

SubConn[®]
DEPENDABILITY AT EVERY LEVEL

**Underwater
and harsh
environment
connectors**

3rd
edition

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Specifications are subject to change without prior notice.



SubConn and the MacArtney Underwater Technology Group have been supplying the world's leading range of underwater pluggable electrical connectors to the demanding underwater industry for 40 years.

<p>Introduction</p> <p>General information and background about SubConn® and the MacArtney Underwater Technology Group.</p> <p style="text-align: right;">4-7</p>	<p>SubConn® Circular series</p> <p>The Circular series forms the basis of the technology that characterises most SubConn® products available today. First introduced in 1978, these connectors are available in various standard sizes and figurations.</p> <p style="text-align: right;">9-21</p>	<p>SubConn® Micro Circular series</p> <p>Based on the original SubConn® Circular series, SubConn® Micro connectors were developed to suit the increasingly more compact design of underwater instruments, equipment and systems.</p> <p style="text-align: right;">23-35</p>
<p>SubConn® Low Profile series</p> <p>The SubConn® Low Profile series is designed to offer connectivity for underwater systems and equipment where space is restricted or a more compact solution is required.</p> <p style="text-align: right;">37-49</p>	<p>SubConn® Micro Low Profile series</p> <p>The SubConn® Micro Low Profile series was developed to suit the increasingly more compact design of underwater instruments, equipment and systems requiring restricted space or a compact solution.</p> <p style="text-align: right;">51-55</p>	<p>SubConn® Metal Shell series</p> <p>The SubConn® Metal Shell series represents an alternative to Circular series bulkhead connectors where an even more rugged, resilient and protected underwater connectivity solution is required.</p> <p style="text-align: right;">57-63</p>
<p>SubConn® Power series</p> <p>The SubConn® Power series is designed to offer a high performance and dependable connector solution to accommodate the ever growing power requirements of underwater system operators and industries.</p> <p style="text-align: right;">65-71</p>	<p>SubConn® Ethernet series</p> <p>The SubConn® Ethernet series marked the first highspeed underwater communications system to offer true Ethernet type performance. Accommodates the demand for Gigabit data speed.</p> <p style="text-align: right;">73-85</p>	<p>SubConn® Coax series</p> <p>The SubConn® Coax connector series is primarily used for facilitating the transmission of HD video signal within and between underwater systems and for interfacing HD video based equipment.</p> <p style="text-align: right;">87-91</p>
<p>SubConn® Specials</p> <p>SubConn® holds extensive experience and expertise in supplying special connector solutions for multiple specific applications like pool cleaning or oceanographic sensors.</p> <p style="text-align: right;">92-93</p>	<p>SubConn® Penetrator series</p> <p>The SubConn® Penetrator series is a fixed installation alternative to inline and bulkhead connectors. SubConn® Penetrators are primarily used for applications, direct signal and power feedthrough emphasising.</p> <p style="text-align: right;">95-99</p>	<p>SubConn® polyurethane cables</p> <p>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.</p> <p style="text-align: right;">101-105</p>
<p>SubConn® additional accessories</p> <p>The SubConn® connectors are available with a full range of accessories held in stock with MacArtney.</p> <p style="text-align: right;">107-111</p>	<p>General technical information</p> <p>Abbreviation list, mounting specifications, handling instructions, recommended torque on SubConn® connector thread sizes, corrosion and debonding information.</p> <p style="text-align: right;">113-125</p>	<p>Index</p> <p>Page-indexed table of contents.</p> <p style="text-align: right;">126-127</p>

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About SubConn®

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

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

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

Standard, special and custom connectors

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

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

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

About MacArtney

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

MacArtney and SubConn®

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

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

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

MacArtney SubConn® applications

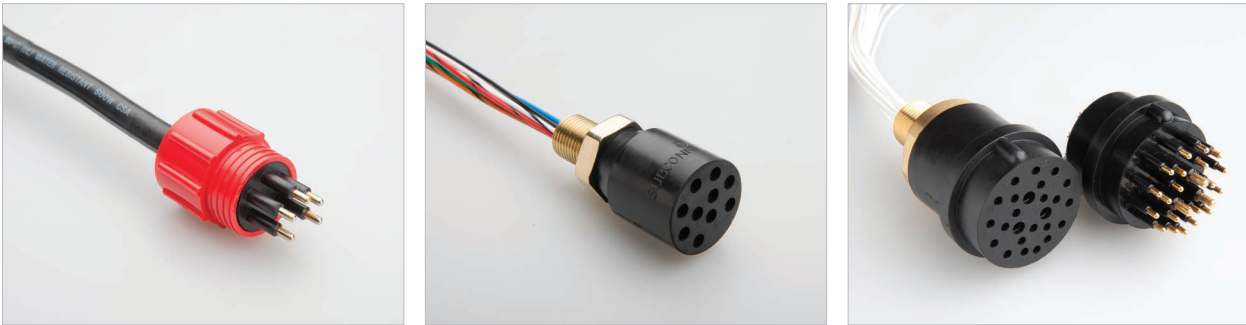
Over the years, SubConn® products have been the primary provider of connectivity infrastructure to MacArtney underwater technology systems and solutions. SubConn® connectors are used on MacArtney EMO and NEXUS multiplexers, LUXUS cameras and lights, FOCUS and TRIAXUS remotely operated towed vehicles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

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

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

Applications

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

Options

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

SubConn® Circular

Mini 1 contact

Connector specifications

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

Material specifications

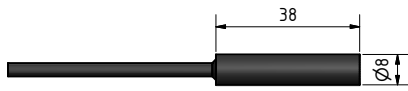
Connector body	Chloroprene rubber
Contacts	Gold plated brass UNS - C36000
Locking sleeves	POM
Inline cable (60 cm, 2 ft)	18 AWG 0.82 mm ² chloroprene rubber

Inline cable colour code

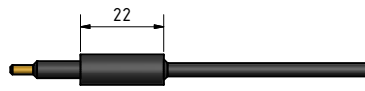
1 Black

Nominal cable outside diameter (OD)

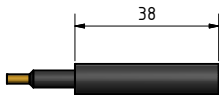
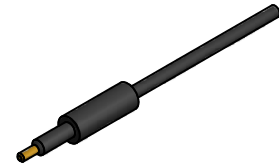
Chloroprene rubber cable 0.142", 3.6 mm



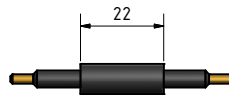
ILM1F



ILM1M



OMM1F



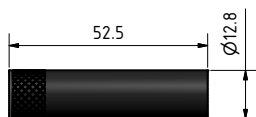
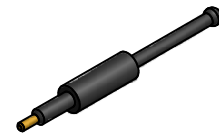
OMM1M



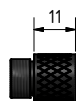
DCM1F



DCM1M



DLSM1-F



DLSM1-M



Drawing information

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

SubConn® Circular

2, 3, 4 and 5 contacts

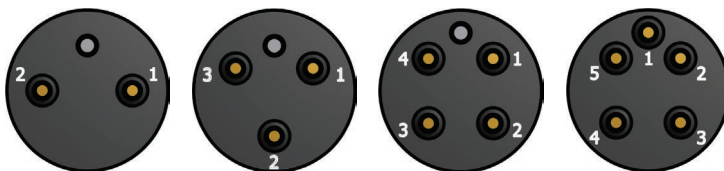
Connector specifications

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

Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel, titanium, anodised aluminium or PEEK
Contacts	Gold plated brass UNS - C36000
Location pin	Stainless steel AISI 303
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
2, 3 and 4 conductor inline cable (60 cm, 2 ft)	16 AWG 1.31 mm ² chloroprene rubber
5 conductor inline cable (60 cm, 2 ft)	18 AWG 0.82 mm ² chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm ² coloured PTFE

Face view (male)



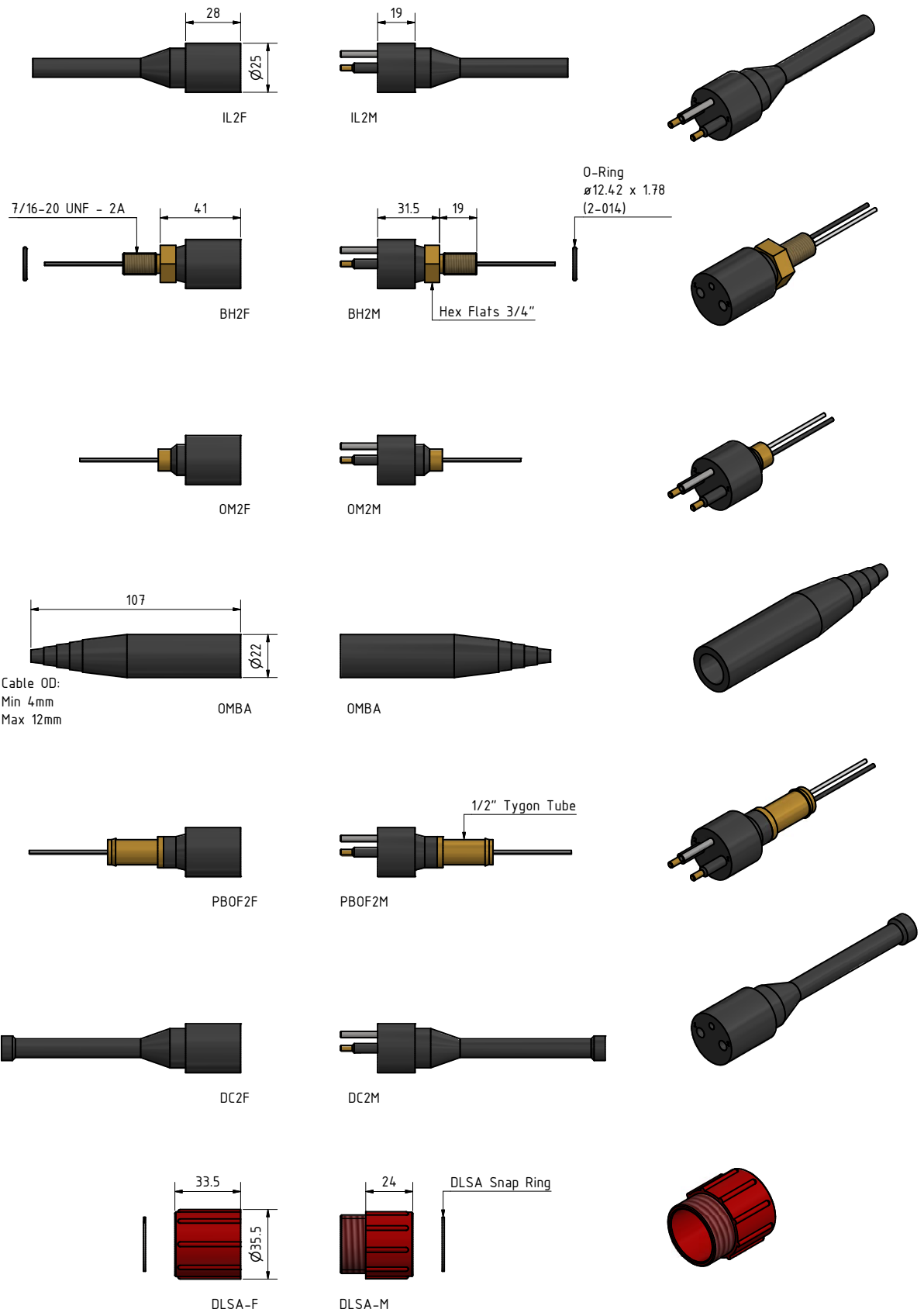
Inline cable colour code

1 Black	4 Green
2 White	5 Orange
3 Red	

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

Nominal cable outside diameter (OD)

2 conductor cable	0.365", 9.3 mm
3 conductor cable	0.385", 9.8 mm
4 conductor cable	0.410", 10.4 mm
5 conductor cable	0.465", 11.8 mm



Drawing information

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

SubConn® Circular Splitconn

2 contacts

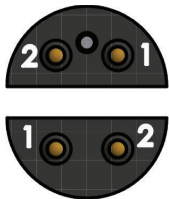
Connector specifications

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

Material specifications

Connector body	Chloroprene rubber
Contacts	Gold plated brass UNS - C36000
Location pin	Stainless steel AISI 303
Locking sleeves	POM
Snap rings	Stainless steel AISI 302
2 conductor inline cable (60 cm, 2 ft)	18 AWG 0.82 mm ² chloroprene rubber

Face view (male)

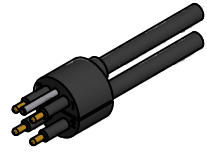
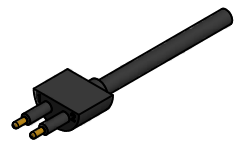
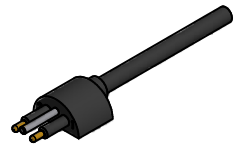
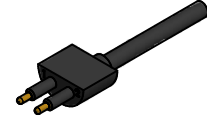
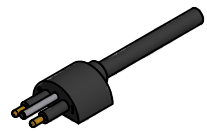
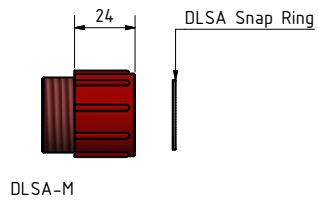
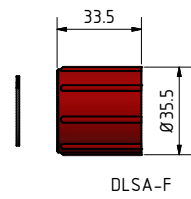
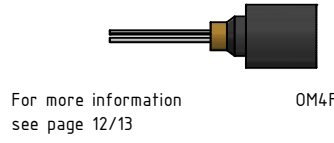
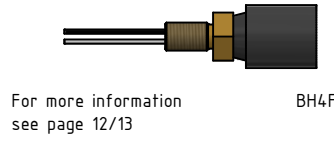
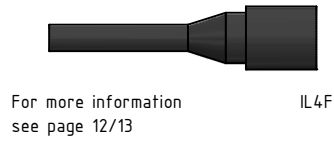


Inline cable colour code

- 1 Black
- 2 White

Nominal cable outside diameter (OD)

2 conductor cable 0.276", 7 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 DC/AC rms
Current rating	10 A per contact (max 50 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Design depth rating	1,400 bar, 20,000 psi
Qualified pressure tested	800 bar, 11,600 psi
Depth rating PEEK	300 bar, 4,350 psi

Material specifications

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

Face view (male)

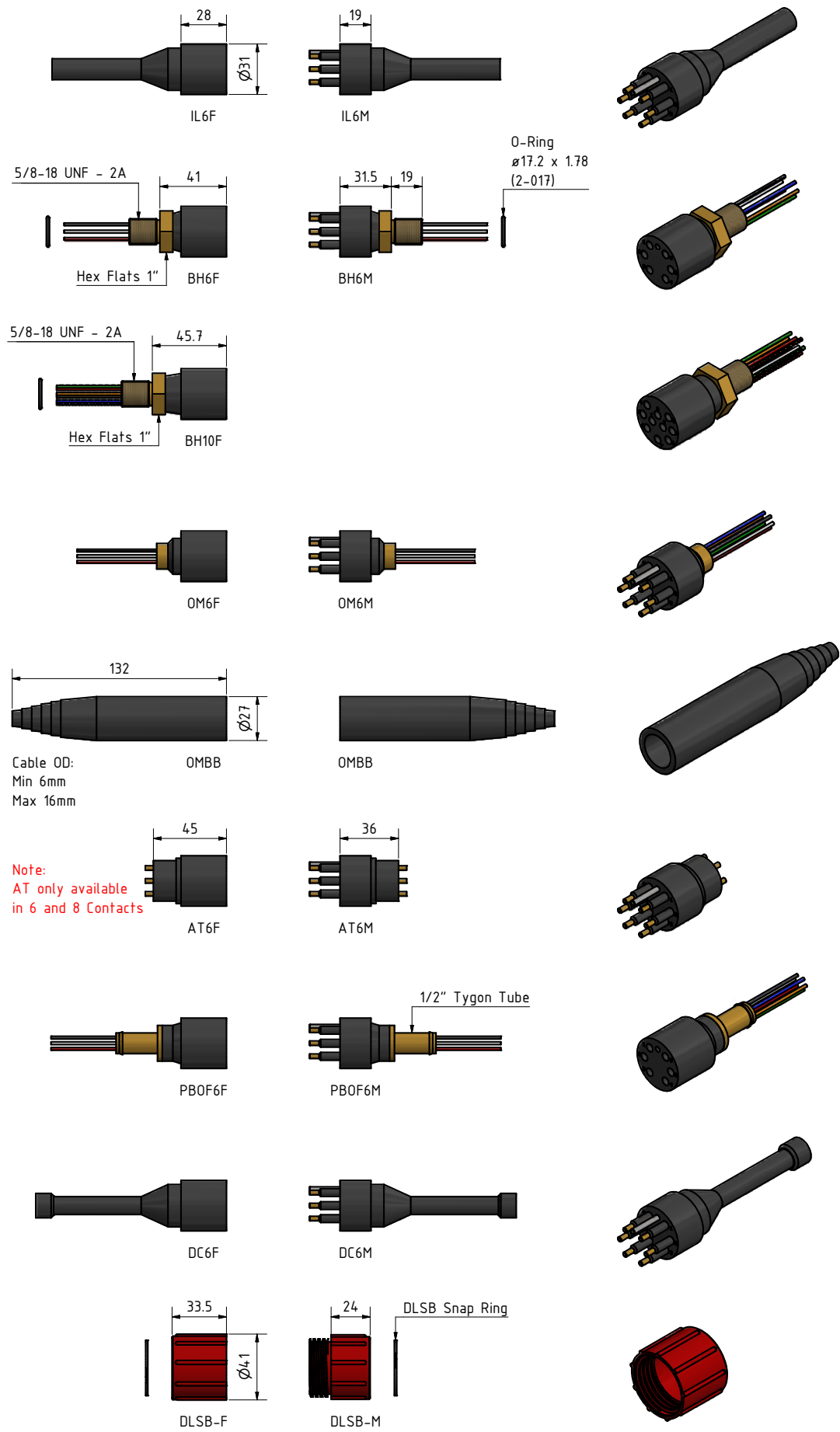


Inline cable colour code

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

Material specifications

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

Face view (male)

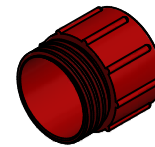
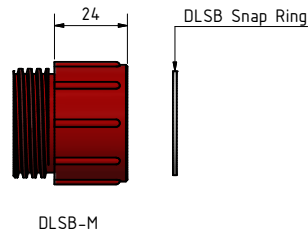
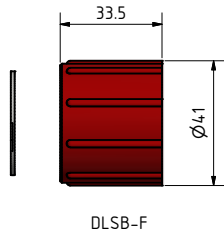
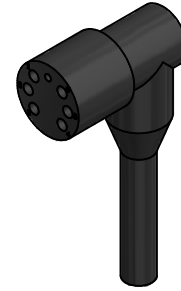
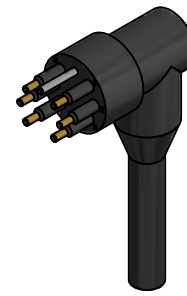
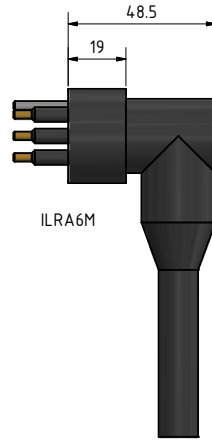
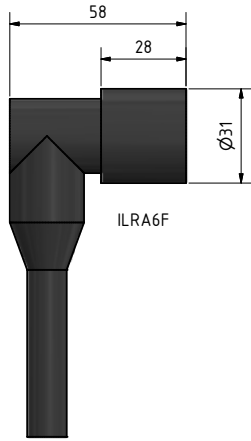


Inline cable colour code

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

Nominal cable outside diameter (OD)

6 conductor cable	0.520", 13.2 mm
8 conductor cable	0.555", 14.1 mm
10 conductor cable	0.605", 15.4 mm



Note:
Locking Sleeve has
to be modified
to fit this connector

Drawing information

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

SubConn® Circular

12, 16 and 25 contacts

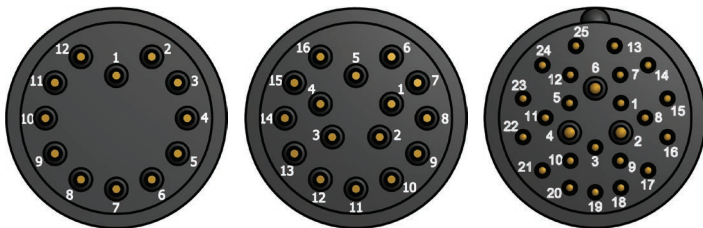
Connector specifications

Voltage rating	600 V DC/AC rms
12 and 16 contacts current rating	10 A per contact (max 60 A per connector)
25 contacts current rating	3 power contacts 10 A per contact, 22 signal contacts 5 A per contact (max 60 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
12 and 16 contacts connector design depth rating	1,400 bar, 20,000 psi
12, 16 and 25 contacts conn. qualified pressure tested	800 bar, 11,600 psi
Depth rating PEEK	300 bar, 4,350 psi

Material specifications

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

Face view (male)



Inline cable colour code for 12 and 16 conductor

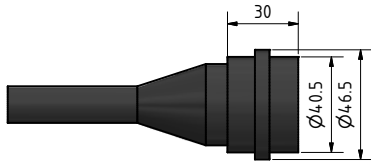
1 Black	5 Orange	9 Green/black	13 Red/white
2 White	6 Blue	10 Orange/black	14 Green/white
3 Red	7 White/black	11 Blue/black	15 Blue/white
4 Green	8 Red/black	12 Black/white	16 Black/red

Inline cable colour code for 25 conductor

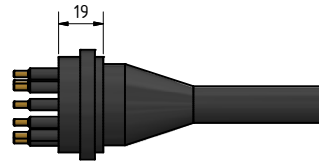
1 Orange	6 Brown-18 AWG	11 Blue	16 White/Grey	21 White/Green/Black
2 Black-18 AWG	7 Yellow	12 White/Yellow	17 White/Brown/Black	22 White/Blue/Black
3 Grey	8 White/Black	13 White/Green	18 White/Red/Black	23 White/Brown
4 Red-18 AWG	9 White	14 White/Blue	19 White/Orange/Black	24 White/Red
5 Green	10 Purple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

Nominal cable outside diameter (OD)

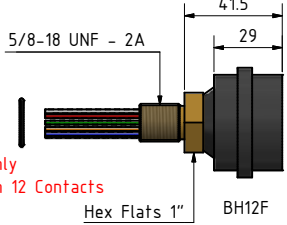
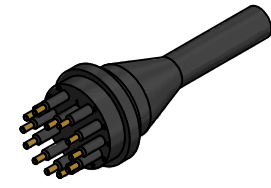
12 conductor cable 0.605", 15.4 mm
16 conductor cable 0.704", 17.9 mm
25 conductor cable 0.589", 15.0 mm



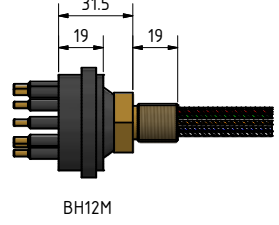
IL12F



IL12M

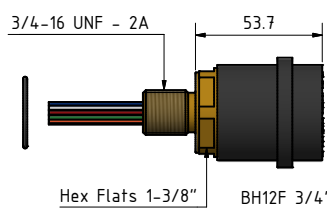
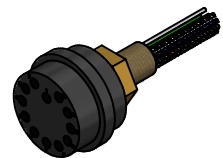


BH12F

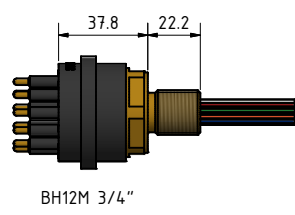


BH12M

O-Ring
Ø17.2 x 1.78
(2-017)

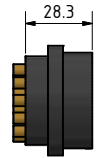
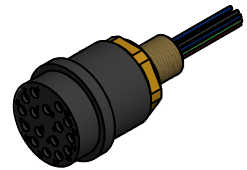


BH12F 3/4"

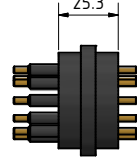


BH12M 3/4"

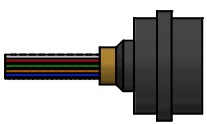
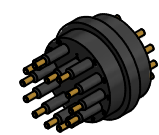
O-Ring
Ø25.12 x 1.78
(2-022)



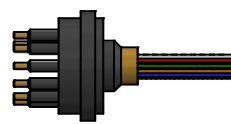
AT12F



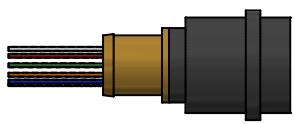
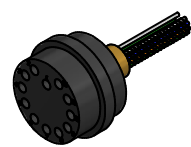
AT12M



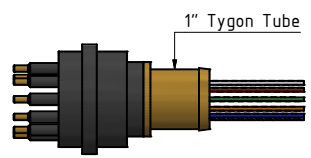
OM12F



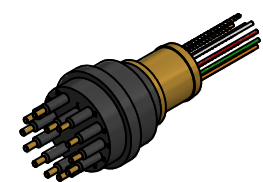
OM12M



PBOF12F



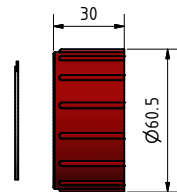
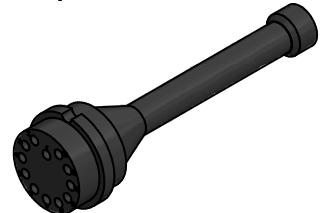
PBOF12M



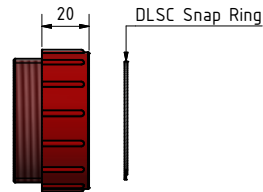
DC12F



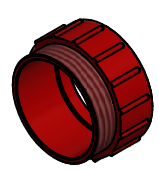
DC12M



DLSC-F



DLSC-M



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."

Nordic Defence Industries A/S

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

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

Options

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

SubConn® Micro Circular

1 contact

Connector specifications

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

Material specifications

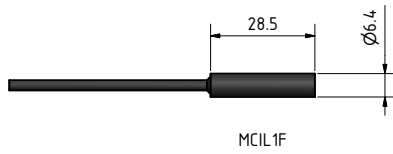
Connector body	Chloroprene rubber
Contacts	Female socket in gold plated brass UNS - C36000 Male pin in gold plated beryllium copper
Inline cable (60 cm, 2 ft)	18 AWG 0.82 mm ² chloroprene rubber

Inline cable colour code

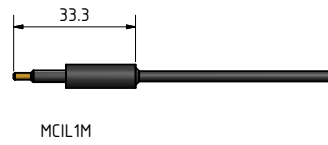
1 Black

Nominal cable outside diameter (OD)

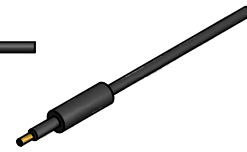
Chloroprene rubber cable 0.100", 2.54 mm



MCIL1F



MCIL1M



MCDC1F



MCDC1M



Drawing information

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

SubConn® Micro Circular

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

Connector specifications

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

Material specifications

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

Face view (male)



Inline cable colour code

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

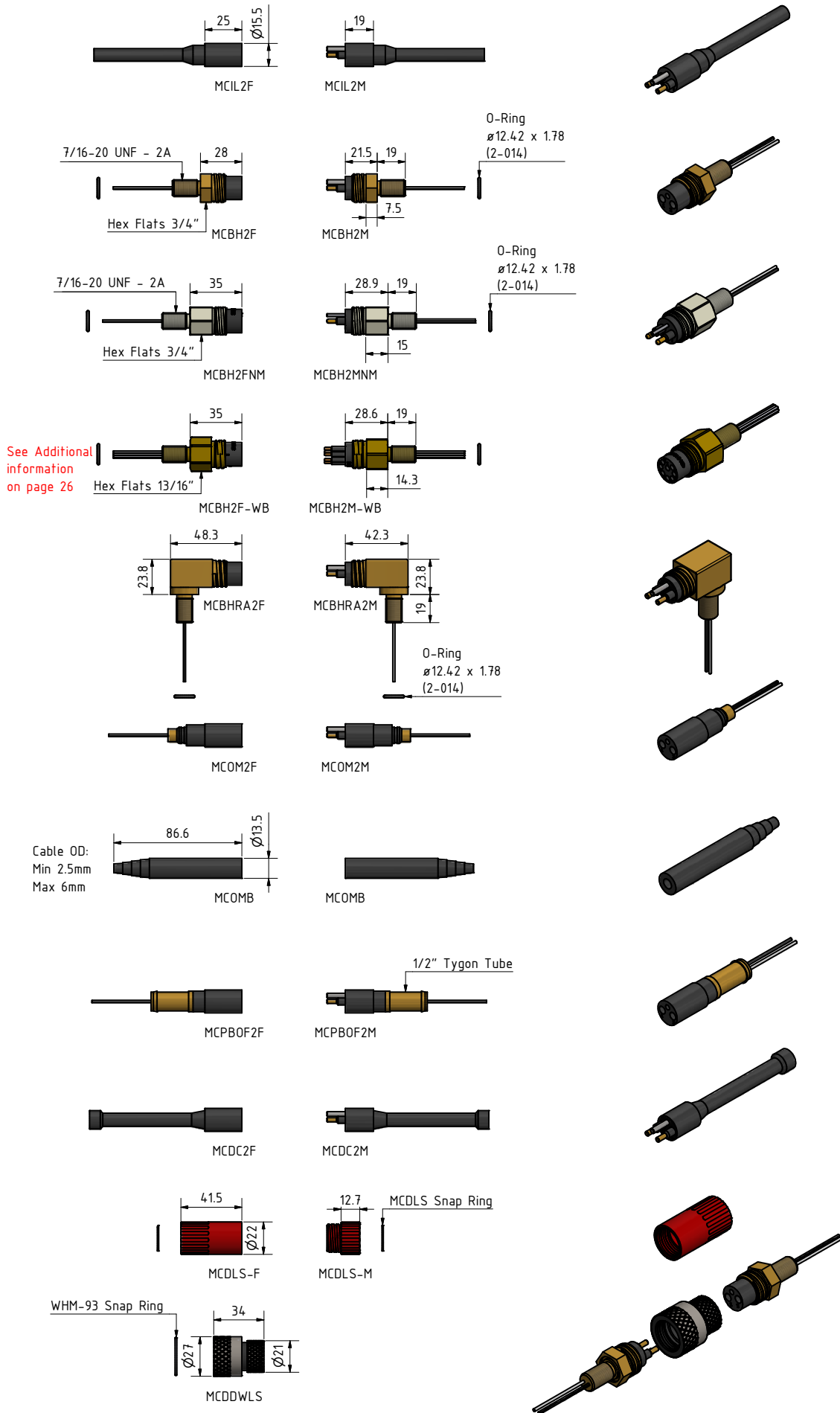
** (3 conductor cable colour code: 1 black, 2 white, 3 green)

Nominal cable outside diameter (OD)

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

Additional information

Micro 2, 3 and 4 contacts in G2 version have the same contact size as 5, 6 and 8 contacts and are available as water blocked (WB).



Drawing information

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

SubConn® Micro Circular Double O-ring

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

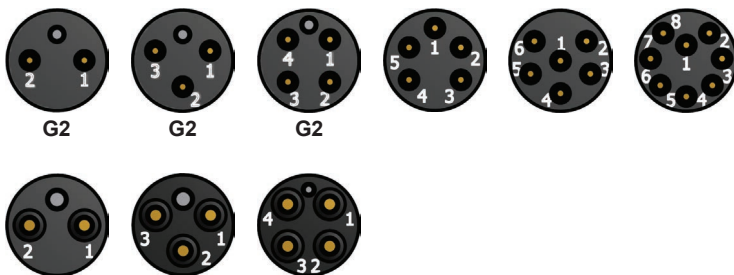
Connector specifications

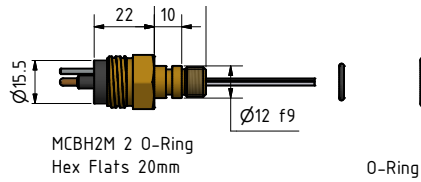
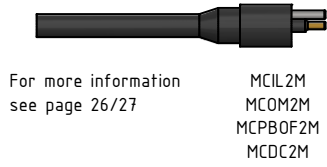
Voltage rating	300 V DC/AC rms
2, 3 and 4 contacts current rating	10 A per contact (max 20 A per connector)
5, 6 and 8 contacts current rating	5 A per contact (max 20 A per connector)
G2 2, 3 and 4 contacts connector current rating	5 A per contact (max 20 A per connector)
Insulation resistance	> 200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

Material specifications

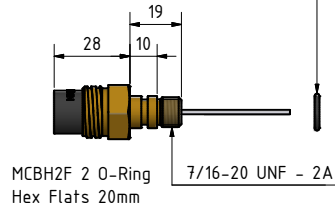
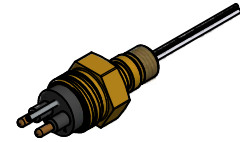
Connector body	Chloroprene rubber
Bulkhead body with 20 mm hex flats	Brass, titanium or anodised aluminium
Bulkhead body with 22 mm hex flats	Anodised aluminium or stainless steel
Bulkhead RA body	Aluminium or titanium
2, 3 and 4 contacts	Gold plated brass UNS - C36000
5, 6, 8 contacts and G2 2, 3 and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

Face view (male)

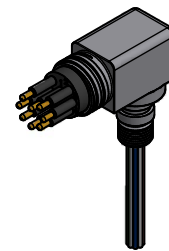
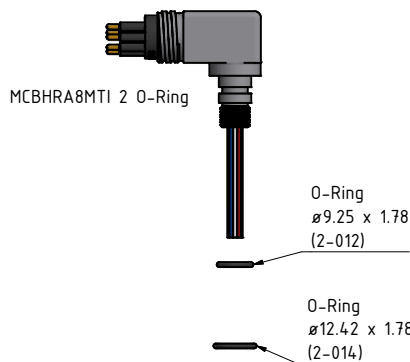
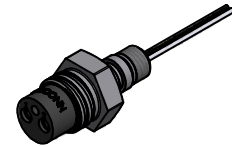
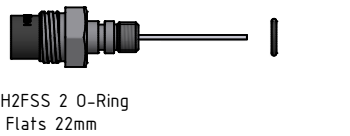
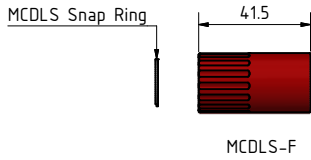
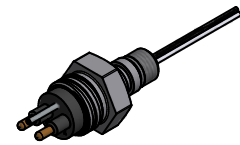
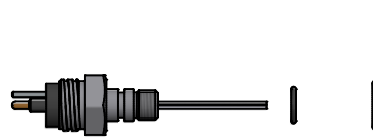
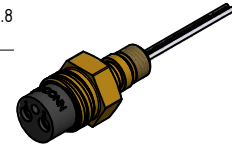




O-Ring
 $\phi 9.25 \times 1.78$
(2-012)



O-Ring
 $\phi 13.34 \times 1.8$
(5-1014)



Drawing information

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

SubConn® Micro Circular

10, 12 and 16 contacts

Connector specifications

Voltage rating	300 V DC/AC rms
Current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0,01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Qualified pressure tested	800 bar, 11,600 psi
Depth rating PEEK	300 bar, 4,350 psi

Material specifications

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

Face view (male)

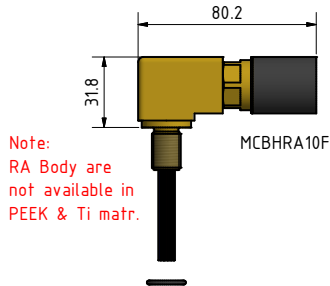
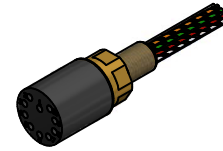
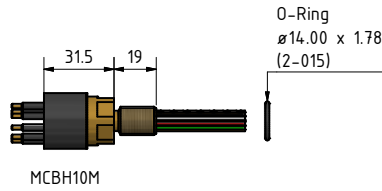
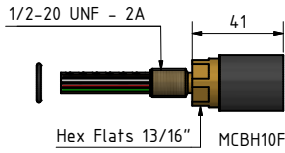
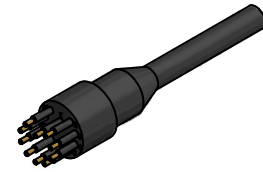
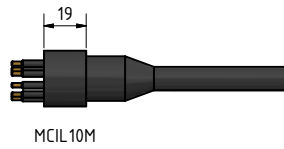
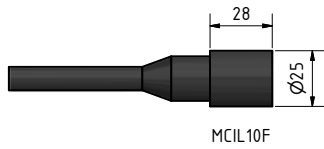


Inline cable colour code

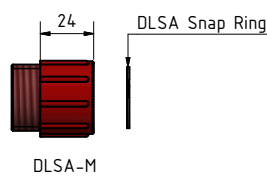
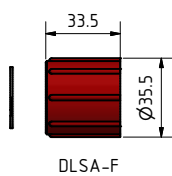
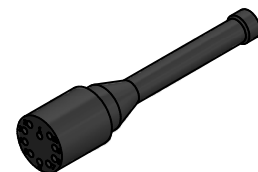
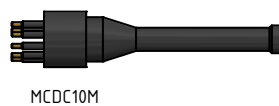
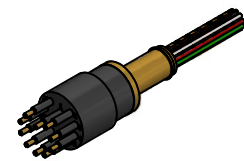
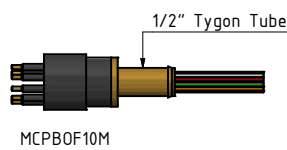
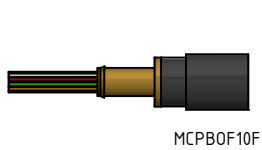
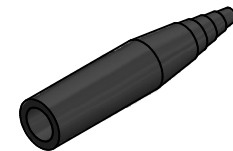
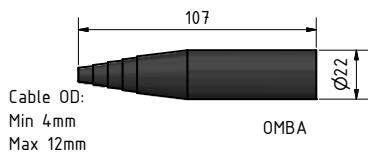
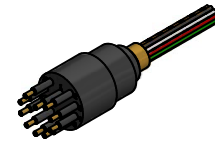
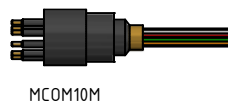
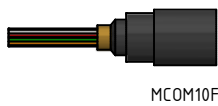
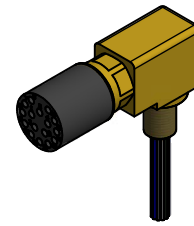
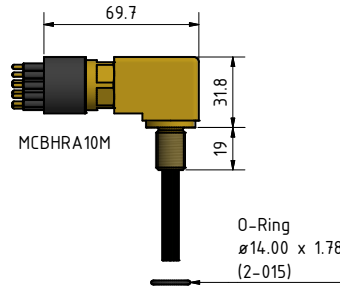
1 Black	5 Orange	9 Green/black	13 Red/white
2 White	6 Blue	10 Orange/black	14 Green/white
3 Red	7 White/black	11 Blue/black	15 Blue/white
4 Green	8 Red/black	12 Black/white	16 Black/red

Nominal cable outside diameter (OD)

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



Note:
RA Body are
not available in
PEEK & Ti matr.



Drawing information

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

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

Connector specifications

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

Material specifications

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

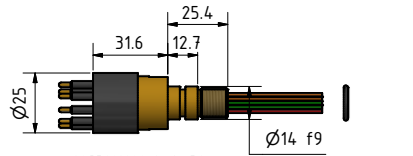
Face view (male)



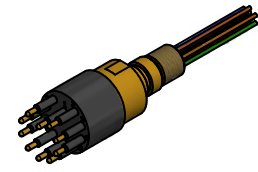


For more information
see page 30/31

MCIL10F
MCOM10F
MCPBOF10F
MDCD10F



MCBH10M 2 O-Ring
Key Flats 22mm

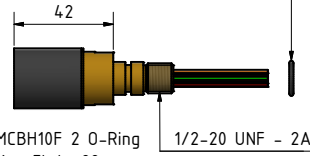


O-Ring
ø10.82 x 1.78
(2-013)



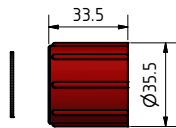
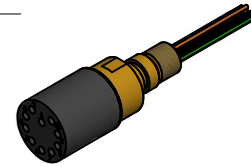
For more information
see page 30/31

MCIL10M
MCOM10M
MCPBOF10M
MDCD10M

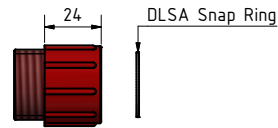


MCBH10F 2 O-Ring
Key Flats 22mm

O-Ring
ø15.6 x 1.78
(2-016)



DLSA-F



DLSA-M

DLSA Snap Ring

Drawing information

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

SubConn® Micro Circular

21 contacts

Connector specifications

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

Material specifications

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

Face view (male)

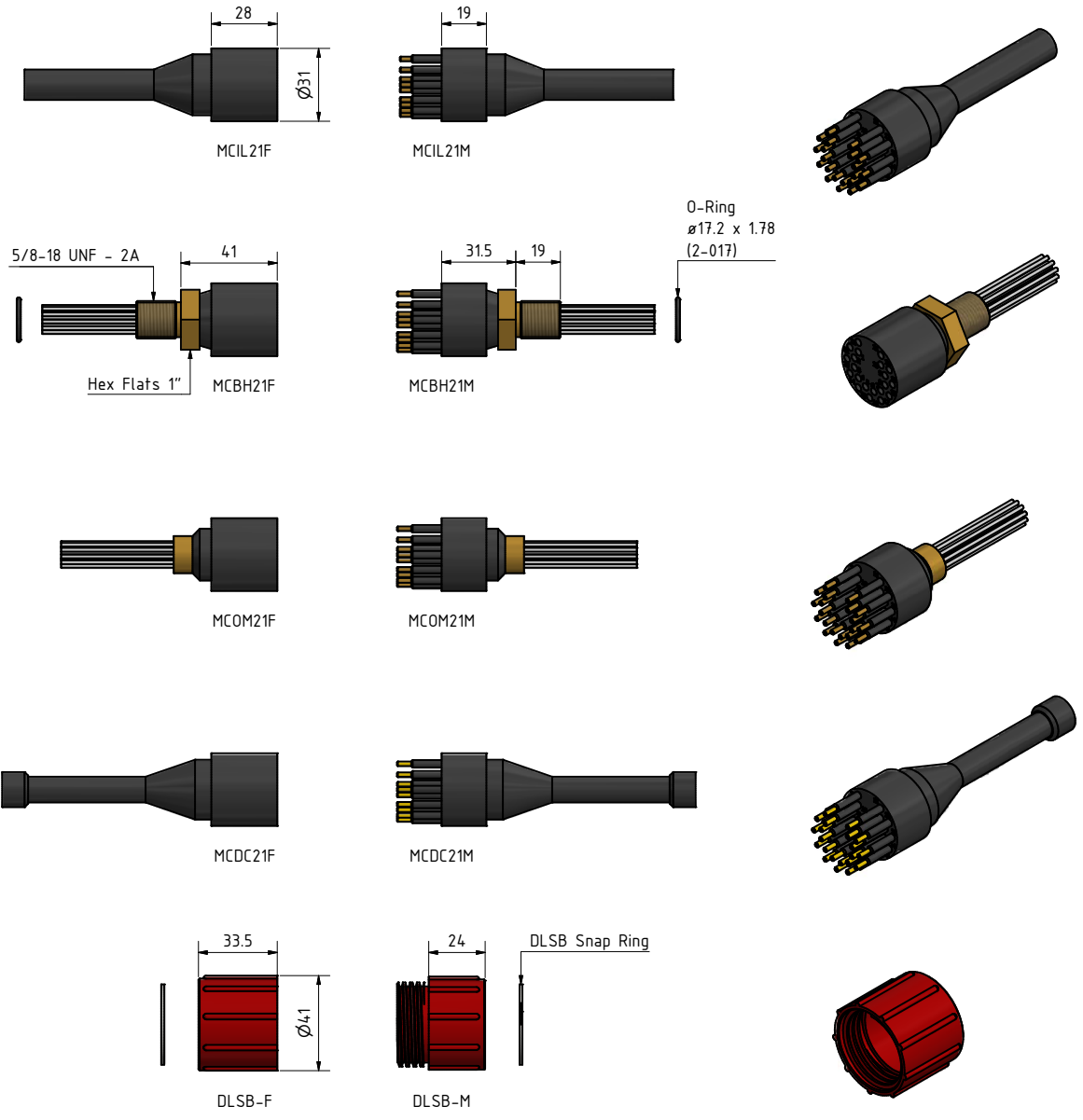


Inline cable colour code

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

Nominal cable outside diameter (OD)

21 conductor cable 0.578" 14.70 mm



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

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

Options

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

SubConn® Low Profile

2 contacts

Connector specifications

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

Material specifications

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

Face view (male)

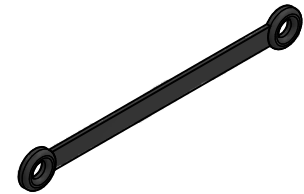
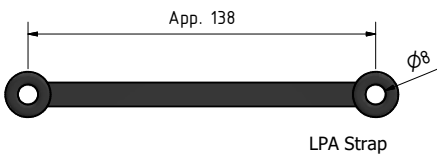
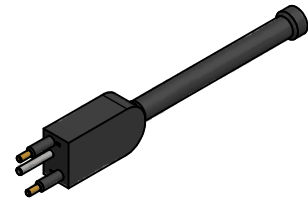
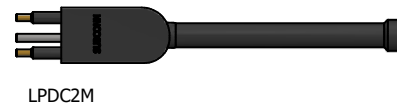
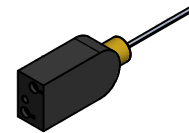
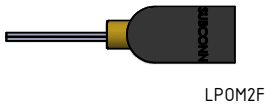
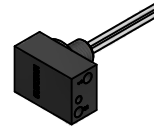
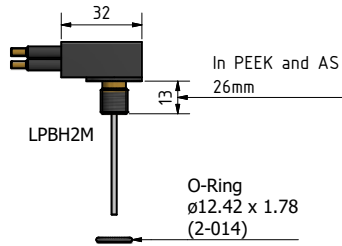
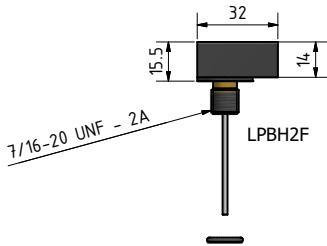
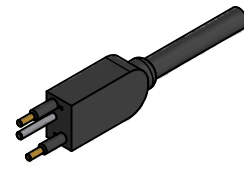
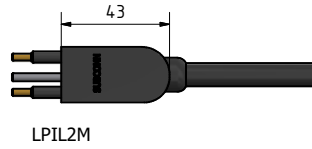
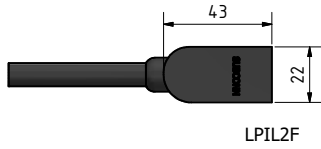


Inline cable colour code

- 1 Black
- 2 White

Nominal cable outside diameter (OD)

2 conductor cable 0.365", 9.3 mm



Low Profile

Drawing information

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

SubConn® Low Profile

3 and 4 contacts

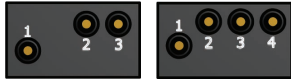
Connector specifications

Single contact rating	600 V DC/AC rms
3 contacts current rating	10 A per contact (max 30 A per connector)
4 contacts current rating	10 A per contact (max 40 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Qualified pressure tested	800 bar, 11,600 psi
Depth rating PEEK	300 bar, 4,350 psi

Material specifications

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

Face view (male)

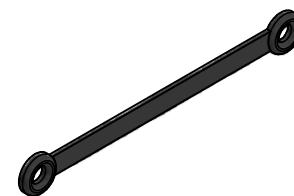
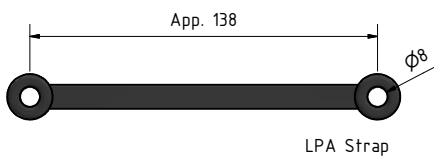
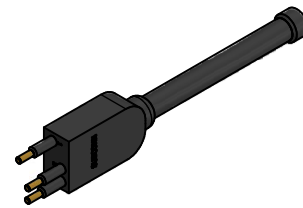
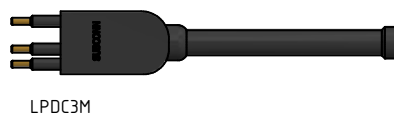
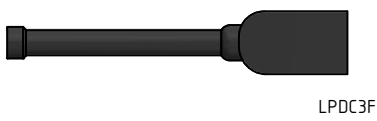
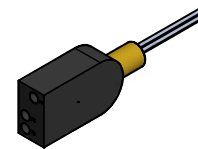
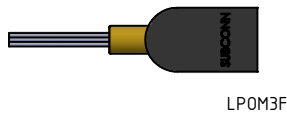
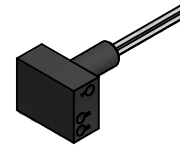
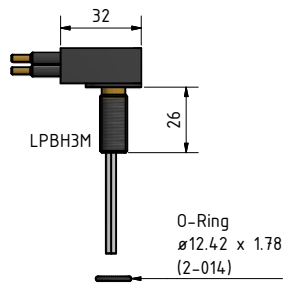
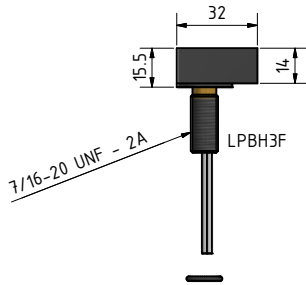
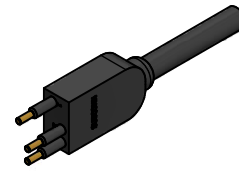
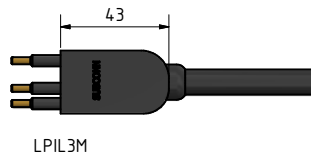
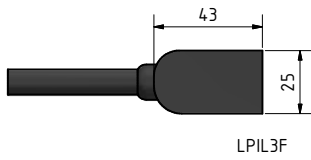


Inline cable colour code

1 Black 2 White 3 Red 4 Green
(3 conductor cable colour code: 1 black, 2 white, 3 green)

Nominal cable outside diameter (OD)

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



Low Profile

Drawing information

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

SubConn® Low Profile

5 contacts

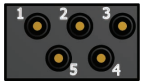
Connector specifications

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

Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel, titanium, anodised aluminium or PEEK
Contacts	Gold plated brass UNS - C36000
O-rings	Nitrile
Locking strap	Chloroprene rubber
Inline cable (60 cm, 2 ft)	18 AWG 0.82 mm ² chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	18 AWG 0.82 mm ² white tagged PTFE

Face view (male)

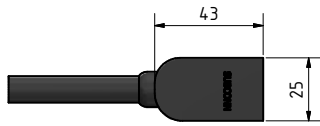


Inline cable colour code

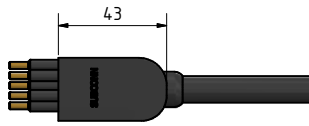
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3 Blue	

Nominal cable outside diameter (OD)

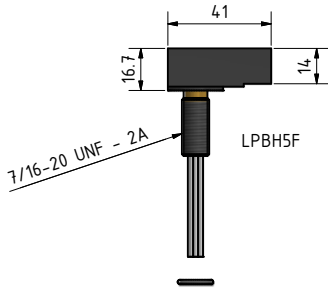
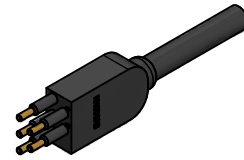
5 conductor cable 0.328", 8.4 mm



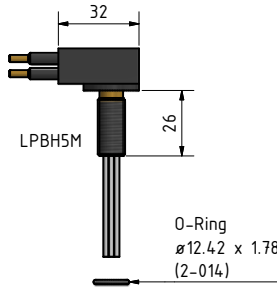
LPIL5F



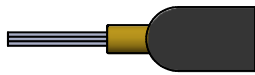
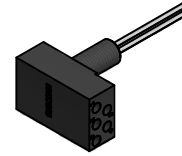
LPIL5M



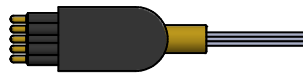
LPBH5F



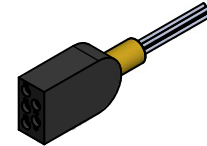
LPBH5M



LPOM5F



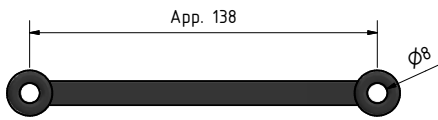
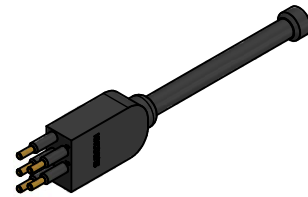
LPOM5M



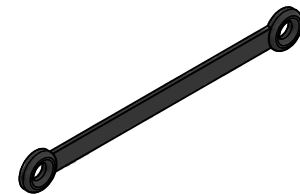
LPDC5F



LPDC5M



LPA Strap



Low Profile

Drawing information

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

SubConn® Low Profile

7 contacts

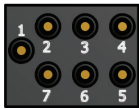
Connector specifications

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

Material specifications

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

Face view (male)

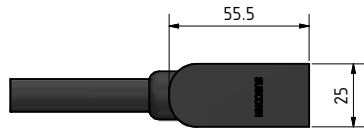


Inline cable colour code

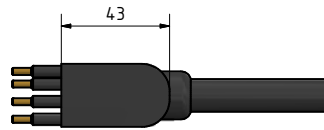
1 Black	3 Red	5 Orange	7 White/black
2 White	4 Green	6 Blue	

Nominal cable outside diameter (OD)

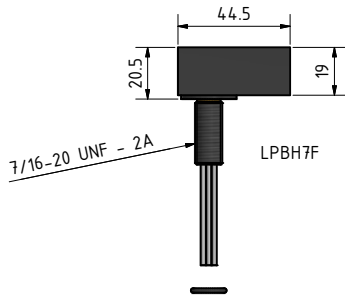
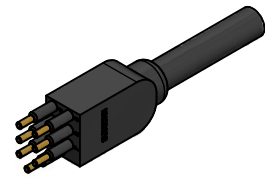
7 conductor cable 0.520", 13.2 mm



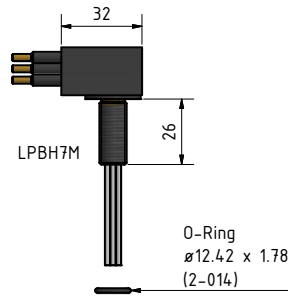
LPIL7F



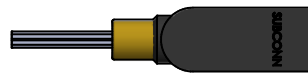
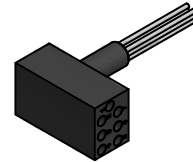
LPIL7M



LPBH7F



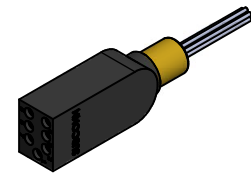
LPBH7M



LPOM7F



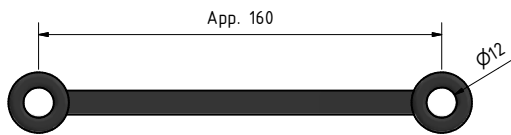
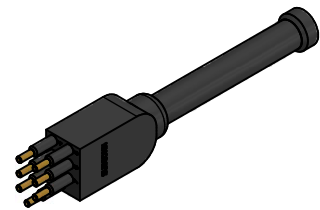
LPOM7M



LPDC7F



LPDC7M



LPB Strap



Low Profile

Drawing information

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

SubConn® Low Profile

9 contacts

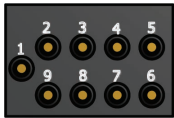
Connector specifications

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

Material specifications

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

Face view (male)

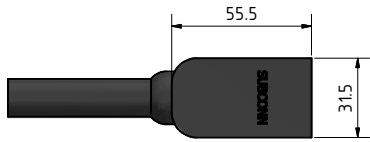


Inline cable colour code

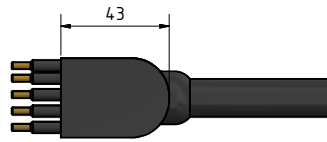
1 Black	4 Green	7 White/black
2 White	5 Orange	8 Red/black
3 Red	6 Blue	9 Green/black

Nominal cable outside diameter (OD)

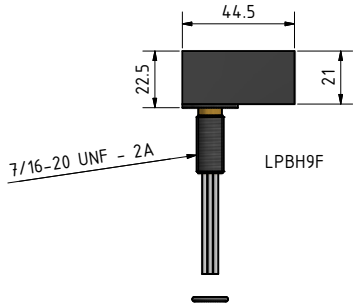
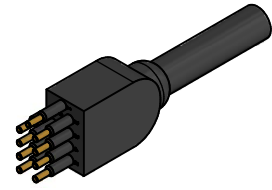
9 conductor cable 0.590", 15.0 mm



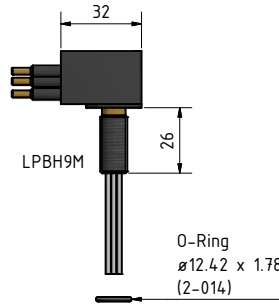
LPIL9F



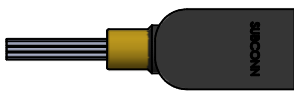
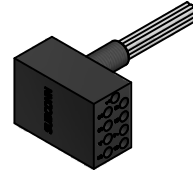
LPIL9M



LPBH9F



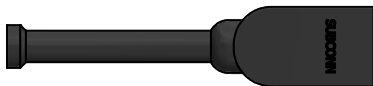
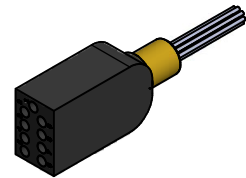
LPBH9M



LPOM9F



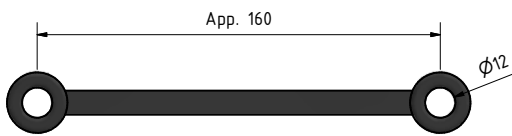
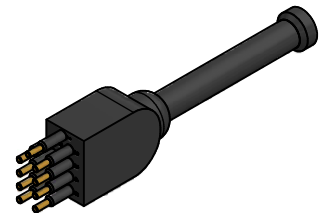
LPOM9M



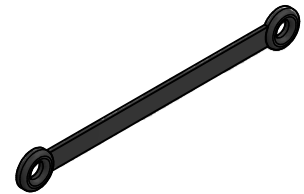
LPDC9F



LPDC9M



LPB Strap



Low Profile

Drawing information

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

SubConn® Low Profile Reed Switch

2 contacts

Connector specifications

Reed switch glass body type	HE559-ND
Switch voltage rating	200 V DC
Contact rating	10 W max
Switch current rating	500 mA
Operation time	0.6 ms (maximum)
Release time	0.2 ms (maximum)
Capacitance	0.20 pF (typical)
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Depth rating	300 bar, 4,350 psi

Material specifications

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

Face view (male)

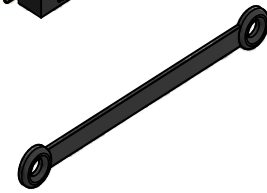
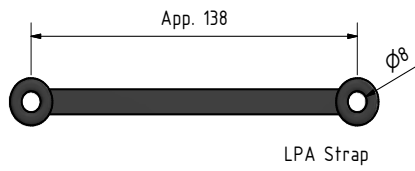
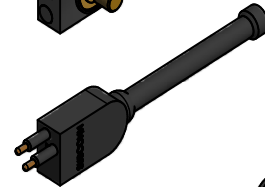
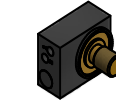
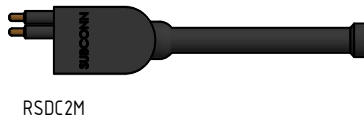
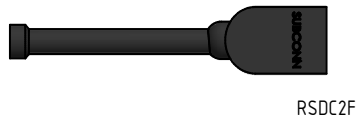
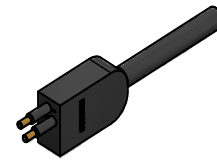
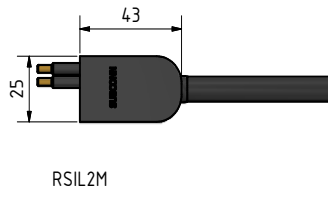
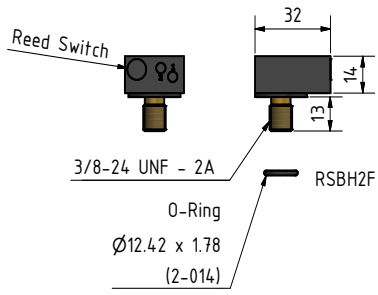


Inline cable colour code

- 1 Black
- 2 White

Nominal cable outside diameter (OD)

2 conductor cable 0.365", 9.3 mm



Low Profile

Drawing information

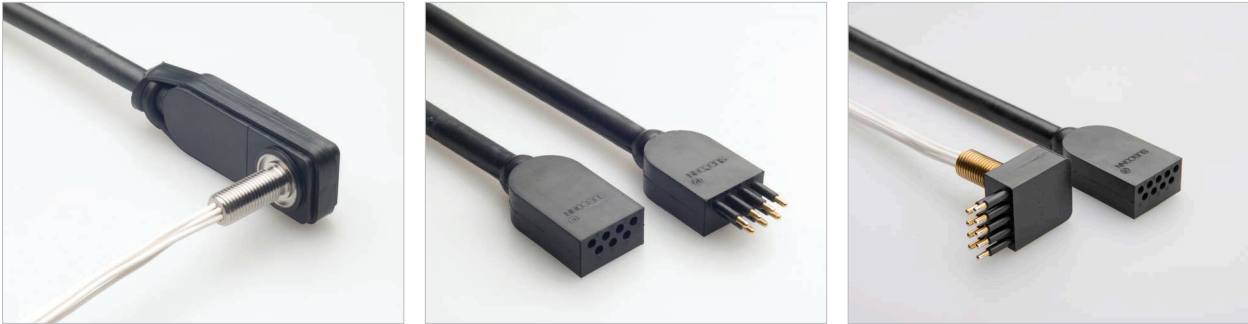
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)

Quote

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

*Juha Manninen, Automation Designer
AW-Energy Oy*

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

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

Options

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

SubConn® Micro Low Profile

3 contacts

Connector specifications

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

Material specifications

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

Face view (male)

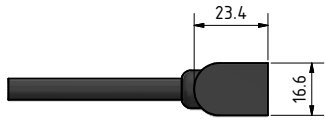


Inline cable colour code

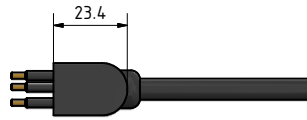
- 1 Black
- 2 White
- 3 Red

Nominal cable outside diameter (OD)

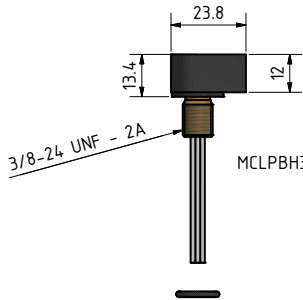
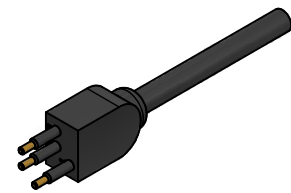
3 conductor cable 0.328", 8.4 mm



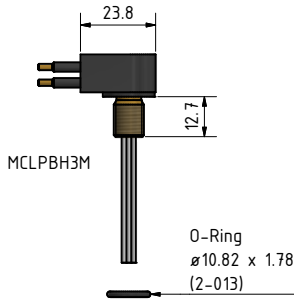
MCLPIL3F



MCLPIL3M

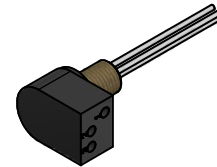


MCLPBH3F



MCLPBH3M

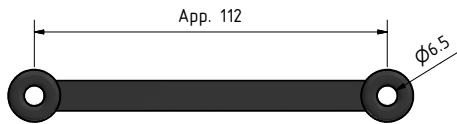
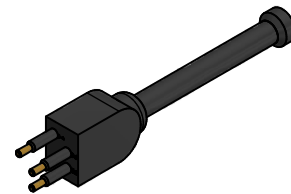
0-Ring
ø10.82 x 1.78
(2-013)



MCLPDC3F



MCLPDC3M



LPMC Strap



Drawing information

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

SubConn® Micro Low Profile 7 and 9 contacts

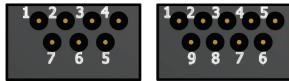
Connector specifications

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

Material specifications

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

Face view (male)



Inline cable colour code

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

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

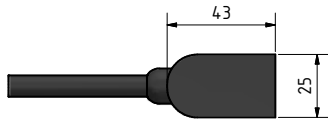
** Micro 9 contacts connector uses a 10 conductor cable (only 9 conductors are used)

Nominal cable outside diameter (OD)

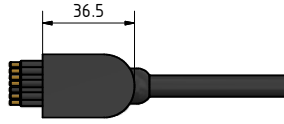
8 conductor cable 0.363", 9.2 mm

10 conductor cable 0.406", 10.3 mm

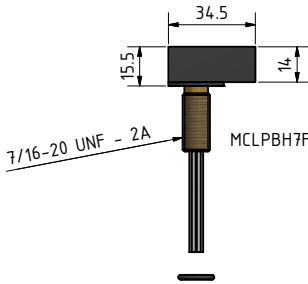
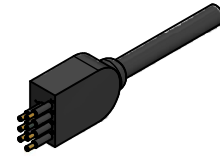
7 and 9 conductor cables are not available, therefore 8 and 10 conductor cables are to be used.



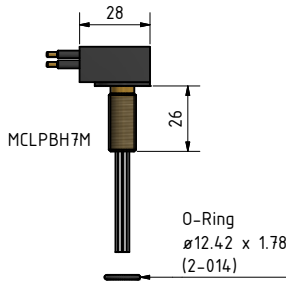
MCLPIL7F



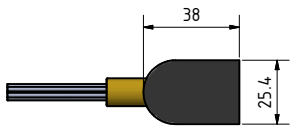
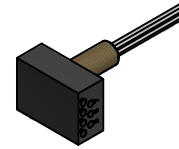
MCLPIL7M



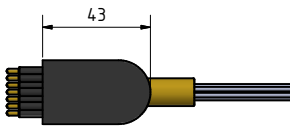
MCLPBH7F



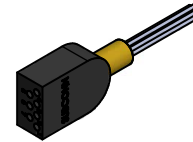
MCLPBH7M



MCLPOM7F



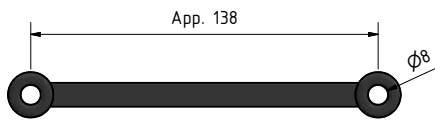
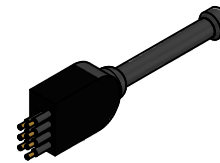
MCLPOM7M



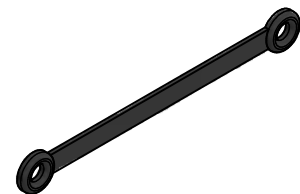
MCLPDC7F



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

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

Options

- Customer specified connector body material
- Customised mating harness cables
- Customer specified cable, wire leads and bulkhead thread lengths
- Electromechanical stress terminations
- Certified pressure testing to specific ocean depths

SubConn® Metal Shell 1500

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

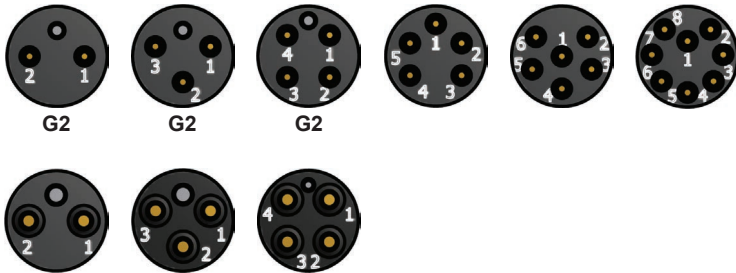
Connector specifications

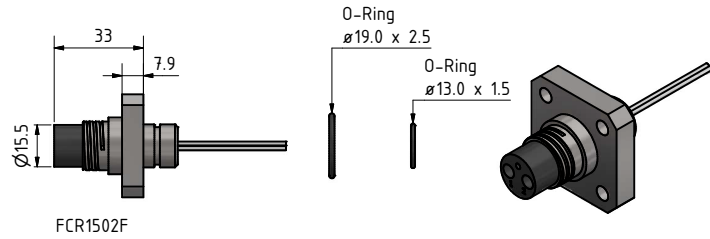
Voltage rating	300 V DC/AC rms
2, 3 and 4 contacts current rating	10 A per contact (max 20 A per connector)
5, 6 and 8 contacts current rating	5 A per contact (max 20 A per connector)
G2 2, 3 and 4 contacts current rating	5 A per contact (max 20 A per connector)
Insulation resistance	> 200 Mohm
Contact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

Material specifications

Connector body	Chloroprene rubber
Connector housing	Stainless steel AISI 316 (other materials on request)
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
Location pin	Stainless steel AISI 303
Locking sleeves	ABS or stainless steel
Snap rings	Stainless steel AISI 302
2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm ² coloured PTFE
5, 6 and 8 contact bulkhead leads (30 cm, 1 ft)	22 AWG 0.33 mm ² coloured PTFE
G2 2, 3 and 4 contact bulkhead leads (30 cm, 1 ft)	20 AWG 0.52 mm ² coloured PTFE

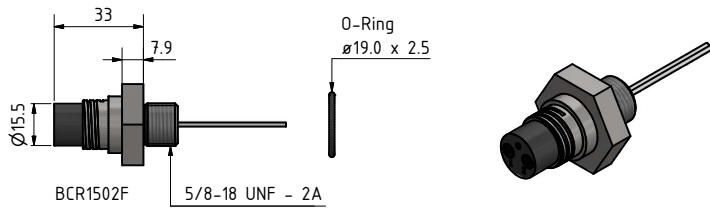
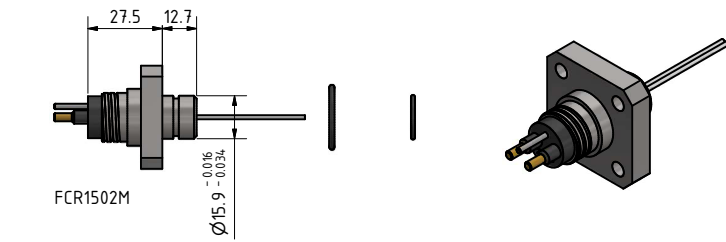
Face view (male)





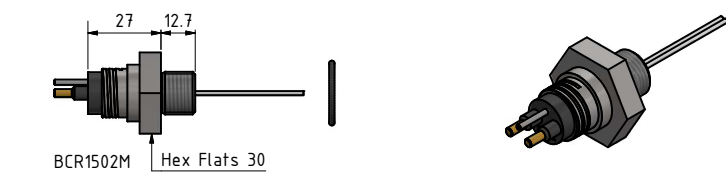
For more information
see page 26/27

MCIL2F
MCOM2F
MCPB0F2F
MCD02F

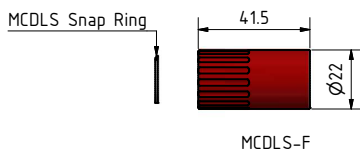


For more information
see page 26/27

MCIL2M
MCOM2M
MCPB0F2M
MCD02M



Metal Shell



Drawing information

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

SubConn® Metal Shell 2000

2, 3, 4 contacts and Micro 10 and 12 contacts

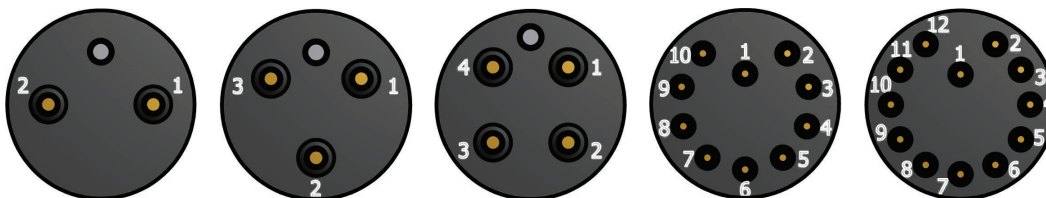
Connector specifications

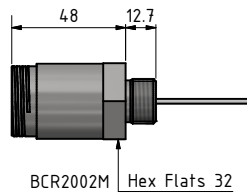
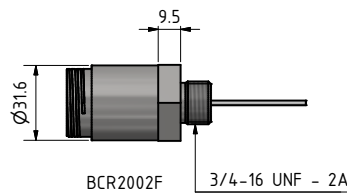
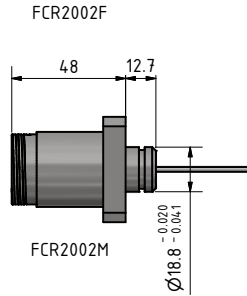
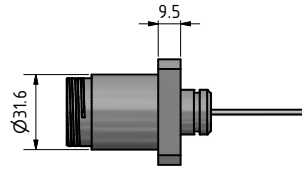
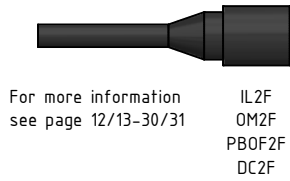
2, 3 and 4 contacts voltage rating	600 V DC/AC rms
10 and 12 contacts voltage rating	300 V DC/AC rms
2, 3 and 4 contacts current rating	10 A per contact (max 30 A per connector)
10 and 12 contacts current rating	5 A per contact (max 30 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance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

Material specifications

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

Face view (male)

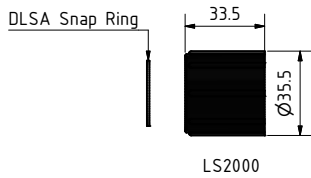
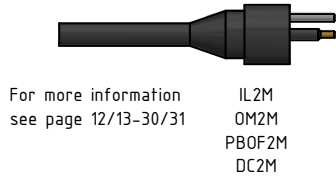
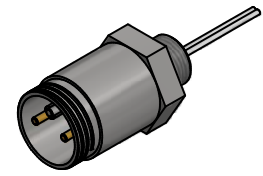
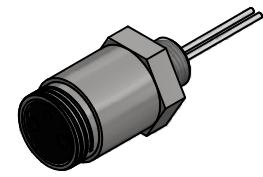
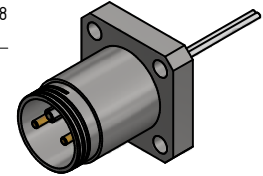
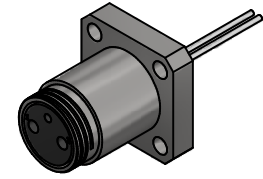




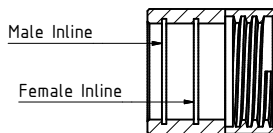
O-Ring
ø22.22 x 2.62

O-Ring
ø15.6 x 1.78
(2-016)

O-Ring
ø22.22 x 2.62



Snap ring placement



With male inline connector - snap ring in outer groove

With female inline connector - snap ring in inner groove

Drawing information

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

SubConn® Metal Shell 2400

6, 8 and 10 contacts

Connector specifications

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

Material specifications

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

Face view (male)





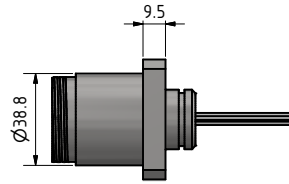
For more information
see page 16/17

IL6F
AT6F
OM6F
PBOF6F
DC6F

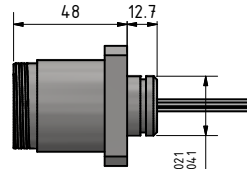


For more information
see page 16/17

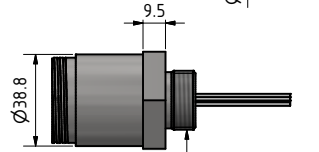
IL6M
AT6M
OM6M
PBOF6M
DC6M



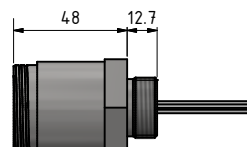
FCR2406F



FCR2406M



BCR2406F



BCR2406M

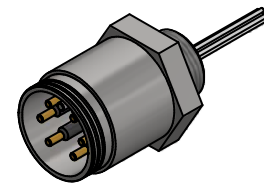
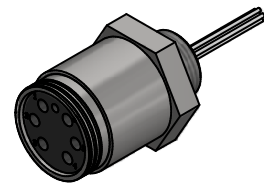
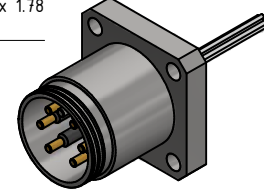
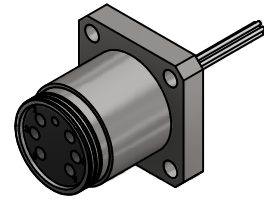
O-Ring
ø28.24 x 2.62
(2-122)

O-Ring
ø21.95 x 1.78
(2-020)

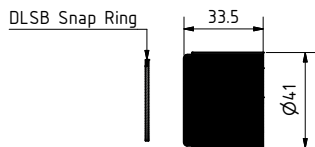
O-Ring
ø28.24 x 2.62
(2-122)

1-14 UNS - 2A

Hex Flats 41



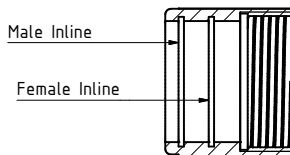
Metal Shell



DLSB Snap Ring

LS2400

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

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

Options

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

SubConn® Power

1 contact

Connector specifications

Voltage rating inline and bulkhead (1 KV version)	1 KV DC/AC rms
Current rating inline, overmould and bulkhead (1 KV version)	250 A
Voltage rating overmould and bulkhead (3 KV version)	3 KV DC/AC rms
Current rating bulkhead (3 KV version)*	90 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
Qualified pressure tested	800 bar, 11,600 psi

Material specifications

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

Inline cable colour code

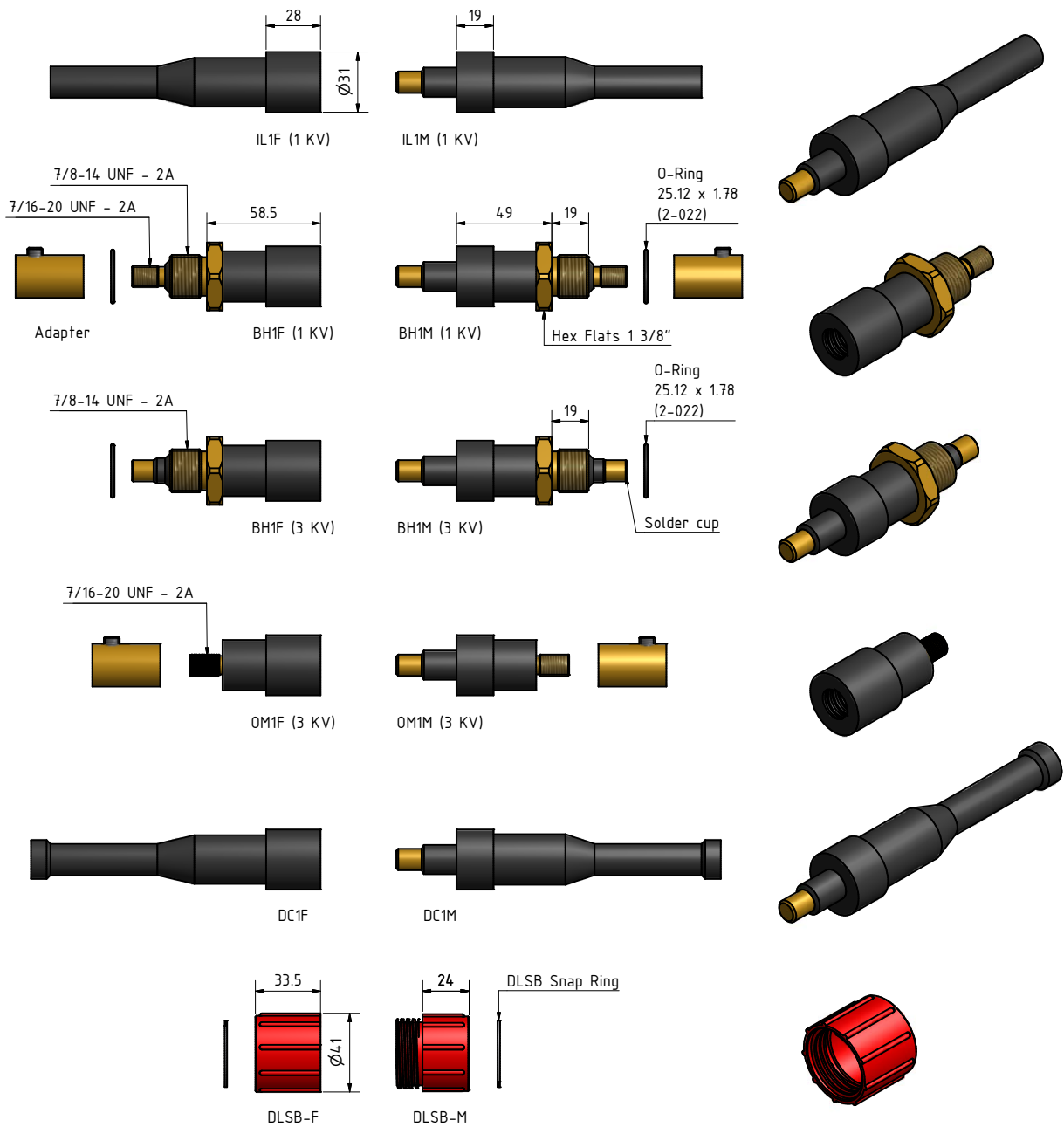
1 Black

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

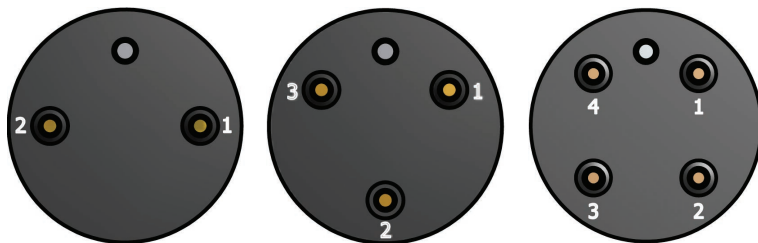
Connector specifications

Voltage rating	600 V DC/AC rms
Current rating	25 A per contact (max 50 A per connector)
Insulation resistance	> 200 Mohm
Contact resistance	< 0,01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Design depth rating	1,400 bar, 20,000 psi
Qualified pressure tested	800 bar, 11,600 psi

Material specifications

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

Face view (male)

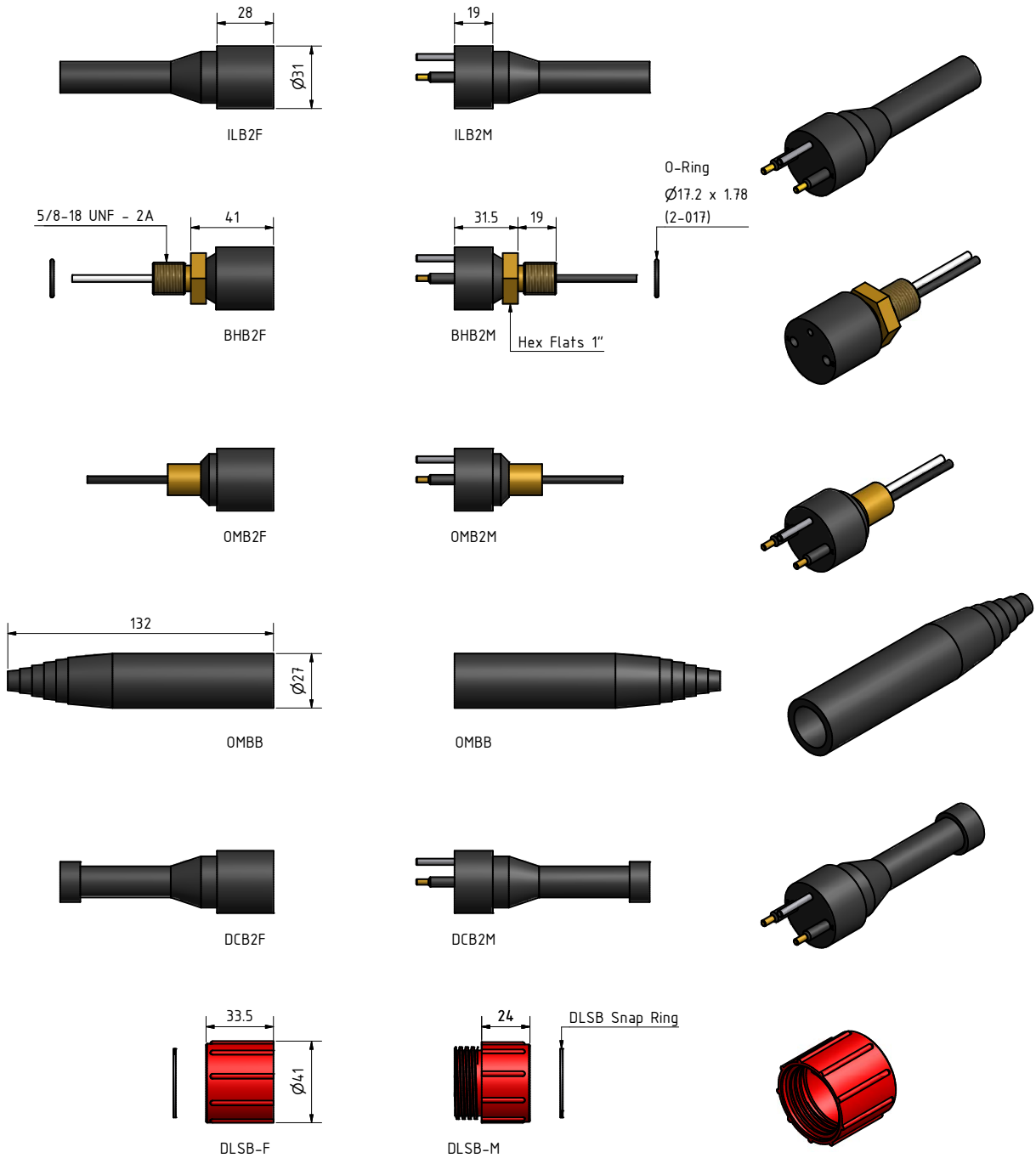


Inline cable colour code

1 Black 2 White 3 Red 4 Green
 (3 conductor cable colour code: 1 black, 2 white, 3 green)

Nominal cable outside diameter (OD)

2 conductor cable 0.640", 16.3 mm
 3 conductor cable 0.671", 17.0 mm
 4 conductor cable 0.660", 16.8 mm



Drawing information

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

SubConn® High Power

4 contacts

Connector specifications

Voltage rating	600 V DC/AC rms
Current rating (water)	50 A per contact (max 200 A per connector)
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
Design depth rating	1,400 bar, 20,000 psi
Qualified pressure tested	800 bar, 11,600 psi
Depth rating PEEK	300 bar, 4,350 psi

Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel, titanium or anodised aluminium
Contacts	Brass UNS - C36000
Location pin	Stainless steel AISI 303
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Inline cable (60 cm, 2 ft)	8 AWG 8.36 mm ² chloroprene rubber
Bulkhead leads (30 cm, 1 ft)	10 AWG 5.26 mm ² tagged PTFE

Face view (male)

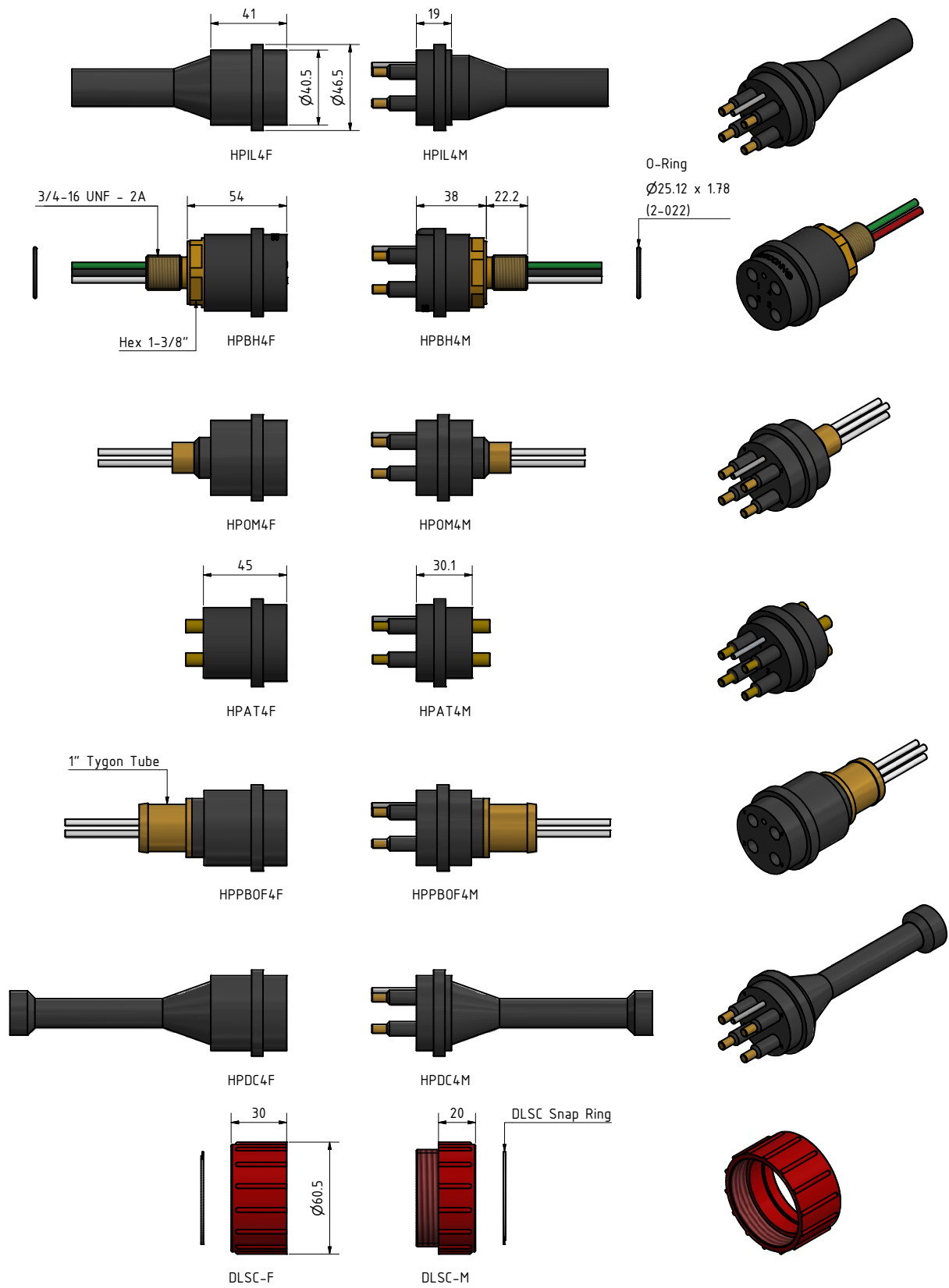


Inline cable colour code

1 Black	2 White	3 Red	4 Green
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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

"Some years ago, we had several suppliers of connectors but ever since we chose MacArtney as our go-to supplier for underwater connectivity, our deployment success rate greatly improved and we have been able to fully concentrate on the further development of the TrawlCamera."

*Kári á Torkilsheyggi
JT Electric*

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

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

Options

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

SubConn® Ethernet Circular

8 contacts

Connector specifications

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

Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel, titanium, anodised aluminium or PEEK
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Inline cable (100 cm, 3.3 ft)	4 pair 24 AWG, 0.20 mm ² 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*	5-6 Orange, Orange/white*
3-4 Blue, Blue/white*	7-8 Green, Green/white*

* Twisted pairs

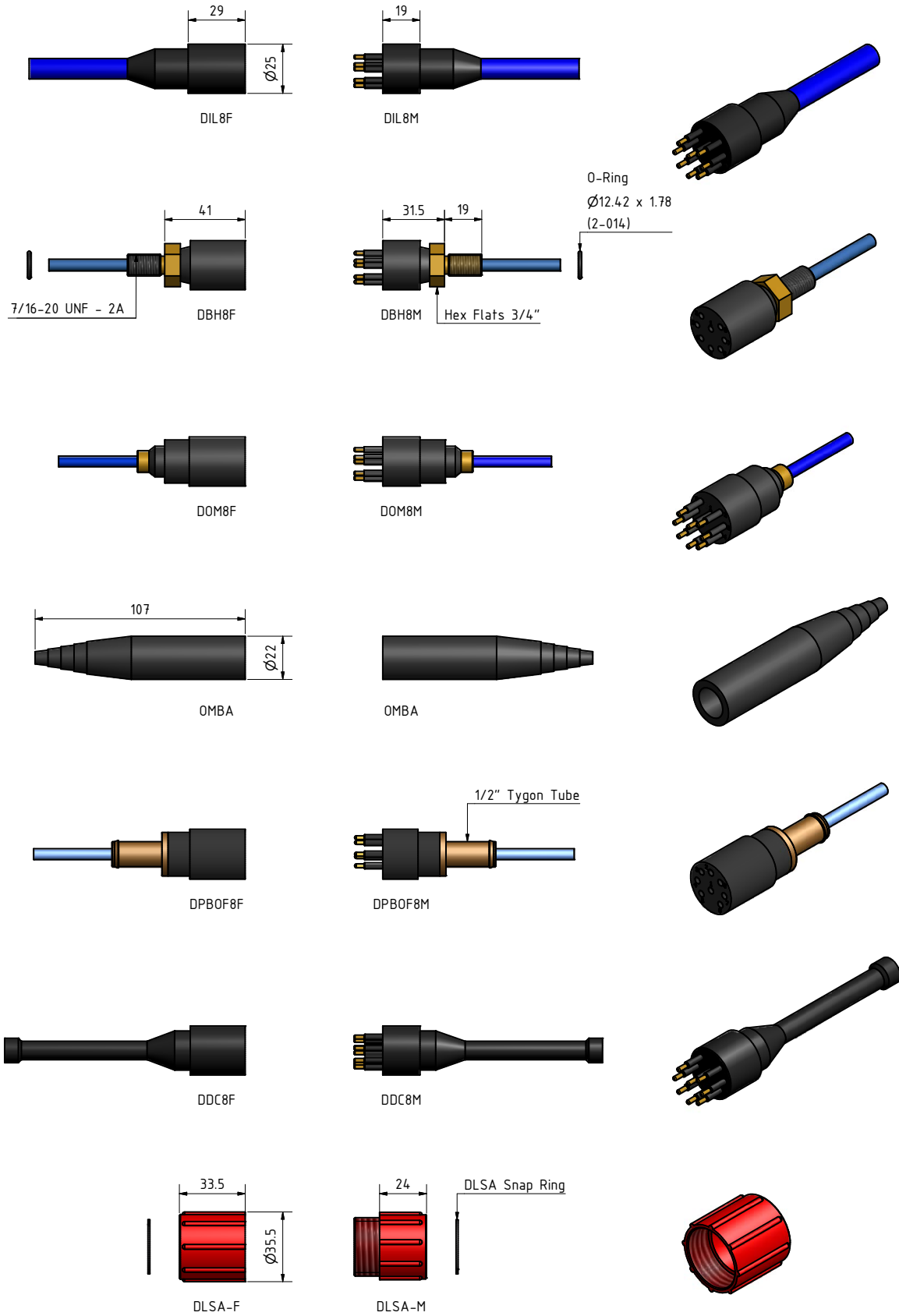
Nominal cable outside diameter (OD)

PUR cable 0.410", 10.4 mm

Additional information

Inline connector is available in shallow water version.

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



Drawing information

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

SubConn® Power Ethernet Circular

13 contacts

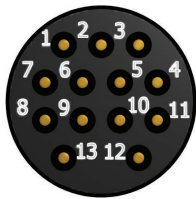
Connector specifications

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

Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel, titanium, anodised aluminium or PEEK
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Inline cable (100 cm, 3.3 ft)	4 pair 24 AWG, 0.20 mm ² PUR Power conductors 4 x 18 AWG, 0.82 mm ² Screen: Tinned copper braid
Bulkhead leads (100 cm, 3.3 ft)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm ² 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

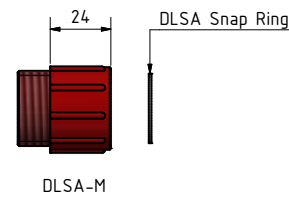
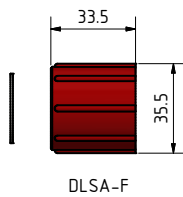
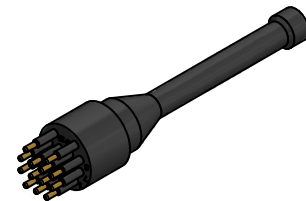
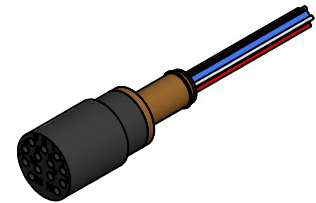
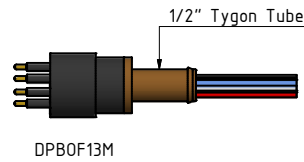
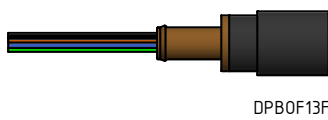
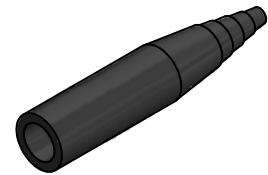
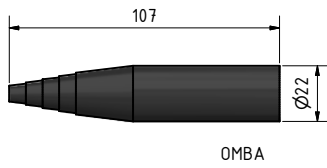
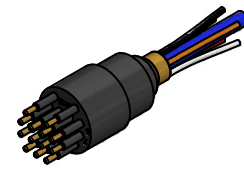
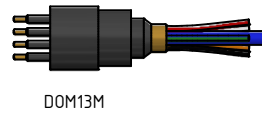
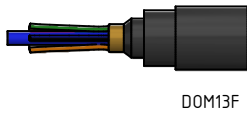
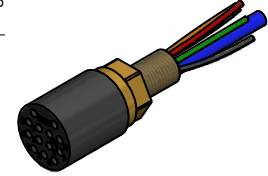
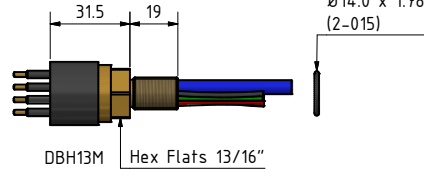
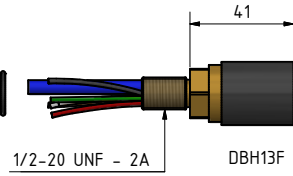
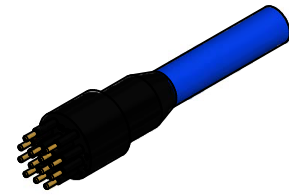
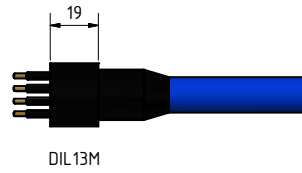
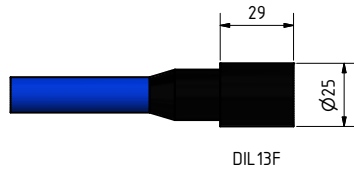
* Twisted pairs

Nominal cable outside diameter (OD)

PUR cable 0.550", 13.97 mm

Additional information

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



Drawing information

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

SubConn® Ethernet Low Profile

9 contacts

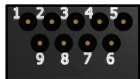
Connector specifications

Voltage rating	250 V DC/AC rms
Data rate	1 Gbit/s (up to 75 m)
Insulation resistance	> 200 Mohm
Contact resistance	< 0.01 ohm
Wet matings	> 500
Temperature rating (water)	- 4 to 60°C, 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C, - 40 to 140°F
Qualified pressure tested	600 bar, 8,700 psi
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 ² 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*	7-8 Green, Green/white*
3-4 Blue, Blue/white*	9 Screen (orange wire on bulkhead)
5-6 Orange, Orange/white*	

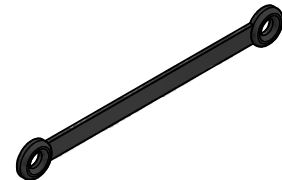
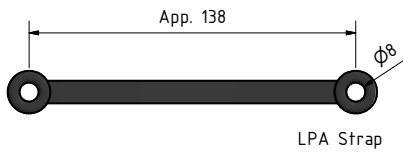
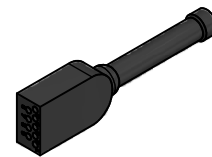
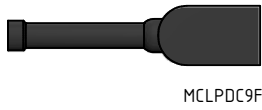
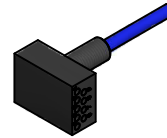
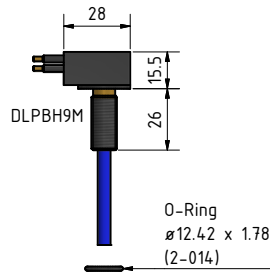
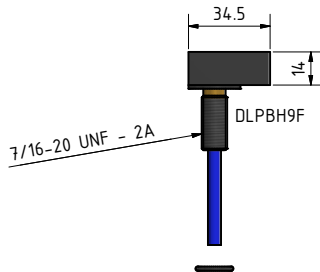
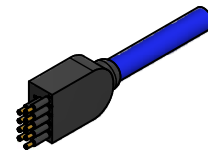
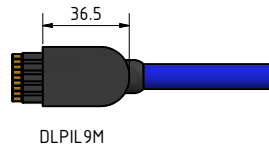
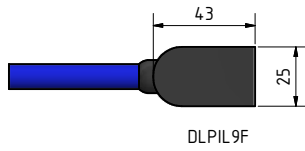
* Twisted pairs

Nominal cable outside diameter (OD)

PUR cable 0.410", 10.4 mm

Additional information

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



Drawing information

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

SubConn® Power Ethernet Low Profile

13 contacts

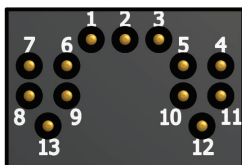
Connector specifications

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

Material specifications

Connector body	Chloroprene rubber
Bulkhead body	Brass, stainless steel or titanium
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
O-rings	Nitrile
Locking straps	Chloroprene rubber
Inline cable (100 cm, 3.3 ft)	4 pair 24 AWG, 0.20 mm ² PUR Power conductors 4 x 18 AWG, 0.82 mm ² Screen: Tinned copper braid
Bulkhead leads (100 cm, 3.3 ft)	CAT 5E patch cable, 5 x 20 AWG, 0.52 mm ² 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

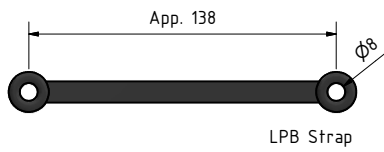
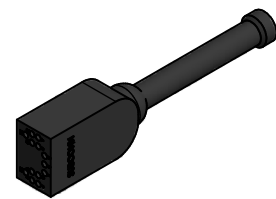
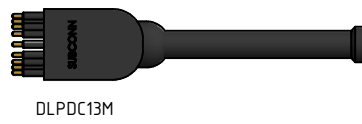
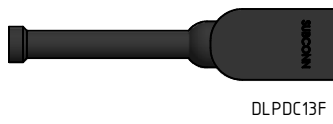
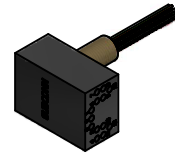
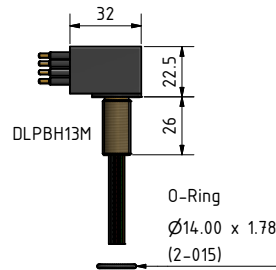
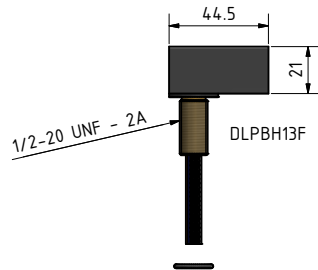
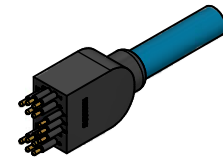
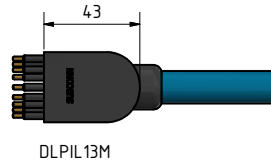
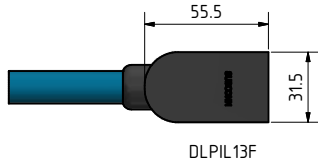
* Twisted pairs

Nominal cable outside diameter (OD)

PUR cable 0.550", 13.97 mm

Additional information

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



Drawing information

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

SubConn® Ethernet Metal Shell 2000

8 contacts

Connector specifications

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

Material specifications

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

Face view (male)



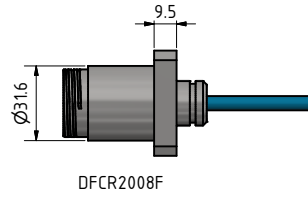
Wire colour code

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

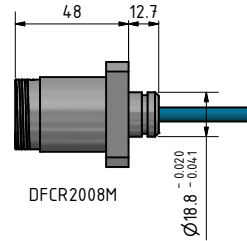
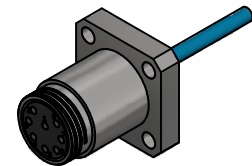
* Twisted pairs



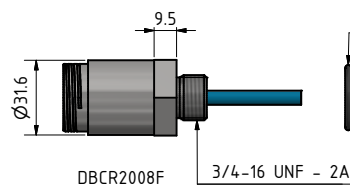
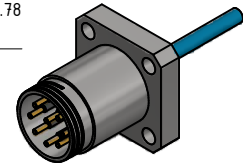
For more information see page 74/75 DIL8F



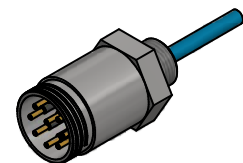
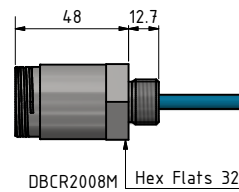
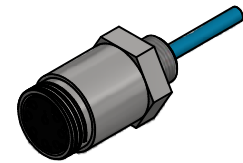
O-Ring
Ø22.22 x 2.62



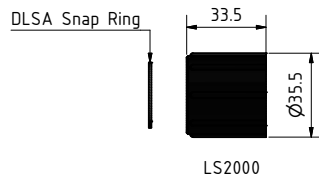
O-Ring
Ø15.6 x 1.78
(2-016)



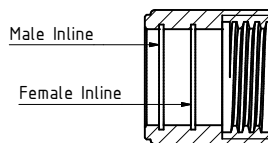
O-Ring
Ø22.22 x 2.62



For more information see page 74/75 DIL8M



Snap ring placement



With male inline connector - snap ring in outer groove

With female inline connector - snap ring in inner groove

Drawing information

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

SubConn® Ethernet Metal Shell 2000

13 contacts

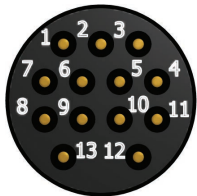
Connector specifications

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

Material specifications

Connector body	Chloroprene rubber
Connector housing	Stainless steel AISI 316 (other materials on request)
Contacts	Female sockets in gold plated brass UNS - C36000 Male pins in gold plated beryllium copper
O-rings	Nitrile
Locking sleeves	POM or stainless steel
Snap rings	Stainless steel AISI 302
Bulkhead leads (100 cm, 3.3 ft)	CAT 5E patch cable, 4 x 20 AWG, 0.52 mm ² with coloured wires incl. RJ 45 connector (not installed)

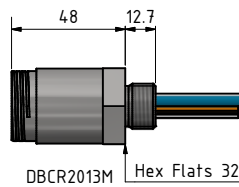
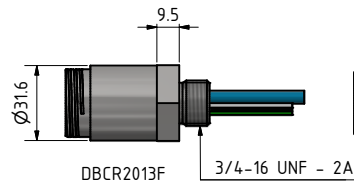
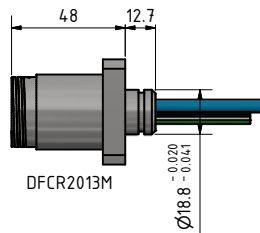
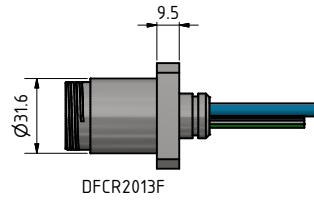
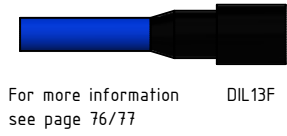
Face view (male)



Wire colour code

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

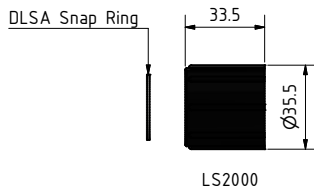
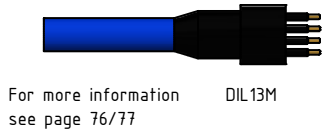
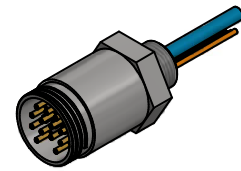
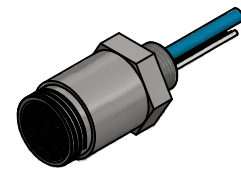
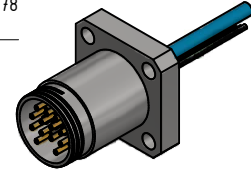
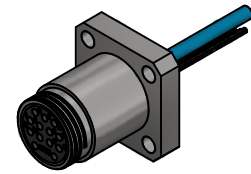
* Twisted pairs



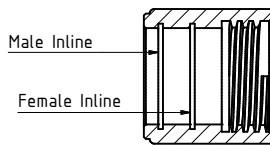
O-Ring
 $\varnothing 22.22 \times 2.62$

O-Ring
 $\varnothing 15.6 \times 1.78$
(2-016)

O-Ring
 $\varnothing 22.22 \times 2.62$



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

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

Options

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

SubConn® HF Coax

50 ohm Coax and Coax/Electric

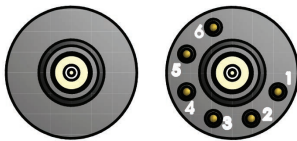
Connector specifications

Voltage rating on electric contacts	300 V DC/AC rms									
Current rating on electric contacts	5 A per contact (max 20 A per connector)									
Video types	Recommended for Composite, SDI, HD-SDI and 3G-SDI video									
Frequency*	0.3 GHz	0.6 GHz	0.9 GHz	1.2 GHz	1.5 GHz	1.8 GHz	2.1 GHz	2.4 GHz	2.7 GHz	3.0 GHz
Attenuation*	5.0 dB	7.7 dB	9.9 dB	11.6 dB	13.4 dB	15.3 dB	17.3 dB	19.3 dB	21 dB	22.5 dB
Recommended max frequency	3.0 GHz									
Insulation resistance	> 200 Mohm									
Contact resistance	< 0.01 ohm									
Wet matings	N/A (dry mating only)									
Temperature rating (water)	- 4 to 60°C, 25 to 140°F									
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F									
Storage temperature rating	- 40 to 60°C, - 40 to 140°F									
Qualified pressure tested	600 bar, 8,700 psi									

Material specifications

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

Face view (male)



Inline cable colour code

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

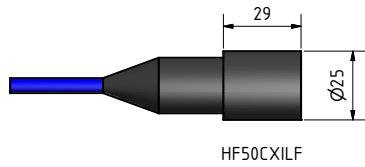
Nominal cable outside diameter (OD)

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

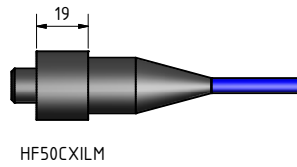
Additional information

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

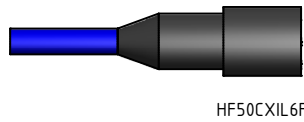
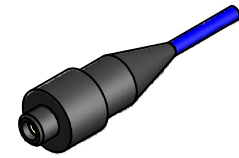
SubConn® Coax connectors are dry mate only, and cannot take open face pressure.
 Locking sleeves are required. No greasing in the actual coax part.
 Minimum bending radius on inline cable is 100 mm.



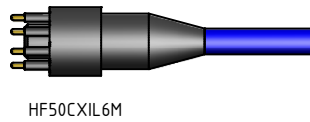
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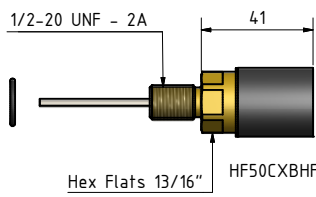
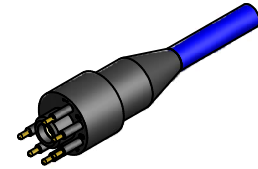
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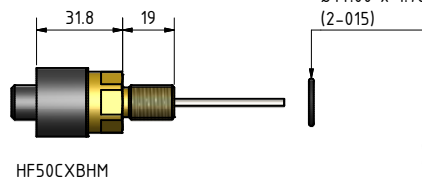
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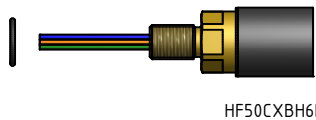
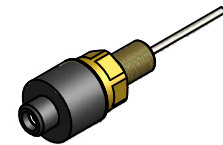
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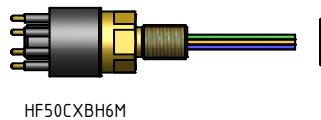
HF50CXBHF



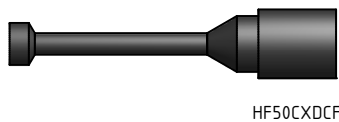
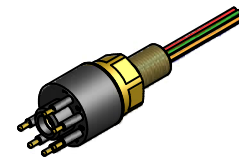
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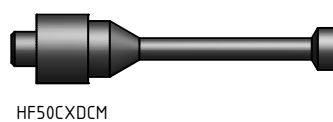
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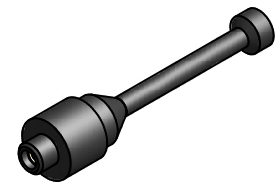
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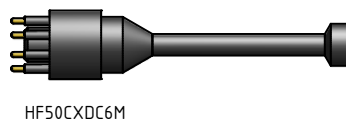
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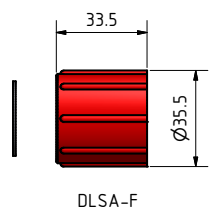
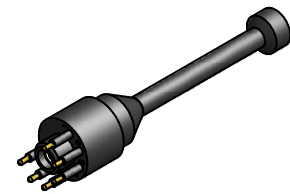
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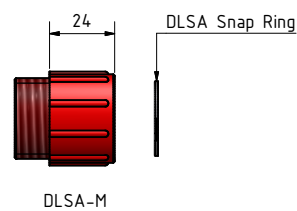
HF50CXDC6F



HF50CXDC6M



DLSA-F



DLSA-M



Drawing information

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

SubConn® HF Coax

75 ohm Coax and Coax/Electric

Connector specifications

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

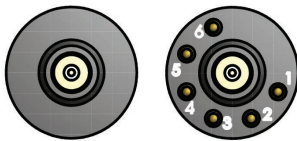
Frequency*	0.9 GHz	1.2 GHz	1.5 GHz	1.8 GHz	2.1 GHz	2.4 GHz	2.7 GHz	3.0 GHz
Attenuation*	6.3 dB	7.4 dB	8.6 dB	9.9 dB	11.3 dB	12.8 dB	14.5 dB	15.7 dB

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

Material specifications

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

Face view (male)



Inline cable colour code

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

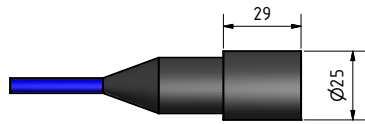
Nominal cable outside diameter (OD)

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

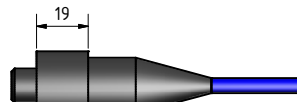
Additional information

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

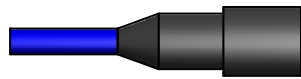
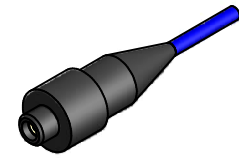
SubConn® Coax connectors are dry mate only, and cannot take open face pressure.
Locking sleeves are required. No greasing in the actual coax part.
Minimum bending radius on inline cable is 100 mm.



HF75CXILF



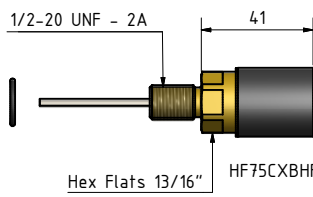
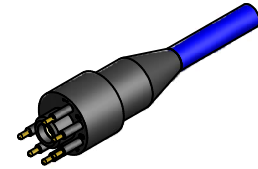
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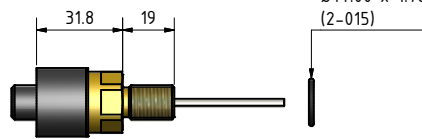
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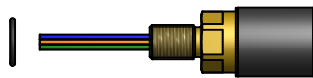
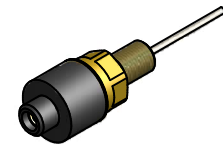
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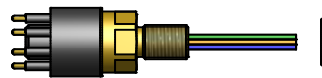
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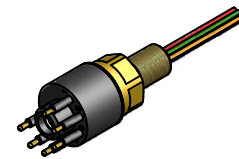
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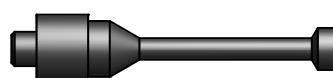
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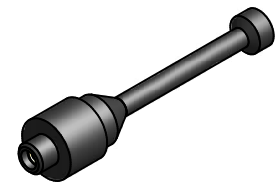
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HF75CXDCF



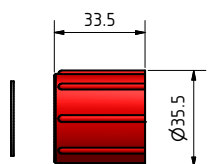
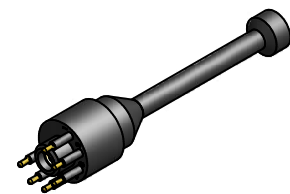
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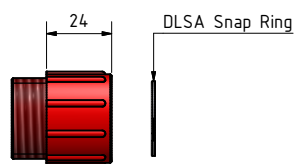
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HF75CXDC6M



DLSA-F

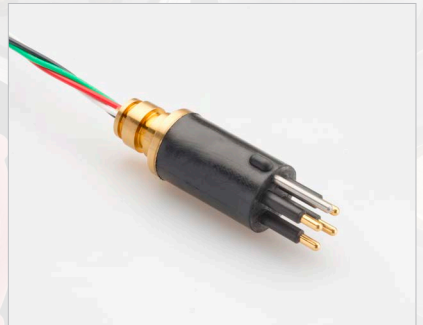
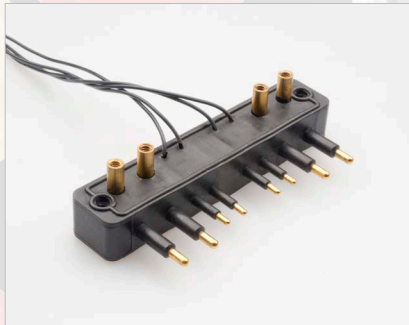


DLSA-M



Drawing information

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



SubConn® Specials

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

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

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

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





Applications

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

SubConn[®] Specials

Options

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

Quote

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

*Dr. Andrey A Tarasenko, Chief Designer
(R&D and Science) with the Russian State Scientific Centre
Yuzhmorgeologiya (YMG)*

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

Applications

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

Options

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

SubConn® Penetrator

Water Blocked Straight

Connector specifications

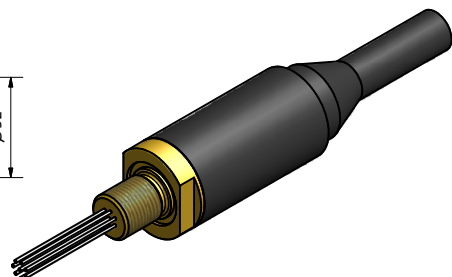
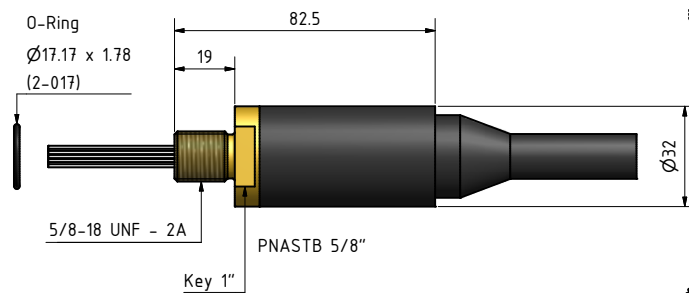
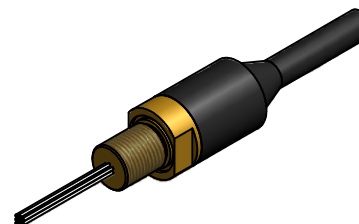
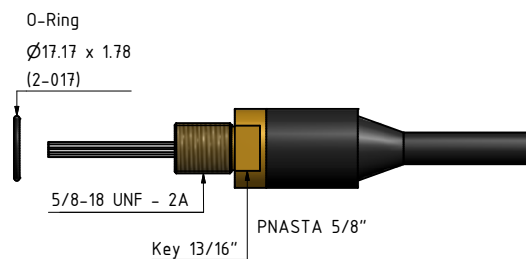
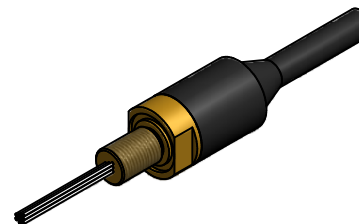
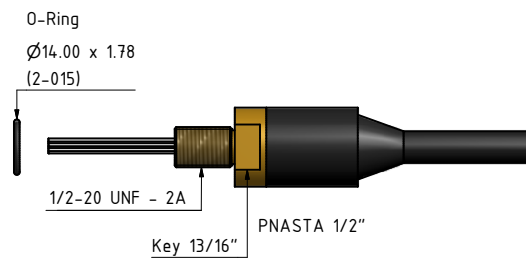
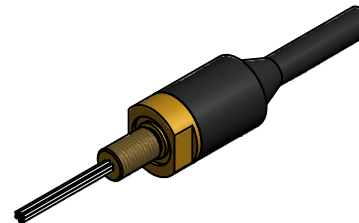
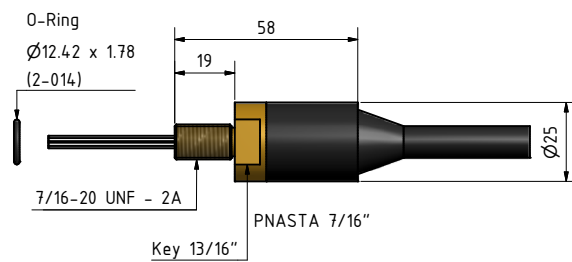
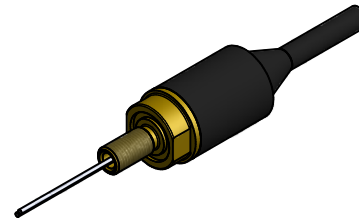
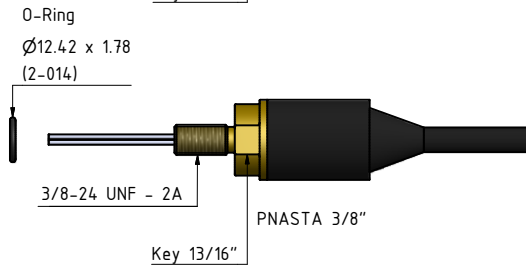
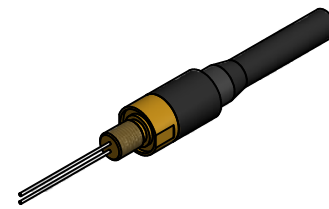
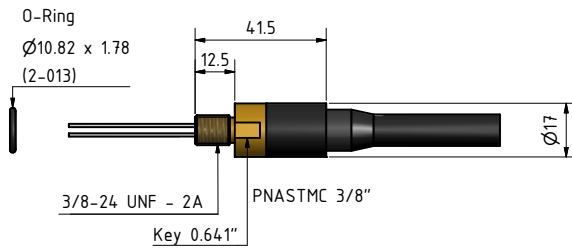
Voltage rating (all penetrators)	300/600 V DC/AC rms (depends on cable)
Current rating	Depends on wire and conductor size
Insulation resistance	> 200 Mohm
Temperature rating (water)	- 4 to 60°C, - 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C,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

Material specifications

Penetrator body	Chloroprene rubber
Penetrator metal part	Brass, stainless steel
Wire and conductor size	18 AWG, 0.82 mm ² to 22 AWG, 0.33 mm ² (depends on wire quantity)
Penetrator wire leads (30 cm, 1 ft)	PTFE
Cable outside diameter	Depends on penetrator and cable type
O-rings	Nitrile
Inline cable length	Customer specified
Inline cable type	Customer specified (SubConn® cables only)

Inline cable colour code

Depends on corresponding SubConn® connector and cable type.



Penetrator

Drawing information

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

SubConn® Penetrator

Water Blocked Right Angle

Connector specifications

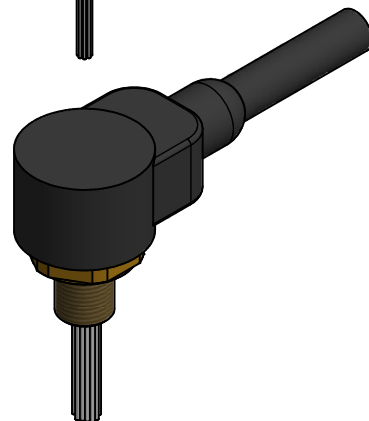
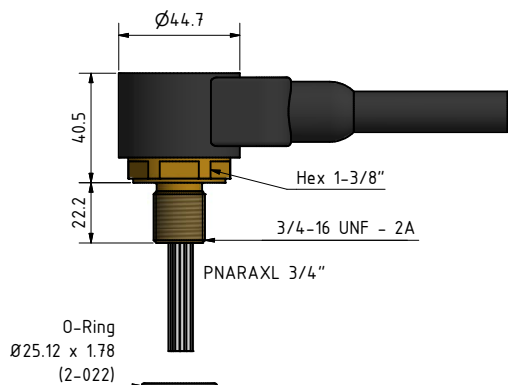
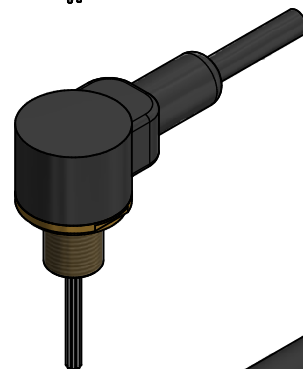
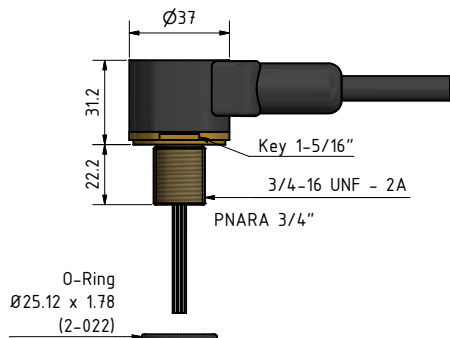
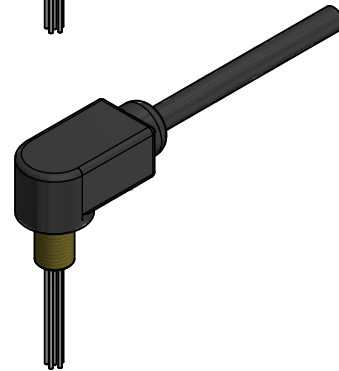
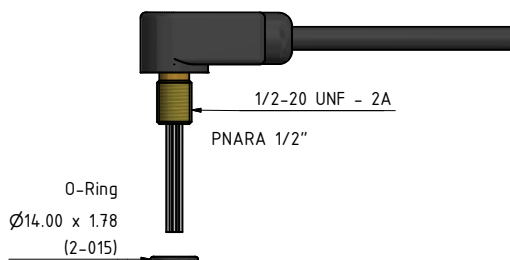
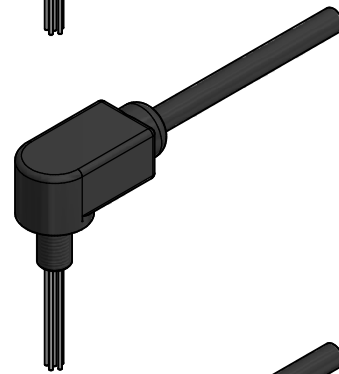
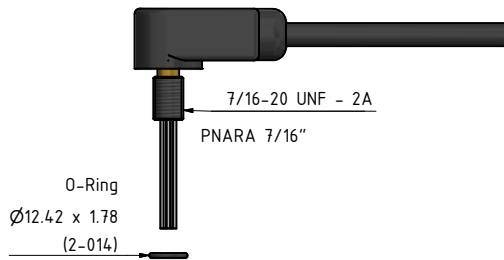
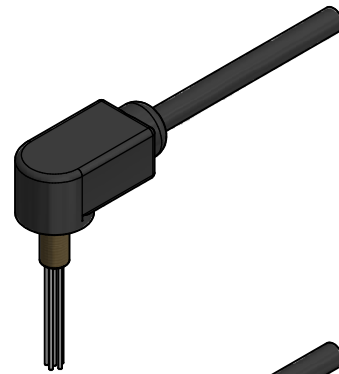
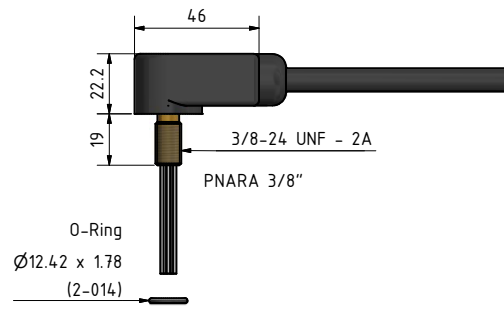
Voltage rating (all penetrators)	300/600 V DC/AC rms (depends on cable)
Current rating	Depends on wire and conductor size
Insulation resistance	> 200 Mohm
Temperature rating (water)	- 4 to 60°C, - 25 to 140°F
Temperature rating (air)	- 40 to 60°C, - 40 to 140°F
Storage temperature rating	- 40 to 60°C,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

Material specifications

Penetrator body	Chloroprene rubber
Penetrator metal part	Brass, stainless steel
Wire and conductor size	18 AWG, 0.82 mm ² to 22 AWG, 0.33 mm ² (depends on wire quantity)
Penetrator wire leads (30 cm, 1 ft)	PTFE
Cable outside diameter	Depends on penetrator and cable type
O-rings	Nitrile
Inline cable length	Customer specified
Inline cable type	Customer specified (SubConn® cables only)

Inline cable colour code

Depends on corresponding SubConn® connector and cable type.



Drawing information

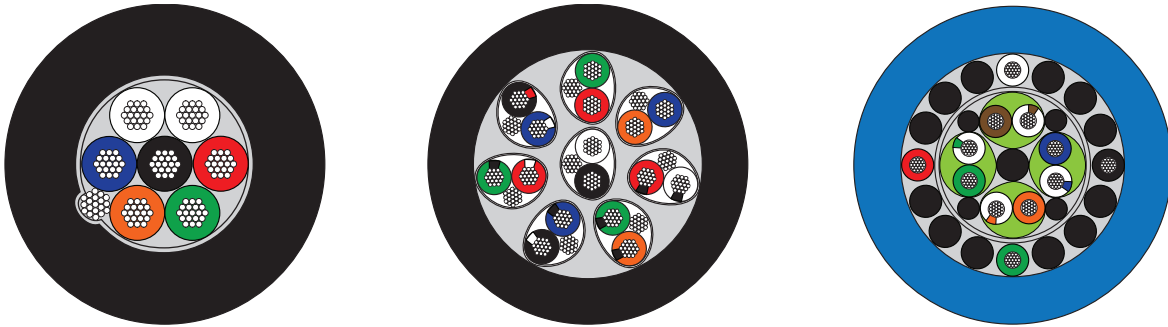
Dimensions in mm (1 mm = 0.03937 inch)
Threads in inches (1 inch = 25.4 mm)

Quote

"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® 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 is supplied with chloroprene rubber cables, while the Ethernet and Coax series, among others, feature polyurethane (PUR) cables as standard.

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

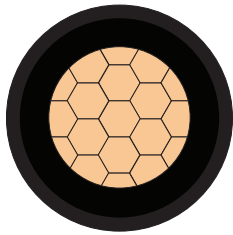
SubConn holds the entire range of rugged, special PUR cables in stock including several different power and signal lead combinations and dimensions.

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

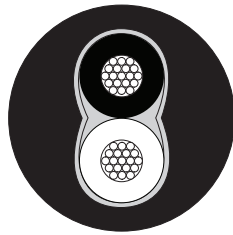
Furthermore, SubConn is among the few companies within the industry mastering the advanced technique of moulding rubber connectors to PUR cables, hereby allowing customers to obtain even more flexible, efficient and rugged connectivity solutions.

SubConn® polyurethane cables - overview

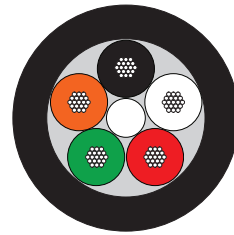
Single conductor cables



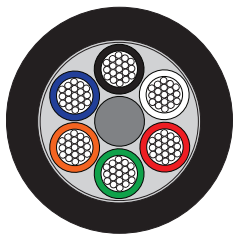
Type: P1C1/0#
1 conductor, 1/0 AWG
Nominal cable OD: 0.606", 15.4 mm



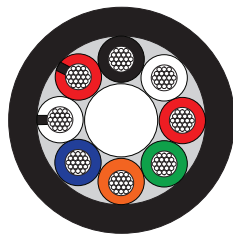
Type: P2C20#
2 conductors, 20 AWG
Nominal cable OD: 0.294", 7.47 mm



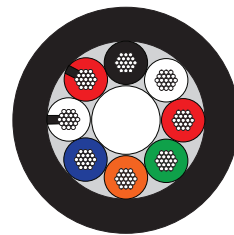
Type: P5C20#
5 conductors, 20 AWG
Nominal cable OD: 0.256", 6.50 mm



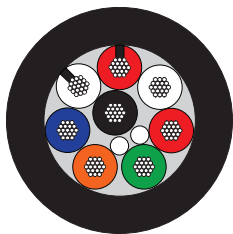
Type: P6C16#
6 conductors, 16 AWG
Nominal cable OD: 0.365", 9.28 mm



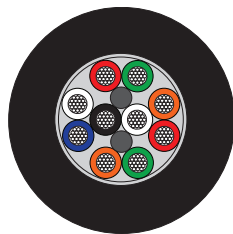
Type: P8C22#-a
8 conductors, 22 AWG
Nominal cable OD: 0.250", 6.35 mm



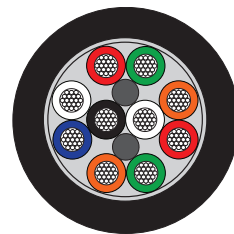
Type: P8C20#
8 conductors, 20 AWG
Nominal cable OD: 0.354", 9.00 mm



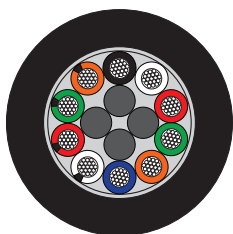
Type: P8C16#
8 conductors, 16 AWG
Nominal cable OD: 0.472", 11.9 mm



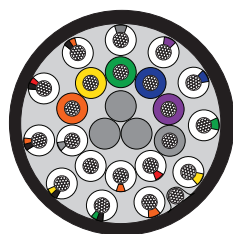
Type: P10C18#-a
10 conductors, 18 AWG
Nominal cable OD: 0.420", 10.67 mm



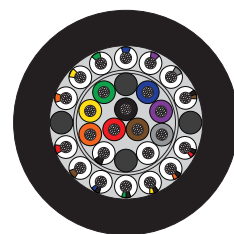
Type: P10C18#-b
10 conductors, 18 AWG
Nominal cable OD: 0.380", 9.65 mm



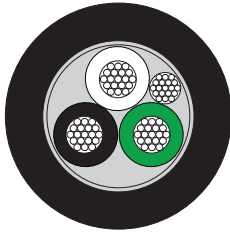
Type: P10C16#
10 conductors, 16 AWG
Nominal cable OD: 0.570", 14.48 mm



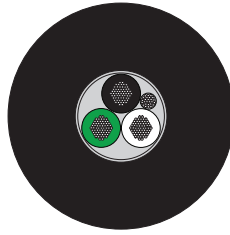
Type: P21C20# OS
21 conductors, 20 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.578", 14.70 mm



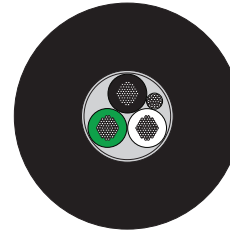
Type: P22C20#/3C18#
22 conductors, 20 AWG
3 conductors, 18 AWG
Nominal cable OD: 0.589", 14.96 mm



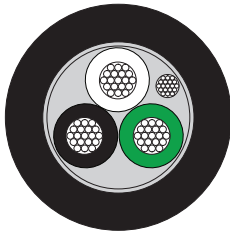
Type: P3C18# OS
3 conductors, 18 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.259", 6.58 mm



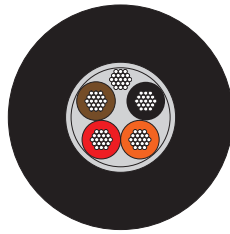
Type: P3C12# OS
3 conductors, 12 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.450", 11.43 mm



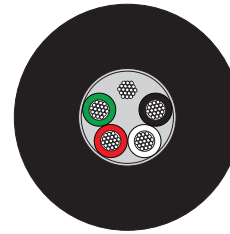
Type: P3C10# OS
3 conductors, 10 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.500", 12.70 mm



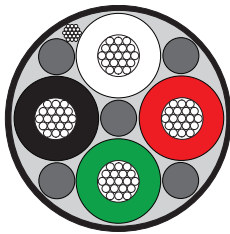
Type: P3C16# OS
3 conductors, 16 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.285", 7.24 mm



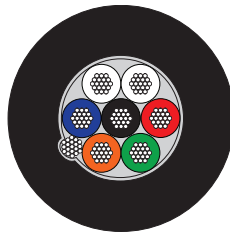
Type: P4C20# OS
4 conductors, 20 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.315", 8.00 mm



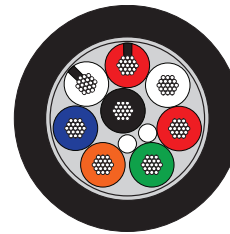
Type: P4C18# OS
4 conductors, 18 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.325", 8.26 mm



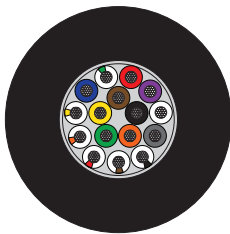
Type: P4C8# OS-PP
4 conductors, 8 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.652", 16.55 mm



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



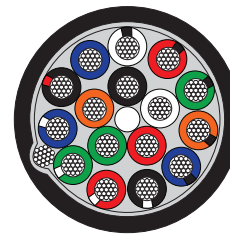
Type: P8C16# OS
8 conductors, 16 AWG
Braided tinned copper shield
Nominal cable OD: 0.438", 11.3 mm



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

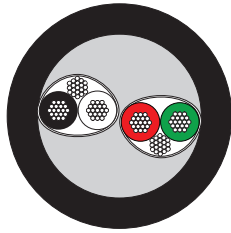


Type: P16C16# OS
16 conductors, 16 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.560", 14.23 mm

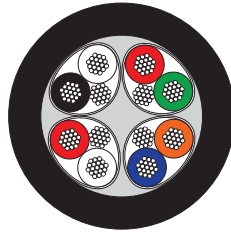


Type: P16C20# OS
16 conductors, 20 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.409", 10.40 mm

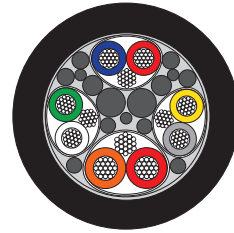
Shielded twisted pair cables



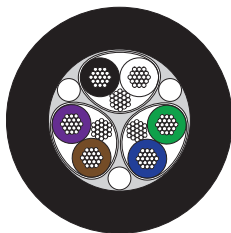
Type: P2TSP20#
2 twisted screened pairs, 20 AWG
Screens with foil and drain wire
Nominal cable OD: 0.335", 8.50 mm



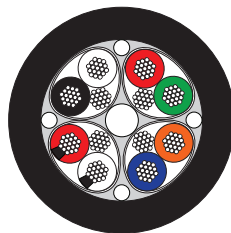
Type: P4TSP18#
4 twisted screened pairs, 18 AWG
Screens with foil and drain wire
Nominal cable OD: 0.500", 12.70 mm



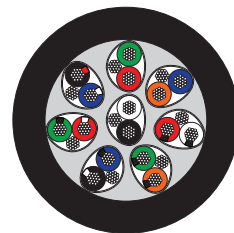
Type: P3TSP22#/1TSP18#
3 twisted screened pairs, 22 AWG
1 twisted screened pair, 18 AWG
Screens with foil and drain wire
Nominal cable OD: 0.400", 10.16 mm



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

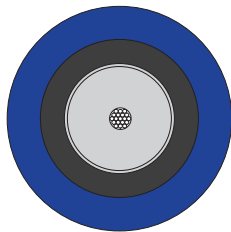


Type: P4TSP20#
4 twisted screened pairs, 20 AWG
Screens with foil and drain wire
Nominal cable OD: 0.409", 10.40 mm

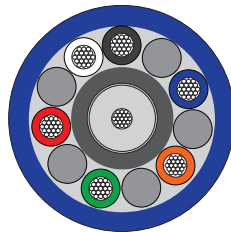


Type: P8TSP20#
8 twisted screened pairs, 20 AWG
Screens with foil and drain wire
Nominal cable OD: 0.508", 12.90 mm

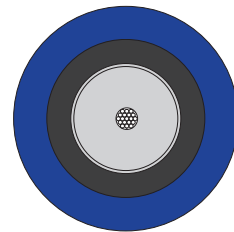
Coax cables



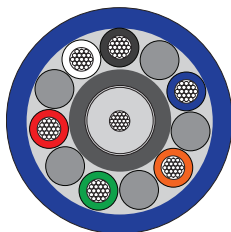
Type: P/HFCX75
1 Coax, 75 Ω
Nominal cable OD: 0.220", 7.75 mm



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

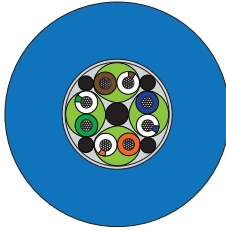


Type: P/HFCX50
1 Coax, 50 Ω
Nominal cable OD: 0.220", 5.59 mm

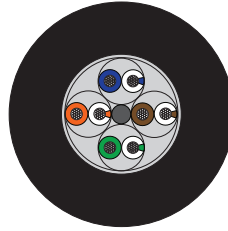


Type: P/HFCX50/6C20#
6 conductors, 20 AWG
1 Coax, 50 Ω
Nominal cable OD: 0.382", 9.70 mm

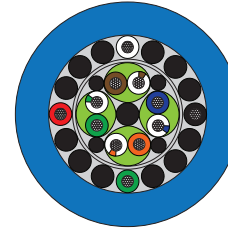
Ethernet cables



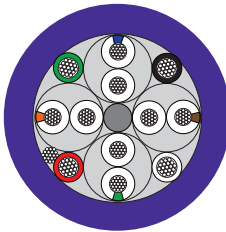
Type: D/P4TP24#
4 twisted pairs, 24 AWG
Overall copper braiding
Nominal cable OD: 0.409", 10.40 mm



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

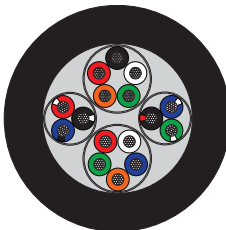


Type: D/P-P4TP24#/4C18#
4 twisted pairs, 24 AWG
Overall screen on TP with copper braiding
4 conductors, 18 AWG
Nominal cable OD: 0.550", 13.97 mm

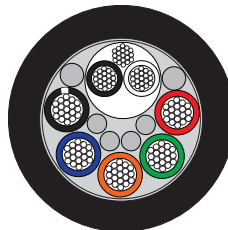


Type: D/P4TP22#/4C18# OS
4 twisted pairs, 22 AWG
4 conductors, 18 AWG
Overall screen with foil and drain wire
Nominal cable OD: 0.520", 13.2 mm

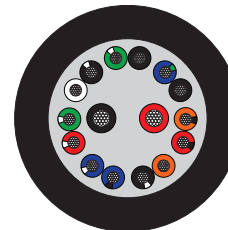
Other cables



Type: P2Quint22#/1Triad22#/1Triad20#
Nom. cable OD: 0.430", 10.92 mm



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



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

Quote

"Falmouth Scientific (FSI) has been using SubConn® connectors for many years on our standard current, wave, and tide meters, in our system solutions, and on many custom development projects. We can always rely on SubConn to provide a cost-effective product with exceptional quality and reliability."

Falmouth Scientific (FSI)

SubConn® additional accessories



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

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

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

Locking sleeves

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

DLSA-M/F



Red



Blue



Black



Yellow



Green



White

SSLSA-M/F



AISI316

DLSB-M/F



Red



Blue



Black

SSLSB-M/F



AISI316

DLSC-M/F



Red



Blue

SSLSC-M/F



AISI316

MCDLS-M/F



Red



Blue



Black



Orange



Green

MCSLS-M/F



AISI316

LS2000



Black

LS2400



Black

DLSM1-M/F



Black

MCDWLS



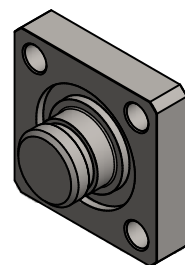
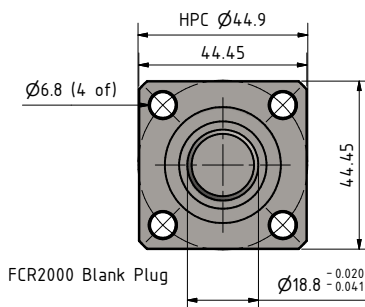
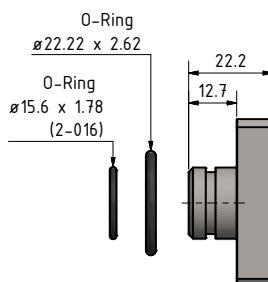
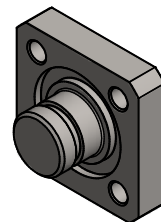
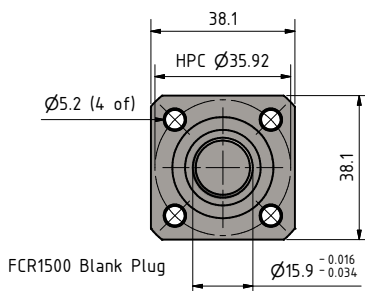
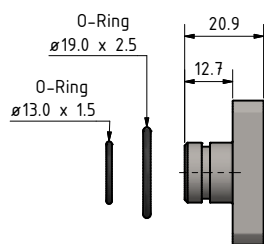
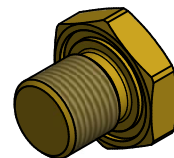
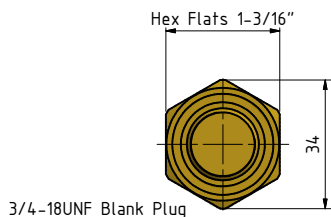
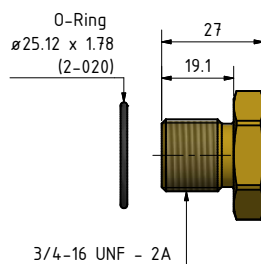
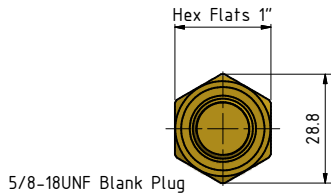
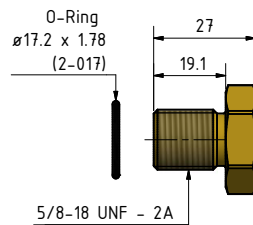
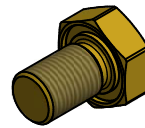
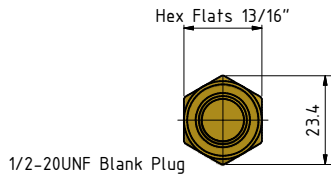
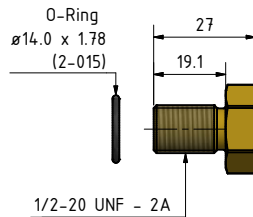
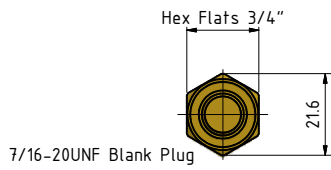
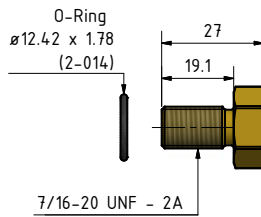
MCSDWLS



AISI316

Blank plugs

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

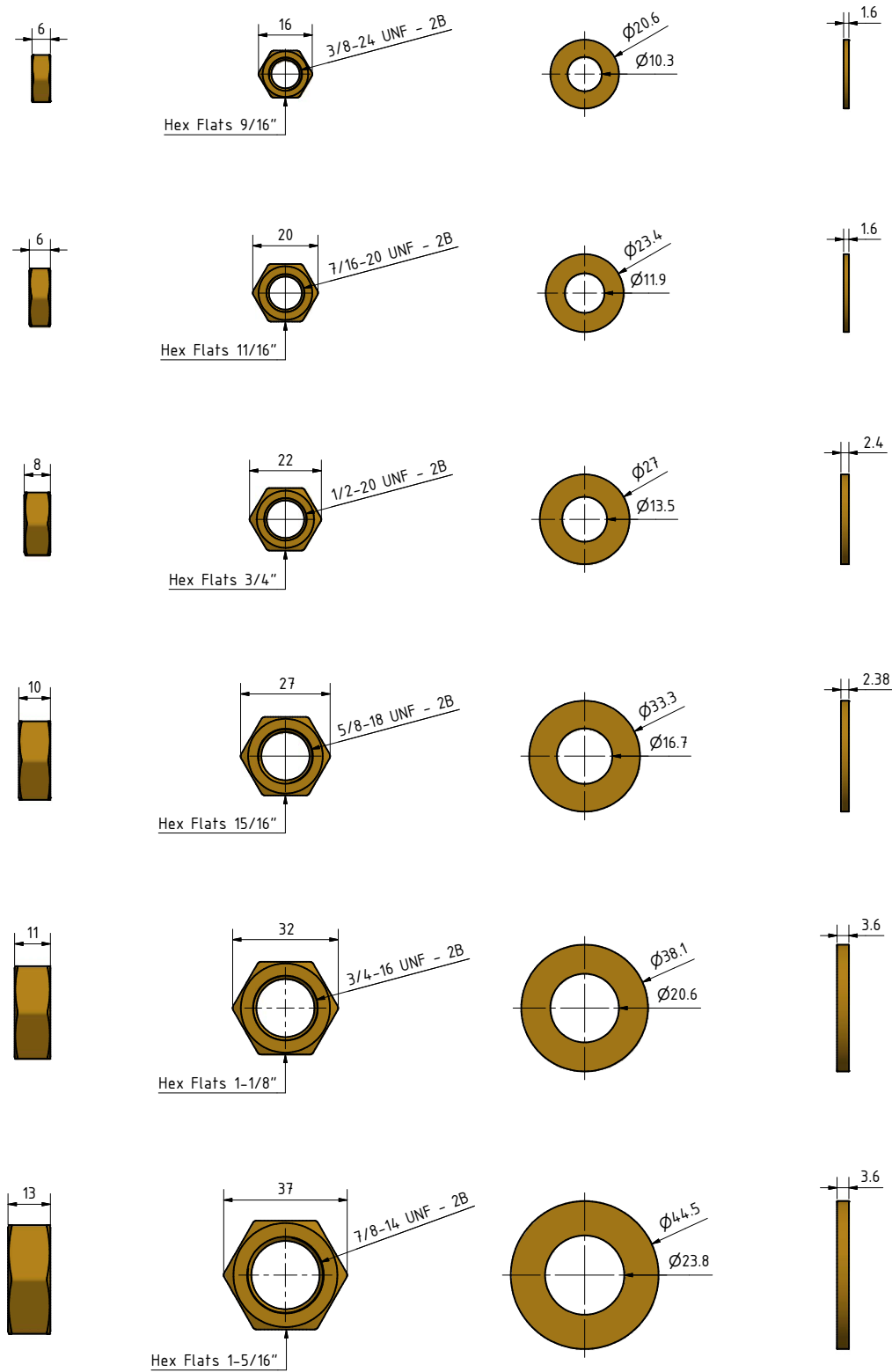


Drawing information

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

Nuts and washers

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



Drawing information

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

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

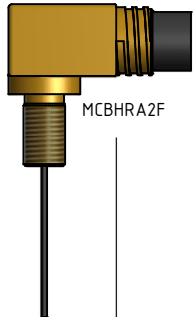


SubConn® connectors are designed, manufactured and tested for use in harsh marine environments. Operators are encouraged to read this section carefully and to follow the recommendations and instructions, in order to sustain the performance and extend the lifespan of their SubConn® connectors.

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

Abbreviation list

Connectors



MC BH RA 2 F

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

Locking sleeves (LS)

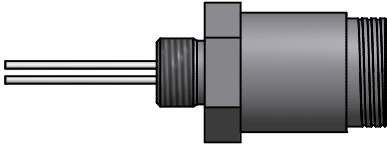


DLSA-F

DLS A - F

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

Metal Shell connectors



BCR2002F

BCR 2002 F

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

Locking sleeves (LS)



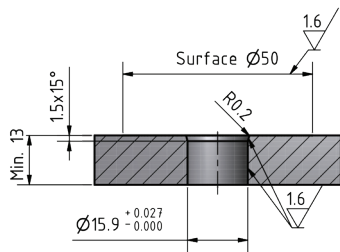
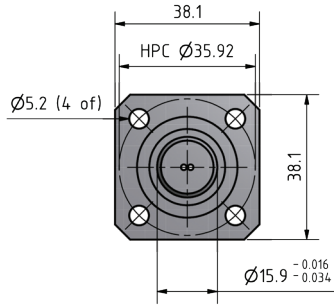
LS2000

LS 2000

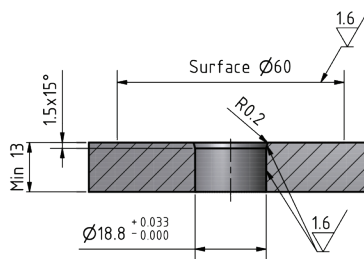
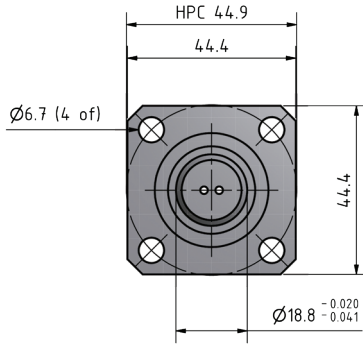
LS	POM
SSLS	Stainless steel
2000	Shell size (series)
1500	Metal Shell series uses MCDLS locking sleeves

Mounting specifications for Metal Shell

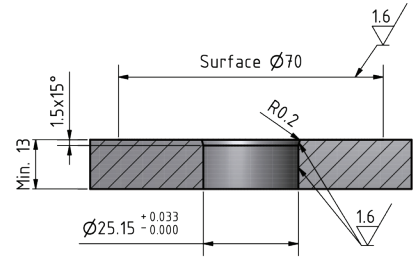
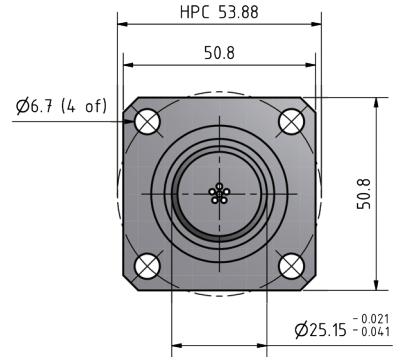
FCR 1500 series



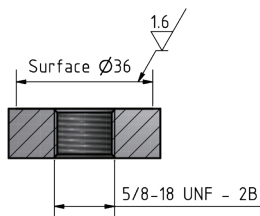
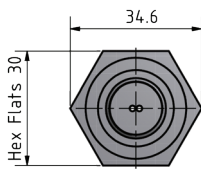
FCR 2000 series



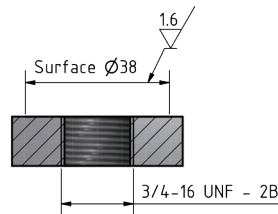
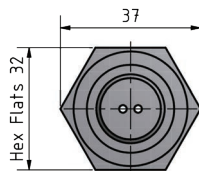
FCR 2400 series



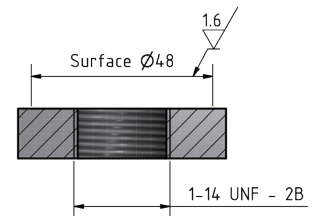
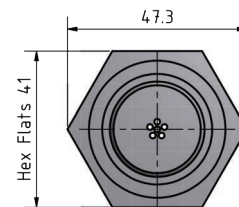
BCR 1500 series



BCR 2000 series



BCR 2400 series



SubConn® connector body material types

Brass	UNS-C36000
Aluminium	6061, hard anodised
Stainless steel	AISI 316
Titanium	Grades 5 (GR5)
PEEK	PEEK 30
Other materials available on request	
Gold plating	Electroless nickel per MIL-C-26074B, 0.0001-0.00012 thickness Hard gold per ASTM B488-01, .000030 thick minimum

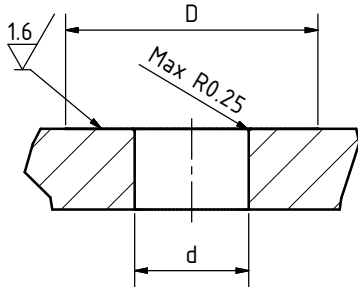
Recommended torque on SubConn® threads sizes

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

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

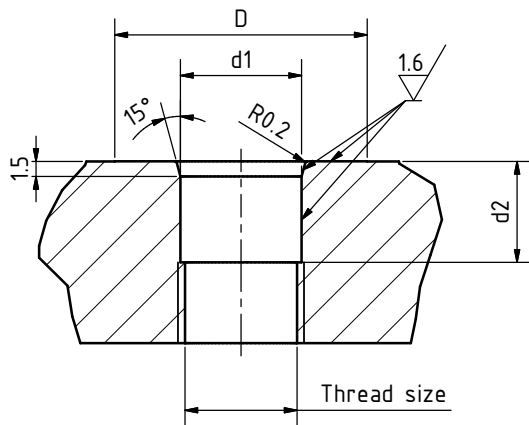
Recommended mounting hole

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 0.504", 12.8 mm	+/- 0.1	ø 0.984", 25.0 mm
5/8"	ø 0.629", 16.0 mm	+/- 0.1	ø 1.181", 30.0 mm
3/4"	ø 0.807", 20.5 mm	+/- 0.1	ø 1.574", 40.0 mm
1"	ø 1.024", 26.0 mm	+/- 0.1	ø 1.968", 50.0 mm
7/8"	ø 0.886", 22.5 mm	+/- 0.1	ø 1.574", 40.0 mm
1 1/2"	ø 1.516", 38.5 mm	+/- 0.1	ø 2.165", 55.0 mm

Double o-ring



Thread size	Hole size (d1)	Tolerance	Hole depth (d2)	Tolerance	Surface size (D)
7/16"	ø 0.47", ø12 mm	H8	ø 0.41", 10.5 mm	+/- 0.1	ø 0.984", 25.0 mm
1/2"	ø 0.55", ø14 mm	H8	ø 0.52", 13.2 mm	+/- 0.1	ø 0.984", 25.0 mm
5/8"	ø 0.685", ø17,4 mm	H8	ø 0.36", 9.2 mm	+/- 0.1	ø 1.181", 30.0 mm

American wire gauge (AWG) to metric

AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²	AWG	mm ²
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		

General cable information

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

General cable assembly information

- All cable assemblies are measured from rubber connector face to rubber connector face
- Our standard cable assembly tolerances
 - +/- 1,5" (38,1 mm) <3 m length and + - 3% >3 m
 - Lower tolerances need approval from the production
 - Min. assemblie length 8" (203 mm)

General termination information

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

Quote

"Our experience of using SubConn® products spans more than a decade. During this period the products delivered an outstanding track record with very high reliability. We now utilise the products in every new subsea design requiring connectors as well as in upgrades to existing equipment. We are excited about the new additions to the SubConn® product range and have great prospects for the future of subsea engineering, especially with industry partners like SubConn®."

*Council for Scientific and Industrial Research (CSIR),
Maritime & Subsea Design – South Africa*

Hoses for pressure balanced oil filled connectors

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

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

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

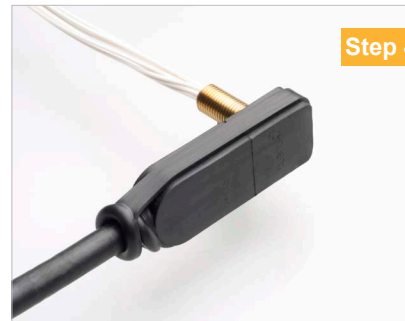
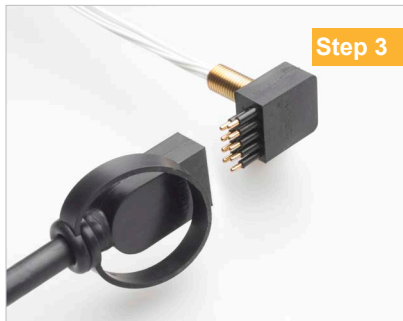
Recommended oil for pressure balanced systems

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

General rubber information

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

Mounting procedure for Low Profile strap



SubConn® handling instructions

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

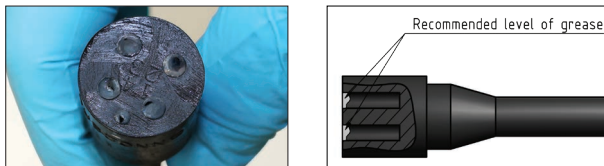
Handling

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

Greasing products



Greasing and mating above water (dry mate)



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

Greasing and mating under water (wet mate)



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

Cleaning

Cleaning products



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

Use of Loctite

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

Scan to access
SubConn® greasing
and cleaning
instruction videos



Quote

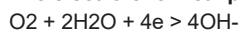
"We have used the SubConn® connectors in many of our projects from weather buoy networks to prototype research projects. Their ease of use and maintenance in difficult conditions has been vital to the success of our projects and allows great confidence in both quality and results."

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

Information on debonding and corrosion

The reason for the debonding of metal connectors with chloroprene rubber or polyurethane heads installed in a cathodically protected system is the natural development of hydroxide. Hydroxide is generated on the cathode when the polarity tension exceeds 400 mV (Cu/CuSo₄) and the aqueous environment is of an alkaline character.

The electro-chemical process of hydroxide



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

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

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

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

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

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

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

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

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