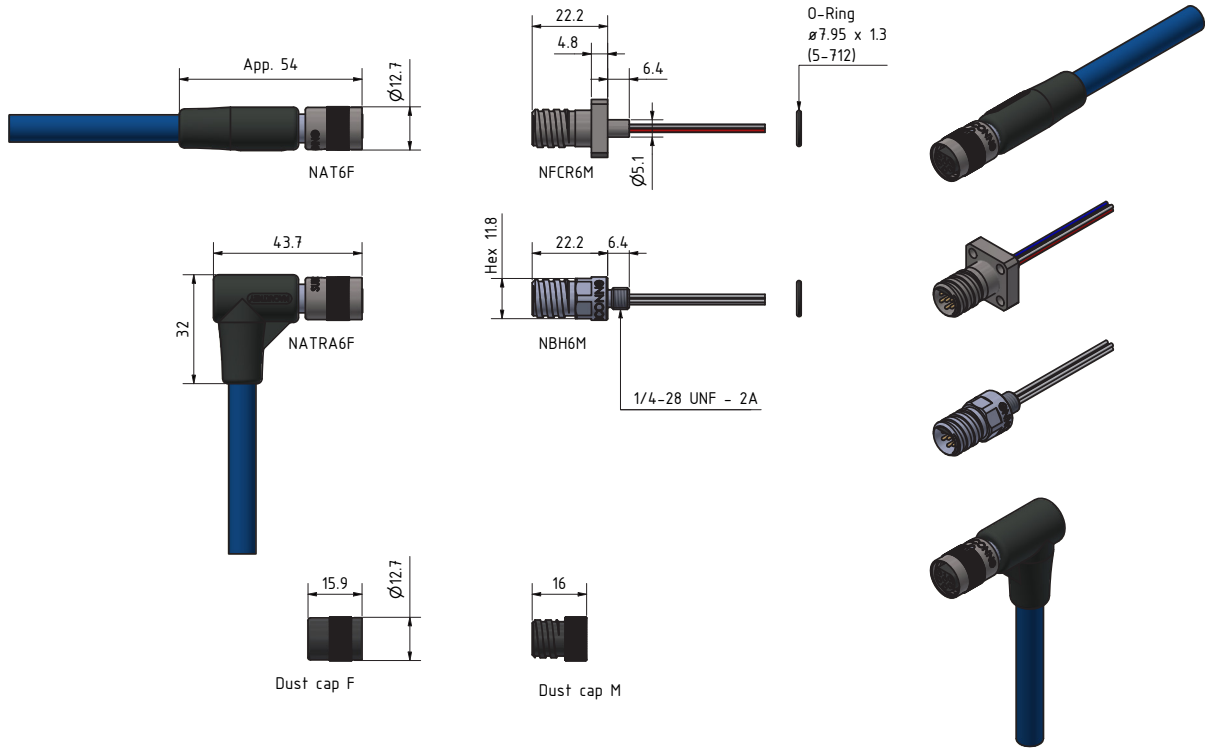
\* Twisted pairs

### BCR/FCR cable colour code

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

### Nominal cable outside diameter (OD)

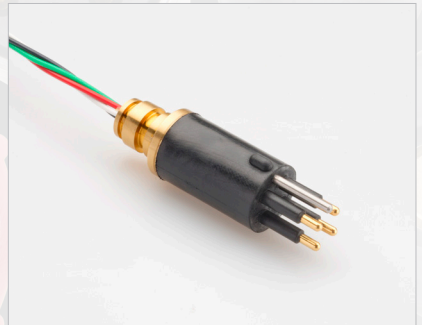
PUR cable 0.315", 8.00 mm



### 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 synthetic 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

**Specials**  
**uuoogqns**

## 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

**Quote**

*"In Graaltech we believe that the right partnerships are one of the keys to success; SubConn® is the longtime partner for our AUV projects."*

*Andrea Pellegrini, Graaltech*

# SubConn® Penetrator series



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 to six 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 synthetic 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
- Synthetic and polyurethane (PUR) cables and mouldings
- Customised body designs
- Certified pressure testing to specific ocean depths

# SubConn® Penetrator

## Water Blocked Straight

### Connector specifications

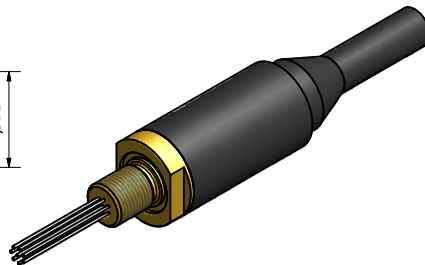
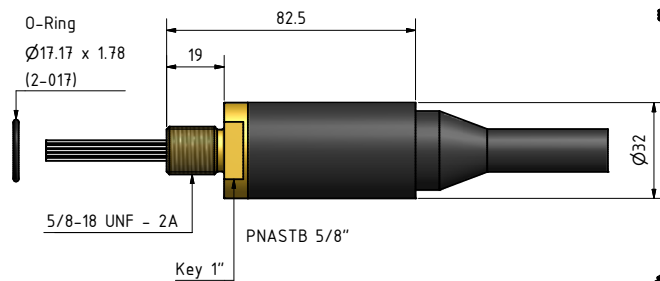
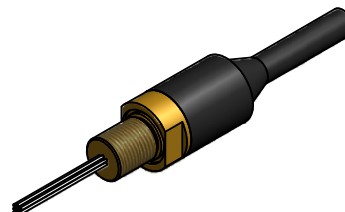
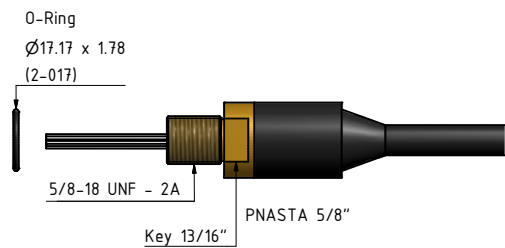
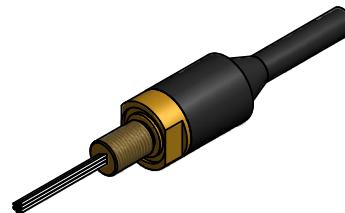
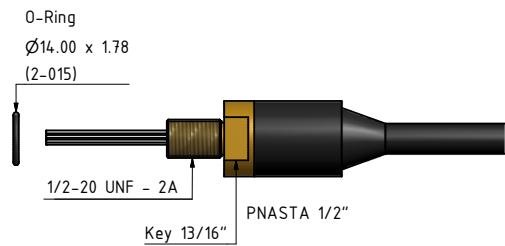
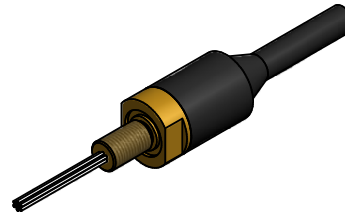
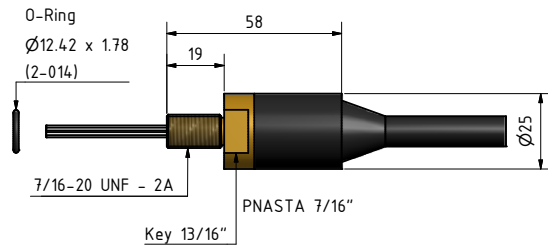
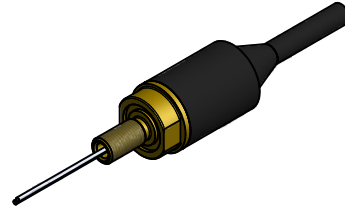
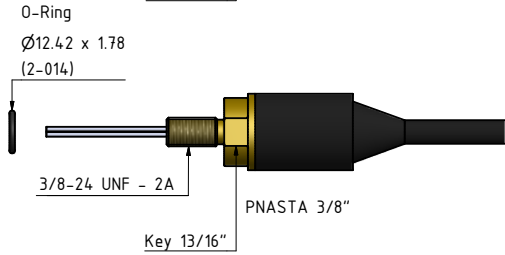
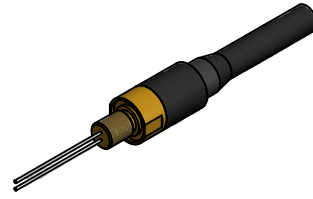
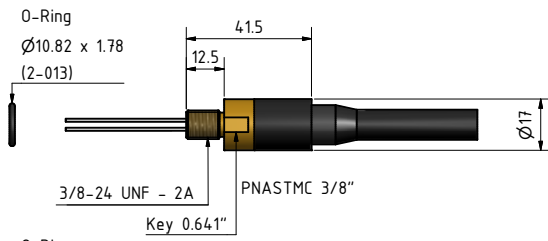
Voltage rating (all penetrators)	300/600 V DC/AC rms (depends on cable)
Current rating	Depends on wire and conductor size
Insulation resistance	> 200 Mohm
Temperature rating (water)	- 4 to 60°C, - 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 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 mm <sup>2</sup> to 22 AWG, 0.33 mm <sup>2</sup> (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.



Subject to change without notice. Visit [MacAirtney.com](http://MacAirtney.com) for latest revision

**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

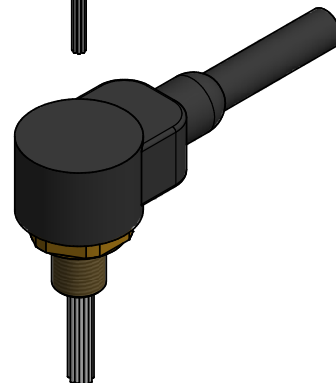
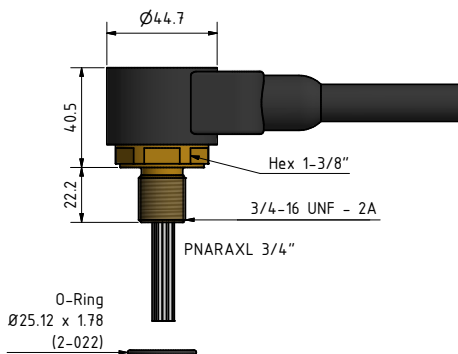
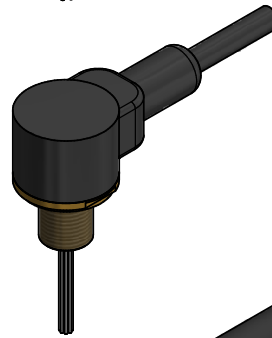
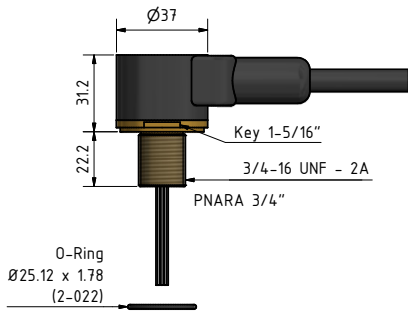
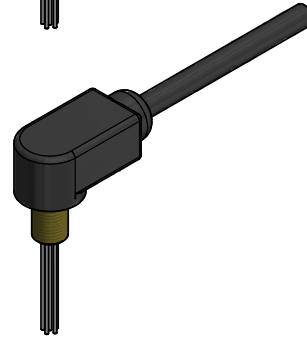
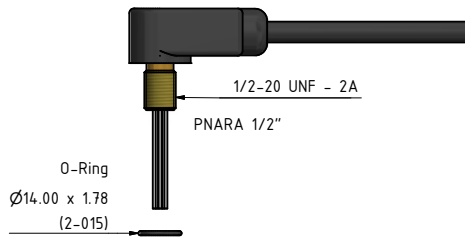
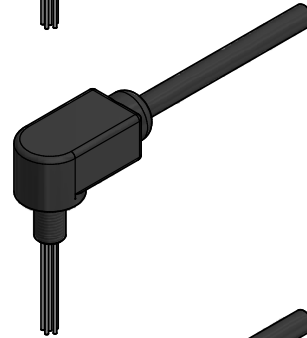
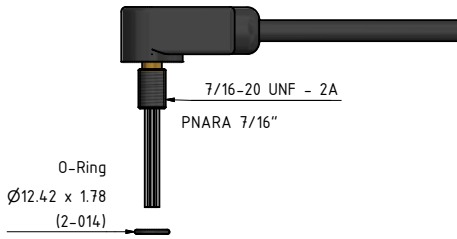
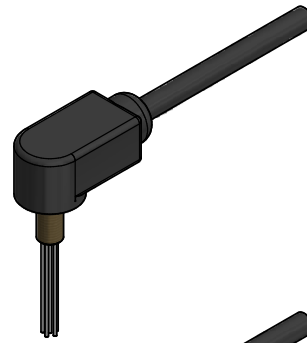
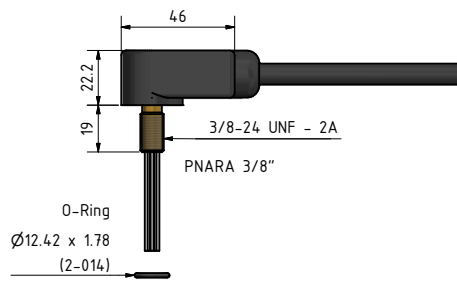
Voltage rating (all penetrators)	300/600 V DC/AC rms (depends on cable)
Current rating	Depends on wire and conductor size
Insulation resistance	> 200 Mohm
Temperature rating (water)	- 4 to 60°C, - 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 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 mm <sup>2</sup> to 22 AWG, 0.33 mm <sup>2</sup> (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)

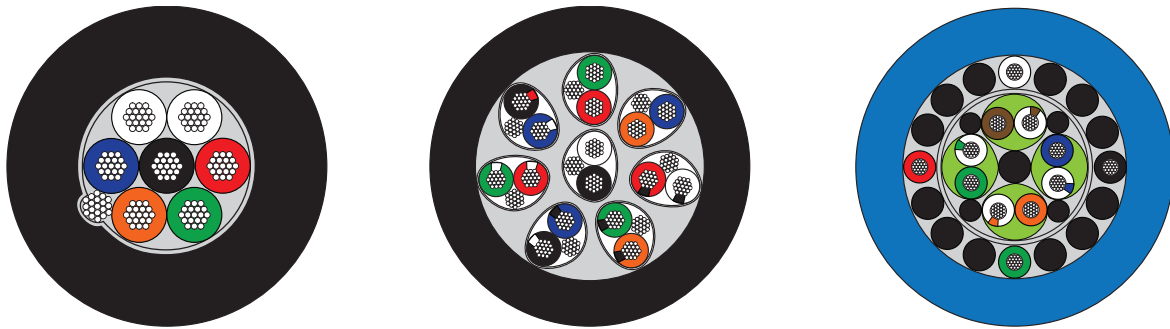


**Quote**

*“Marine Survey has sold SubConn® connectors to the Swedish market since the eighties. We have met many satisfied customers who during these years have used SubConn® connectors regularly. High quality and secure deliveries are important components in the SubConn® business.”*

*Cecilia Drougge  
Marine Survey & Consulting AB*

# SubConn® polyurethane cables



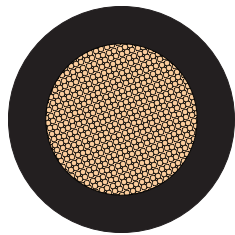
All SubConn® connectors and penetrators can be supplied with dedicated underwater cables of various types and conductor configurations. As standard, the majority of SubConn® connectors is supplied with synthetic rubber cables, while the Ethernet and Coax series, among others, feature polyurethane (PUR) 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.

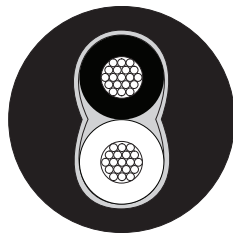
SubConn holds the entire range of rugged, special PUR cables in stock including several different power and signal conductor combinations and dimensions.

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.

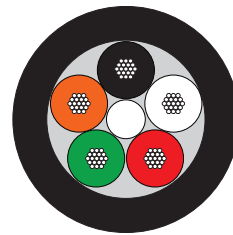
Furthermore, SubConn is among the few companies within the industry mastering the advanced technique of moulding rubber connectors to PUR cables, hereby allowing customers to obtain even more flexible, efficient and rugged connectivity solutions.



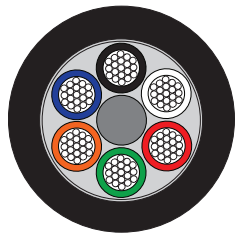
Type: P1C1/0#  
1 conductor, 1/0 AWG  
Nominal cable OD: 0.606", 15.4 mm



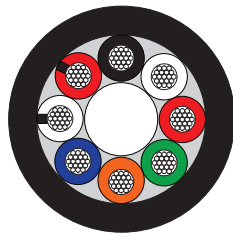
Type: P2C20#  
2 conductors, 20 AWG  
Nominal cable OD: 0.294", 7.47 mm



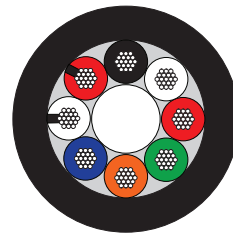
Type: P5C20#  
5 conductors, 20 AWG  
Nominal cable OD: 0.256", 6.50 mm



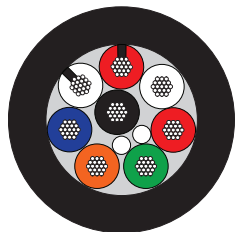
Type: P6C16#  
6 conductors, 16 AWG  
Nominal cable OD: 0.365", 9.28 mm



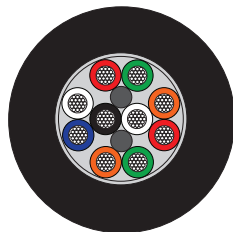
Type: P8C22#-a  
8 conductors, 22 AWG  
Nominal cable OD: 0.250", 6.35 mm



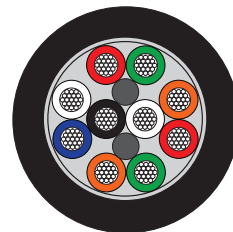
Type: P8C20#  
8 conductors, 20 AWG  
Nominal cable OD: 0.354", 9.00 mm



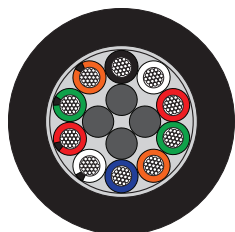
Type: P8C16#  
8 conductors, 16 AWG  
Nominal cable OD: 0.472", 11.9 mm



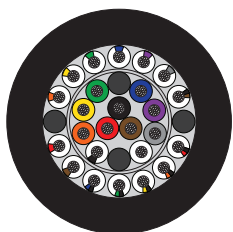
Type: P10C18#-a  
10 conductors, 18 AWG  
Nominal cable OD: 0.420", 10.67 mm



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

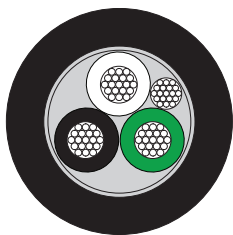


Type: P10C16#  
10 conductors, 16 AWG  
Nominal cable OD: 0.570", 14.48 mm

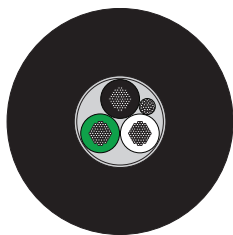


Type: P22C20#/3C18#  
22 conductors, 20 AWG  
3 conductors, 18 AWG  
Nominal cable OD: 0.589", 15 mm

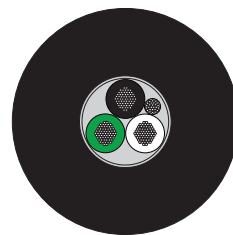
Screened single conductor cables



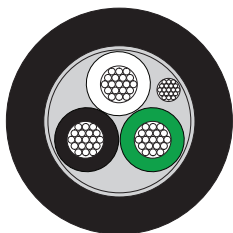
Type: P3C18# OS  
3 conductors, 18 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.259", 6.58 mm



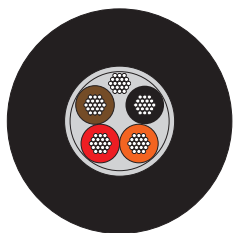
Type: P3C12# OS  
3 conductors, 12 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.450", 11.43 mm



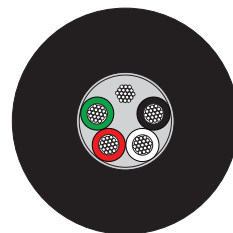
Type: P3C10# OS  
3 conductors, 10 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.500", 12.70 mm



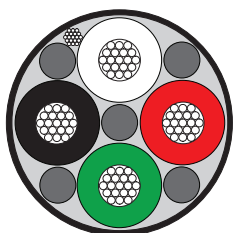
Type: P3C16# OS  
3 conductors, 16 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.285", 7.24 mm



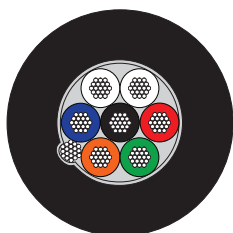
Type: P4C20# OS  
4 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.315", 8.00 mm



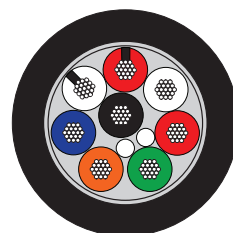
Type: P4C18# OS  
4 conductors, 18 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.325", 8.26 mm



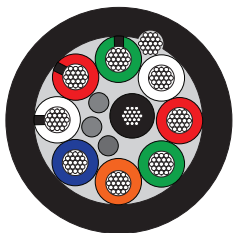
Type: P4C8# OS-PP  
4 conductors, 8 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.652", 16.55 mm



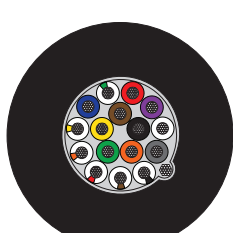
Type: P7C20# OS  
7 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.315", 8.00 mm



Type: P8C16# OS  
8 conductors, 16 AWG  
Braided tinned copper shield  
Nominal cable OD: 0.438", 11.3 mm



Type: P9C20# OS  
9 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.359", 9.12 mm



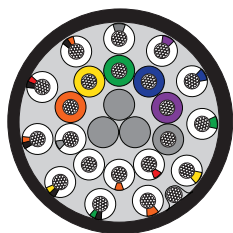
Type: P16C22# OS  
16 conductors, 22 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.415", 10.55 mm



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



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

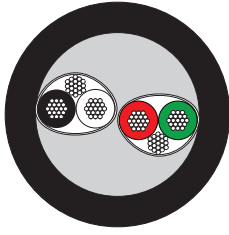


Type: P21C20# OS  
21 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.578", 14.70 mm

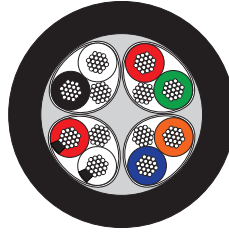
Subject to change without notice. Visit [MacArtney.com](http://MacArtney.com) for latest revision



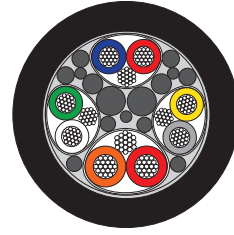
Shielded twisted pair cables



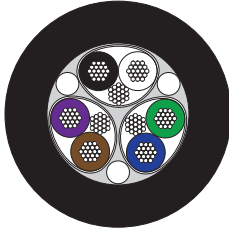
Type: P2TSP20#  
2 twisted screened pairs, 20 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.335", 8.50 mm



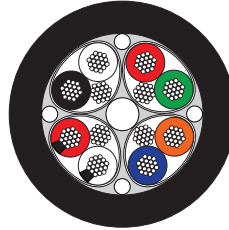
Type: P4TSP18#  
4 twisted screened pairs, 18 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.500", 12.70 mm



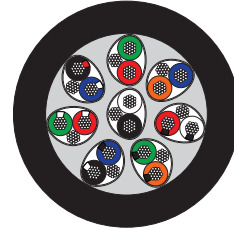
Type: P3TSP22#/1TSP18#  
3 twisted screened pairs, 22 AWG  
1 twisted screened pair, 18 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.400", 10.16 mm



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

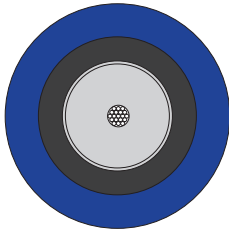


Type: P4TSP20#  
4 twisted screened pairs, 20 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.409", 10.40 mm

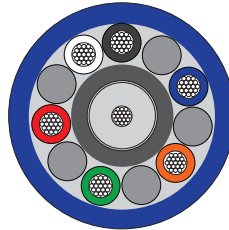


Type: P8TSP20#  
8 twisted screened pairs, 20 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.508", 12.90 mm

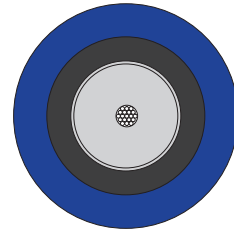
Coax cables



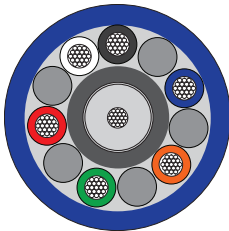
Type: P/HFCX75  
1 Coax, 75 Ω  
Nominal cable OD: 0.220", 5.59 mm



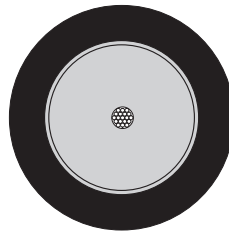
Type: P/HFCX75/6C20#  
6 conductors, 20 AWG  
1 Coax, 75 Ω  
Nominal cable OD: 0.382", 9.70 mm



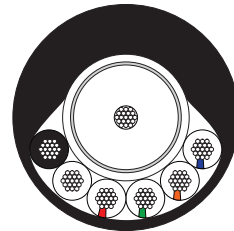
Type: P/HFCX50  
1 Coax, 50 Ω  
Nominal cable OD: 0.220", 5.59 mm



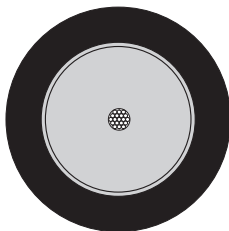
Type: P/HFCX50/6C20#  
6 conductors, 20 AWG  
1 Coax, 50 Ω  
Nominal cable OD: 0.382", 9.70 mm



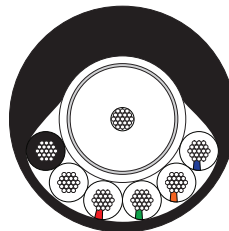
Type: PCX75  
1 Coax, 75 Ω  
Nominal cable OD: 0.305", 7.75 mm



Type: PVCX6C20# 75Ω  
6 conductors, 20 AWG  
1 Coax, 75 Ω  
Nominal cable OD: 0.386", 9.80 mm

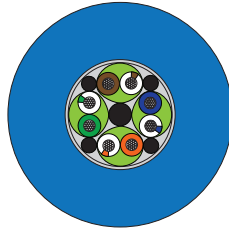


Type: PCX50  
1 Coax, 50 Ω  
Nominal cable OD: 0.291", 7.38 mm

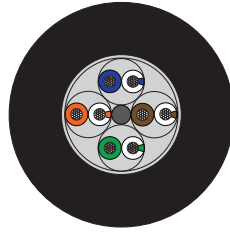


Type: PSCX6C20# 50Ω  
6 conductors, 20 AWG  
1 Coax, 50 Ω  
Nominal cable OD: 0.386", 9.80 mm

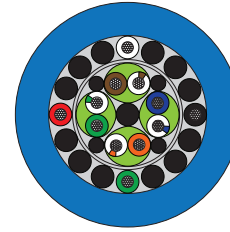
**Ethernet cables**



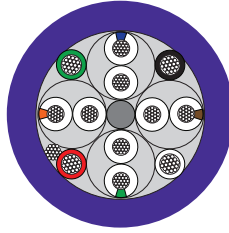
Type: D/P4TP24#  
4 twisted pairs, 24 AWG  
Overall copper braiding  
Nominal cable OD: 0.409", 10.40 mm



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

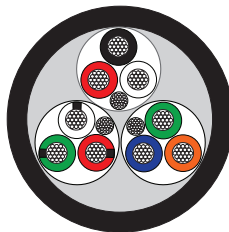


Type: D/P-P4TP24#/4C18#  
4 twisted pairs, 24 AWG  
Overall screen on TP with copper braiding  
4 conductors, 18 AWG  
Nominal cable OD: 0.550", 13.97 mm

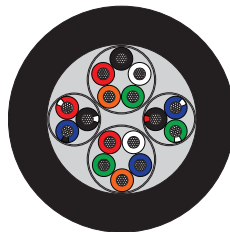


Type: D/P4TP22#/4C18# OS  
4 twisted pairs, 22 AWG  
4 conductors, 18 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.520", 13.2 mm

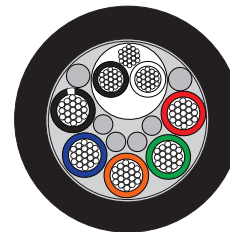
**Other cables**



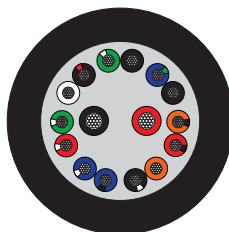
Type: P3TST20#  
3 twisted triple, 20 AWG  
Screen with foil and drain wire  
Nom. cable OD: 0.410", 10.41 mm



Type: P2Quint22#/1Triple22#/  
1Triple20#  
2 twisted quint, 22 AWG  
1 twisted triple, 22 AWG  
1 twisted triple, 20 AWG  
Nom. cable OD: 0.430", 10.92 mm



Type: P1TSP20/5C20#  
1 twisted screened pair, 20 AWG  
Screen with foil and drain wire  
5 conductors, 20 AWG  
Nom. cable OD: 0.339", 8.62 mm



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

**Quote**

*"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 Inc. 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, 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.

DLSA-M/F



Red



Blue



Black



Green



Yellow



White

SSLSA-M/F



AISI316

DLSB-M/F



Red



Blue



Black



Green

SSLSB-M/F



AISI316

DLSC-M/F



Red



Blue

SSLSC-M/F



AISI316

MCDLS-M/F



Red



Blue



Black



Green



Orange

MCSLS-M/F



AISI316

LS2000



Black

LS2400



Black

DLSM1-M/F



Black

MCDWLS



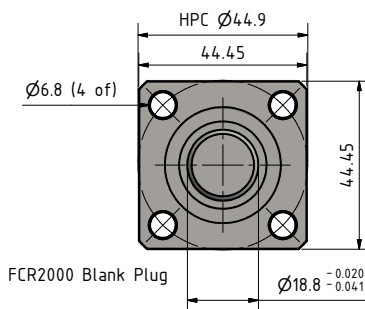
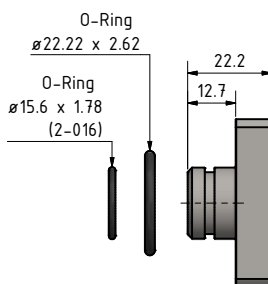
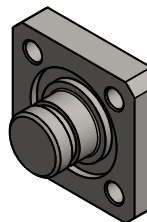
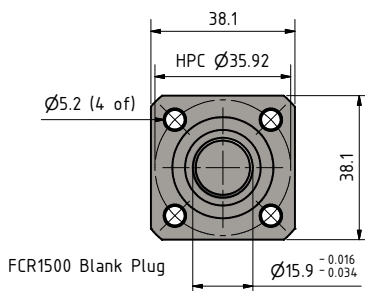
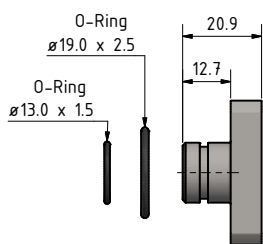
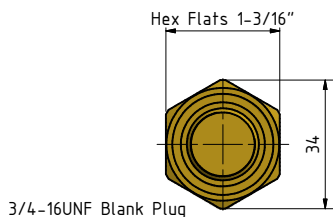
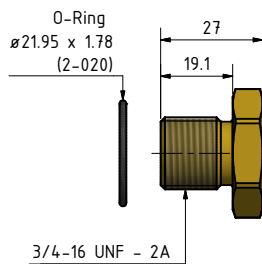
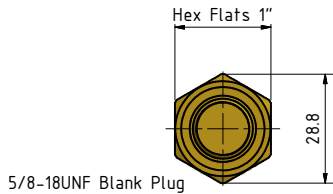
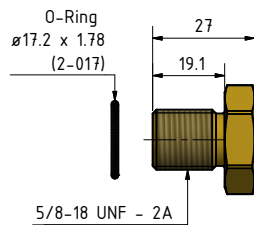
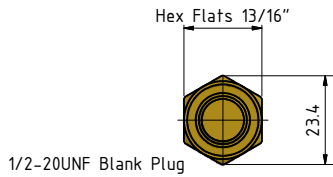
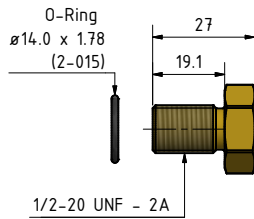
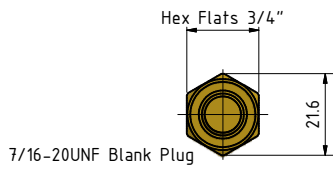
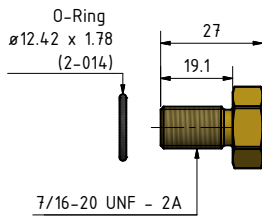
MCSDWLS



AISI316

# Blank plugs

Blank plugs are available in stainless steel AISI 316 or brass UNS-C36000 (other materials on request).



## Drawing information

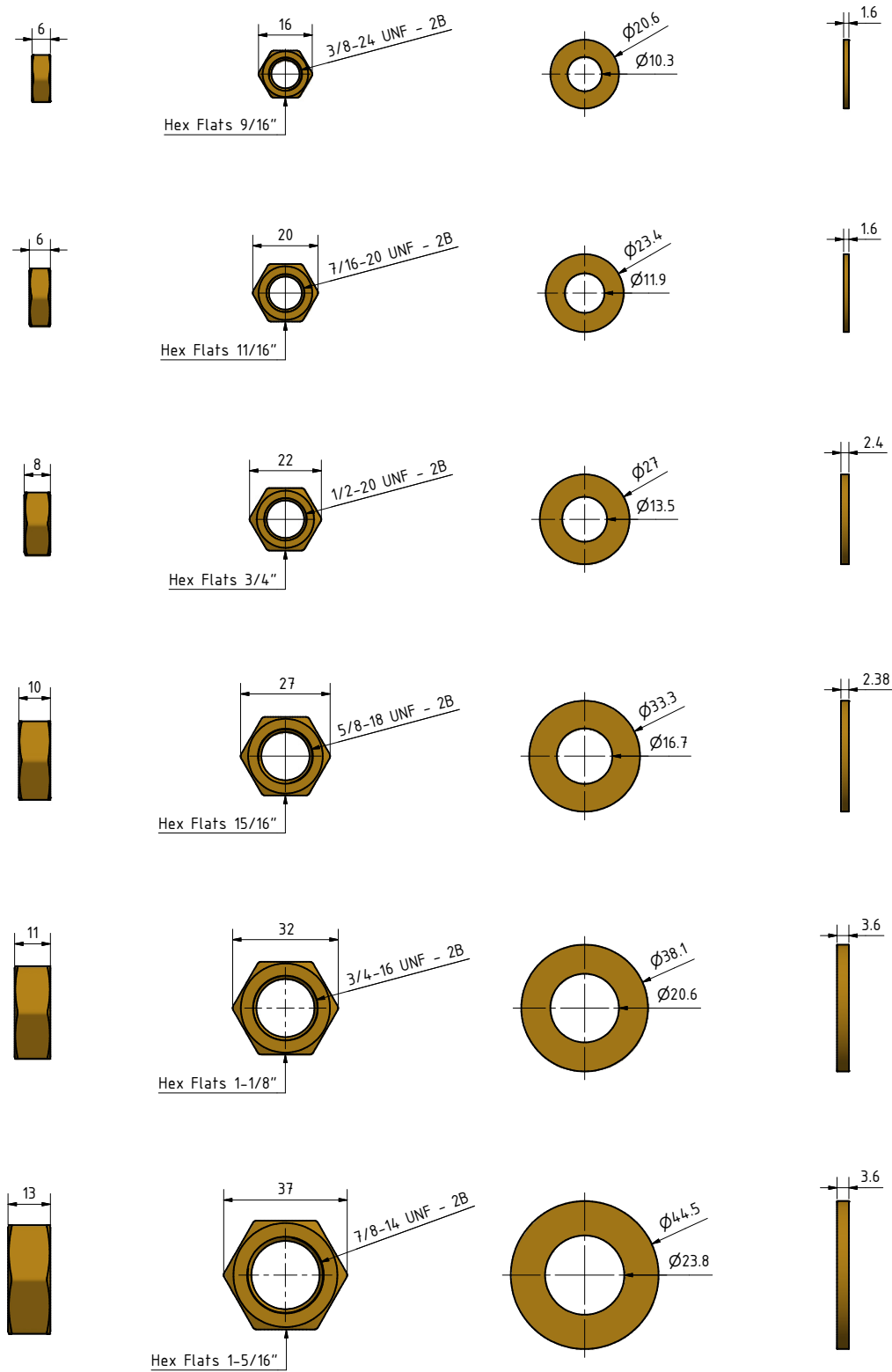
Dimensions in mm (1 mm = 0.03937 inch)  
Threads in inches (1 inch = 25.4 mm)

Subject to change without notice. Visit [MacArtney.com](http://MacArtney.com) for latest revision



## Nuts and washers

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



### Drawing information

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

# FSK assembly procedure

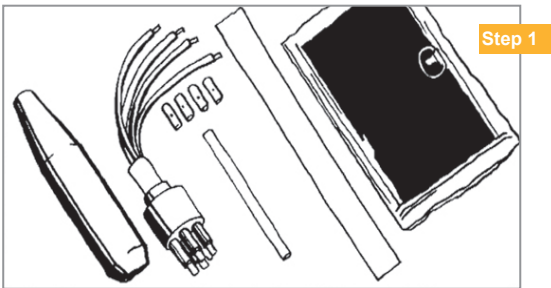
## Introduction

The SubConn® OM series of connectors is supplied as a quick reliable and watertight solution for customers who require installation of standard SubConn® connectors on a non-standard cable or for quick, efficient field retermination.

The OM connector series mates with the compatible standard SubConn® series.

The connectors are produced with a tube brass body and 7 cm pigtail wires which are spliced and moulded to the cable using a pre-formed "Boot" and pre-packed ambient temperature curing polyurethane.

The end result is a professional, rugged and watertight termination rated to full ocean depth. The connector is available in 2 to 16 pin male and female configurations together with all the specials with the same shell size.

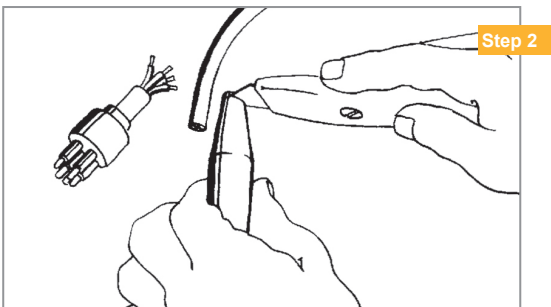


## Operational steps

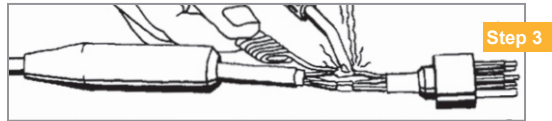
1. Ensure that the correct materials are available for the planned job

- The correct OM connector, e.g. OM6F (not included in the FSK)
- The correct "Boot" (e.g. OMBB)
- Adequate moulding material (e.g. 2131, 90 g from 3M)
- Primers (Scotchcast™ Resin Primer 5136 from 3M)\*
- Acetone for degreasing\*
- Crimp sleeve and heating gun
- Soldering iron, solder, side cutters, cable stripper and small paint brush

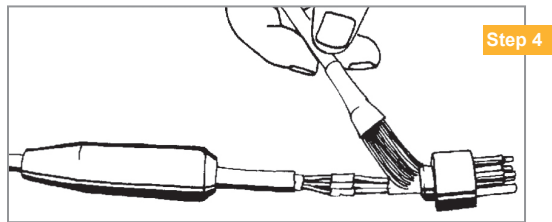
\* Please notice that primers and acetone are not part of the delivery. You will need to purchase these items individually to be sent as dangerous goods or purchase them locally.



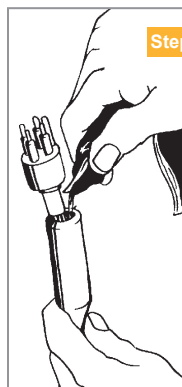
2. Cut pigtail wires on OM connector to approx. 2 cm from the brass body. Trim back tapered cable entry on boot until the cable is a snug fit (approx. 0.5 mm less than cable diameter).



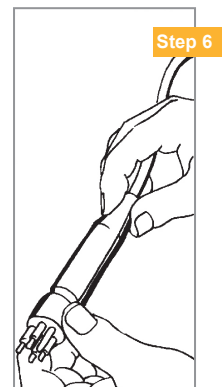
3. Prepare cable to be connected by stripping 3 cm off the jacket. Solder or crimp cable wires to pigtail on OM connector and insulate using crimp sleeve, heat shrink, or electrical tape. The spliced conductors should be twisted together in the same direction as laid in the cable.



4. Degrease all moulding surfaces including cable jacket, conductors and brass body with acetone and allow to dry. Apply appropriate primer to brass body conductors, cable jacket and neoprene base of connector with a small brush and allow to dry (approx. 30 min. at 20°C). Do not touch primed surfaces after primer application.



5. Select the appropriate polyurethane twin pack (e.g. 2131, 90 g for a single moulding) and mix the PUR material according to supplier instruction. Cut off the corner of the pack and squeeze the material into the boot as shown.



6. When the boot is full of material slide it up the cable until it fits tightly over the neoprene protrusion on the back of the connector. Push the cable into the boot about 2 mm and wipe off any excess visible polyurethane material. The connector will be ready for use after 12 hours at 20°C.

## Safe handling procedures

To comply with recommended health and safety procedures; ensure the use of barrier creams, gloves and a clean, well-ventilated work area.

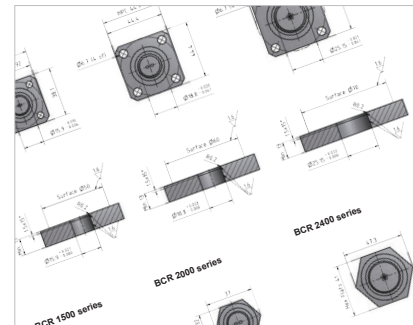
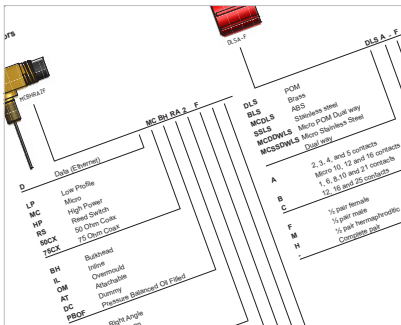
**Quote**

*"Due to the high reliability and efficiency of SubConn® sealed connectors, BO "AKVAIRI-SPb" has become a regular supplier of sealed connectors for various research institutes. We made a decision to supply SubConn sealed connectors to our many different underwater projects within our markets.*

*We are proud to work with you."*

*Vasilevskaya Angelina  
Sales Administrator - SubConn Sales  
BO "AKVAIRI-SPb"*

# Technical information

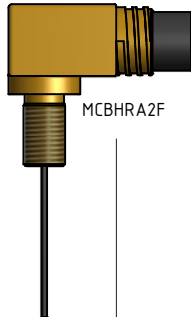


SubConn® connectors are designed, manufactured and tested for use in harsh marine environments. Operators are encouraged to read this section carefully and to follow the recommendations and instructions, in order to sustain the performance and extend the lifespan of their SubConn® connectors.

- Abbreviation list
- Recommended mounting hole
- Mounting specifications for Metal Shell
- Recommended torque on SubConn® connector thread sizes
- Mounting procedure for Low Profile strap
- SubConn® connector body material types
- Qualification test
- Test and acceptance criteria
- American wire gauge (AWG) to metric
- Conductor resistance of copper
- Formulas
- RoHs/Reach directive
- Rubber information
- Termination information
- Cable information
- Cable assembly information
- Hoses for pressure balanced oil filled connectors
- Recommended oil for pressure balanced systems
- Pressure PSI/BAR
- SubConn® handling instructions
- Galvanic series of metals in seawater
- Information on debonding and corrosion

# Abbreviation list

## Connectors



MC BH RA 2 F

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

## Locking sleeves (LS)

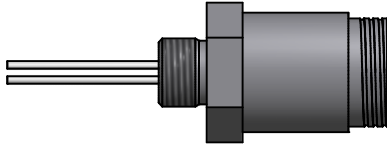


DLSA-F

DLS A - F

<b>DLS</b>	POM
<b>BLS</b>	Brass
<b>MCDLS</b>	ABS
<b>SSLS</b>	Stainless steel
<b>MCDDWLS</b>	Micro POM Dual way
<b>MCSSDWLS</b>	Micro Stainless Steel Dual way
<b>A</b>	2, 3, 4, and 5 contacts Micro 10, 12 and 16 contacts
<b>B</b>	1, 6, 8, 10 and 21 contacts
<b>C</b>	12, 16 and 25 contacts
<b>F</b>	½ pair female
<b>M</b>	½ pair male
<b>H</b>	½ pair hermaphroditic
<b>-</b>	Complete pair

## Metal Shell connectors



BCR2002F

**BCR 2002 F**

<b>D</b>	Data (Ethernet)
<b>BCR</b>	Bulkhead connector receptable
<b>FCR</b>	Flange connector receptable
<b>20xx</b>	Shell size (series)
<b>xx04</b>	Number of contacts
<b>F</b>	Female socket
<b>M</b>	Male pins
<b>AS</b>	Anodized Aluminium
<b>TI</b>	Titanium
<b>NM</b>	Non Metallic

## Locking sleeves (LS)



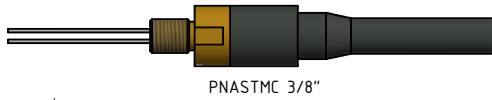
LS2000

**LS 2000**

<b>LS</b>	POM
<b>SSLS</b>	Stainless steel
<b>2000</b>	Shell size (series)
<b>1500</b>	Metal Shell series uses MCDLS locking sleeves

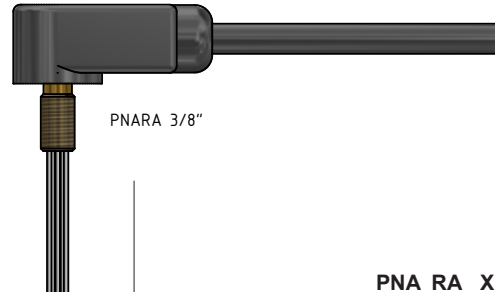
# Abbreviation list

## Penetrator - Straight



<b>PNA ST MC 3/8"</b>	
<b>Leads information:</b>	
Length	
Size	
Quality	
<b>PNA</b>	Penetrator
<b>ST</b>	Straight
<b>MC</b>	Micro size, OD 17 mm
<b>A</b>	A-size, OD 25 mm
<b>B</b>	B-size, OD 32 mm
<b>Thread sizes and length:</b>	
<b>MC</b>	3/8"
<b>A</b>	3/8" / 7/16" / 1/2" or 5/8"
<b>B</b>	5/8"
All sizes are available in various thread length from 1/2" to 1.375"	
<b>Body material:</b>	
<b>Std</b>	Brass
<b>SS</b>	Stainless Steel
<b>AS</b>	Anodised Aluminium
<b>TI</b>	Titanium
<b>Cable information:</b>	
Length	
Size	
Type	

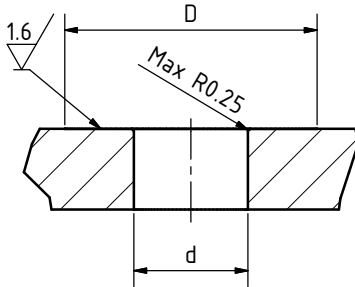
## Penetrator - Right Angle



<b>PNA RA XL 3/8" GS</b>	
<b>Leads information:</b>	
Length	
Size	
Quality	
<b>PNA</b>	Penetrator
<b>RA</b>	Right Angle
<b>XL</b>	Extra Large
<b>Thread sizes and length:</b>	
<b>PNARA</b>	3/8" / 7/16" or 1/2"
<b>PNARA 3/4"</b>	3/4"
<b>XL</b>	3/4"
All sizes are available in various thread length from 1/2" to 1.375"	
<b>GS</b>	Glass Spheres
<b>Body material:</b>	
<b>Std</b>	Brass
<b>SS</b>	Stainless Steel
<b>AS</b>	Anodised Aluminium
<b>TI</b>	Titanium
<b>Cable information:</b>	
Length	
Size	
Type	

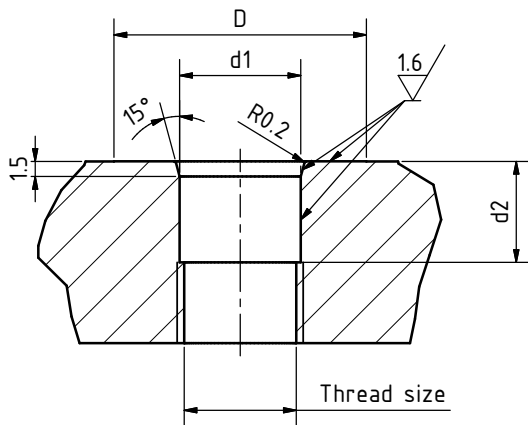
# Recommended mounting hole

## Single o-ring



Thread size	Hole size (d)	Tolerance	Surface size (D)
1/4"	ø 0.217", 5.5 mm	+/- 0.1	ø 0.709", 18.0 mm
3/8"	ø 0.374", 9.5 mm	+/- 0.1	ø 0.984", 25.0 mm
7/16"	ø 0.445", 11.3 mm	+/- 0.1	ø 0.984", 25.0 mm
1/2"	ø 0.504", 12.8 mm	+/- 0.1	ø 0.984", 25.0 mm
5/8"	ø 0.629", 16.0 mm	+/- 0.1	ø 1.181", 30.0 mm
3/4"	ø 0.807", 20.5 mm	+/- 0.1	ø 1.574", 40.0 mm
1"	ø 1.024", 26.0 mm	+/- 0.1	ø 1.968", 50.0 mm
7/8"	ø 0.886", 22.5 mm	+/- 0.1	ø 1.574", 40.0 mm
1 1/2"	ø 1.516", 38.5 mm	+/- 0.1	ø 2.165", 55.0 mm

## Double o-ring



Thread size	Hole size (d1)	Tolerance	Hole depth (d2)	Tolerance	Surface size (D)
7/16"	ø 0.47", ø 12 mm	H8	ø 0.41", 10.5 mm	+/- 0.1	ø 0.984", 25.0 mm
1/2"	ø 0.55", ø 14 mm	H8	ø 0.52", 13.2 mm	+/- 0.1	ø 0.984", 25.0 mm
5/8"	ø 0.685", ø 17.4 mm	H8	ø 0.36", 9.2 mm	+/- 0.1	ø 1.181", 30.0 mm
7/8"	ø 0.875", ø 22.32 mm	H8	ø 0.30", 5.1 mm	+/- 0.1	ø 1.378", 35.0 mm

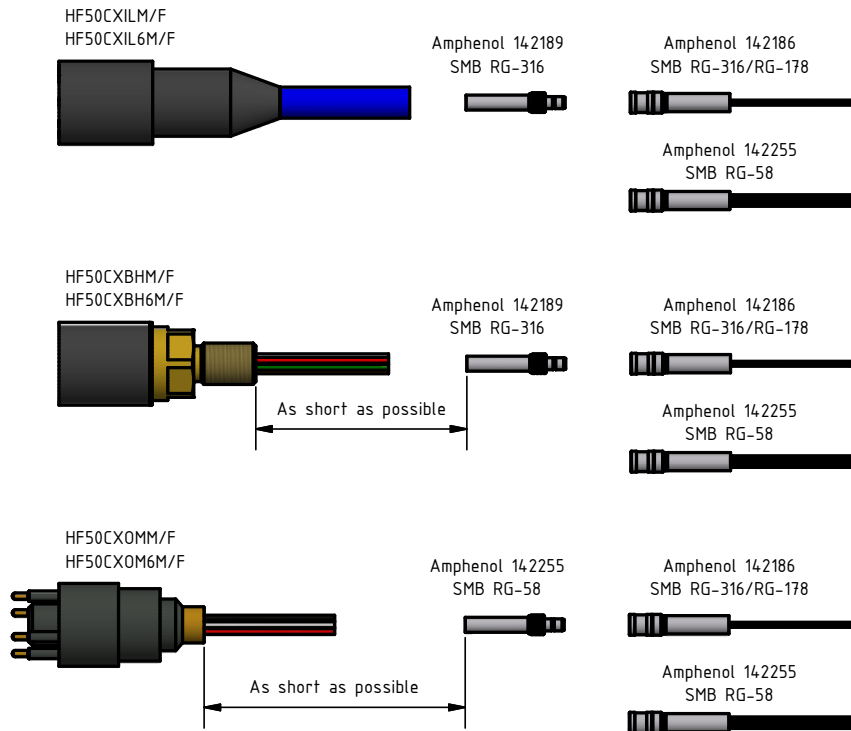
## Drawing information

Dimensions in mm (1 mm = 0.03937 inch).  
 Threads in inches (1 inch = 25.4 mm)  
 Not mentioned tolerance is according to DS/ISO 2768-m



## Recommended SMB termination for Coax Inline, overmould and bulkheads

### 50 ohm Coax and Coax/Electric



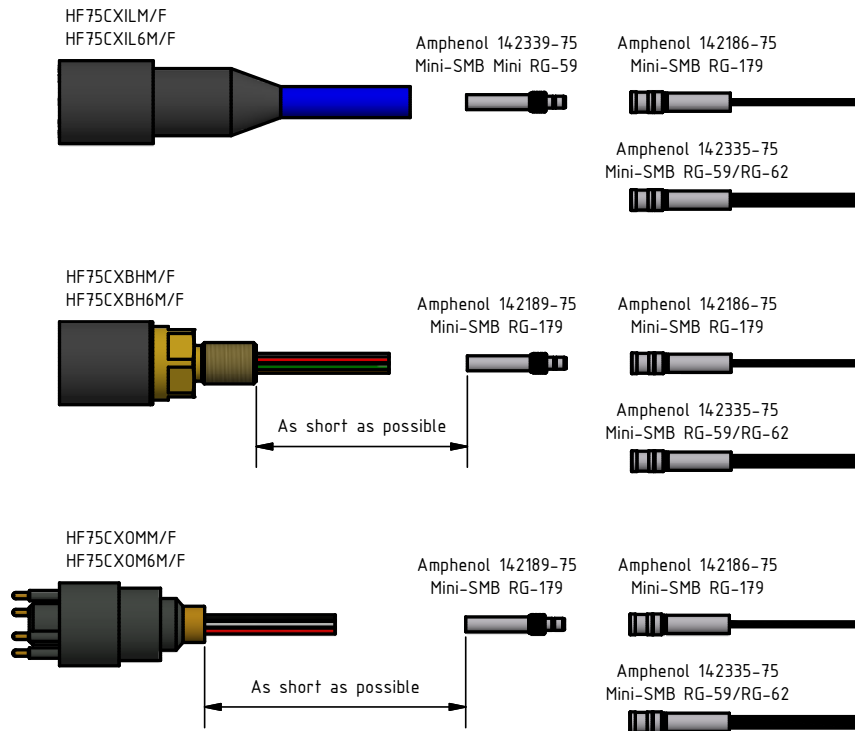
See assembly instructions for:

- SMB RG-316
- SMB RG-58

on suppliers webpage [www.amphenolrf.com](http://www.amphenolrf.com).

Use the Amphenol part number as reference.

## 75 ohm Coax and Coax/Electric



See assembly instructions for:

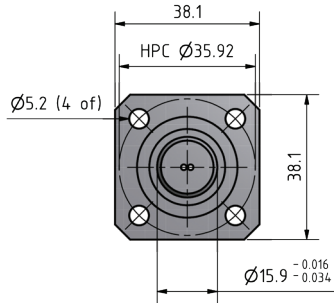
- Mini-SMB RG-59
- Mini-SMB RG-179

on suppliers webpage [www.amphenolrf.com](http://www.amphenolrf.com).

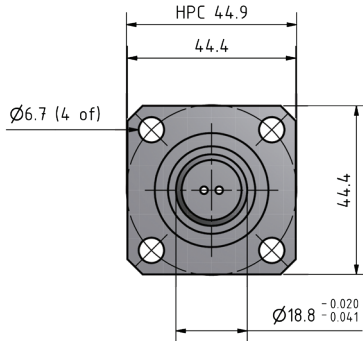
Use the Amphenol part number as reference.

# Mounting specifications for Metal Shell

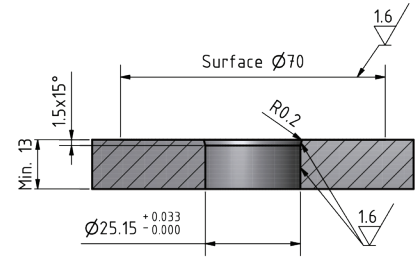
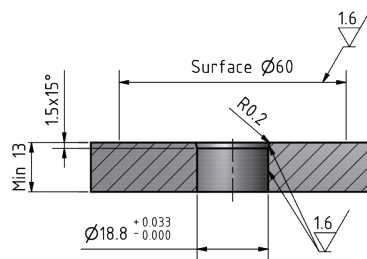
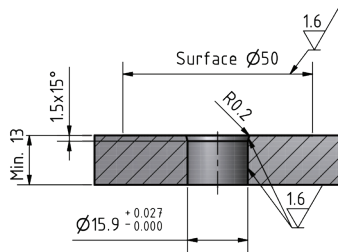
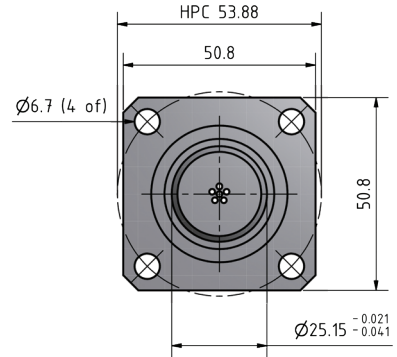
**FCR 1500 series**



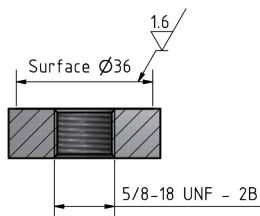
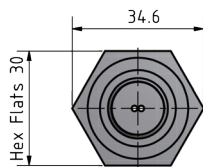
**FCR 2000 series**



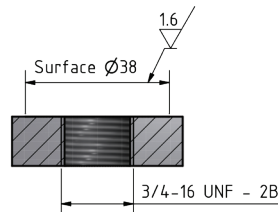
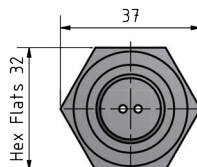
**FCR 2400 series**



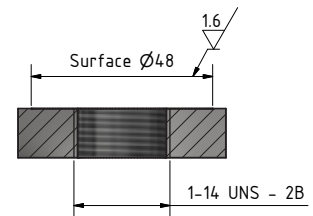
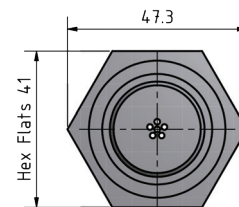
**BCR 1500 series**



**BCR 2000 series**



**BCR 2400 series**



## Drawing information

Dimensions in mm (1 mm = 0.03937 inch). Threads in inches (1 inch = 25.4 mm)  
Not mentioned tolerance is according to DS/ISO 2768-m

## Recommended torque on SubConn® thread sizes

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

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.

## Mounting procedure for Low Profile strap



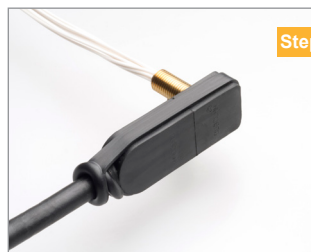
Step 1



Step 2



Step 3



Step 4

**Quote**

*“Nautilus Marine Service has been using SubConn® connectors for many years on our VITROVEX deep sea glass enclosures. We appreciate their exceptional quality and reliability. Even for small purchase quantities, SubConn/MacArtney has always been very accommodating to meet our specific delivery demands and has turned into our preferred vendor for underwater connectors. We would not hesitate to recommend SubConn® connector solutions for deepwater applications.”*

*Steffen Pausch, Managing Director  
Nautilus Marine Service*

## 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	
Contacts, gold plating	Electroless nickel per MIL-C-26074B, 0.0001"-0.00017" thickness Hard gold per ASTM B488-01, 0.000030" minimum thickness

## Qualification test

### Prior to production of a new connector type or connector range

#### Pressure test:

5 x cycle test 0 to 800 bar, holding time 10 minute per cycle  
1 x 0 to 800 bar holding time 1 hour  
Open face rated (Coax connectors excluded)

#### Electrical test during pressure test:

Continuity test Pin to pin

Insulation test between all contacts and body/tank  
At 500 V DC  
Minimum 200 Mohm

#### Electrical test after pressure test:

Continuity test Pin to pin

Insulation test between all contacts and body  
At 500 V DC  
Minimum 200 Mohm

High pot test At 2 x Voltage rating plus 1 kV

## Test and acceptance criteria

### Prior to shipment from factory

Visual test

Continuity test Pin to pin

Insulation test between all contacts and body  
At 500 V DC  
Minimum 200 Mohm

## American wire gauge (AWG) to metric

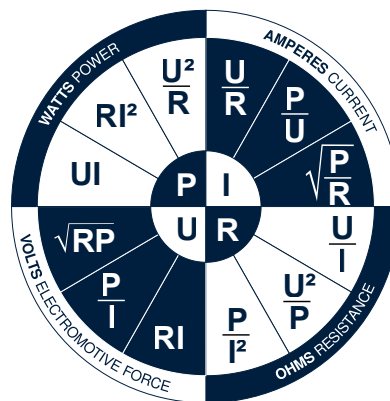
AWG	mm <sup>2</sup>
000	85.03
00	67.40
0	53.46
1	42.39
2	33.61
3	26.65
4	24.14
5	16.76
6	13.29
7	10.55
8	8.36
9	6.63
10	5.26
11	4.17
12	3.31
13	2.63
14	2.08
15	1.65
16	1.31
17	1.04
18	0.82
19	0.65
20	0.52
21	0.41
22	0.33
23	0.26
24	0.20
25	0.16
26	0.13

## Conductor resistance of copper

0.14 mm <sup>2</sup>	145 ohm/km
0.22 mm <sup>2</sup>	96.2 ohm/km
0.50 mm <sup>2</sup>	39.0 ohm/km
0.75 mm <sup>2</sup>	26.0 ohm/km
1.00 mm <sup>2</sup>	19.5 ohm/km
1.34 mm <sup>2</sup>	15.3 ohm/km
1.50 mm <sup>2</sup>	13.3 ohm/km
2.00 mm <sup>2</sup>	10.0 ohm/km
2.50 mm <sup>2</sup>	7.98 ohm/km
4.00 mm <sup>2</sup>	4.95 ohm/km
6.00 mm <sup>2</sup>	3.30 ohm/km
10.00 mm <sup>2</sup>	1.91 ohm/km
16.00 mm <sup>2</sup>	1.21 ohm/km
25.00 mm <sup>2</sup>	0.78 ohm/km
35.00 mm <sup>2</sup>	0.55 ohm/km
50.00 mm <sup>2</sup>	0.39 ohm/km

Approx. values

## Formulas



### Ohm's Law: Valid only for DC circuits

$$U = R \times I$$

$$P = U \times I$$

### 3 Phased AC power for electrical motor

$$P = U \times I \times \sqrt{3} \times \cos \Phi$$

U: Voltage (V), R: Resistance (ohm), I: Current (A), P: Power (W)

## Need to know:

### RoHs/Reach directive

SubConn® connectors are in general compliant to latest revision of RoHs and Reach directive.

#### Rubber

The measurements made on all rubber parts including 3D files are nominal values due to the fact that rubber shrinks during hardening.

#### Termination

- Maximum wire size for micro contacts is 18 AWG
- Maximum 2 screens or conductors can be terminated per contact

#### Cable

- Nominal static cable bending radius = 10 x cable OD
- Nominal dynamic cable bending radius = 15 x cable OD
- All special polyurethane (PUR) cable specifications can be found online at [www.macartney.com](http://www.macartney.com)

#### Cable assembly

- 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)

### 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 (1") ID and 31.8 mm (1 1/4") 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

#### Pressure PSI/BAR

	PSI	BAR
PSI	1	0.0689
BAR	14.5	1

## SubConn® handling instructions

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

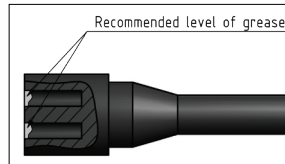
### Handling

- Connectors must be greased with Molykote 44 Medium before every mating
- Always grease O-rings on BH, BCR and FCR connectors with Molykote 111
- Disconnect by pulling straight out, 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

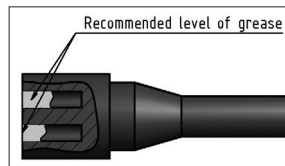


### Greasing and mating above water (dry mate)



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

## Molykote 44

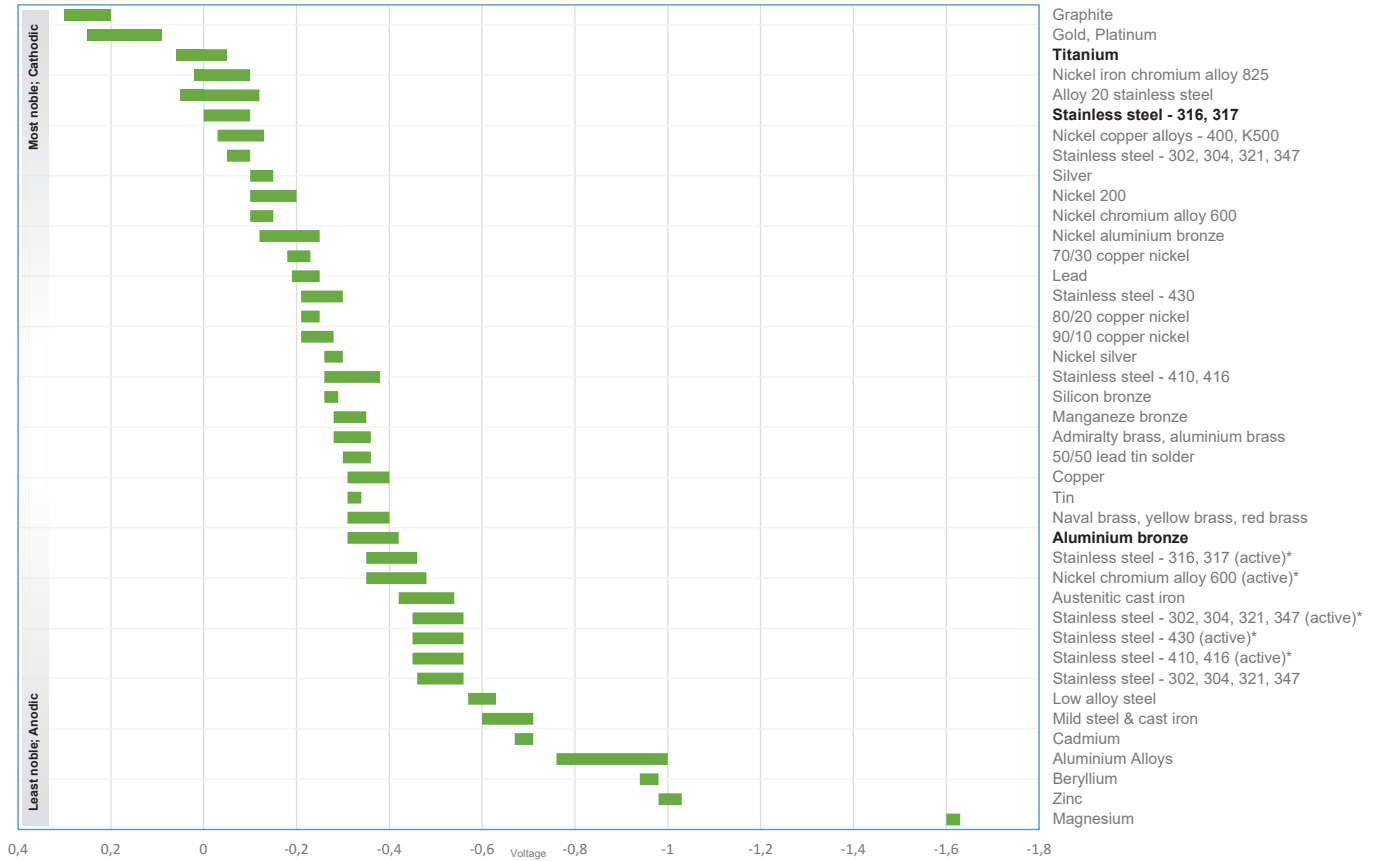
MacArtney offers Molykote 44 Medium in two sizes (10 ml and 100 ml), connectors must be greased with Molykote 44 Medium before every mating.

Scan to access  
SubConn® greasing  
and cleaning  
instruction videos



# Galvanic series of metals in seawater

The table shows how the various metals are been denoted noble and less noble.



- \*Ranges in acidic water, e.g. in crevices, stagnant, low velocity or poorly aerated water
- The closer 2 metals in the table are to each other, the less prone they are to corrode
- The further away 2 metals in the table are, the greater the risk of corrosion of the less noble (anode)
- The higher the potential the more noble a specific material will be

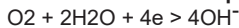
Example:

- Stainless steel AISI 304 is more noble than aluminum
- Stainless steel AISI 316 is more noble than AISI 304
- Titanium of any grade is more noble than AISI 316

## 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/CuSo<sub>4</sub>) and the aqueous environment is of an alkaline character.

### The electro-chemical process of hydroxide



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.

When in contact with cathodic protection, the natural electrochemical sub-process of water disassociation 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 polymers' surface, and a total debonding is impending.

### The velocity of the debonding 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 and 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 rust-resistant exposed surface's natural oxide formation.

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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# MacArtney

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