



# Underwater and harsh environment connectors

2nd  
edition

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



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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 almost 40 years.*

## Introduction

General information and background about SubConn® and the MacArtney Underwater Technology Group.

### SubConn® Circular series

The Circular series forms the basis of the technology that characterises most SubConn® products available today. First introduced in 1978, these connectors are widely recognised as a dependable connectivity solution for underwater and harsh marine environment applications. SubConn® Circular connectors are available in various standard size configurations.

### SubConn® Micro Circular series

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

### 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 enabled to assemble design optimised, streamlined and effective underwater systems, with sensors and other types of equipment producing less drag.

### 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.

### 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® Power series

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

### SubConn® Ethernet series

The SubConn® Ethernet series marked the first highspeed 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.

### SubConn® Coax series

The SubConn® Coax connector 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.

### SubConn® Specials

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

### SubConn® Penetrator series

The SubConn® Penetrator series is a fixed installation alternative to inline and bulkhead connectors. SubConn® Penetrators are primarily used for applications, where direct signal and power feedthrough is emphasised above the flexibility provided by a mateable connector interface.

### SubConn® cables

As standard, the majority of SubConn® connectors are supplied with chloroprene rubber cables, while the Ethernet and Coax series feature polyurethane (PUR) cables as standard. All SubConn® connectors can also be delivered with special polyurethane (PUR) cables that are specifically designed, manufactured and tested for use with SubConn® connectors.

### SubConn® additional accessories

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

## General technical information and index

Abbreviation list, mounting specifications for Metal Shell, SubConn® connector body material types, recommended torque on SubConn® connector threads sizes, AWG to metric, recommended mounting hole, mounting procedure for Low Profile strap, SubConn® handling instructions and corrosion and debonding information

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## About SubConn®

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

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

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

### Standard, special and custom connectors

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

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

We hope that you will regard this catalogue as a useful tool for facilitating the selection of the right connector solution to suit your requirements. In case you do not find a suitable solution within our standard range, please do not hesitate to contact us. Contact details, page 4.

## 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 system and remotely operated towed vehicles. All the products supplied are designed and tested to supply high quality, efficiency and reliable performance in the challenging underwater environment.

### MacArtney and SubConn®

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

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

MacArtney is DS/EN ISO 9001:2008 certified and closely involved in the development and testing of the SubConn® range.

### MacArtney SubConn® applications

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

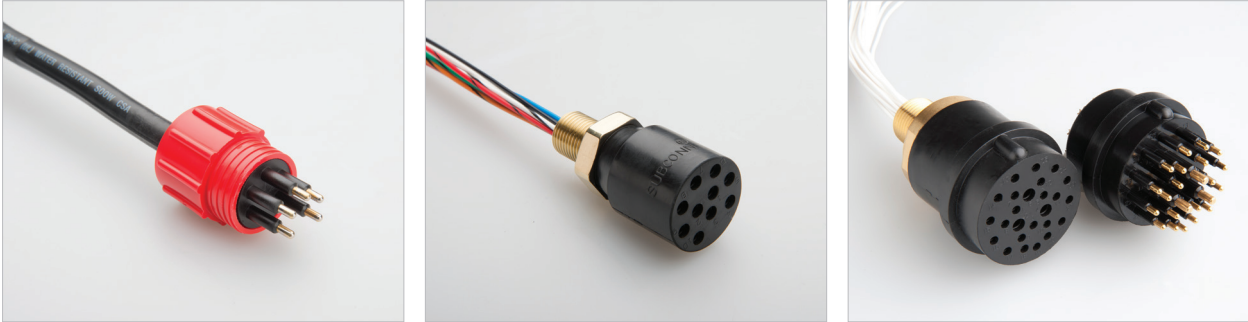
**Quote**

*"We started to introduce SubConn® connectors to Chinese users 13 years ago. SubConn® connectors now provide high performance and reliable connection for tens of thousands of ocean instruments and items of equipment in China."*

*Jenny Song, General Manager  
SeaTech China Co., Ltd.*



# 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 highgrade chloroprene rubber with different types of body material and feature a high depth rating. The connectors are available in different standard shell sizes with contacts rated at 600 V up to 10 A. SubConn® Circular connectors are available in bulkhead, inline and field installable overmould versions. All bulkhead connectors come with colour coded or numbered teflon (PTFE) leads.

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

## Applications include

- 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 include

- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, pigtail 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 AC rms
DC rating	85% of above AC rating
Current rating	10 A
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	1,400 bar, 20,000 psi

### Material specifications

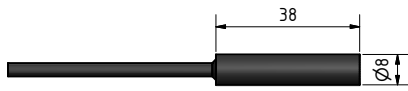
Connector body	Chloroprene rubber
Contacts	Gold plated brass UNS - C36000
Locking sleeves	Delrin
Inline cable	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber

### Inline cable colour code

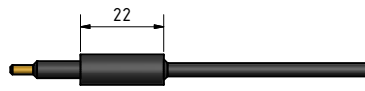
1 Black

### Nominal cable outside diameter (OD)

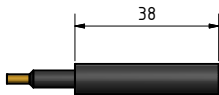
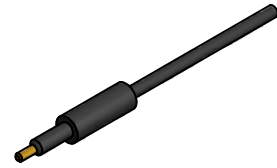
Chloroprene rubber cable 0.142", 3.6 mm



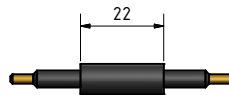
ILM1F



ILM1M



OMM1F



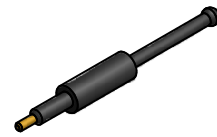
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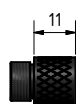
DCM1F



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

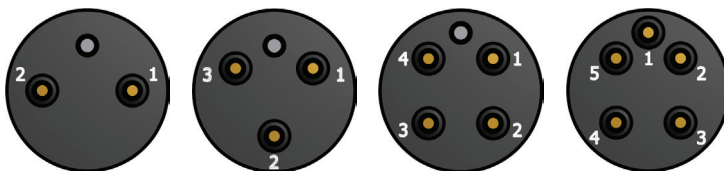
### Connector specifications

Voltage rating	600 V AC rms
DC rating	85% of above AC rating
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
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	1,400 bar, 20,000 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
Snap rings	Stainless steel AISI 302
2, 3 and 4 conductor inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber
5 conductor inline cable (60 cm, 2 ft)	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> coloured PTFE

### Face view (male)



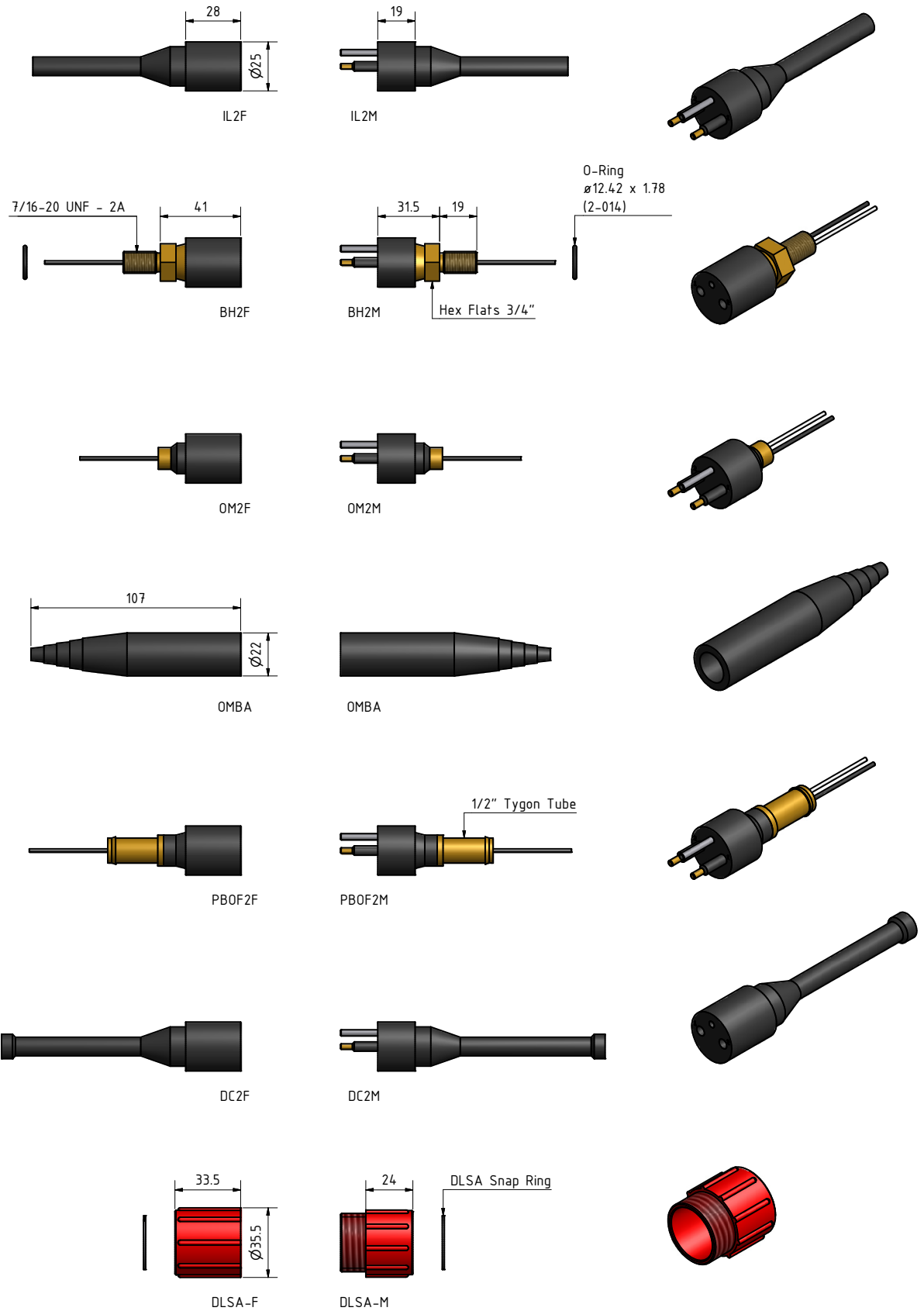
### Inline cable colour code

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	5 conductor cable 0.465", 11.8 mm
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® Circular

## 6, 8 and 10 contacts

### Connector specifications

Voltage rating	600 V AC rms
DC rating	85% of above AC rating
Current rating	10 A per contact (max 50 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	1,400 bar, 20,000 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
Snap rings	Stainless steel AISI 302
6 and 8 conductor inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber
10 conductor inline cable (60 cm, 2 ft)	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> PTFE

### Face view (male)

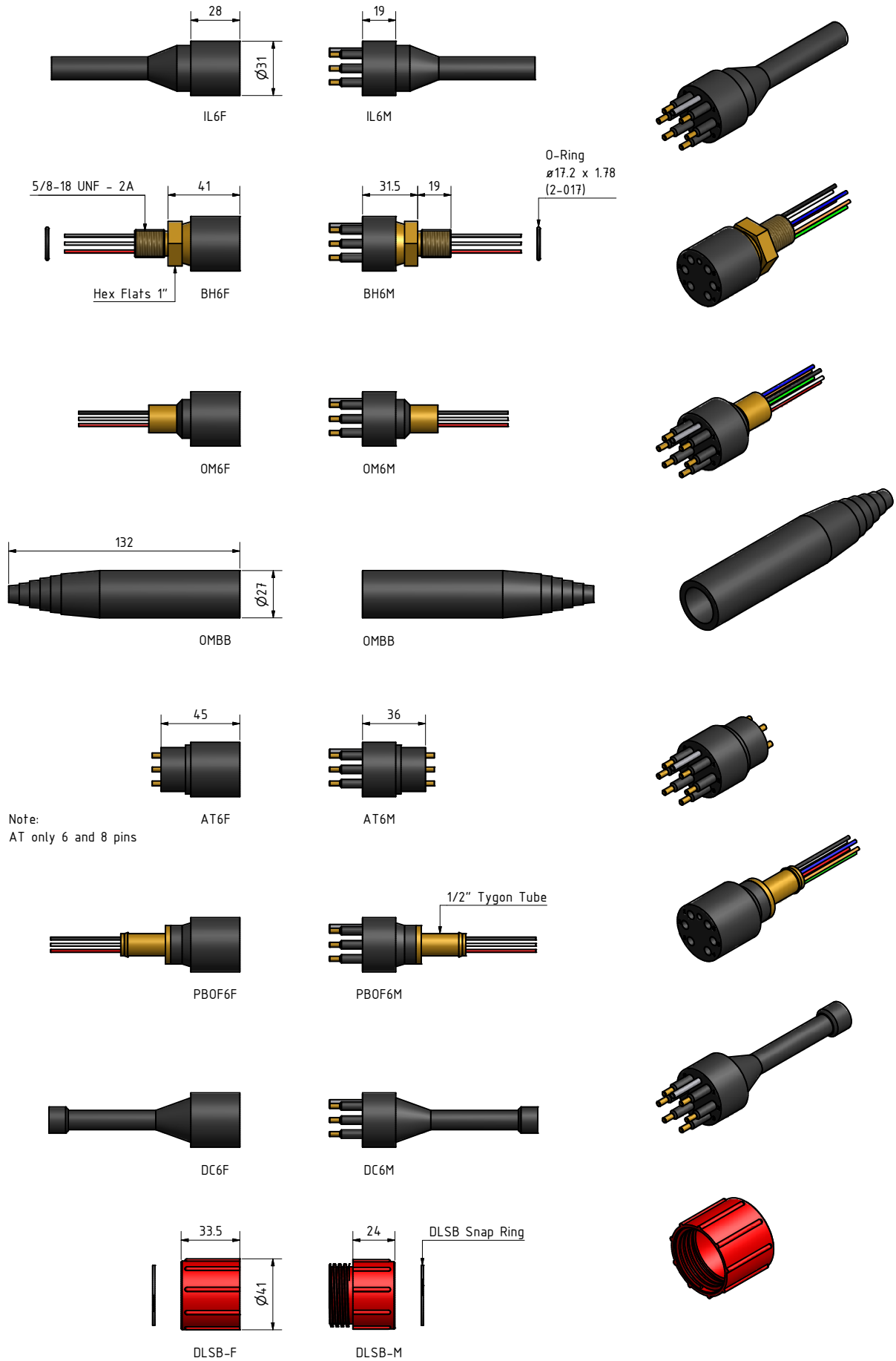


### Inline cable colour code

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



**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 AC rms
DC rating	85% of above AC rating
Current rating	10 A per contact (max 50 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40° to 140°F
Depth rating	1,400 bar, 20,000 psi

### Material specifications

Connector body	Chloroprene rubber
Contacts	Brass UNS - C36000
Location pin	AISI 303
Locking sleeves	POM
Snap rings	AISI 302
6 and 8 conductor inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber
10 conductor inline cable (60 cm, 2 ft)	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber

### Face view (male)



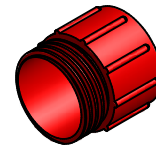
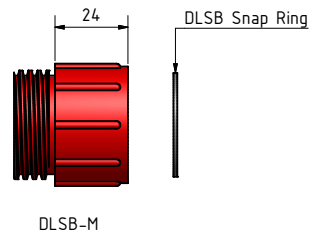
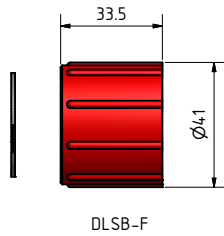
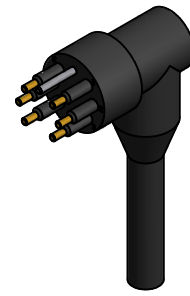
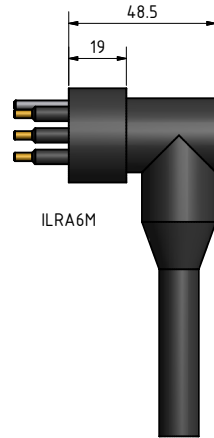
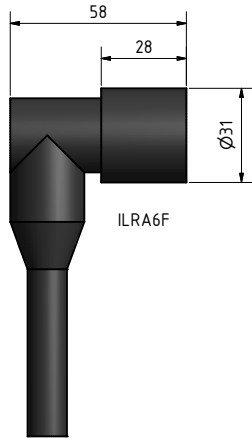
### Inline cable colour code

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





**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

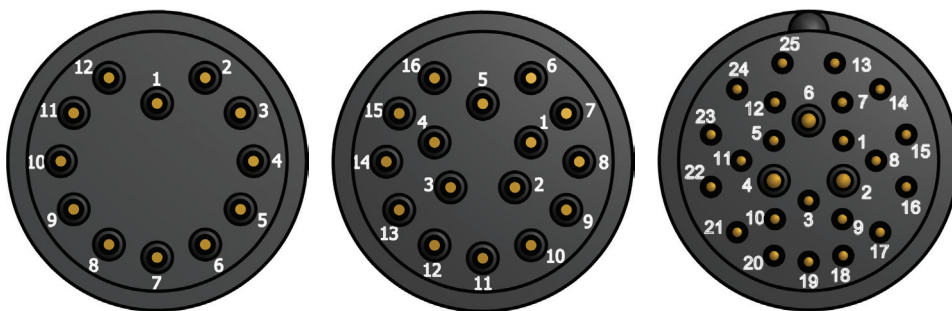
### Connector specifications

Voltage rating	600 V AC rms
DC rating	85% of above AC rating
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
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 depth rating	1,400 bar, 20,000 psi
25 contacts connector depth rating	700 bar, 10,000 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	Contacts 2, 4 and 6: Gold plated brass UNS - C36000 Contacts 1, 3, 5, 7 - 25: Gold plated beryllium copper
O-rings	Nitrile
Locking sleeves	POM
Snap rings	Stainless steel AISI 302
12 and 16 conductor inline cable (60 cm, 2 ft)	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber
25 conductor inline cable (60 cm, 2 ft)	3 x 18 AWG 0.82 mm <sup>2</sup> , 22 x 20 AWG 0.52 mm <sup>2</sup> polyurethane
12 and 16 contacts bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> coloured PTFE
25 contacts bulkhead leads (30 cm, 1 ft)	3 x 18 AWG 0.82 mm <sup>2</sup> , 22 x 22 AWG 0.33 mm <sup>2</sup> tagged PTFE

### Face view (male)



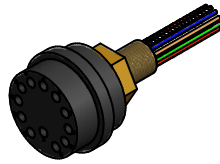
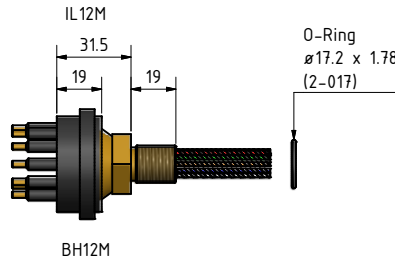
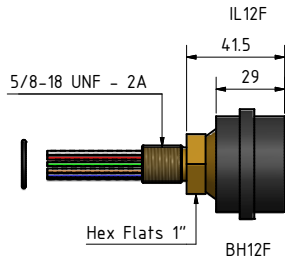
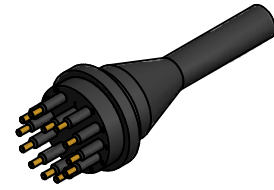
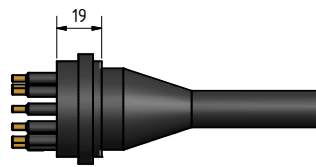
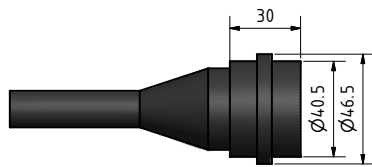
### Inline cable colour code

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

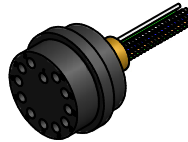
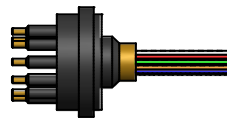
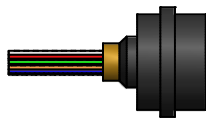
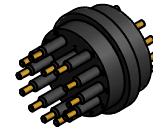
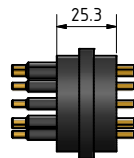
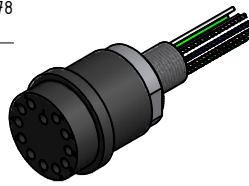
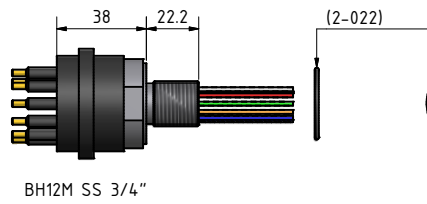
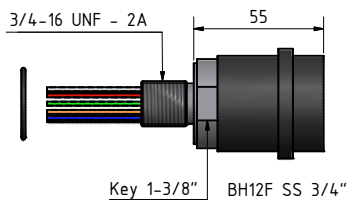
(Except 25 conductor cable - tagged numbering, 1-25)

### Nominal cable outside diameter (OD)

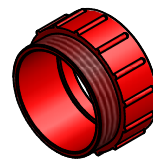
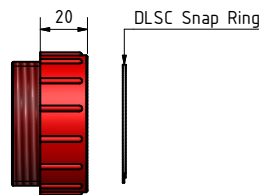
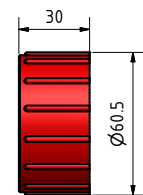
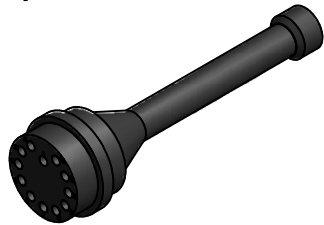
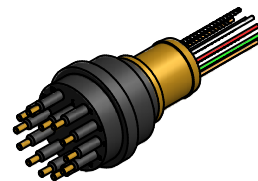
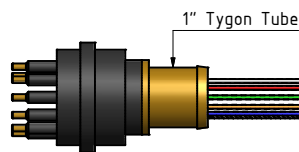
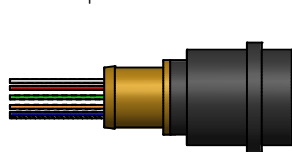
12 conductor cable	0.605", 15.4 mm
16 conductor cable	0.704", 17.9 mm
25 conductor cable	0.589", 15.0 mm



Note:  
BH 5/8" only in 12 pin



Note:  
OM only 12 and 16 pins



**Drawing information**

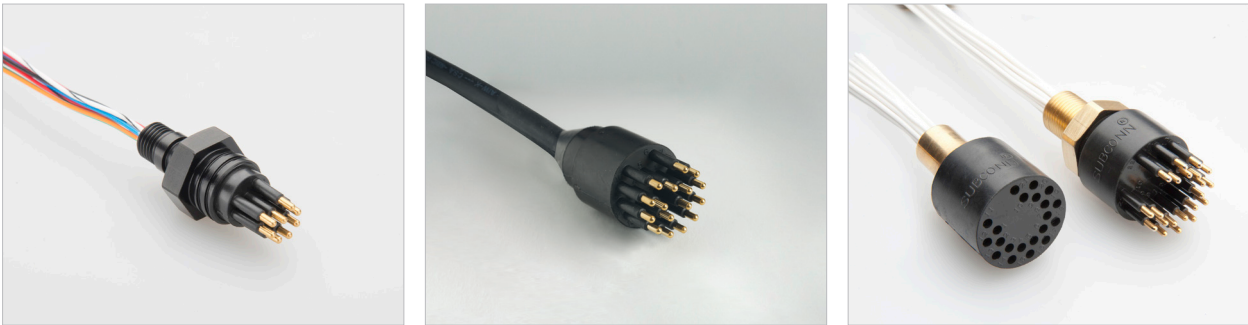
Dimensions in mm (1 mm = 0.03937 inch)  
Threads in inches (1 inch = 25.4 mm)

**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® 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 with 2 to 21 contacts rated at 300 V from 5 to 10 A in the standard inline version and in bulkhead versions.

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

## Applications include

- 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 include

- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, pigtail 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 AC rms
DC rating	85% of above AC rating
Current rating	5 A
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 psi

### Material specifications

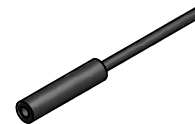
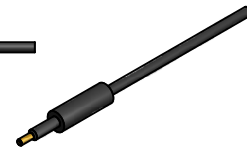
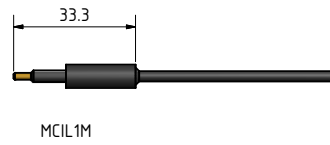
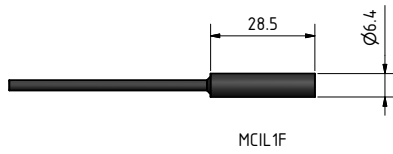
Connector body	Chloroprene rubber
Contacts	Female socket in gold plated brass UNS - C36000 Male pin in gold plated beryllium copper
Inline cable	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber

### Inline cable colour code

1 Black

### Nominal cable outside diameter (OD)

Chloroprene rubber cable 0.100", 2.54 mm



**Drawing information**

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

# SubConn® Micro Circular

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

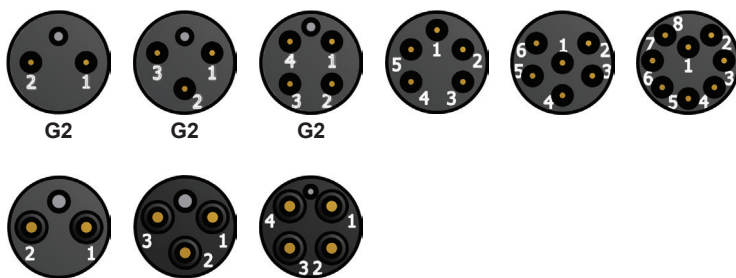
### Connector specifications

Voltage rating	300 V AC rms
DC rating	85% of above AC rating
2, 3 and 4 contacts current rating	10 A per contact (max 20 A per connector)
5, 6 and 8 contacts current rating	5 A per contact (max 20 A per connector)
G2 2, 3 and 4 contacts current rating	5 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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
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
Snap rings	Stainless steel AISI 302
2, 3 and 4 conductor inline cable (60 cm, 2 ft)	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber
5, 6 and 8 conductor inline cable (60 cm, 2 ft)	20 AWG 0.52 mm <sup>2</sup> chloroprene rubber
G2 2, 3 and 4 conductor inline cable (60 cm, 2 ft)	20 AWG 0.52 mm <sup>2</sup> chloroprene rubber
2, 3 and 4 contacts bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> coloured PTFE
5, 6 and 8 contacts bulkhead leads (30 cm, 1 ft)	22 AWG 0.33 mm <sup>2</sup> coloured PTFE
G2 2, 3 and 4 contacts bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 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	

(3 conductor cable colour code: 1 black, 2 white, 3 green)  
 (G2 3 conductor cable colour code: 1 black, 2 white, 3 red)

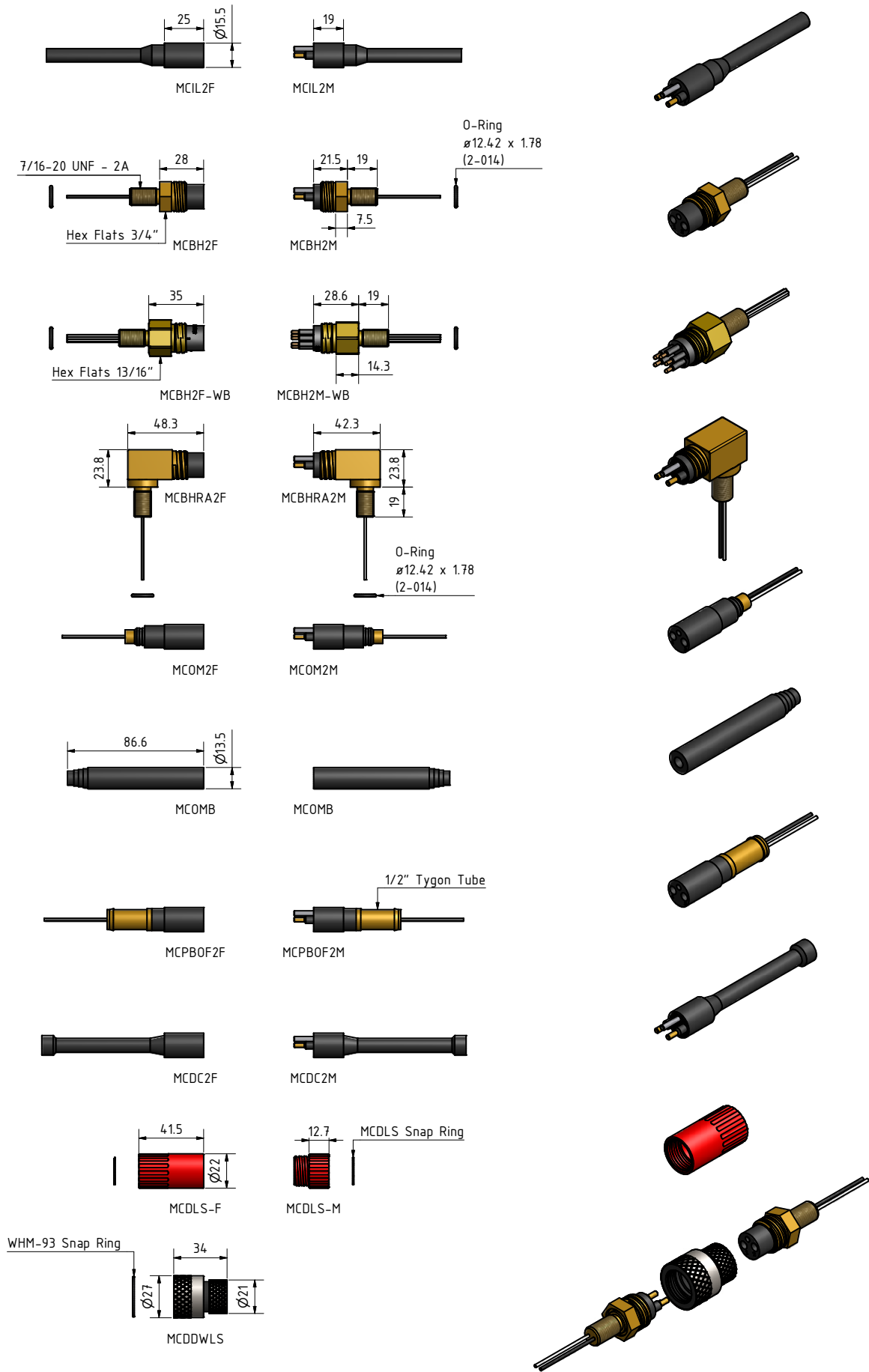
### Nominal cable outside diameter (OD)

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 5, 6 and 8 contacts and G2 2, 3, 4 contacts are available as water blocked (WB)





Micro Circular series

**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

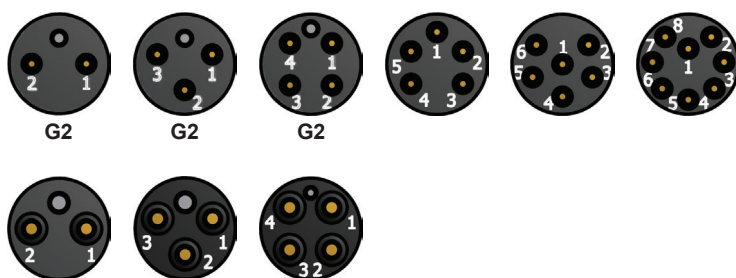
### Connector specifications

Voltage rating	300 V AC rms
DC rating	85% of above AC rating
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
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	700 bar, 10,000 psi
Depth rating PEEK	300 bar, 4,350 psi

### Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Titanium, anodised aluminium or stainless steel*
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
Snap rings	Stainless steel AISI 302
2, 3 and 4 contacts bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> coloured PTFE
5, 6 and 8 contacts bulkhead leads (30 cm, 1 ft)	22 AWG 0.33 mm <sup>2</sup> coloured PTFE
G2 2, 3 and 4 contacts bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)



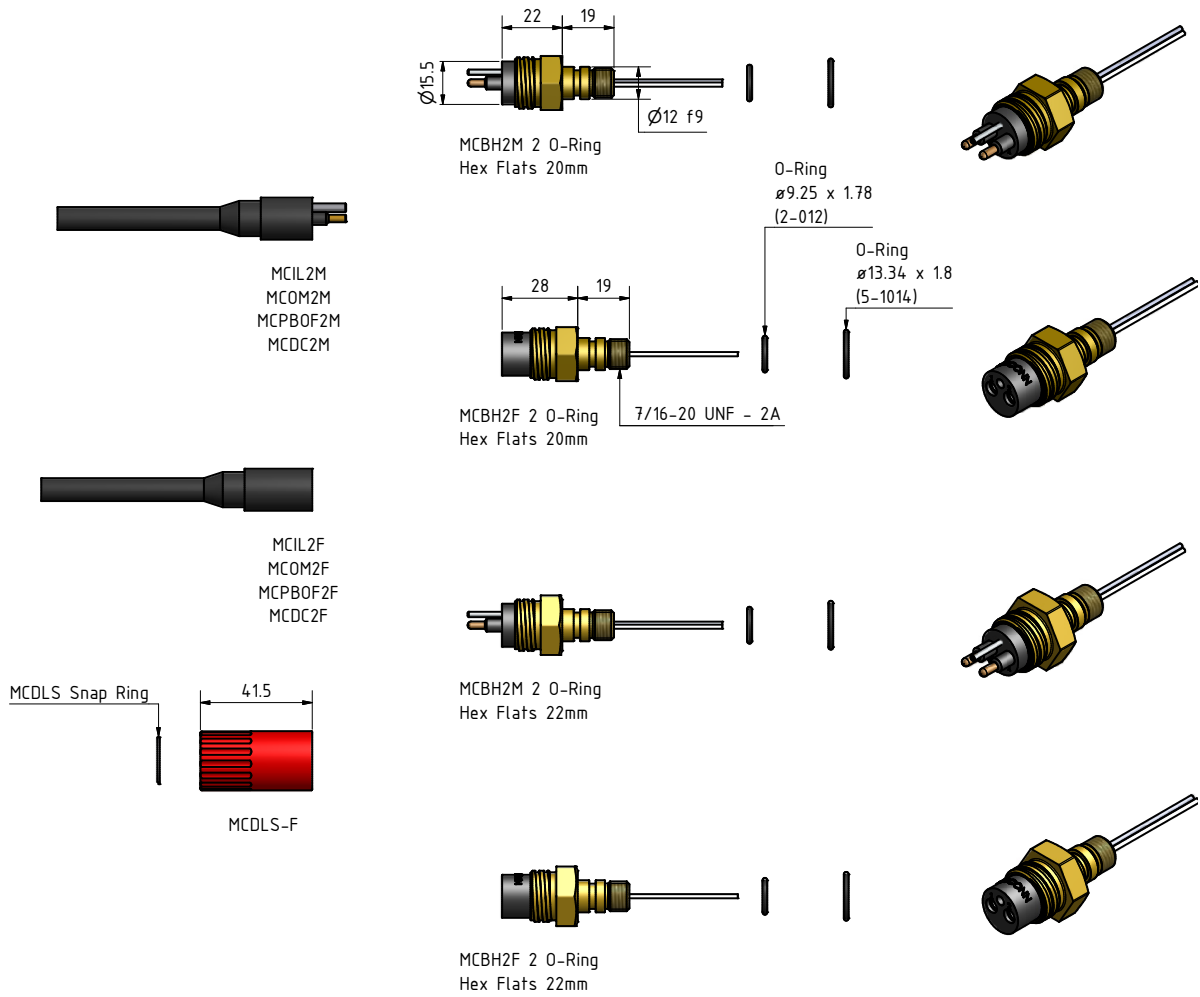
### Inline cable colour code

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

(3 conductor cable colour code: 1 black, 2 white, 3 green)  
 (G2 3 conductor cable colour code: 1 black, 2 white, 3 red)

### Additional information

\* Stainless steel only in 22 mm hex size



**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 AC rms
DC rating	85% of above AC rating
Current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0,01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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
Snap rings	Stainless steel AISI 302
Inline cable (60 cm, 2 ft)	20 AWG 0.52 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> coloured PTFE

### Face view (male)

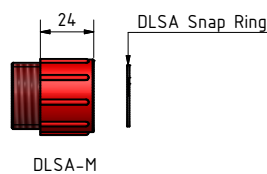
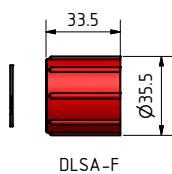
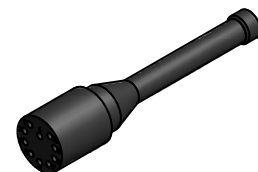
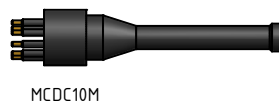
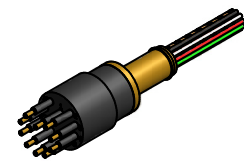
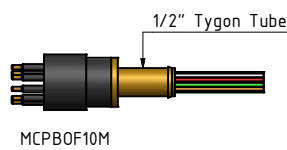
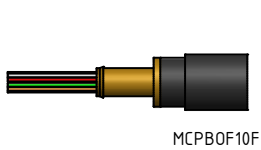
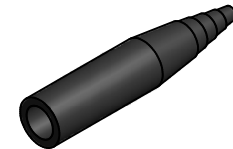
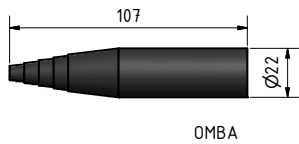
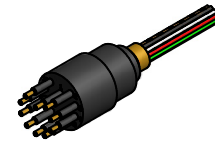
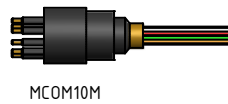
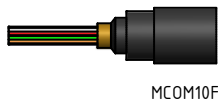
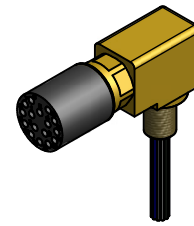
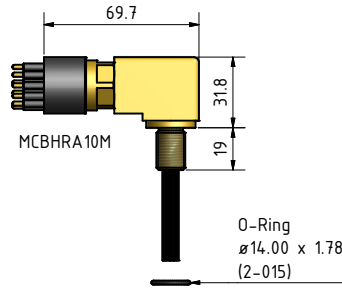
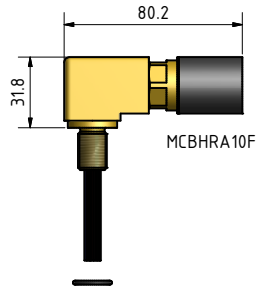
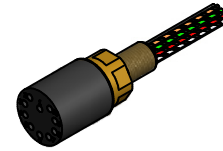
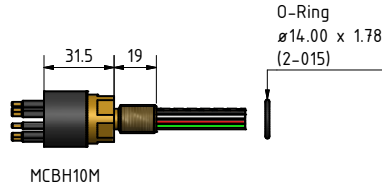
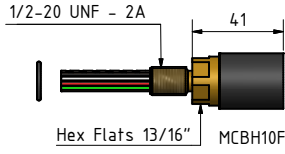
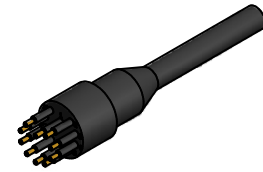
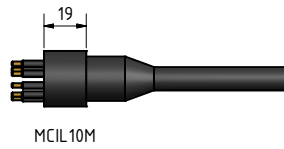
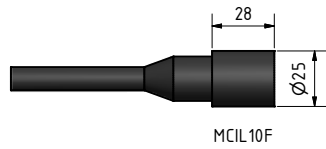


### Inline cable colour code

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

### Nominal cable outside diameter (OD)

10 conductor cable	0.406", 10.3 mm
12 conductor cable	0.436", 11.0 mm
16 conductor cable	0.472", 12.0 mm



**Drawing information**

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

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

## Connector specifications

Voltage rating	300 V AC rms
DC rating	85% of above AC rating
Current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 psi
Depth rating PEEK	300 bar, 4,350 psi

## Material specifications

Connector body	Chloroprene rubber
Bulkhead body	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
Snap rings	Stainless steel AISI 302
Bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> coloured PTFE

## Face view (male)

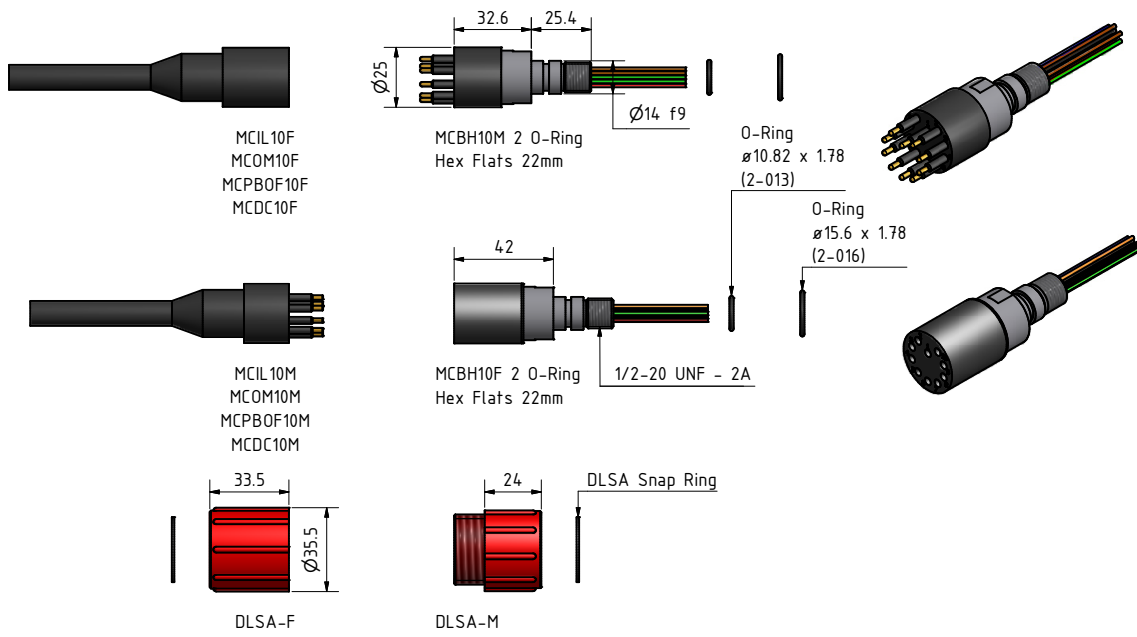


## Inline cable colour code

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

## Nominal cable outside diameter (OD)

10 conductor cable	0.406", 10.3 mm
12 conductor cable	0.436", 11.0 mm
16 conductor cable	0.472", 12.0 mm



**Drawing information**

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

# SubConn® Micro Circular

## 21 contacts

### Connector specifications

Voltage rating	300 V AC rms
DC rating	85% of above AC rating
Current rating	5 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4° to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40° to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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
Snap rings	Stainless steel AISI 302
Inline cable (60 cm, 2 ft)	20 AWG 0.52 mm <sup>2</sup> PUR
Bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> tagged PTFE

### Face view (male)



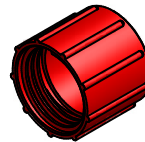
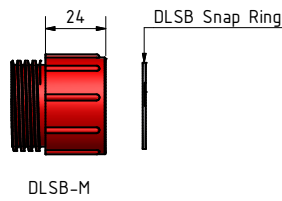
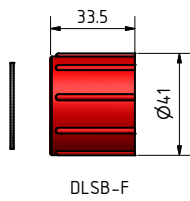
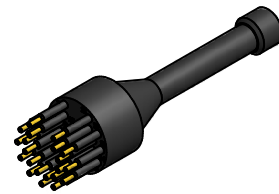
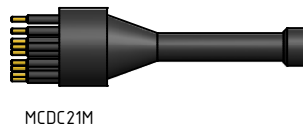
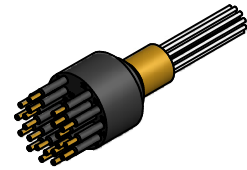
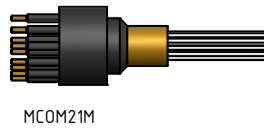
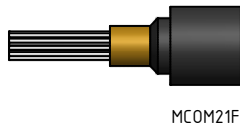
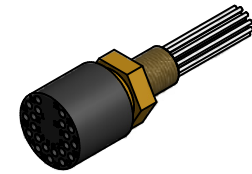
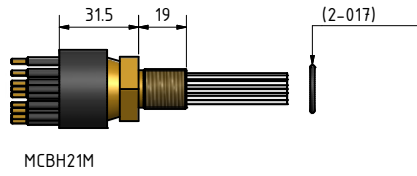
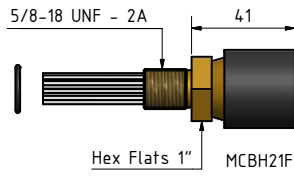
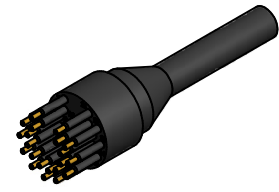
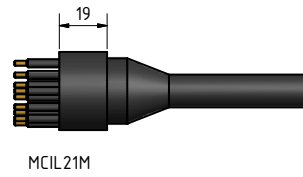
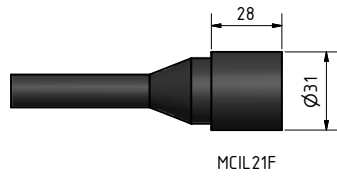
### Inline cable colour code

1-21 Tagged numbering

### Nominal cable outside diameter (OD)

21 conductor cable 0.578" 14,70 mm





**Drawing information**

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

**Quote**

*"We receive excellent customer service through every aspect of our business relationship with SubConn."*

*Faith Goguen, Purchasing Manager  
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 and inline versions featuring a high depth rating.

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

## Applications include

- 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 include

- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, pigtail 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 AC rms
DC rating	85% of above AC rating
Current rating	10 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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
Inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> tagged PTFE

### Face view (male)

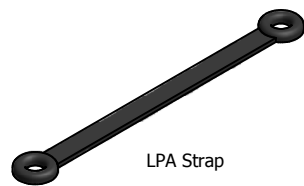
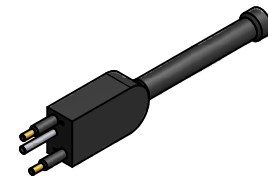
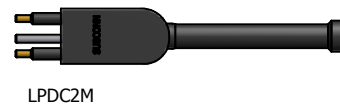
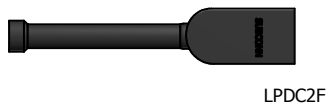
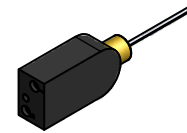
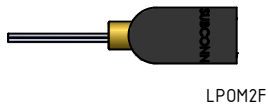
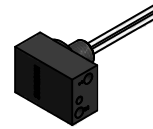
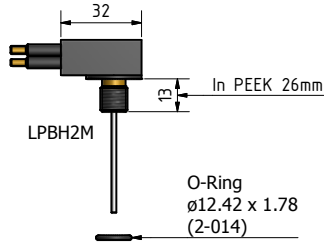
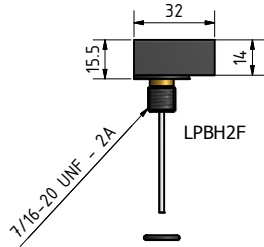
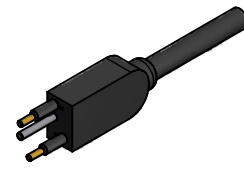
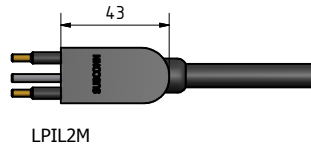
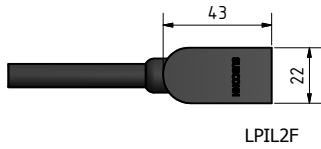


### Inline cable colour code

- 1 Black
- 2 White

### Nominal cable outside diameter (OD)

2 conductor cable 0.365", 9.3 mm



**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

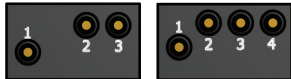
### Connector specifications

Single contact rating	600 V AC rms
DC rating	85% of above AC rating
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
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	700 bar, 10,000 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 straps	Chloroprene rubber
Inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> tagged PTFE

### Face view (male)



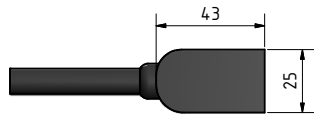
### Inline cable colour code

- 1 Black
- 2 White
- 3 Red
- 4 Green

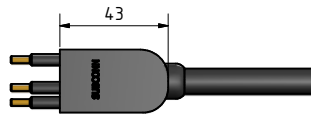
(3 conductor cable colour code: 1 black, 2 white, 3 green)

### Nominal cable outside diameter (OD)

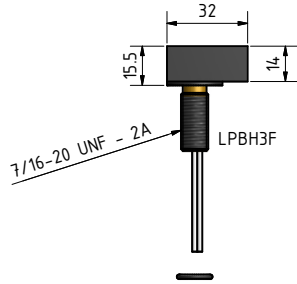
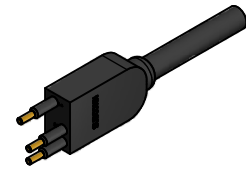
- 3 conductor cable 0.385", 9.8 mm
- 4 conductor cable 0.410", 10.4 mm



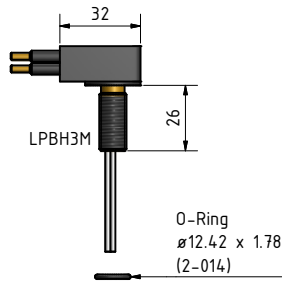
LPIL3F



LPIL3M

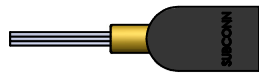
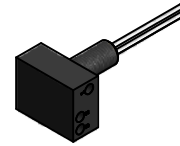


LPBH3F

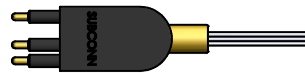


LPBH3M

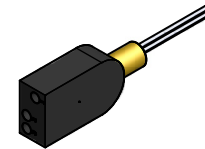
O-Ring  
ø12.42 x 1.78  
(2-014)



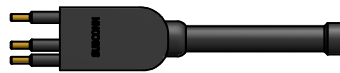
LPOM3F



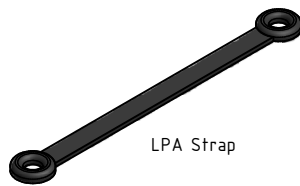
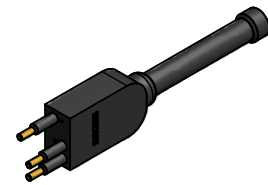
LPOM3M



LPDC3F



LPDC3M



LPA Strap

**Drawing information**

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

# SubConn® Low Profile

## 5 contacts

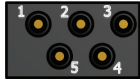
### Connector specifications

Voltage rating	600 V AC rms
DC rating	85% of above AC rating
Current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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 straps	Chloroprene rubber
Inline cable (60 cm, 2 ft)	18 AWG 0.82 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> tagged PTFE

### Face view (male)



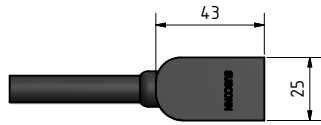
### Inline cable colour code

1 Black	4 Orange
2 Red	5 Yellow
3 Blue	

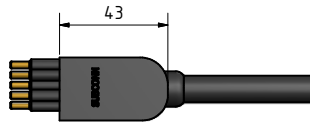
### Nominal cable outside diameter (OD)

5 conductor cable 0.328", 8.4 mm

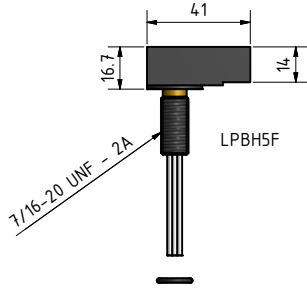
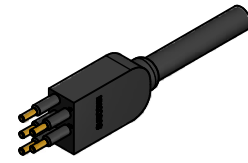




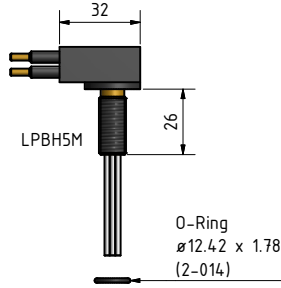
LPIL5F



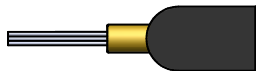
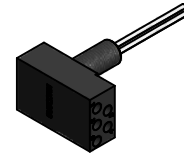
LPIL5M



LPBH5F



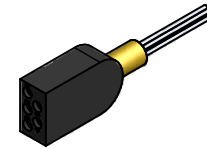
LPBH5M



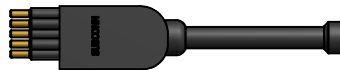
LPOM5F



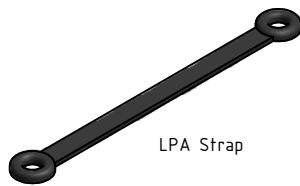
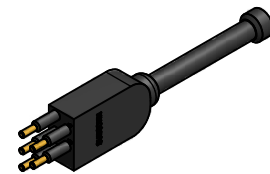
LPOM5M



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

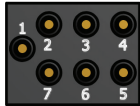
### Connector specifications

Voltage rating	600 V AC rms
DC rating	85% of above AC rating
Current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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 straps	Chloroprene rubber
Inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> tagged PTFE

### Face view (male)

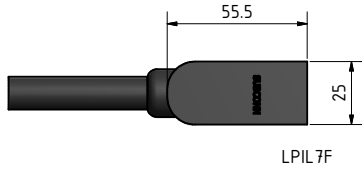


### Inline cable colour code

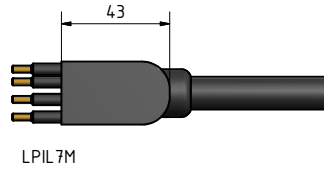
1 Black	4 Green	7 White/black
2 White	5 Orange	
3 Red	6 Blue	

### Nominal cable outside diameter (OD)

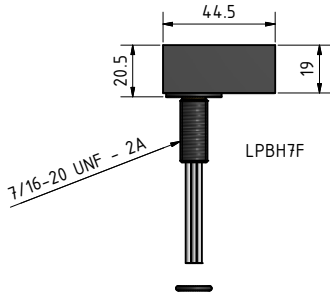
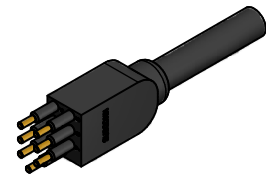
7 conductor cable 0.520", 13.2 mm



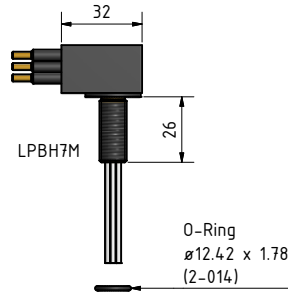
LPIL7F



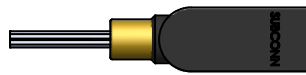
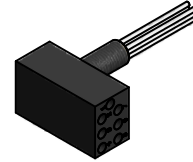
LPIL7M



LPBH7F



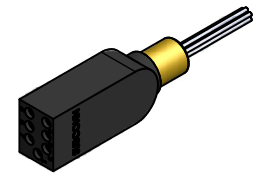
LPBH7M



LPOM7F



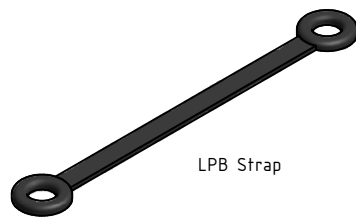
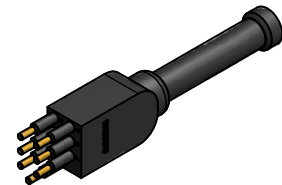
LPOM7M



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 AC rms
DC rating	85% of above AC rating
Current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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 straps	Chloroprene rubber
Inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> tagged PTFE

### Face view (male)

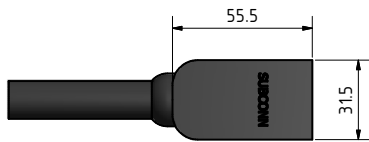


### Inline cable colour code

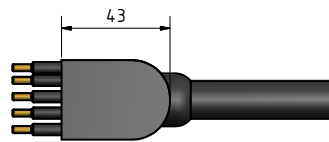
1 Black	4 Green	7 White/black
2 White	5 Orange	8 Red/black
3 Red	6 Blue	9 Green/black

### Nominal cable outside diameter (OD)

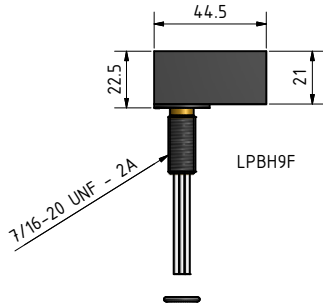
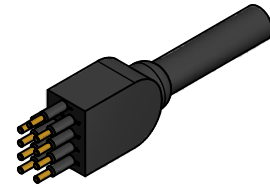
9 conductor cable 0.590", 15.0 mm



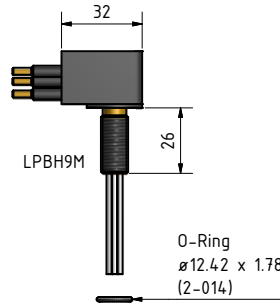
LPIL9F



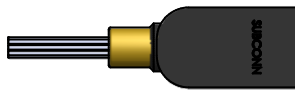
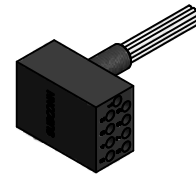
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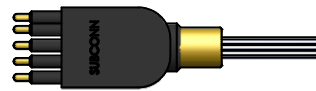
LPBH9F



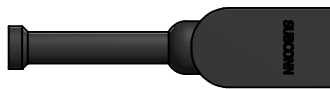
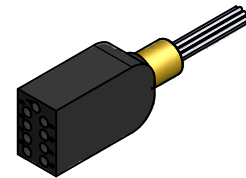
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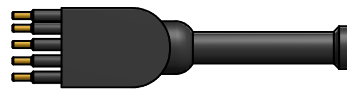
LPOM9F



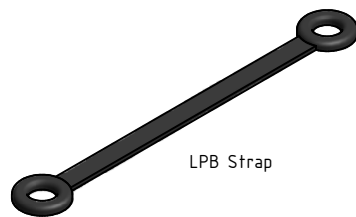
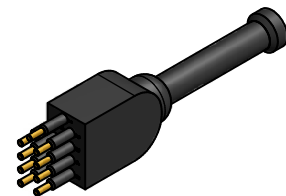
LPOM9M



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 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
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 straps	Chloroprene rubber
Inline cable (60 cm, 2 ft)	16 AWG 1.31 mm <sup>2</sup> chloroprene rubber

### Face view (male)

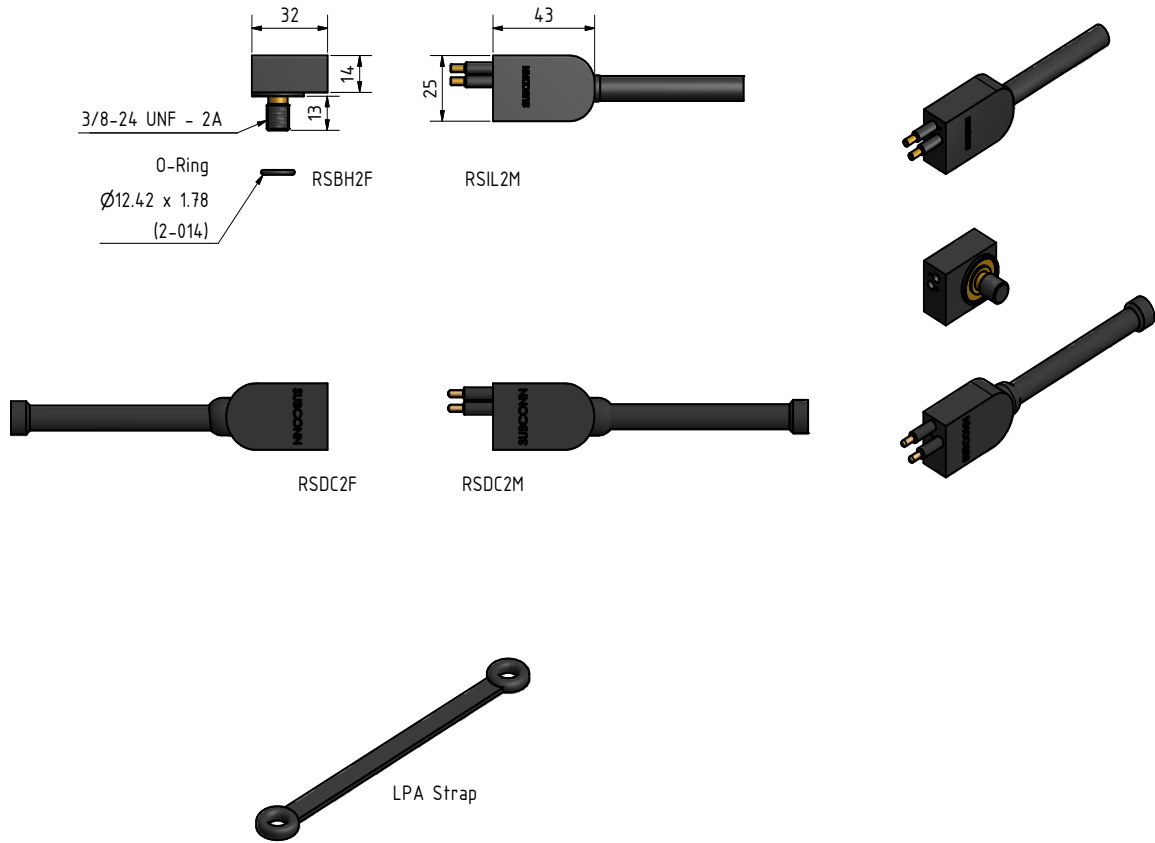


### Inline cable colour code

- 1 Black
- 2 White

### Nominal cable outside diameter (OD)

2 conductor cable 0.365", 9.3 mm



**Drawing information**

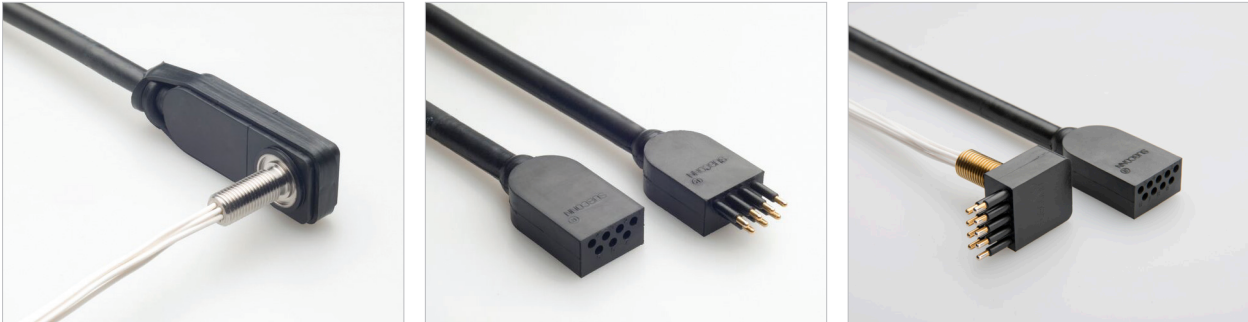
Dimensions in mm (1 mm = 0.03937 inch)  
Threads in inches (1 inch = 25.4 mm)

**Did you know?**

*The globally trusted range of SubConn® connectors is continually being tested and reviewed to ensure the highest quality and suitability to the underwater and offshore markets. The range is regularly extended to meet the new individual or industry requirements.*



# 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 and inline versions featuring a high depth rating.

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

## Applications include

- 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 include

- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, pigtail 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 AC rms
DC rating	85% of above AC rating
Current rating	5 A per contact (max 10 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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 straps	N/A
Inline cable (60 cm, 2 ft)	20 AWG 0.52 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> tagged PTFE

### Face view (male)

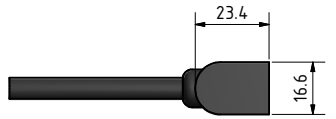


### Inline cable colour code

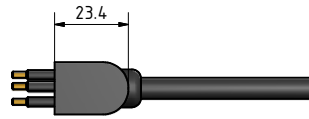
- 1 Black
- 2 White
- 3 Red

### Nominal cable outside diameter (OD)

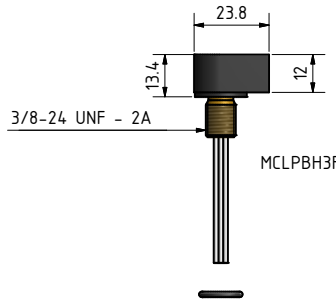
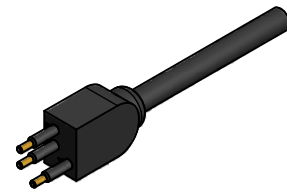
3 conductor cable 0.328", 8.4 mm



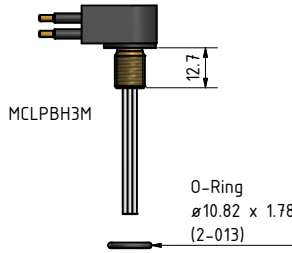
MCLPIL3F



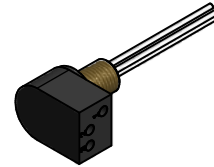
MCLPIL3M



MCLPBH3F



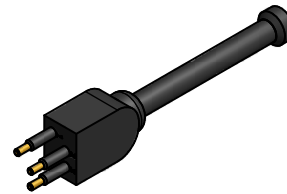
MCLPBH3M



MCLPDC3F



MCLPDC3M



### 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

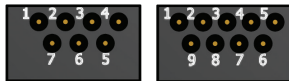
## Connector specifications

Voltage rating	300 V AC rms
DC rating	85% of above AC rating
Current rating	5 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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 (60 cm, 2 ft)	20 AWG 0.52 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> tagged 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	

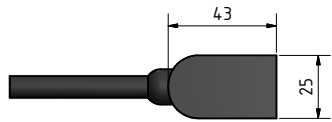
\* Micro 7 contacts connector uses an 8 conductor cable (only 7 conductors are used)

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

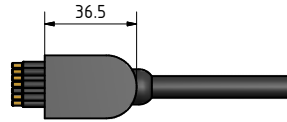
## Nominal cable outside diameter (OD)

8 conductor cable 0.363", 9.2 mm

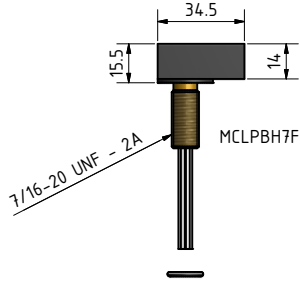
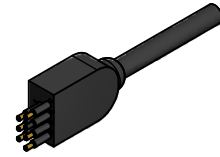
10 conductor cable 0.406", 10.3 mm



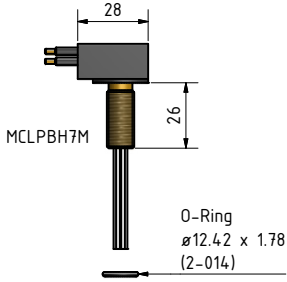
MCLPIL7F



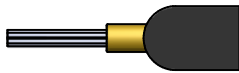
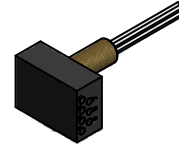
MCLPIL7M



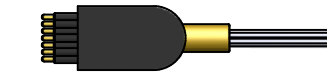
MCLPBH7F



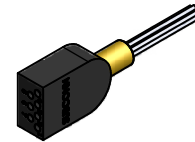
MCLPBH7M



MCLPOM7F



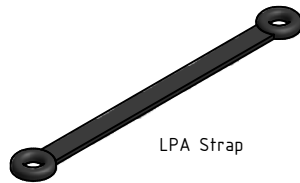
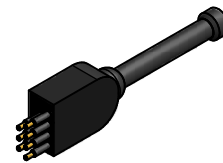
MCLPOM7M



MCLPDC7F



MCLPDC7M



LPA Strap

**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® 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 include

- 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 include

- Customer specified connector body material
- Customised mating harness cables
- Customer specified cable, pigtail 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

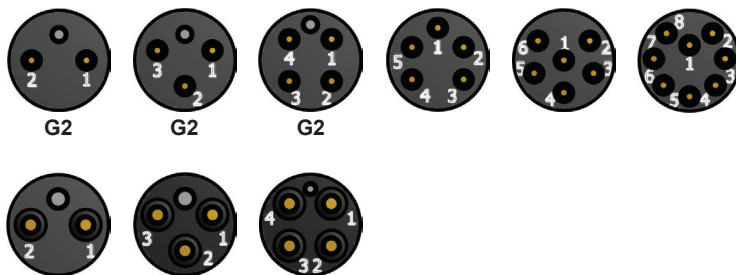
### Connector specifications

Voltage rating	300 V AC rms
DC rating	85% of above AC rating
2, 3 and 4 contacts current rating	10 A per contact (max 20 A per connector)
5, 6 and 8 contacts current rating	5 A per contact (max 20 A per connector)
G2 2, 3 and 4 contacts current rating	5 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 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
Snap rings	Stainless steel AISI 302
2, 3 and 4 contacts bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> coloured PTFE
5, 6 and 8 contacts bulkhead leads (30 cm, 1 ft)	22 AWG 0.33 mm <sup>2</sup> coloured PTFE
G2 2, 3 and 4 contacts bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm <sup>2</sup> coloured PTFE

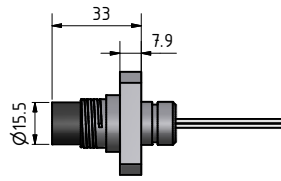
### Face view (male)



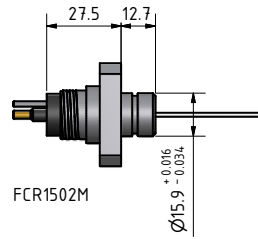
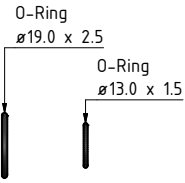




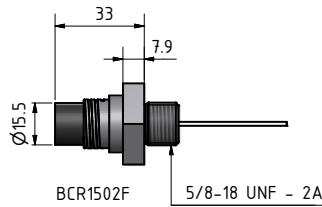
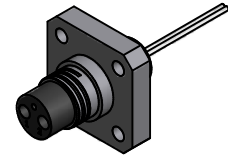
MCIL2F  
MCOM2F  
MCPBOF2F  
MCDC2F



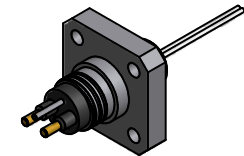
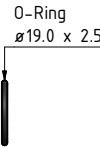
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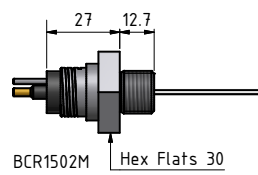
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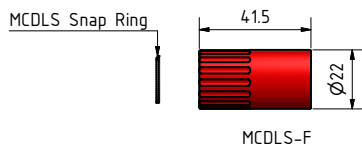
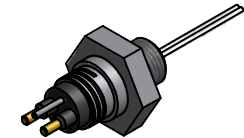
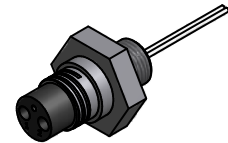
BCR1502F



MCIL2M  
MCOM2M  
MCPBOF2M  
MCDC2M



BCR1502M



MCDLS-F

**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

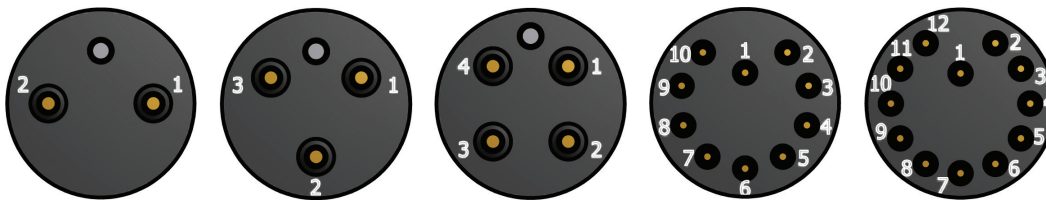
### Connector specifications

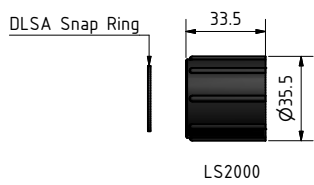
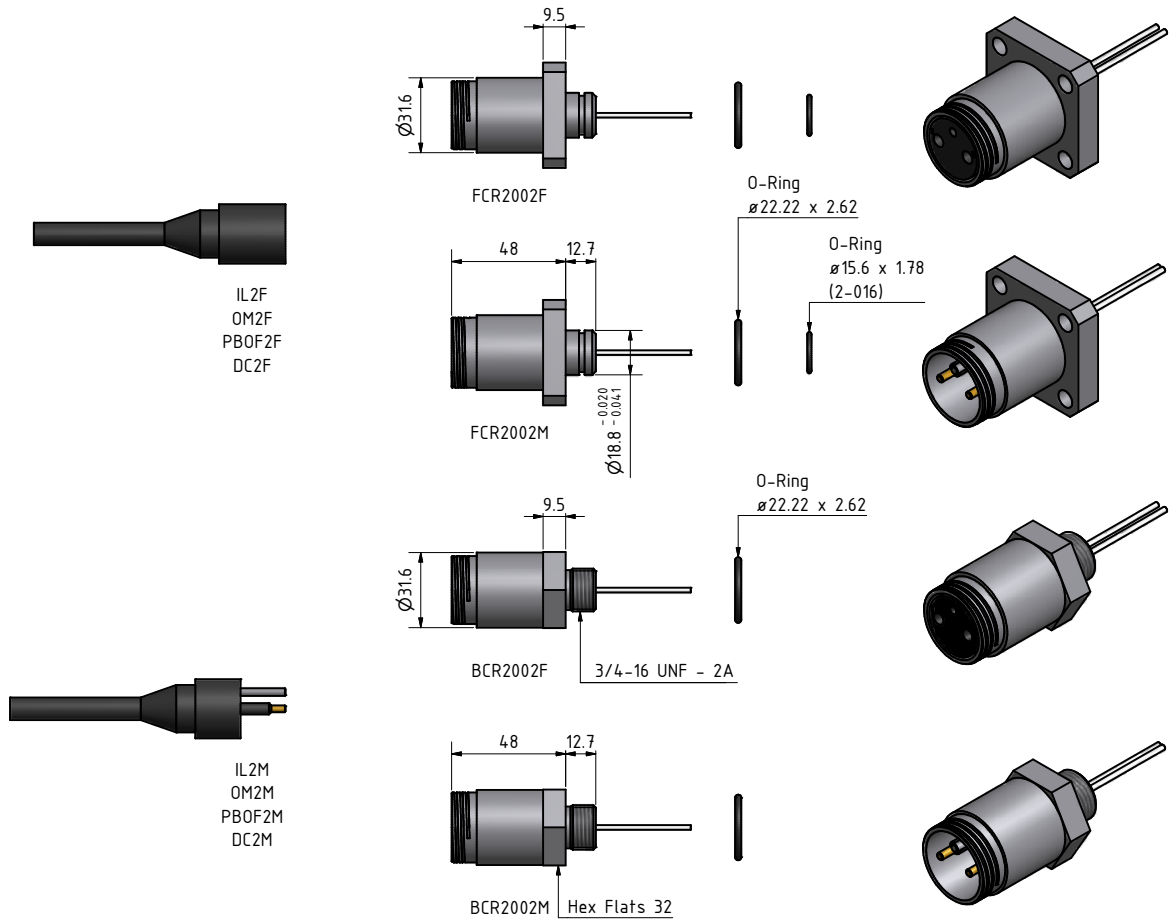
2, 3 and 4 contacts voltage rating	600 V AC rms
10 and 12 contacts voltage rating	300 V AC rms
DC rating	85% of above AC rating
2, 3 and 4 contacts current rating	10 A per contact (max 30 A per connector)
10 and 12 contacts current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
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	700 bar, 10,000 psi

### Material specifications

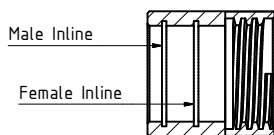
Connector body	Chloroprene rubber
Connector housing	Stainless steel AISI 316 (other materials on request)
2, 3 and 4 contacts	Brass UNS - C36000
10 and 12 contacts	Female sockets in gold plated brass UNS - C36000
Location pin	Male pins in gold plated beryllium copper
O-rings	Stainless steel AISI 303
Locking sleeves	Nitrile
Snap rings	POM
2, 3 and 4 contacts bulkhead leads (30 cm, 1 ft)	Stainless steel AISI 302
10 and 12 contacts bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> tagged PTFE
	20 AWG 0.52 mm <sup>2</sup> tagged PTFE

### Face view (male)





**Snap ring placement**



With male inline connector - snap ring in outer groove

With female inline connector - snap ring in inner groove

**Drawing information**

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

# SubConn® Metal Shell 2400

## 6, 8 and 10 contacts

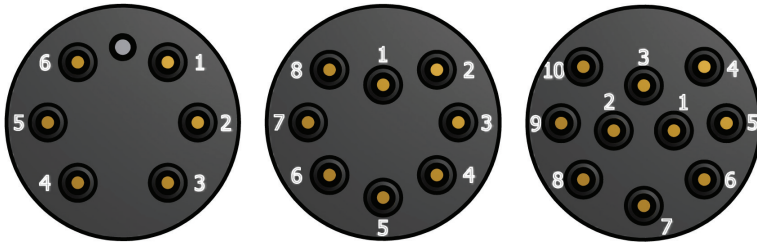
### Connector specifications

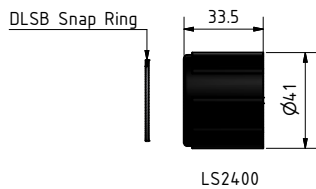
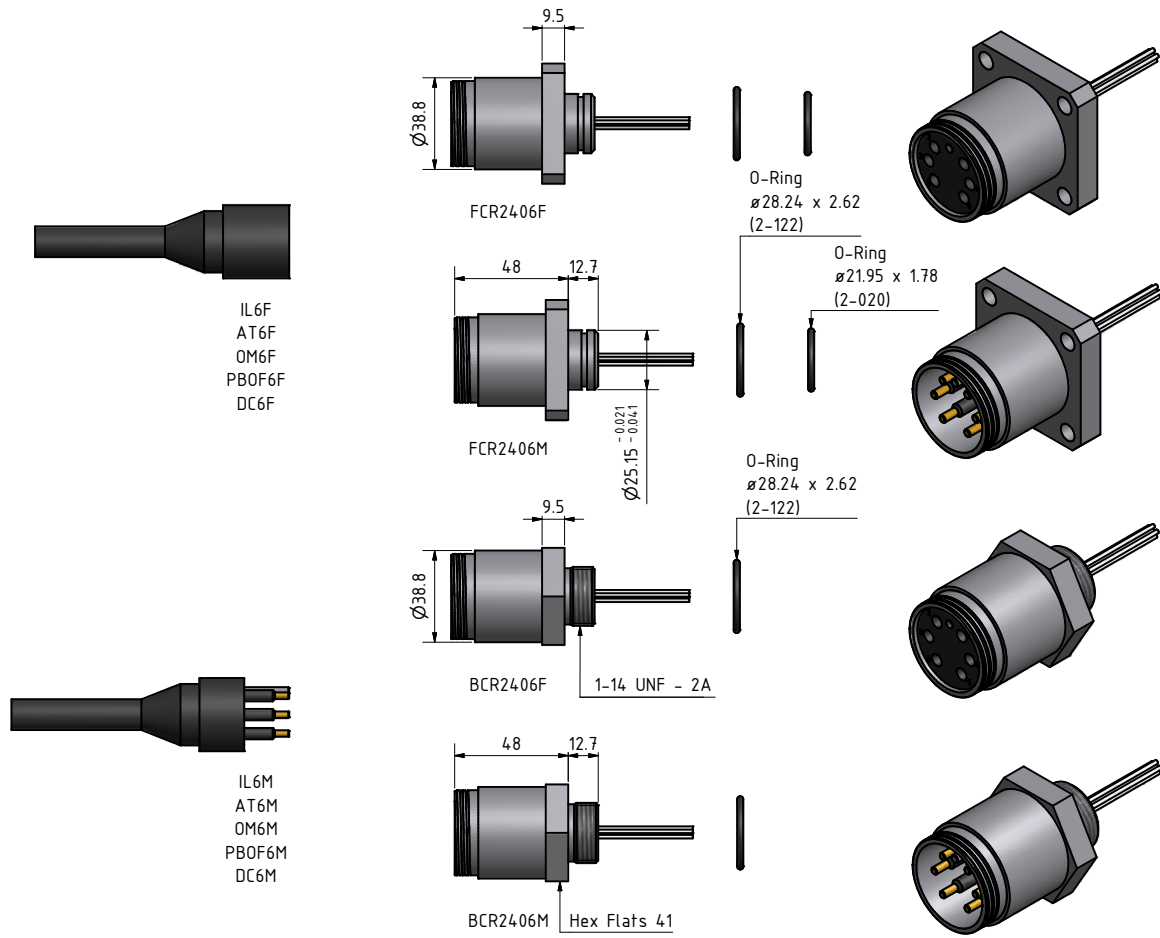
Voltage rating	600 V AC rms
DC rating	85% of above AC rating
Current rating	10 A per contact (max 50 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 psi

### Material specifications

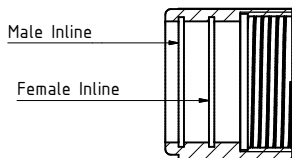
Connector body	Chloroprene rubber
Bulkhead body	AISI 316 (other materials on request)
Contacts	Brass UNS - C36000
Location pin	Stainless steel AISI 303
O-rings	Nitrile
Locking sleeves	POM
Snap rings	Stainless steel AISI 302
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm <sup>2</sup> tagged PTFE

### 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 carrying up to 25 A per contact. The 4 contact high power connector is suitable for 600 V at 50 A per contact and is supplied in standard SubConn® inline and bulkhead configurations.

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

### Applications include

- 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 include

- 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

Voltage rating inline and bulkhead (1 KV version)	1 KV AC rms
Current rating inline, overmould and bulkhead (1 KV version)	250 A
Voltage rating overmould and bulkhead (3 KV version)	3 KV AC rms
Current rating bulkhead (3 KV version)*	90 A
DC rating	85% of above AC rating
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 psi

### Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel or titanium (other materials available upon request)
Contacts	Brass UNS - C36000
Adapter	Brass UNS - C36000
O-rings	Nitrile
Locking sleeves	POM
Snap rings	Stainless steel AISI 302
Inline cable (60 cm, 2 ft)	1/0 AWG 53.46 mm <sup>2</sup> chloroprene rubber

### Inline cable colour code

1 Black

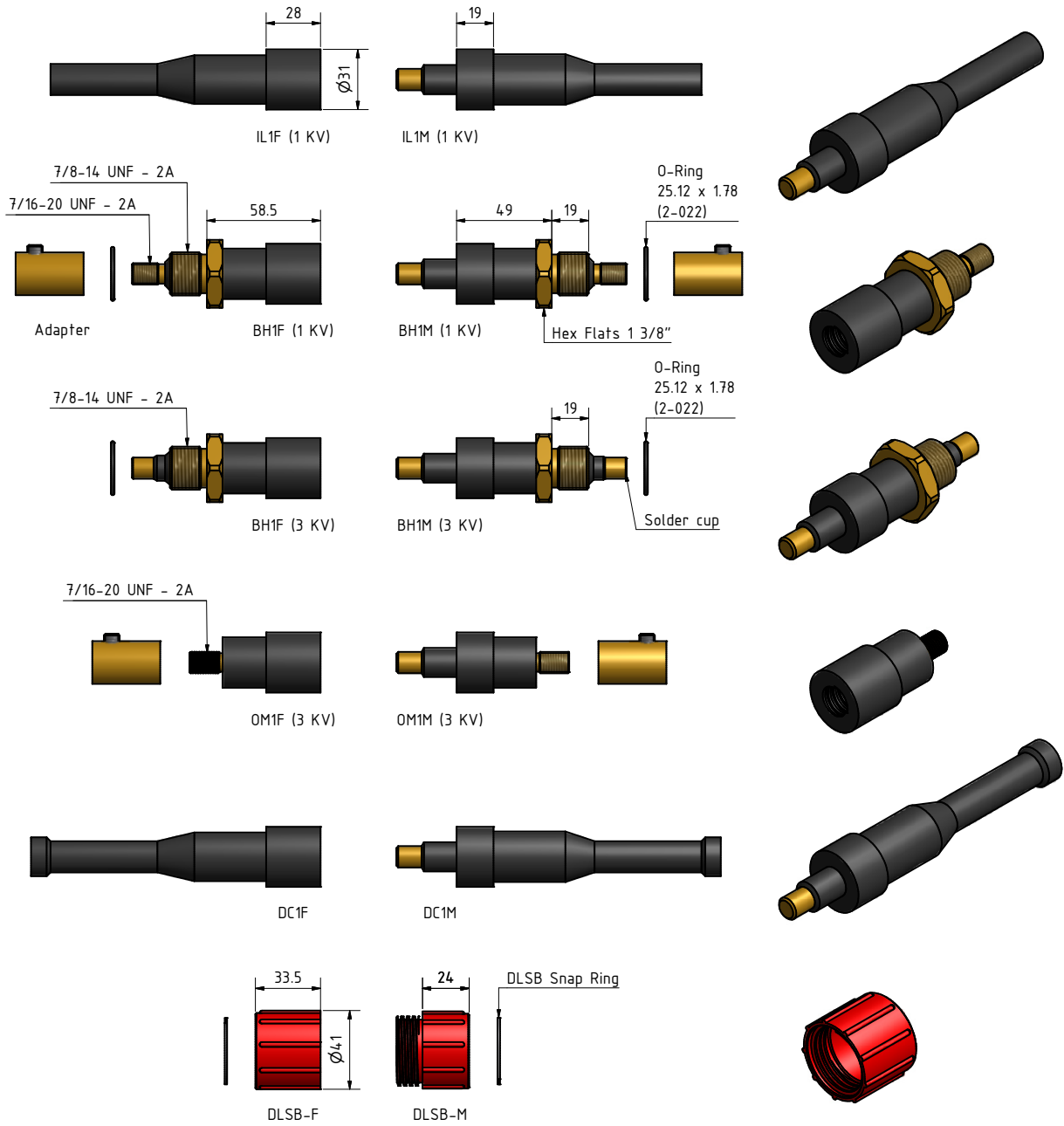
### Nominal cable outside diameter (OD)

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

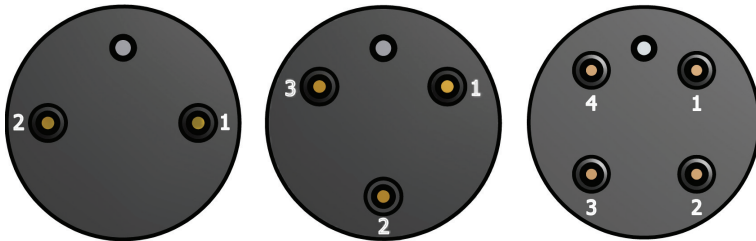
### Connector specifications

Voltage rating	600 V AC rms
DC rating	85% of above AC rating
Current rating	25 A per contact (max 50 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0,01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	1,400 bar, 20,000 psi

### Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel, titanium or anodised aluminium
Contacts	Gold plated brass UNS - C36000
Location pin	Stainless steel AISI 303
O-rings	Nitrile
Locking sleeves	POM
Snap rings	Stainless steel AISI 302
Inline cable (60 cm, 2 ft)	10 AWG 5.26 mm <sup>2</sup> chloroprene rubber
2 and 3 contacts bulkhead leads (30 cm, 1 ft)	10 AWG 5.26 mm <sup>2</sup> tagged PTFE
4 contacts bulkhead leads (30 cm, 1 ft)	12 AWG 3.31 mm <sup>2</sup> tagged PTFE

### Face view (male)

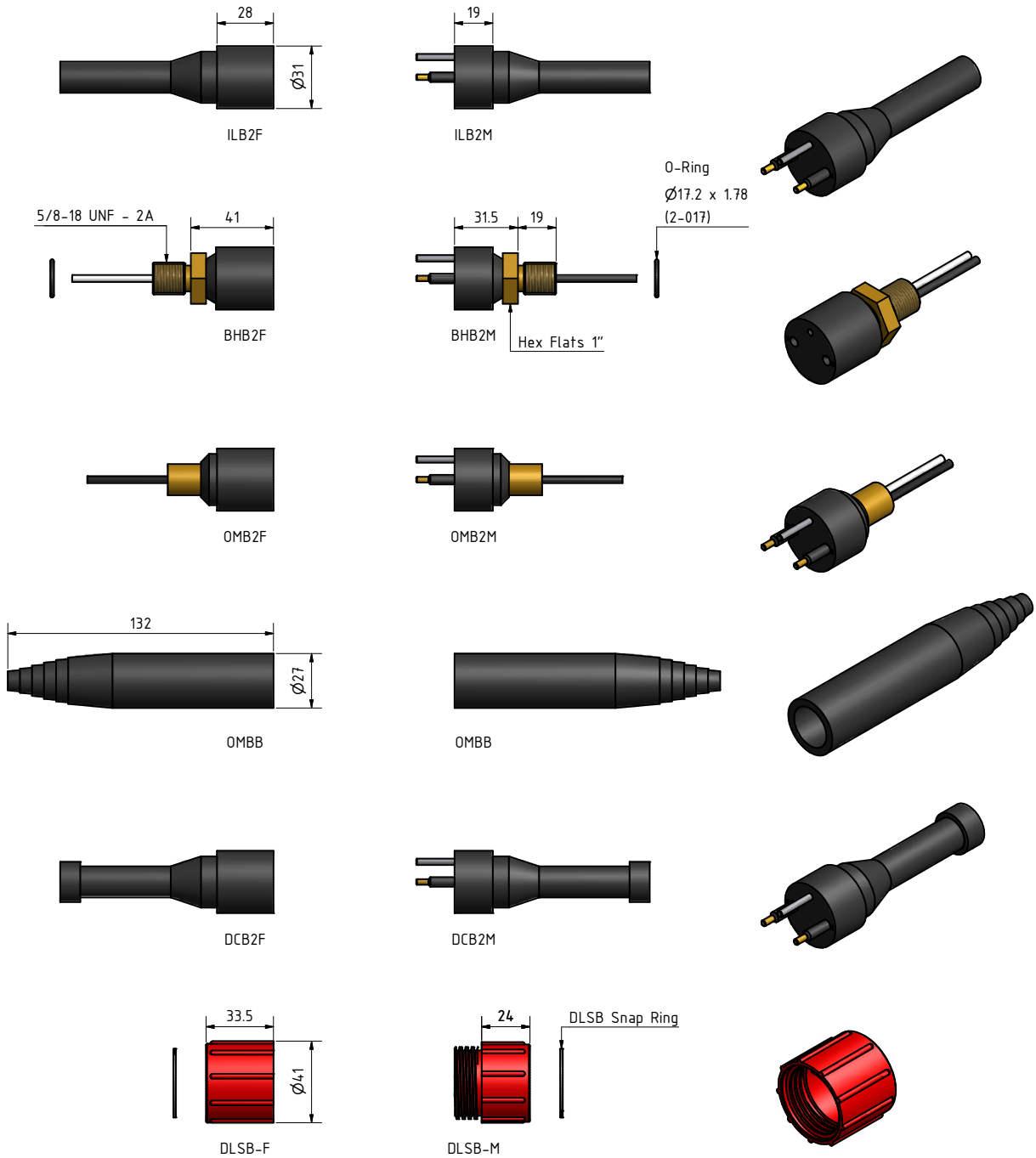


### Inline cable colour code

- 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 AC rms
DC rating	85% of above AC rating
Current rating (water)	50 A per contact (max 200 A per connector)
Current rating (air)	28 A per contact (max 112 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	1,400 bar, 20,000 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
Snap rings	Stainless steel AISI 302
Inline cable (60 cm, 2 ft)	8 AWG 8.36 mm <sup>2</sup> chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	10 AWG 5.26 mm <sup>2</sup> tagged PTFE

### Face view (male)

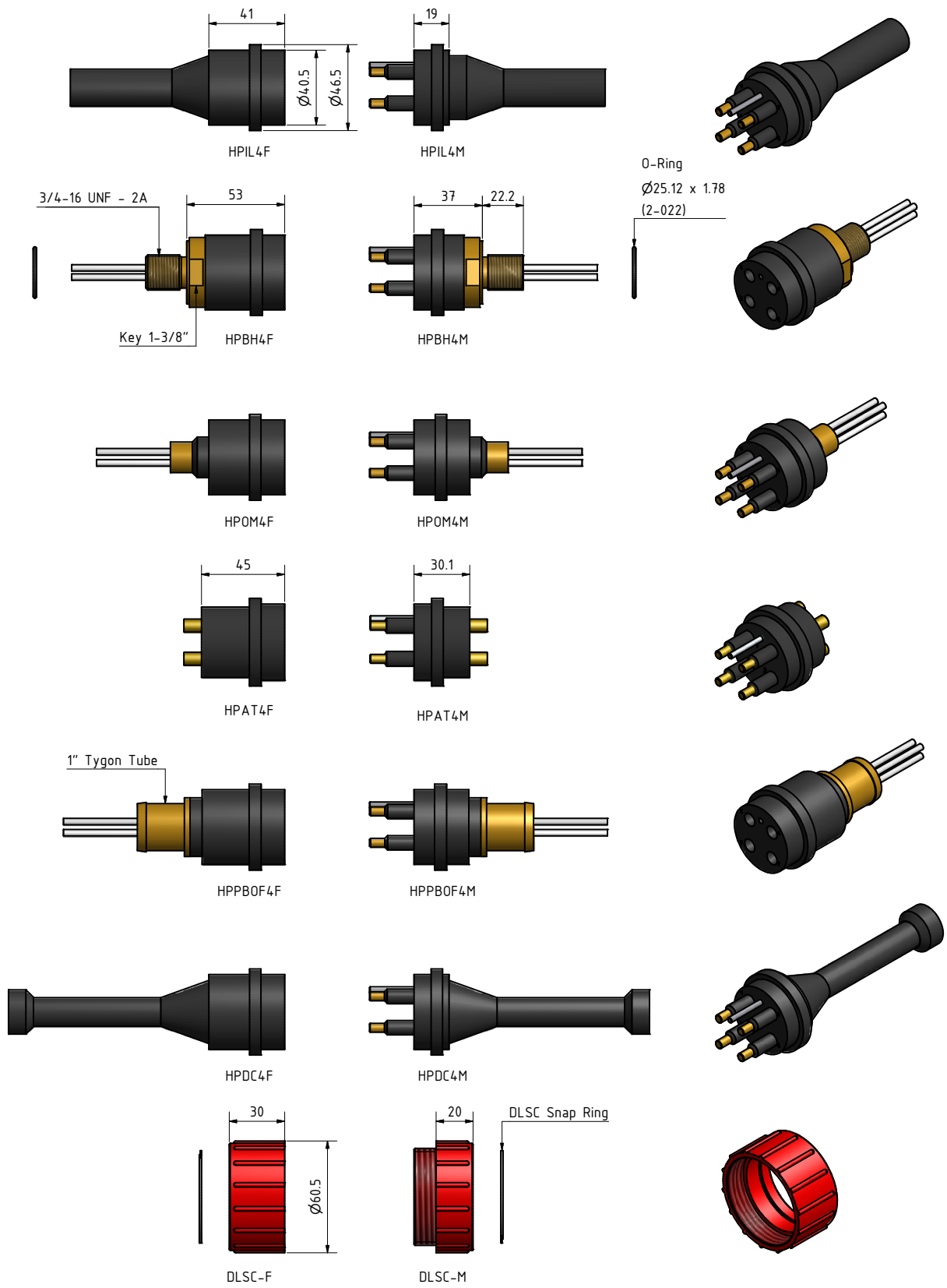


### Inline cable colour code

1 Black	4 Green
2 White	
3 Red	

### 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**

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

*Declan Murray, OSIS Technician  
P&O Maritime Services*

# 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 with dummy connectors and injection moulded polyoxymethylene (POM) or stainless steel locking sleeves.

## Applications include

- 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 include

- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, pigtail 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 AC rms
DC rating	85% of above AC rating
Data rate	1 Gbit/s (up to 75 m)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	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
Snap rings	Stainless steel AISI 302
Inline cable (100 cm, 3.3 ft)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR
Bulkhead leads (100 cm, 3.3 ft)	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
- \*5-6: Orange, Orange/white
- \* Twisted pairs

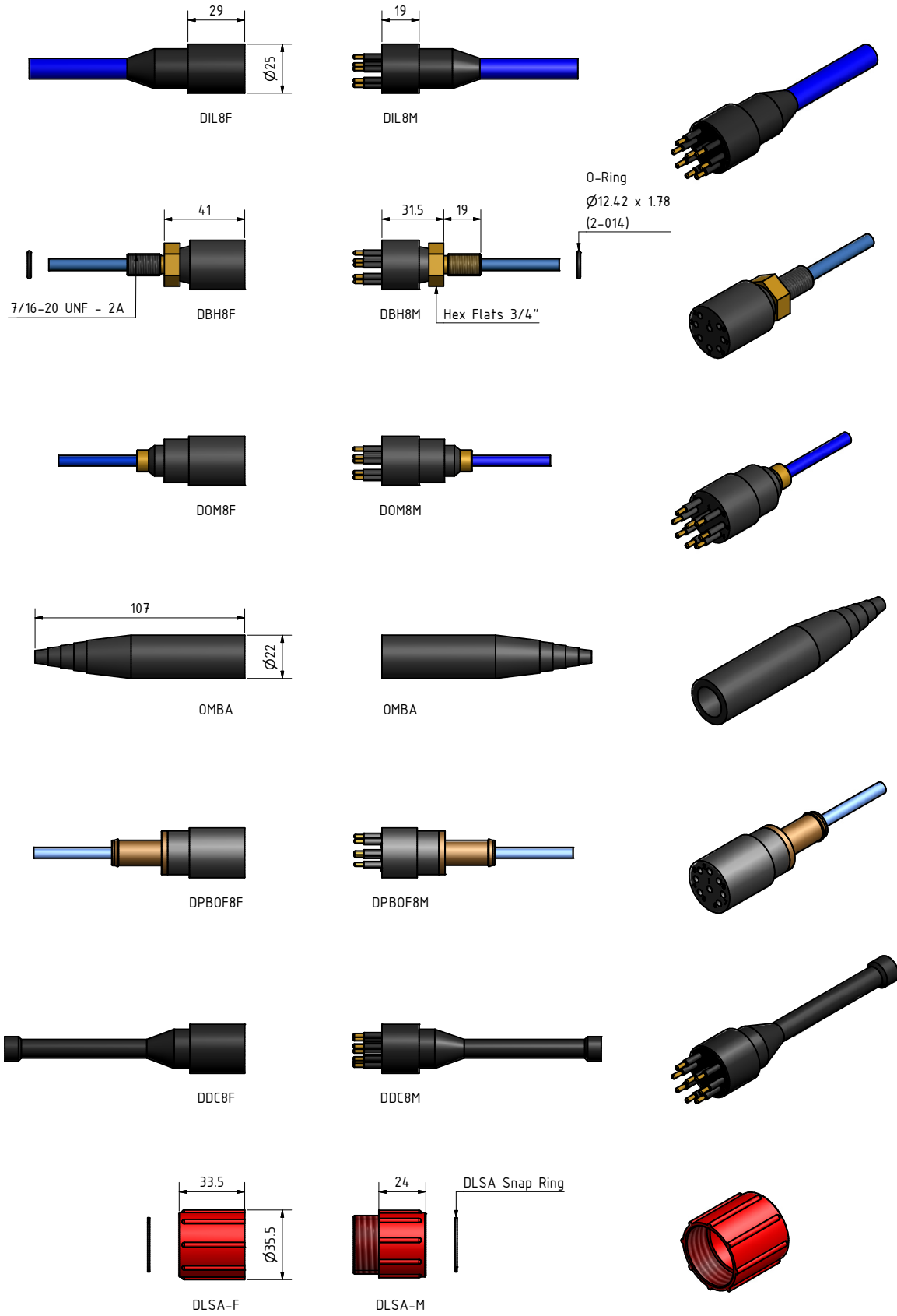
### Nominal cable outside diameter (OD)

PUR cable 0.410", 10.4 mm

### Additional information

Available in shallow water version.





**Drawing information**

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

# SubConn® Power Ethernet Circular

## 13 contacts

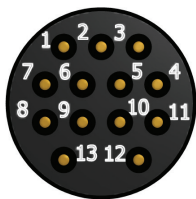
### Connector specifications

Voltage rating	600 V AC rms
Voltage rating on data wire	250 V AC rms
DC rating	85% of above AC rating
Current rating on power wire	4 A per contact (max 16 A per connector)
Data rate	1 Gbit/s (up to 75 m)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	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
Snap rings	Stainless steel AISI 302
Inline cable (100 cm, 3.3 ft)	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 (100 cm, 3.3 ft)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm <sup>2</sup> with coloured wires incl. RJ 45 connector (not installed)

### Face view (male)



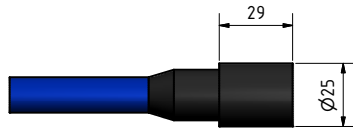
### Inline cable colour code

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

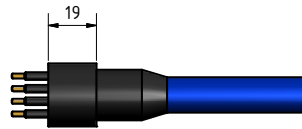
\* Twisted pairs

### Nominal cable outside diameter (OD)

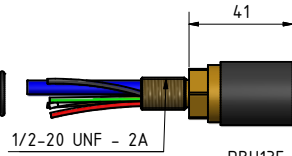
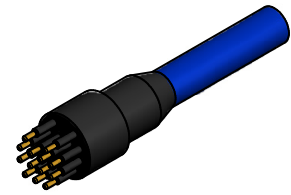
PUR cable 0.550", 13.97 mm



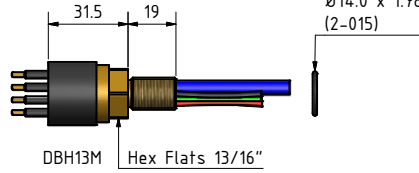
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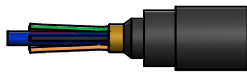
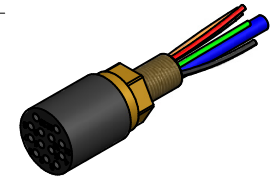
DIL13M



DBH13F



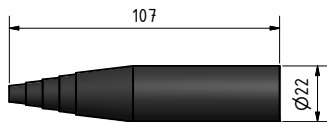
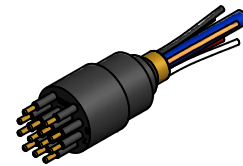
DBH13M



DOM13F



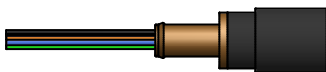
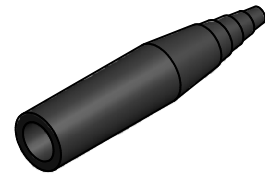
DOM13M



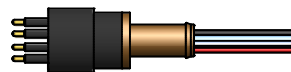
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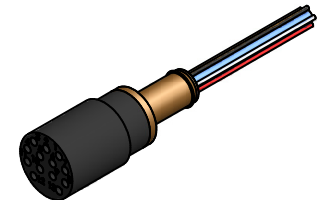
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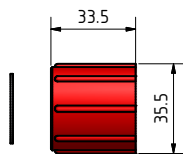
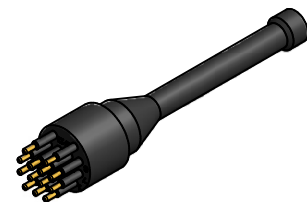
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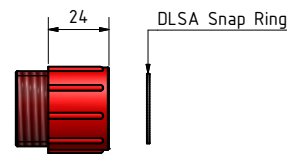
DDC13F



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 Low Profile

## 9 contacts

### Connector specifications

Voltage rating	250 V AC rms
DC rating	85% of above AC rating
Data rate	1 Gbit/s (up to 75 m)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	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 (100 cm, 3.3 ft)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR Screen: Tinned copper braid
Bulkhead leads (100 cm, 3.3 ft)	CAT 5E patch cable incl. RJ 45 connector (not installed)

### Face view (male)

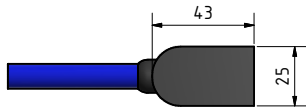


### Inline cable colour code

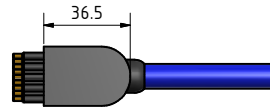
- \*1-2: Brown, Brown/white
- \*3-4: Blue, Blue/white
- \*5-6: Orange, Orange/white
- \* Twisted pairs
- \*7-8: Green, Green/white
- 9: Screen (orange wire on bulkhead)

### Nominal cable outside diameter (OD)

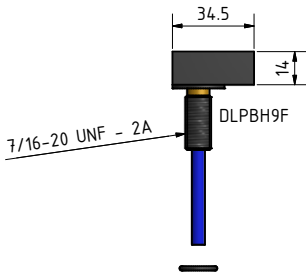
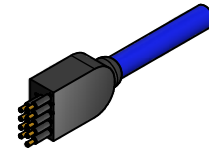
PUR cable 0.410", 10.4 mm



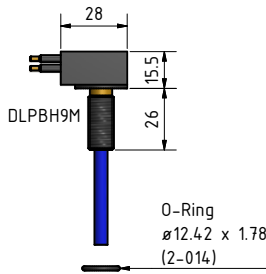
DLPIL9F



DLPIL9M

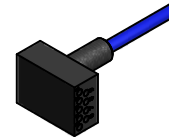


DLPBH9F



DLPBH9M

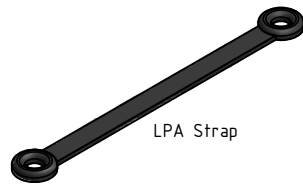
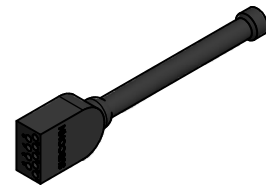
O-Ring  
ø12.42 x 1.78  
(2-014)



DLPDC9F



DLPDC9M



LPA Strap

**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

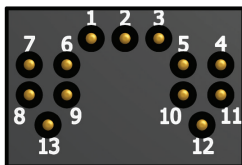
### Connector specifications

Voltage rating	600 V AC rms
Voltage rating on data wire	250 V AC rms
DC rating	85% of above AC rating
Current rating on power wire	4 A per contact (max 16 A per connector)
Data rate	1 Gbit/s (up to 75 m)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	600 bar, 8,700 psi
Depth rating PEEK	300 bar, 4,350 psi

### Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel or titanium
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
O-rings	Nitrile
Locking straps	Chloroprene rubber
Inline cable (100 cm, 3.3 ft)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR Power conductors 4 x 18 AWG, 0.82 mm <sup>2</sup> Screen: Tinned copper braid
Bulkhead leads (100 cm, 3.3 ft)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm <sup>2</sup> with coloured wires incl. RJ 45 connector (not installed)

### Face view (male)



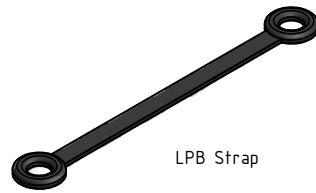
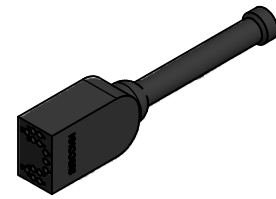
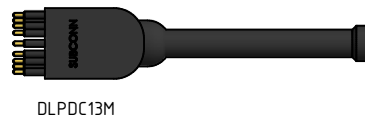
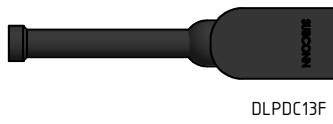
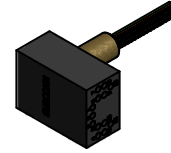
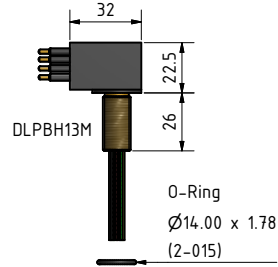
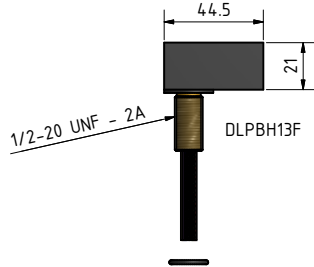
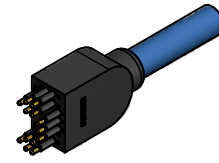
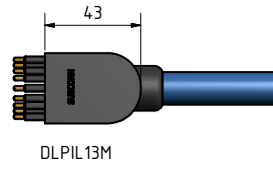
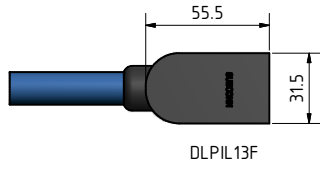
### Inline cable colour code

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



**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 AC rms
DC rating	85% of above AC rating
Data rate	1 Gbit/s (up to 75 m)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	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
Snap rings	Stainless steel AISI 302
Inline cable (100 cm, 3.3 ft)	4 pair 24 AWG, 0.20 mm <sup>2</sup> PUR
Bulkhead leads (100 cm, 3.3 ft)	CAT 5E patch cable incl. RJ 45 connector (not installed)

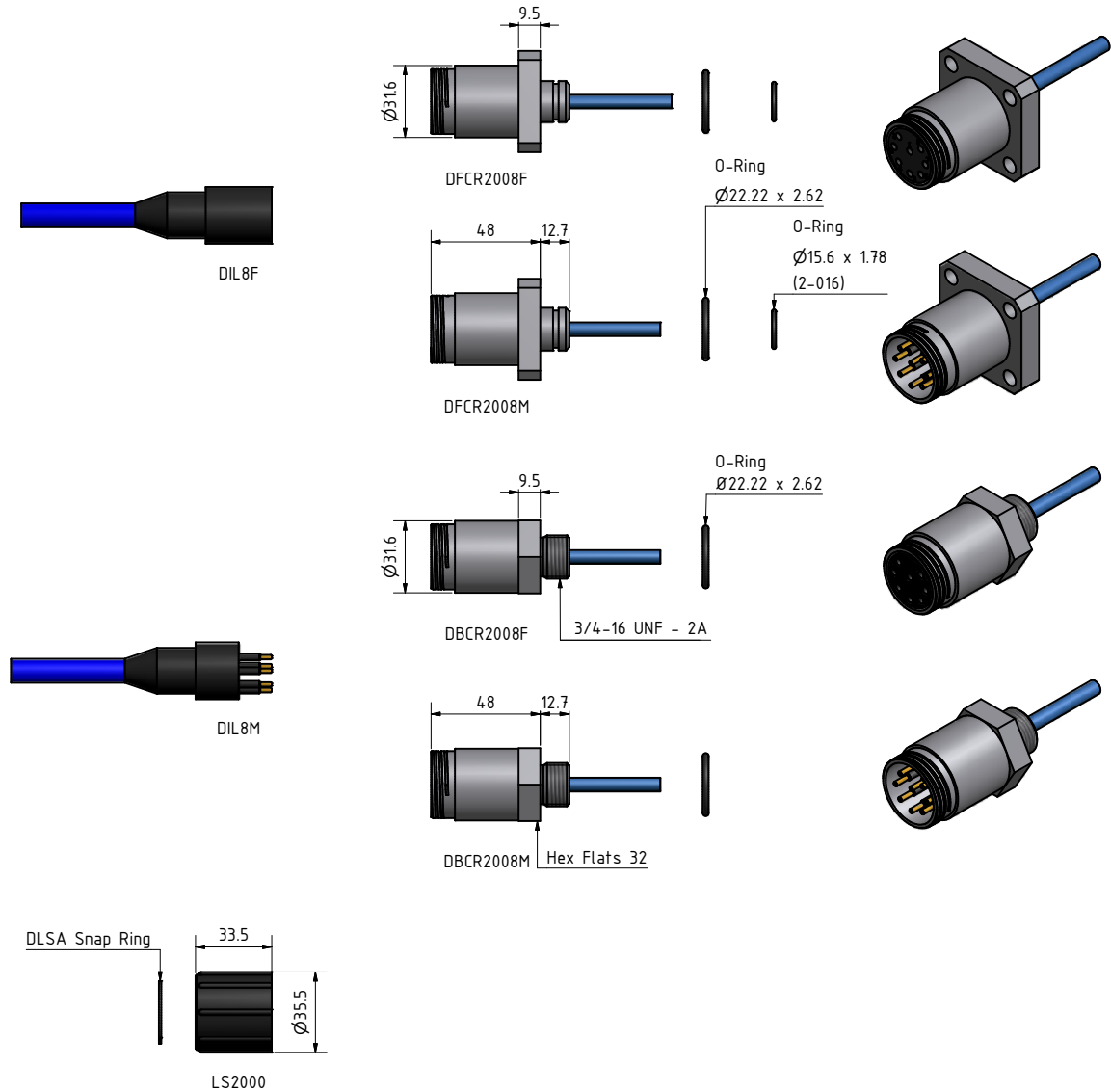
### Face view (male)



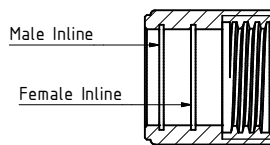
### Inline cable colour code

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





### 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

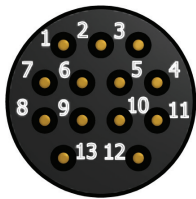
### Connector specifications

Voltage rating	600 V AC rms
Voltage rating on data wire	250 V AC rms
DC rating	85% of above AC rating
Current rating on power wire	4 A per contact (max 16 A per connector)
Data rate	1 Gbit/s (up to 75 m)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	600 bar, 8,700 psi

### Material specifications

Connector body	Chloroprene rubber
Bulkhead body	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
Snap rings	Stainless steel AISI 302
Inline cable (100 cm, 3.3 ft)	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 CAT 5E patch cable, 4 x 20 AWG, 0.52 mm <sup>2</sup> with coloured wires incl. RJ 45 connector (not installed)
Bulkhead leads (100 cm, 3.3 ft)	

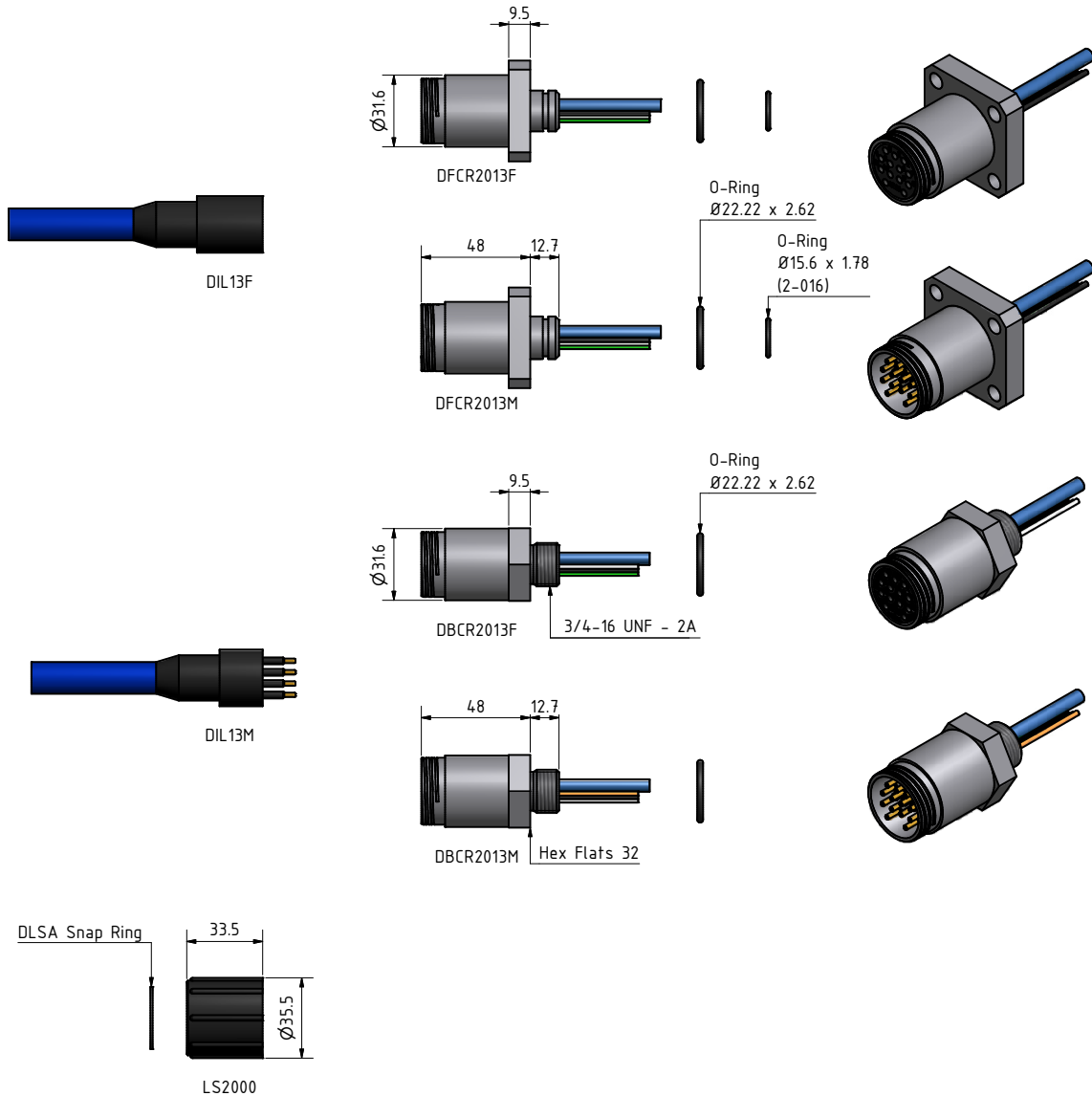
### Face view (male)



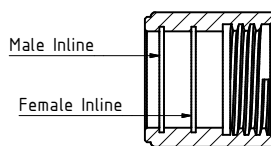
### Inline cable colour code

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



### 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**

*“Seamor Marine selected the quality SubConn® connector products to integrate into our ROV systems. For several years the SubConn® products have performed flawlessly and we are very excited with the recent product innovations such as the Coax connector product line.*

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

*Seamor Marine*

# 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 ohms.

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

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

## Applications include

- 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 include

- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, pigtail and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths

# SubConn® Coax

## Coax and Coax/Electric (50 and 75 ohms)

### Connector specifications

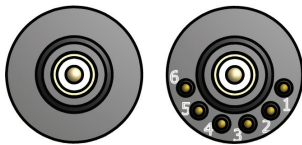
Voltage rating on electric contacts	300 V AC rms							
DC rating	85% of above AC rating							
Current rating on electric contacts	5 A per contact (max 20 A per connector)							
HD video (75 ohms connector version)	HD-SDI SMPTE292M (1.485 Gbps), 1920x1080 60i							
50 ohm frequency*	0.1 GHz	0.3 GHz	0.5 GHz	0.7 GHz	0.9 GHz	1.1 GHz	1.3 GHz	1.5 GHz
50 ohm attenuation*	1.4 dB	3.0 dB	4.1 dB	6.3 dB	8.0 dB	11.2 dB	15.9 dB	18.5 dB
75 ohm frequency*	0.1 GHz	0.3 GHz	0.5 GHz	0.7 GHz	0.9 GHz	1.1 GHz	1.3 GHz	1.5 GHz
75 ohm attenuation*	1.6 dB	3.4 dB	4.5 dB	6.9 dB	7.9 dB	13.7 dB	18.4 dB	22.5 dB
Recommended max frequency for 50 and 75 ohm	1.5 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							
Depth rating	600 bar, 8,700 psi							

**SubConn® Coax connectors are dry mate only, and cannot take open face pressure. Locking sleeves are required.**

### 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
Snap rings	Stainless steel AISI 302
Inline cable (60 cm, 2 ft)	PUR jacket cable with either 50 or 75 ohm coax and 6 x 20 AWG, 0.52 mm <sup>2</sup> conductors RG188 coax RG179 coax
50 ohm bulkhead leads (100 cm 3.3 ft)	RG188 coax
75 ohm bulkhead leads (100 cm 3.3 ft)	RG179 coax
50 ohm 6 contacts bulkhead leads (100 cm 3.3 ft)	5 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE wires and RG188 coax
75 ohm 6 contacts bulkhead leads (100 cm 3.3 ft)	5 x 20 AWG, 0.52 mm <sup>2</sup> coloured PTFE wires and RG179 coax

### Face view (male)



### Inline cable colour code

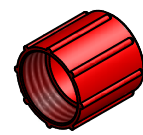
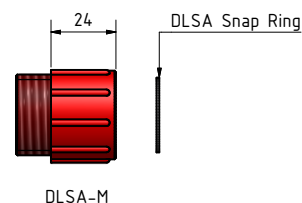
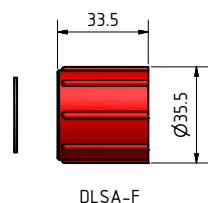
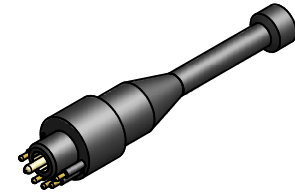
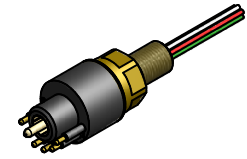
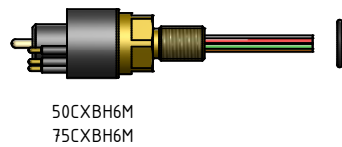
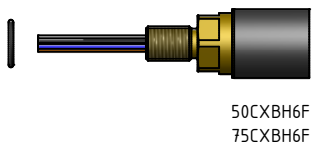
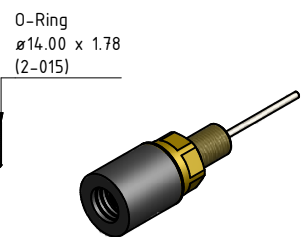
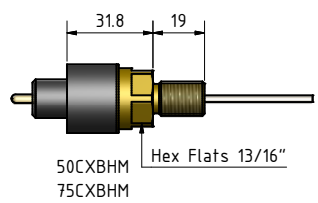
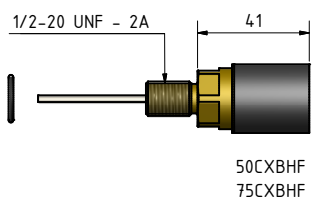
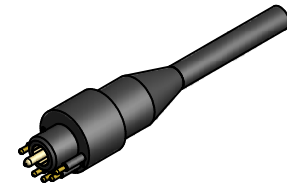
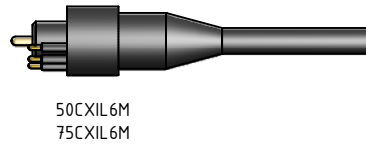
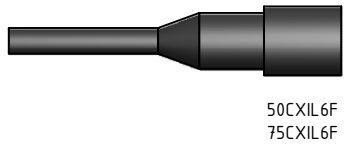
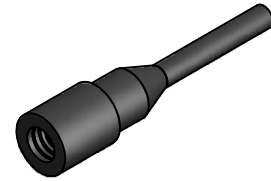
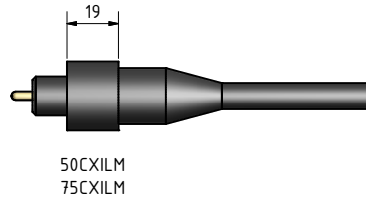
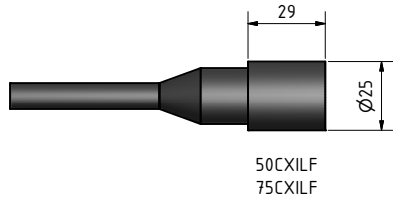
1 Black	4 Green
2 White	5 Orange
3 Red	6 Blue

### Nominal cable outside diameter (OD)

50 ohm coax PUR cable 0.290", 7.38 mm	75 ohm coax PUR cable 0.305", 7.75 mm
50 ohm, 6 conductor PUR cable 0.385", 9.80 mm	75 ohm, 6 conductor PUR cable 0.385", 9.80 mm

### Additional information

\*All frequency and attenuation values are based on a 7 metre cable assembly test including 2 bulkhead connectors.



**Drawing information**

Dimensions in mm (1 mm = 0.03937 inch)  
Threads in inches (1 inch = 25.4 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 to provide a cost-effective product with exceptional quality and reliability."*

*Falmouth Scientific (FSI)*



# SubConn® Specials



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

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

## Applications include

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

## Options include

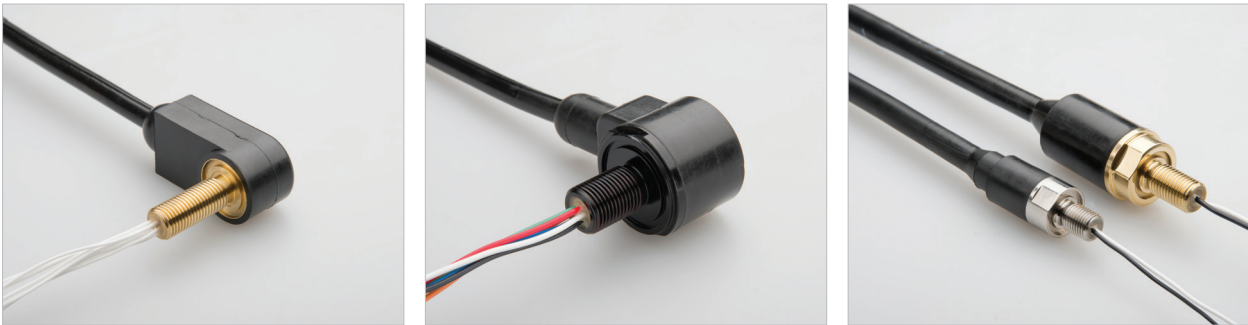
- Customised connectors and cable assembly designs
- Customised harness cables and direct moulding to selected polyurethane (PUR) cables
- Customer specified cable, pigtail and bulkhead thread lengths
- Customer specified connector body material
- Certified pressure testing to specific ocean depths

**Quote**

*“Achieving safe and reliable connection and sealing of instruments is a key to success in any survey operation. At deep water, high pressure and extreme temperature variations are serious issues. YMG uses SubConn connectivity solutions, as they warrant excellent performance and reliability under these harsh conditions.”*

*Andrey Tarasenko, Deputy General Director  
(R&D and Science) with the Russian State Scientific Centre  
Yuzhmorgeologiya (YMG)*

# 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 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 700 bar and are often delivered with dedicated SubConn® cables made from flexible and water-resistant chloroprene rubber or polyurethane (PUR).

## Applications include

- 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 include

- Customer specified penetrator body material
- Chloroprene and polyurethane (PUR) cables and mouldings
- Customised body designs
- Certified pressure testing to specific ocean depths

# SubConn® Penetrator

## Water Blocked Straight

### Connector specifications

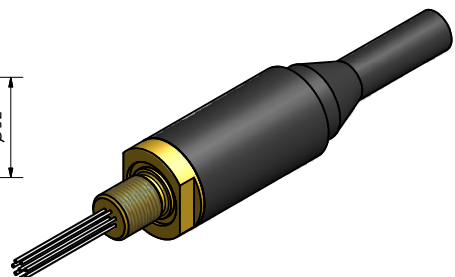
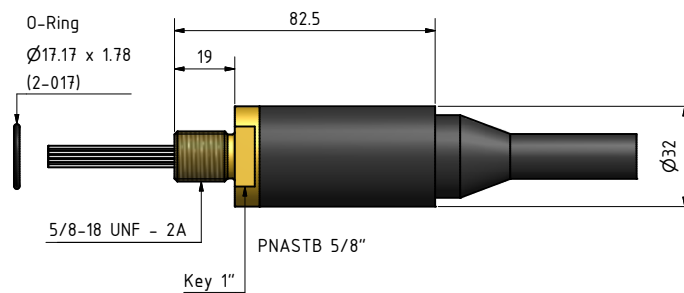
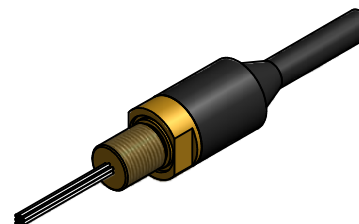
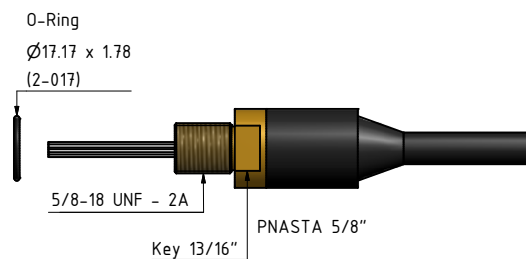
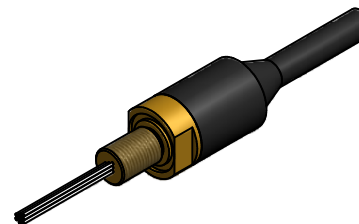
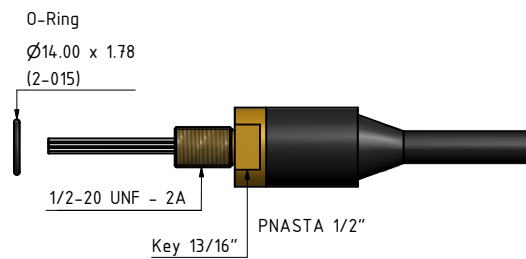
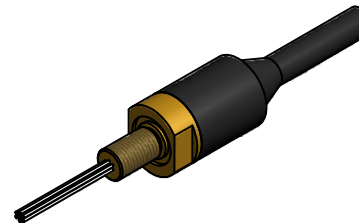
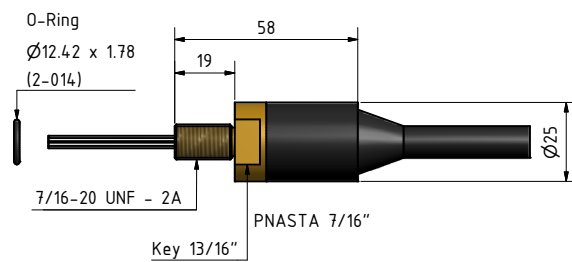
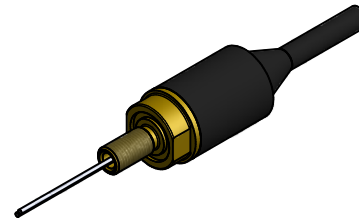
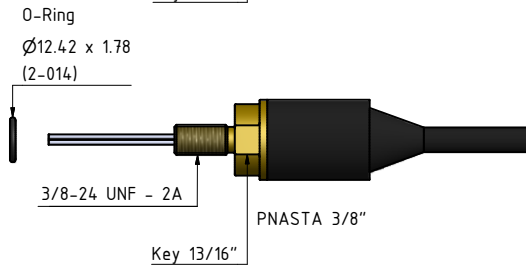
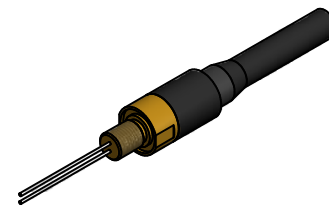
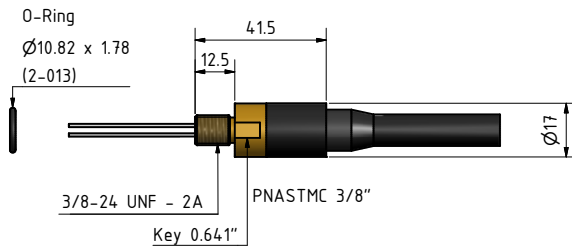
Voltage rating (all penetrators)	300/600 V AC rms (depends on cable)
DC rating	85% of above AC rating
Current rating	Depends on wire and conductor size
Insulation resistance	> 200 Mohm
Temperature rating (water)	- 4 to 60°C, - 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 psi

### Material specifications

Penetrator body	Chloroprene rubber
Penetrator metal part	Brass, stainless steel (other materials on request)
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 pigtail (30 cm, 1 ft)	PTFE
Cable outside diameter	Depends on penetrator and cable type
O-rings	Nitrile
Inline cable length	Customer specified
Inline cable type	Customer specified (SubConn® cables only)

### Inline cable colour code

Depends on corresponding SubConn® connector and cable type



**Drawing information**

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

# SubConn® Penetrator

## Water Blocked Right Angle

### Connector specifications

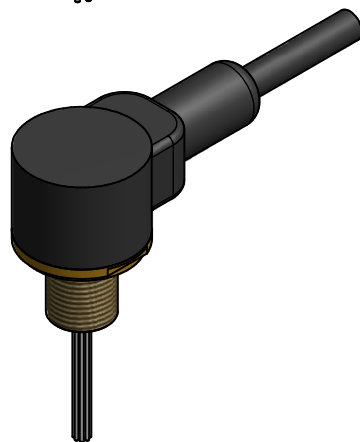
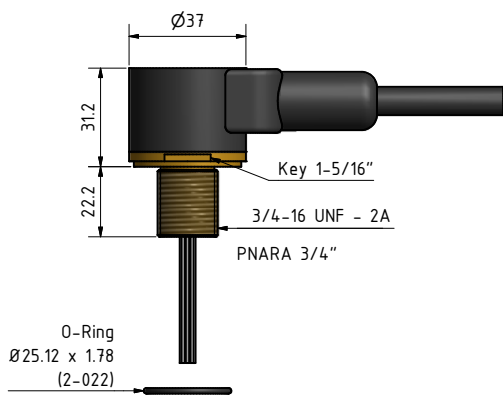
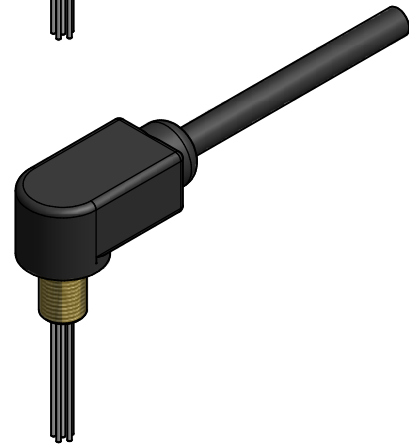
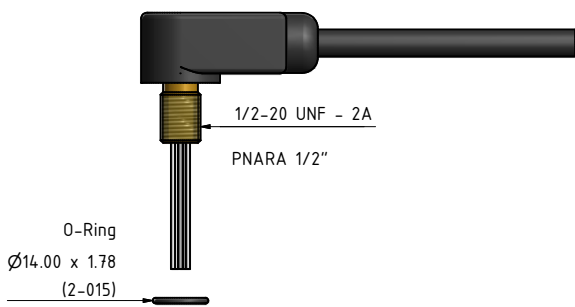
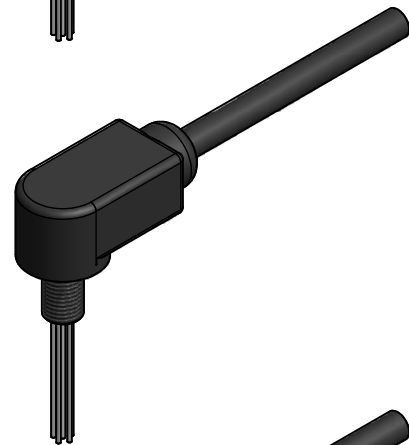
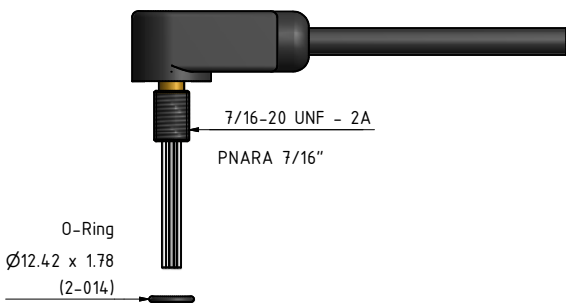
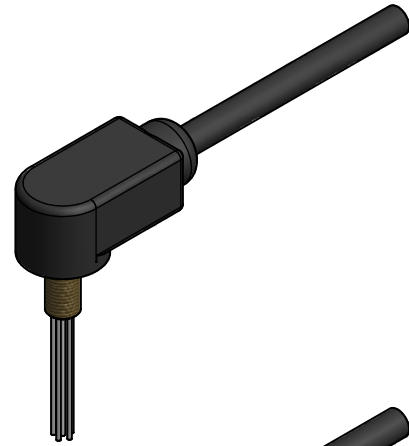
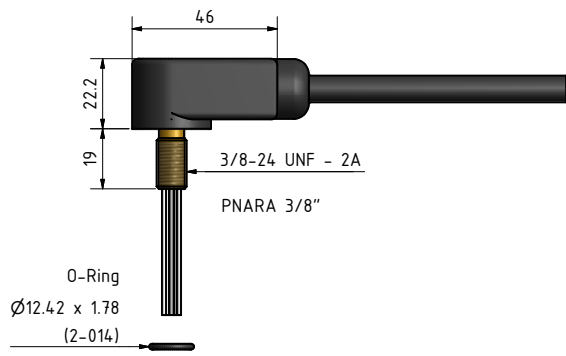
Voltage rating (all penetrators)	300/600 V AC rms (depends on cable)
DC rating	85% of above AC rating
Current rating	Depends on wire and conductor size
Insulation resistance	> 200 Mohm
Temperature rating (water)	- 4 to 60°C, - 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	700 bar, 10,000 psi

### Material specifications

Penetrator body	Chloroprene rubber
Penetrator metal part	Brass, stainless steel (other materials on request)
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 pigtail (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)

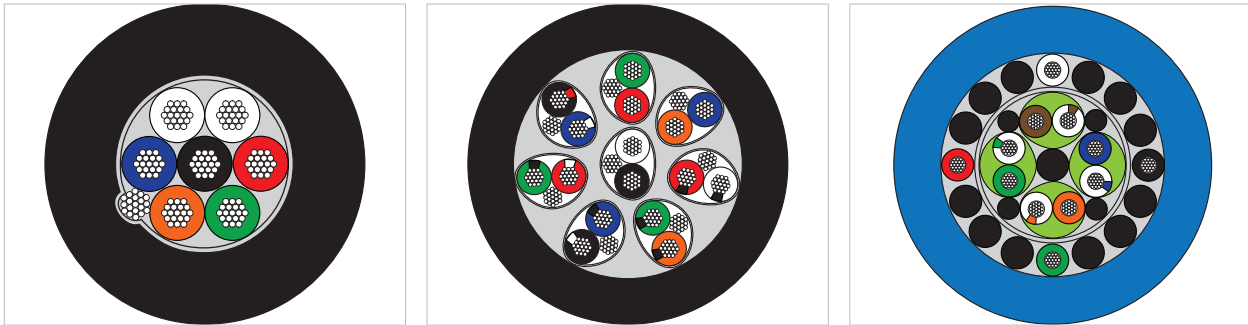
Quote

*"NORDIC DEFENCE INDUSTRIES A/S has used SubConn® connectors since the mid-nineties for our undersea mine disposal equipment, and find them to be extremely robust and reliable in the tough marine environment - both in arctic and subtropical climates."*

*Henning Madsen, Project Manager  
Nordic Defence Industries A/S*



## SubConn® polyurethane cables

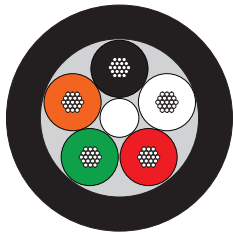


All SubConn® connectors and penetrators can be supplied with dedicated underwater cables of various types and lead configurations. As standard, the majority of SubConn® connectors are supplied with chloroprene rubber cables, while the Ethernet and Coax series, among other, feature polyurethane (PUR) cables as standard.

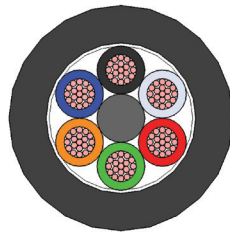
All SubConn® connector products can also be delivered with special polyurethane (PUR) type cables that are specifically designed, manufactured and tested for use with SubConn® connectors. SubConn® holds the entire range of rugged special polyurethane (PUR) cables in stock including several different power and signal lead combinations and dimensions. When procured in conjunction with SubConn® connectors or penetrators, this broad range of special cable options allows the customer to assemble the optimal underwater connectivity solution for any task or application. Furthermore, SubConn is among the few companies within the industry mastering the advanced technique of moulding rubber connectors to polyurethane (PUR) cables hereby allowing customers to obtain even more flexible, efficient and rugged connectivity solutions.

# SubConn® polyurethane cables

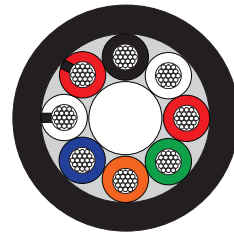
Single conductor cables



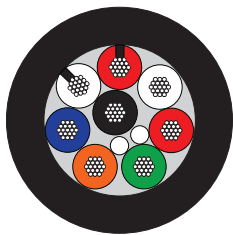
Type: P5C20#  
5 conductors, 20 AWG  
Nominal cable OD: 0.256", 6.50 mm



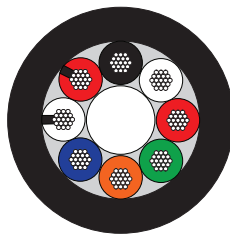
Type: P6C16#  
6 conductors, 16 AWG  
Nominal cable OD: 0.365", 9.28 mm



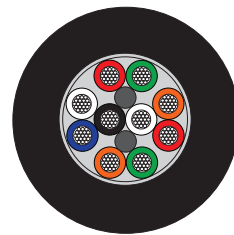
Type: P8C22#-a  
8 conductors, 22 AWG  
Nominal cable OD: 0.250", 6.35 mm



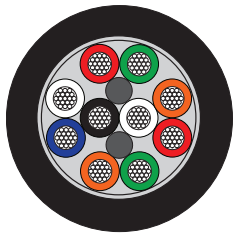
Type: P8C22#-b  
8 conductors, 22 AWG  
Nominal cable OD: 0.300", 7.62 mm



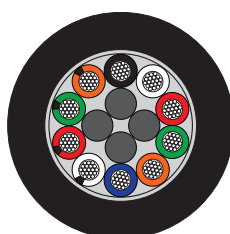
Type: P8C20#  
8 conductors, 20 AWG  
Nominal cable OD: 0.354", 9.00 mm



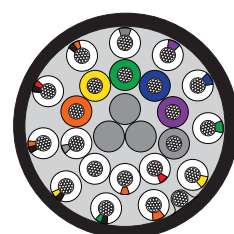
Type: P10C18#-a  
10 conductors, 18 AWG  
Nominal cable OD: 0.420", 10.67 mm



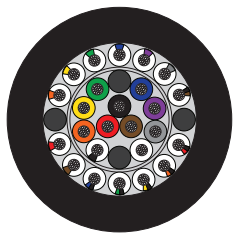
Type: P10C18#-b  
10 conductors, 18 AWG  
Nominal cable OD: 0.380", 9.65 mm



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

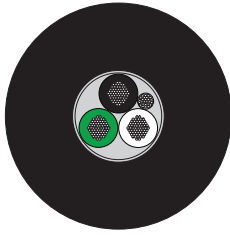


\* Type: P21C20#OS  
21 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.578", 14.70 mm

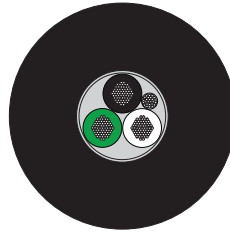


\* Type: P22C20#/3C18#  
22 conductors, 20 AWG  
3 conductors, 18 AWG  
Nominal cable OD: 0.589", 14.96 mm

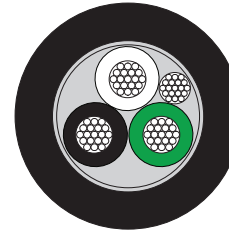
\* The cable is part of our standard cable range



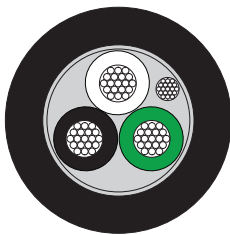
Type: P3C12# OS  
3 conductors, 12 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.450", 11.43 mm



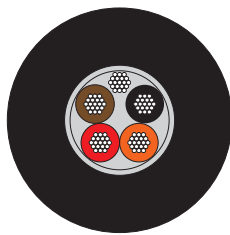
Type: P3C10# OS  
3 conductors, 10 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.500", 12.70 mm



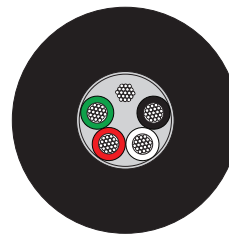
Type: P3C18# OS  
3 conductors, 18 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.259", 6.58 mm



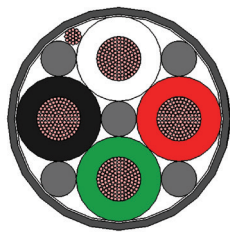
Type: P3C16# OS  
3 conductors, 16 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.285", 7.24 mm



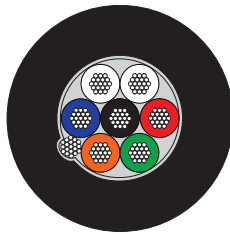
Type: P4C20# OS  
4 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.311", 7.90 mm



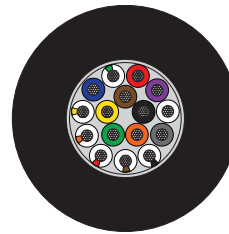
Type: P4C18# OS  
4 conductors, 18 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.325", 8.26 mm



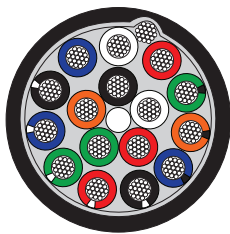
Type: P4C8#OS-PP  
4 conductors, 8 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.652", 16.55 mm



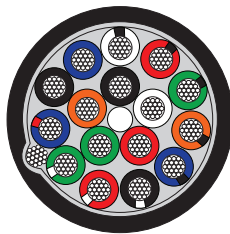
Type: P7C20# OS  
7 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.315", 8.00 mm



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



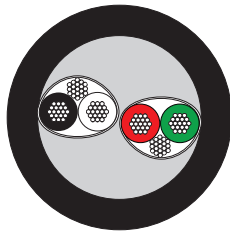
Type: P16C16# OS  
16 conductors, 16 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.560", 14.23 mm



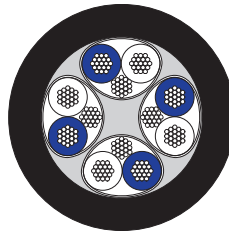
Type: P16C20# OS  
16 conductors, 20 AWG  
Overall screen with foil and drain wire  
Nominal cable OD: 0.409", 10.40 mm

Our assortment of polyurethane cables continues on next page

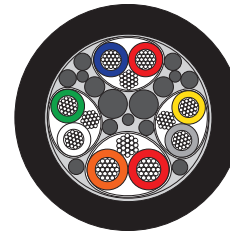
Shielded twisted pair cables



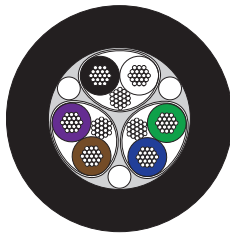
Type: P2TSP20#  
2 twisted screened pairs, 20 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.335", 8.50 mm



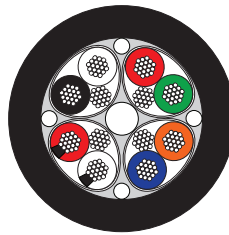
Type: P4TSP18#  
4 twisted screened pairs, 18 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.500", 12.70 mm



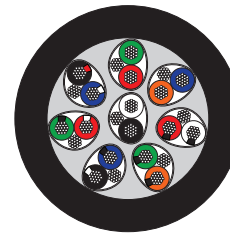
Type: P3TSP22#/1TSP18#  
3 twisted screened pairs, 22 AWG  
1 twisted screened pair, 18 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.400", 10.16 mm



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

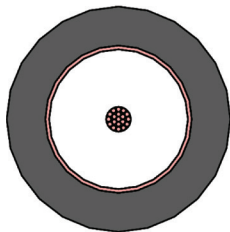


Type: P4TSP20#  
4 twisted screened pairs, 20 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.409", 10.40 mm

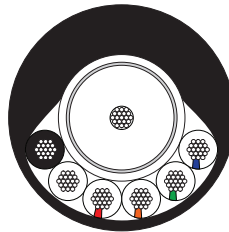


Type: P8TSP20#  
8 twisted screened pairs, 20 AWG  
Screens with foil and drain wire  
Nominal cable OD: 0.508", 12.90 mm

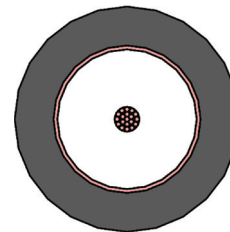
Coax cables



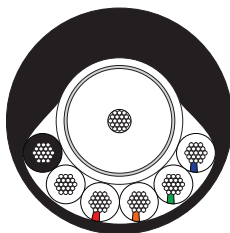
\* Type: PCX75  
1 Coax, 75 Ω  
Nominal cable OD: 0.305", 7.75 mm



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



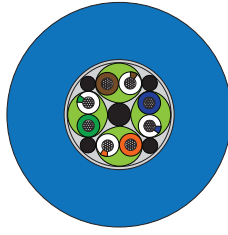
\* Type: PCX50  
1 Coax, 50 Ω  
Nominal cable OD: 0.291", 7.38 mm



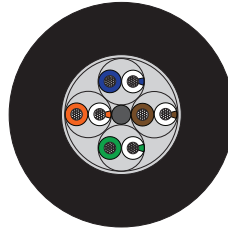
\* Type: PSCX6C20# 50Ω  
6 conductors, 20 AWG  
1 Coax, 50 Ω  
Nominal cable OD: 0.386", 9.80 mm

\* The cable is part of our standard cable range

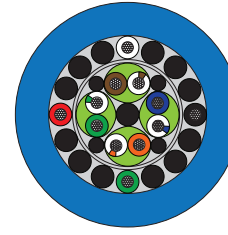
Ethernet cables



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

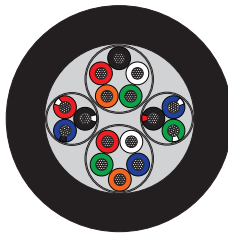


Type: D-P4TP24#SW  
4 twisted pairs, 24 AWG  
Shallow water version  
Nominal cable OD: 0.380", 9.65 mm

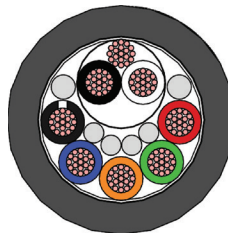


\* Type: D-P4TP24#/4C18#  
4 twisted pairs, 24 AWG  
Overall screen with copper braiding  
4 conductors, 18 AWG  
Nominal cable OD: 0.550", 13.97 mm

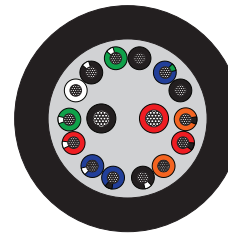
Other cables



Type: FM250019  
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

### General cable information

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

### General cable assembly information

- All cable assemblies are measured from rubber connector face to rubber connector face
- Our standard cable assembly tolerances are +/- 1" (25,4 mm) on the ordered cable length, lower tolerances need approval from the supplier

### General termination information

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

\* The cable is part of our standard cable range

**Quote**

*"Coupled with timely local and global MacArtney availability and customer support, the excellent performance and reliability of SubConn® connectors make them an integral part of Nuytco's manned submersible product line."*

*Mike Reay, Nuytco Lead Engineering Technologist  
Nuytco Research*

## SubConn® additional accessories



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

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

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

## Locking sleeves

Besides our standard locking sleeves, we offer locking sleeves in a range of colours.

DLSA-M/F



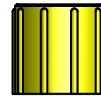
Red



Blue



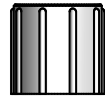
Black



Yellow

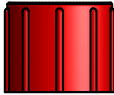


Green



White

DLSB-M/F



Red



Blue



Black

DLSC-M/F



Red



Blue

MCDLS-M/F



Red



Blue



Black



Orange



Green

LS2000



Black

LS2400



Black

DLSM1-M/F



Black

## Hoses for pressure balanced oil filled connectors

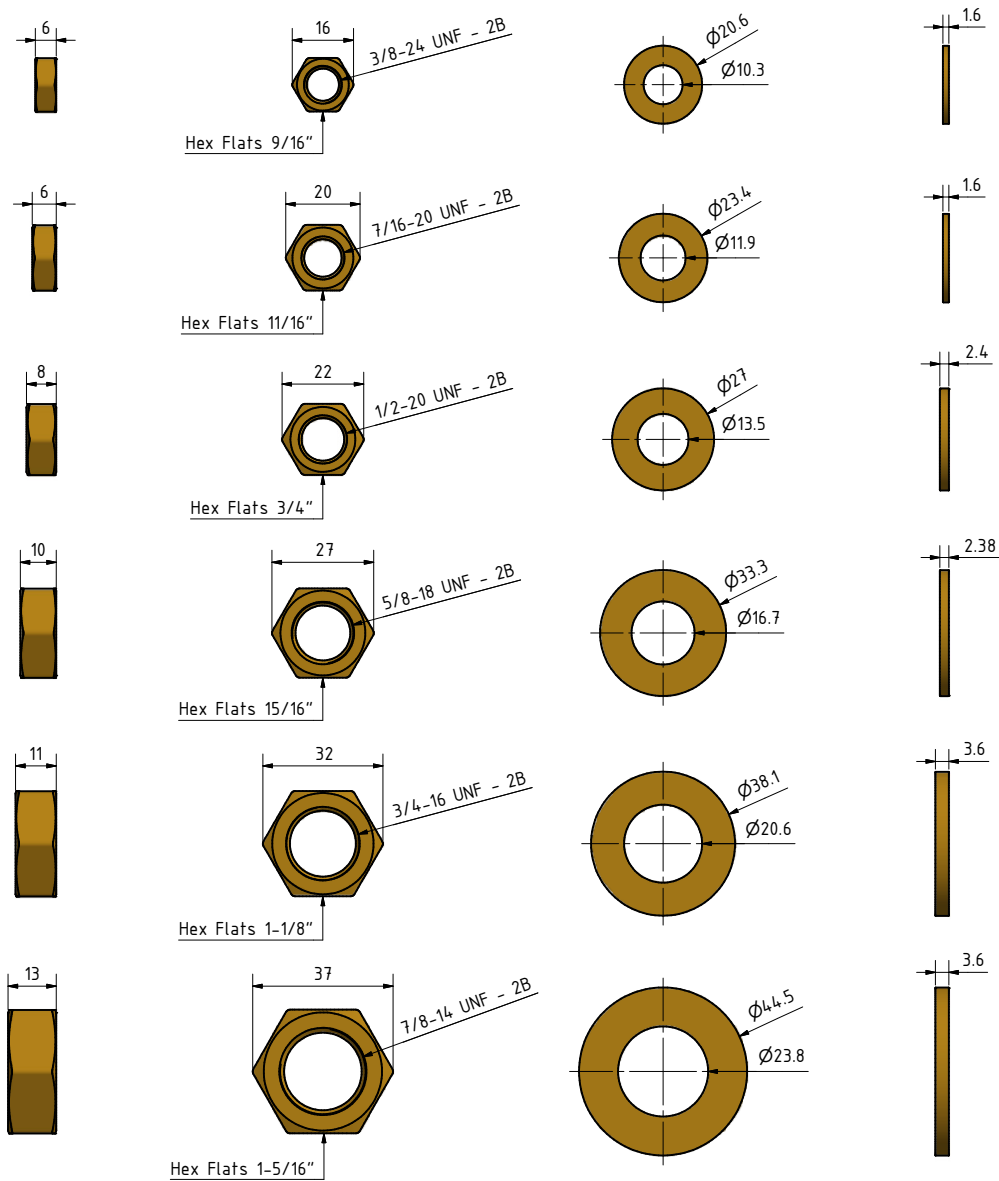
MacArtney holds a stock of recommended hoses for Pressure Balanced Oil Filled (PBOF) connectors.

- Tygon hose type C-120-A with 1/2" ID and 5/8" OD
- Tygon hose type C-120-A with 5/8" ID and 13/16" OD
- Tygon hose type C-120-A with 25.4 mm ID and 31.8 mm OD



## Nuts and washers

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



## Products for handling

### Isopropyl

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

### Loctite

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

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

### Molykote 44

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

**Quote**

*"Cost effective and with excellent performance, SubConn is the first choice for our deep ocean applications."*

*Ocean University of China*

# General technical information

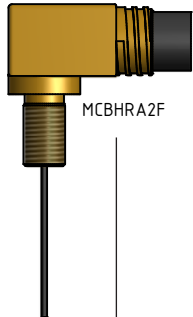
SubConn® connectors are designed, manufactured and tested for use in harsh marine environments. Operators are encouraged to read this section carefully and to follow the recommendations and instructions, in order to sustain the performance and extend the lifespan of their SubConn® connectors.

## Contents of this section:

- Abbreviation list
- Mounting specifications for Metal Shell
- SubConn® connector body material types
- Recommended torque on SubConn® connector threads sizes
- AWG to metric
- Recommended mounting hole
- Mounting procedure for Low Profile strap
- SubConn® handling instructions
- Corrosion and debonding

# 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>50CX</b>	50 Ohm Coax
<b>75CX</b>	75 Ohm Coax
<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>	Anodized Aluminium
<b>TI</b>	Titanium
<b>UNS32550</b>	Super Duplex
<b>NM</b>	Non Metallic
<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)

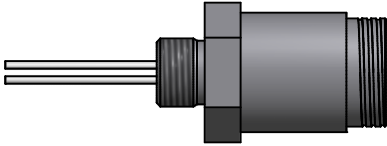


DLSA-F

DLS A - F

<b>DLS</b>	Delrin
<b>BLS</b>	Brass
<b>MCDLS</b>	Micro Delrin
<b>SSLS</b>	Stainless steel
<b>MCDDWLS</b>	Micro Delrin 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

**Locking sleeves (LS)**



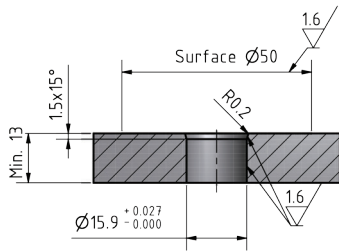
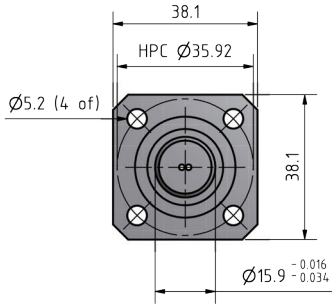
LS2000

**LS 2000**

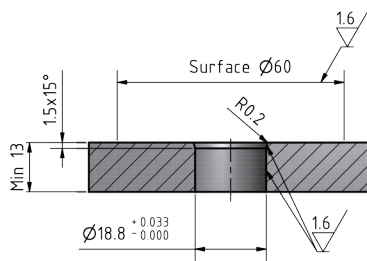
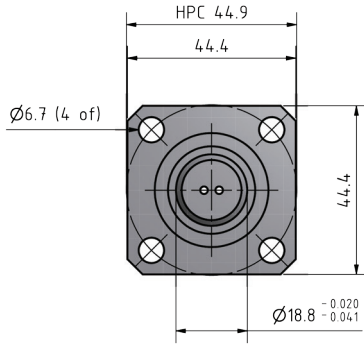
<b>LS</b>	Delrin
<b>SSLS</b>	Stainless steel
<b>2000</b>	Shell size (series)
<b>1500</b>	Metal Shell series uses MCDLS locking sleeves

# Mounting specifications for Metal Shell

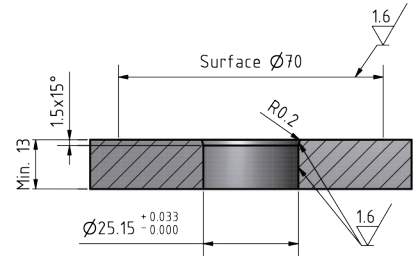
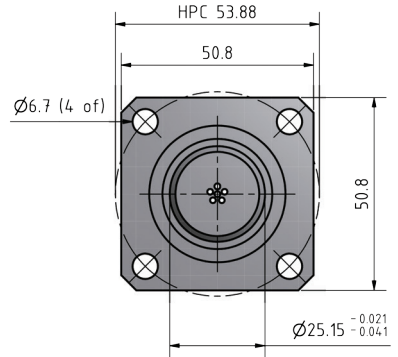
**FCR 1500 series**



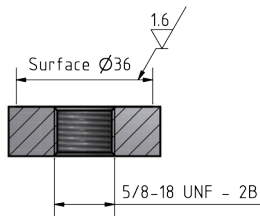
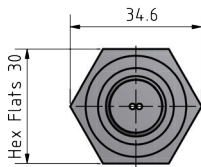
**FCR 2000 series**



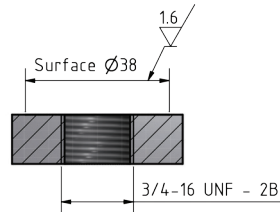
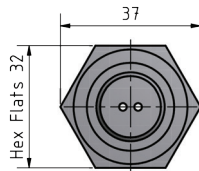
**FCR 2400 series**



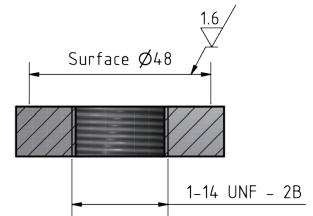
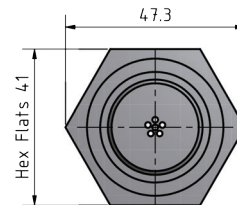
**BCR 1500 series**



**BCR 2000 series**



**BCR 2400 series**



## SubConn® connector body material types

Brass	UNS-C36000
Aluminium	6061, hard anodised
Stainless steel	AISI 316
Titanium	Grades 5 (GR5)
PEEK	PEEK 30
Other materials available on request	

## Recommended torque on SubConn® threads 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

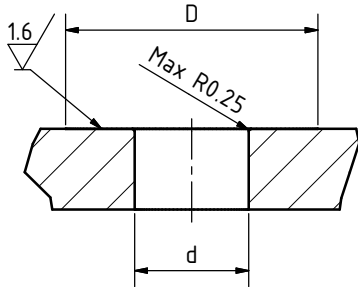
A range of nuts and washers are available in stainless steel and brass for all thread-sizes mentioned above  
Please consult the additional accessories list.

## American wire gauge (AWG) to metric

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

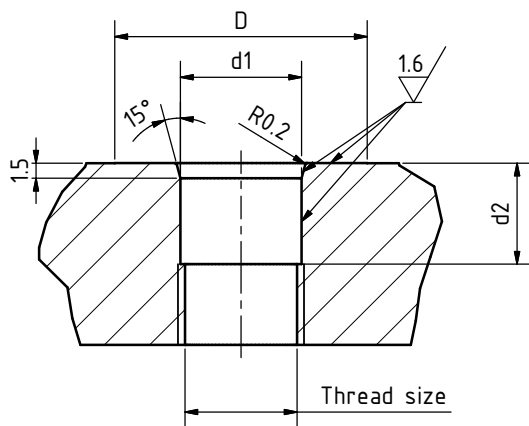
## Recommended mounting hole

### Single o-ring



Thread size	Hole size (d)	Tolerance	Surface size (D)
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 0.534", 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 1.965", 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

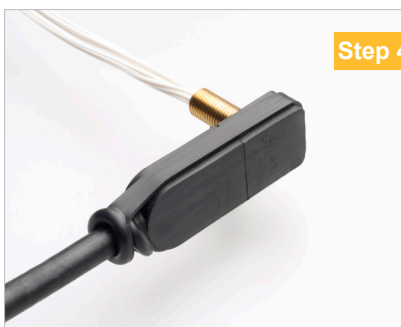
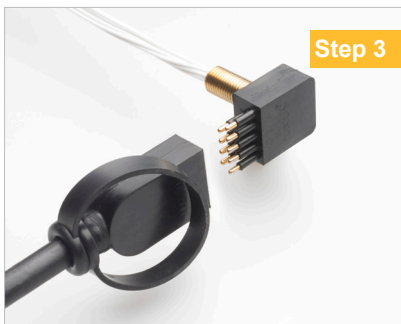
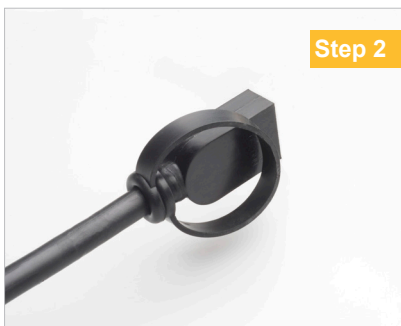
### Double o-ring



Thread size	Hole size (d1)	Tolerance	Hole depth (d2)	Tolerance
7/16"	ø 0.49", ø12 mm	H8	ø 0.41", 10.5 mm	+/- 0.1
1/2"	ø 0.55", ø14 mm	H8	ø 0.52", 13.2 mm	+/- 0.1



## Mounting procedure for Low Profile strap



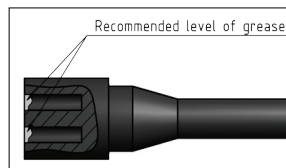
## SubConn® handling instructions

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

### Handling

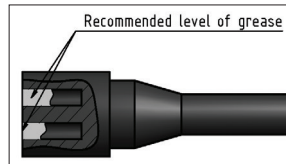
- Always apply grease before mating
- Disconnect by pulling straight, not at an angle
- Do not pull on the cable and avoid sharp bends at cable entry
- When using a bulkhead connector, ensure that there are no angular loads
- Make sure to apply the recommended torque when tightening bulkhead nuts (see page 108)
- 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 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

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

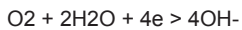
### Use of Loctite

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

## 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.

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

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

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

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

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

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

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

**INDEX - SubConn® underwater and harsh environment connectors****Introduction**

Contact information .....	4
About SubConn .....	5
About MacArtney .....	5

**SubConn®  
Circular series**

SubConn® Circular series .....	7
SubConn® Circular - Mini 1 contact .....	8-9
SubConn® Circular - 2, 3, 4 and 5 contacts .....	10-11
SubConn® Circular - 6, 8 and 10 contacts .....	12-13
SubConn® Circular Right Angle - 6, 8 and 10 contacts .....	14-15
SubConn® Circular - 12, 16 and 25 contacts .....	16-17

**SubConn®  
Micro Circular series**

SubConn® Micro Circular series .....	19
SubConn® Micro Circular - 1 contact .....	20-21
SubConn® Micro Circular - 2, 3, 4, 5, 6, and 8 contacts and G2 2, 3, and 4 contacts .....	22-23
SubConn® Micro Circular Double O-ring - 2, 3, 4, 5, 6, and G2 2, 3, and 4 contacts .....	24-25
SubConn® Micro Circular - 10, 12 and 16 contacts .....	26-27
SubConn® Micro Circular Double O-ring - 10, 12 and 16 contacts .....	28-29
SubConn® Micro Circular - 21 contacts .....	30-31

**SubConn®  
Low Profile series**

SubConn® Low Profile series .....	33
SubConn® Low Profile - 2 contacts .....	34-35
SubConn® Low Profile - 3 and 4 contacts .....	36-37
SubConn® Low Profile - 5 contacts .....	38-39
SubConn® Low Profile - 7 contacts .....	40-41
SubConn® Low Profile - 9 contacts .....	42-43
SubConn® Low Profile Reed Switch - 2 contacts .....	44-45

**SubConn®  
Micro Low Profile series**

SubConn® Micro Low Profile series .....	47
SubConn® Micro Low Profile - 3 contacts .....	48-49
SubConn® Micro Low Profile - 7 and 9 contacts .....	50-51

**SubConn®  
Metal Shell series**

SubConn® Metal Shell series .....	53
SubConn® Metal Shell 1500 - 2, 3, 4, 5, 6 and 8 contacts and G2 2, 3, and 4 contacts .....	54-55
SubConn® Metal Shell 2000 - 2, 3, 4, 10 and 12 contacts .....	56-57
SubConn® Metal Shell 2400 - 6, 8 and 10 contacts .....	58-59

**SubConn®  
Power series**

SubConn® Power series .....	61
SubConn® Power - 1 contact .....	62-63
SubConn® Power Battery - 2, 3 and 4 contacts .....	64-65
SubConn® Power High Power - 4 contacts .....	66-67

**SubConn®  
Ethernet series**

SubConn® Ethernet series .....	69
SubConn® Ethernet Circular - 8 contacts .....	70-71
SubConn® Ethernet Circular - 13 contacts .....	72-73
SubConn® Ethernet Low Profile - 9 contacts .....	74-75
SubConn® Power Ethernet Low Profile - 13 contacts .....	76-77
SubConn® Ethernet Metal Shell 2000 - 8 contacts .....	78-79
SubConn® Ethernet Metal Shell 2000 - 13 contacts .....	80-81

**SubConn®  
Coax series**

SubConn® Coax series .....	83
SubConn® Coax - Coax and Coax/Electric (50 and 75 ohm) .....	84-85

**SubConn® specials**

SubConn® specials .....	87
-------------------------	----

**SubConn®  
Penetrator series**

SubConn® Penetrator series .....	89
SubConn® Penetrator - Water Blocked Straight .....	90-91
SubConn® Penetrator - Water Blocked Right Angle .....	92-93

**SubConn®  
polyurethane cables**

SubConn® polyurethane (PUR) cables .....95

**Additional accessories**

SubConn® Accessoires ..... 101

SubConn® locking sleeves..... 102

SubConn® hose for Pressure Balanced Oil Filled  
(PBOF) connectors ..... 102

SubConn® products for handling ..... 102

SubConn® nuts and washers ..... 103

**General technical information**

General technical information ..... 105

Abbreviation list ..... 106-107

Mounting specifications for Metal Shell ..... 108

SubConn® connector body material types ..... 109

Recommended torque on different  
standard SubConn® connector threads ..... 109

American wire gauge (AWG)  
to metric conversion chart ..... 109

Recommended mounting hole ..... 110

Mounting procedure for Low Profile strap ..... 111

SubConn® handling instructions ..... 112

Information on debonding and corrosion ..... 113







**MacArtney**  
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