

fischer UltiMate™

New Original Series

Technical
Specifications



*UltiMate Connections
for Harsh Environment*



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Edition 1.3

fischer
CONNECTORS

Rugged, Compact, Lightweight Connectors for Harsh Environment

Fischer Connectors is a leading company in the design, manufacture and distribution of high-performance connectors and cable assembly solutions. Known for their quality, ruggedness and excellent sealing, our products prove to be reliable in the most demanding environments.

Innovative and flexible, Fischer Connectors is committed to provide customized solutions and uncompromising quality. Primary design and manufacturing facilities are located in Switzerland, with subsidiaries and distributors located worldwide.



Core Competencies

- High performance push-pull connectors
- Complete cable assembly solutions
- Rugged solutions for harsh environment
- Sealed and hermetic connector solutions
- Lightweight and compact connectors
- Shock and vibration resistant connectors
- High flexibility of product configurations
- Standard solutions or customized product development
- Military standards compliant
- World-class customer service
- Specialized advice and support
- High quality industrial processes
- Trusted by high-end industries



Introduction to Fischer UltiMate™ Original Series

Product Features

Compact
Miniature connector design, ideal for devices with restricted space

1. Sealing IP68/69K even unmated

3. Mechanical coding

Rugged
Designed for harsh environment

Lightweight
Aluminium 50% lighter than standard brass connectors

2. EMC 360° high performance shielding

4. Soft sealing caps

- High shock and vibration resistance
- Operating temperatures: -55°C to +135°C
- 10,000 mating cycles
- Wide range of configurations
- Military standards compliant

1. Sealing IP68/69K even unmated

- One piece body
- Cable assembly containing epoxy

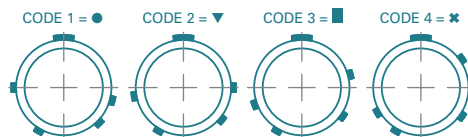
2. EMC 360° high performance shielding

- Grounding ring
- Cable assembly design



3. Mechanical and visual coding

- Robust mechanical coding
- 4 options with visual coding



4. Soft sealing caps

- Rugged, IP68 sealing
- Easily installed on plug and receptacle



Cable Assembly Solutions

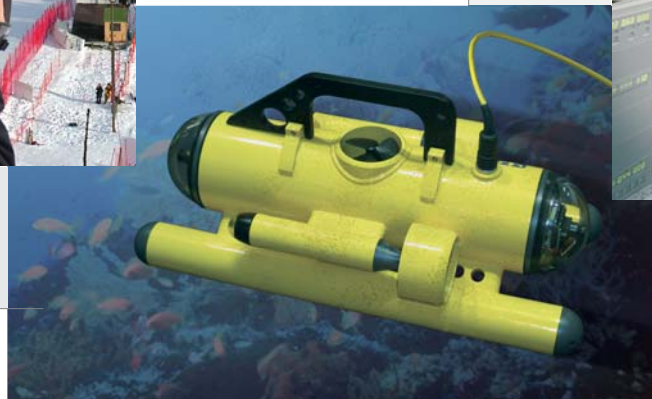
Fischer developed innovative complete cable assembly solutions for Fischer UltiMate™ Original Series. Rely on Fischer's engineering expertise for your harsh environment applications and order a complete turnkey solution from one source.



- Durable and reliable overmolding specially designed for severe conditions
- High performance epoxy potting for IP68/69K sealed connector
- Cable assembly designed for excellent EMC 360° shielding
- Straight and right angle thermoplastic overmolding

Applications

Fischer UltiMate™ Original Series is specially designed for a broad range of harsh environment applications. It offers rugged, compact, lightweight, sealed connectors and cable assembly solutions ideally suited to withstand a variety of severe environmental, industrial and chemical conditions.



Technical Specifications

Product Range Overview

Plugs

Cable mounted

- UP01: Short plug



Panel mounted

- UP50: Front mounted



Receptacles

Panel mounted

- UR01: Rear mounted low profile receptacle



- UR02: Rear mounted receptacle



- UR03: Front mounted low profile



Cable mounted

- UR50: Short receptacle

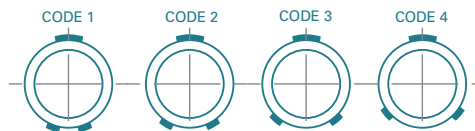


Additional body styles will follow shortly

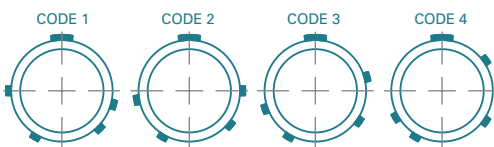
Mechanical Coding

Plugs

- Size 08

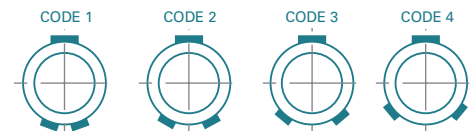


- Size 11, 13 and 18

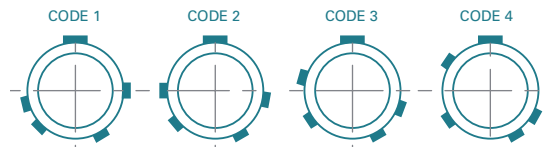


Receptacles

- Size 08



- Size 11, 13 and 18



Part Numbering

Structure

Connector Design	Contact Block
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Parts

Body Style	Sealing Level	Locking System	Connector Size	Polarity	Number of Contacts	Contact Type
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Available Choices

UltiMate Plug = UP Cable mounted plug <ul style="list-style-type: none"> ■ Short = UP01 Panel mounted plug <ul style="list-style-type: none"> ■ Front mounted = UP50 UltiMate Receptacle = UR Panel mounted receptacle <ul style="list-style-type: none"> ■ Rear mounted low profile = UR01 ■ Rear mounted = UR02 ■ Front mounted low profile = UR03 Cable mounted receptacle <ul style="list-style-type: none"> ■ Short = UR50 	Panel Mounted <ul style="list-style-type: none"> ■ Vacuum sealing = V ■ Water sealing = W 	Cable Mounted Plug <ul style="list-style-type: none"> ■ Push-pull automatic locking system = L ■ Quick release = Q Cable Mounted Receptacle = Z	<ul style="list-style-type: none"> ■ Size 8 = 08 ■ Size 11 = 11 ■ Size 13 = 13 ■ Size 18 = 18 	<ul style="list-style-type: none"> ■ Male contacts = M ■ Female contacts = F 	002 to 042 Contacts available per size: <ul style="list-style-type: none"> ■ Size 08 002, 003, 004, 005, 007, 009 ■ Size 11 012, 016, 019 ■ Size 13 027 ■ Size 18 042 	<ul style="list-style-type: none"> ■ Solder = S ■ PCB = P ■ Crimp* = C <p>* Only available for size 13 & 18</p>
	Cable Mounted Not applicable* * IP68/69K with Fischer Connectors Cable Assembly Solution	Panel Mounted Not applicable	Size corresponds to interface diameter of plug and receptacle in mm	Standard polarity Male contacts on Plug Female contacts on Receptacle Inverted polarity Female contacts on Plug Male contacts on Receptacle		

Examples

Cable Mounted Plugs (UP01 to UP49)

UP0X		L	11	M	012	S
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Cable Mounted Receptacles (UR50 to UR89)

UR5X		Z	11	F	012	S
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Panel Mounted Plugs (UP50 to UP99)

UP5X	W		11	M	012	S
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Panel Mounted Receptacles (UR01 to UR49)

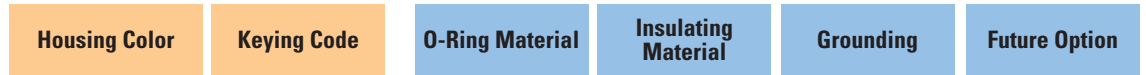
UR0X	W		11	F	012	S
-------------	----------	--	-----------	----------	------------	----------

Part Numbering

Structure



Parts



Available Choices

<ul style="list-style-type: none"> ▪ Black = BK ▪ Grey = GR 	<ul style="list-style-type: none"> ▪ Code 1 (●) = 1 ▪ Code 2 (▼) = 2 ▪ Code 3 (■) = 3 ▪ Code 4 (✱) = 4 	<p>Receptacle</p> <p>O-ring at plug interface</p> <ul style="list-style-type: none"> ▪ EPDM = E <p>Plug</p> <p>Not applicable = Z</p>	<ul style="list-style-type: none"> ▪ PBT = 1 	<p>Panel Mounted</p> <ul style="list-style-type: none"> ▪ Grounding pin = A* <p><small>* Available for UR01/UR02</small></p> <ul style="list-style-type: none"> ▪ None = N for UR03/UP50 <p>Cable Mounted</p> <p>Not applicable = Z</p>	<ul style="list-style-type: none"> ▪ A
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Standard guide mark

- Red for Grey housing color

- White for Black housing color

Standard keying code 1

Visual coding on plug and receptacle

● ▼ ■ ✱

* Please contact us for other o-ring material, insulating material or grounding options

Examples

Cable Mounted Plugs (UP01 to UP49)



Cable Mounted Receptacles (UR50 to UR89)



Panel Mounted Plugs (UP50 to UP99)

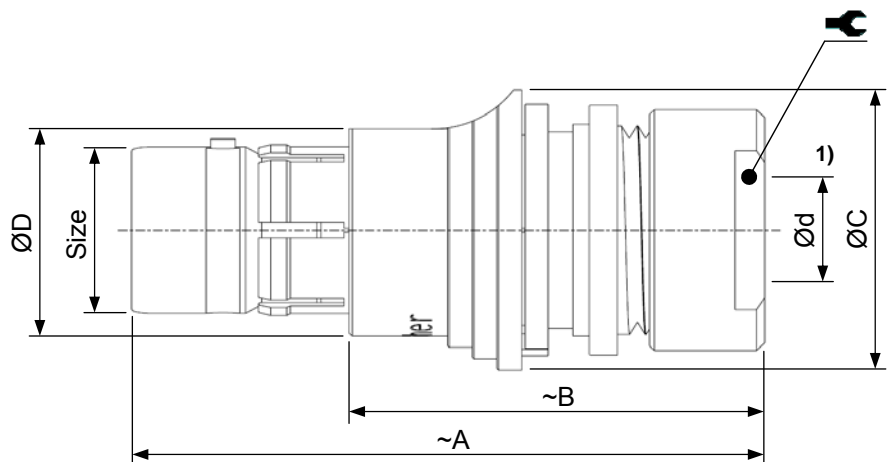
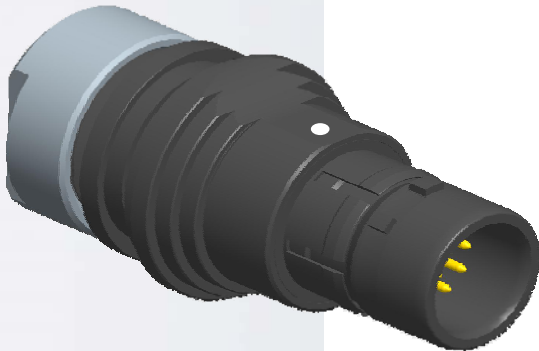


Panel Mounted Receptacles (UR01 to UR49)



Dimensions

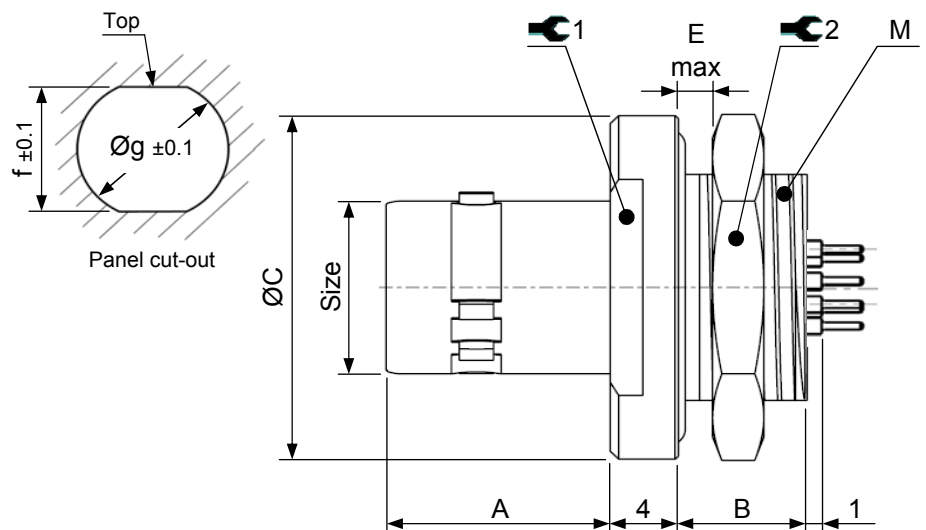
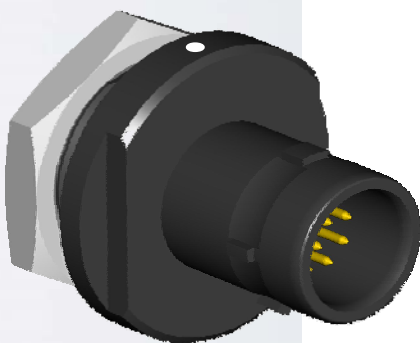
UP01: short cable plug



Size	A	B	C	D	d max		Torque
08	31	18	13.9	10.9	4.5	10	1.5 Nm
11	38	25	18.5	13.7	7.1	12	3.0 Nm
13	54	37	21.7	15.7	8.7	17	3.5 Nm
18	60	40	29.0	22.7	13.7	22	6.0 Nm

1) Max cable diameter below shield.

UP50: front mounted panel plug

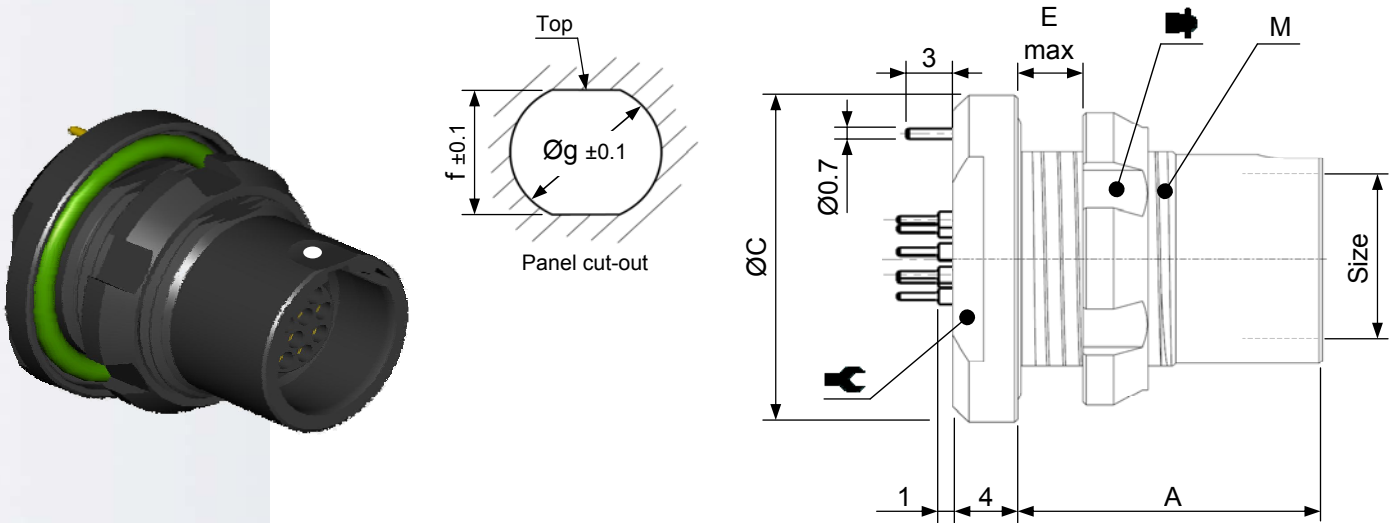


Size	A	B	C	E	f	g	M			Torque
11	13.2	7.5	21.8	4.5	14.5	16.1	16x1	17	19	4.5 Nm

All dimensions shown are in millimeters and are for reference only.
They are subject to change without prior notice.

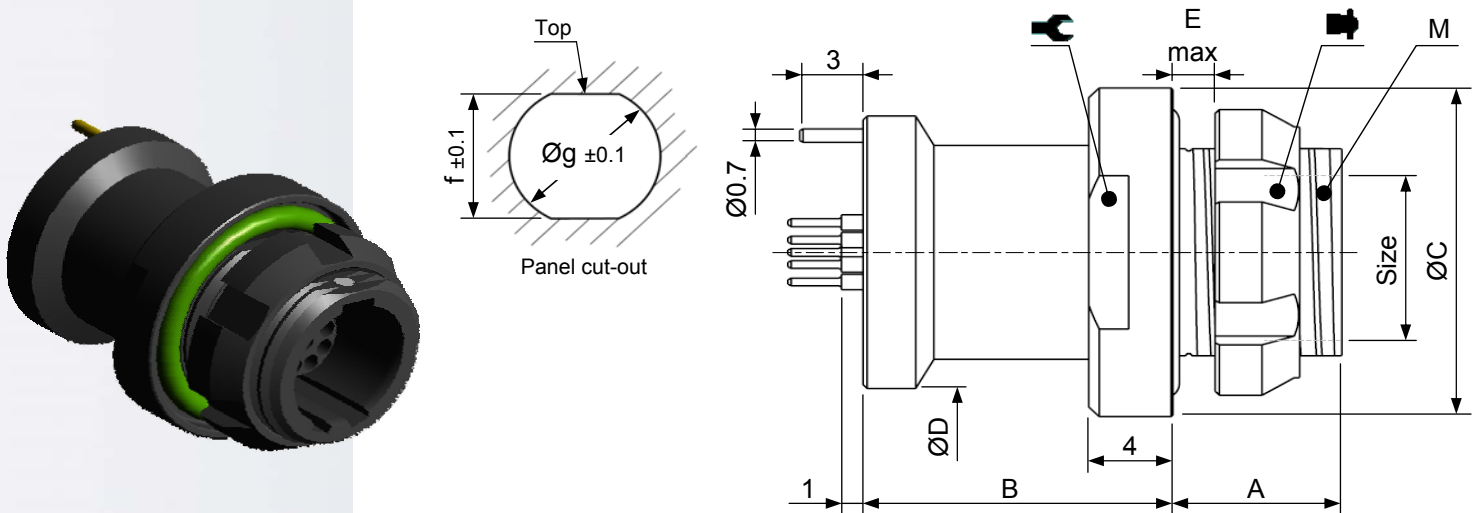
Dimensions

UR01: rear mounted low profile panel receptacle



Size	A	C	E	f	g	M			Torque
08	18.0	16.9	5	10.9	12.1	12x1	15	TF00.001	2.5 Nm
11	18.7	21.8	5	14.6	16.1	16x1	17	TK00.002	4.5 Nm
13	22.5	23.8	5.5	16.5	18.1	18x1	20	TP00.011	6.0 Nm

UR02: rear mounted panel receptacle

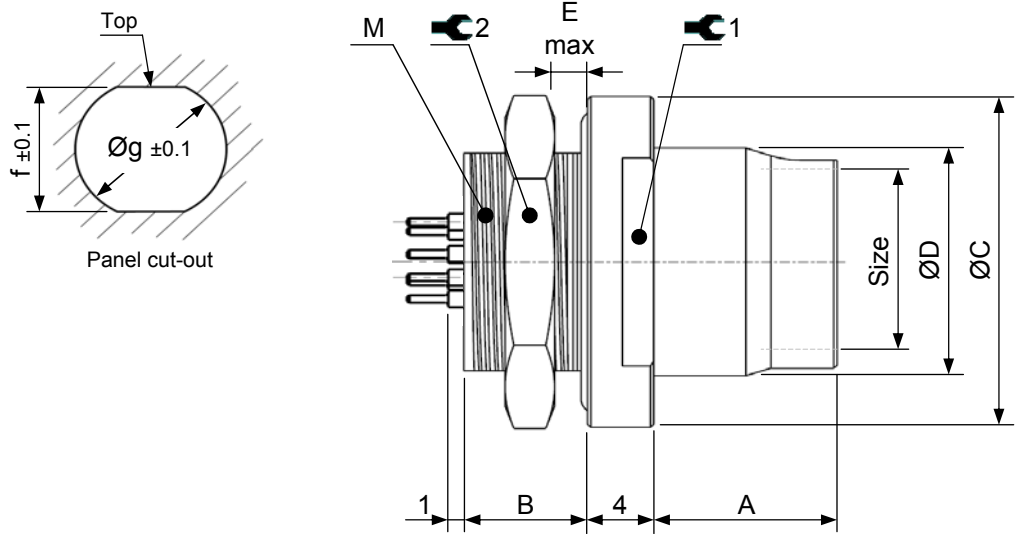
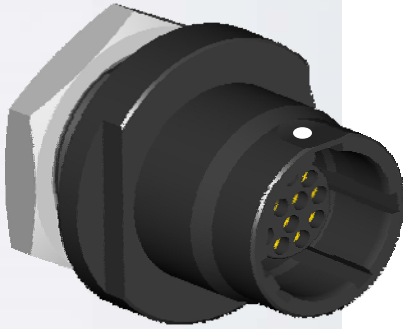


Size	A	B	C	D	E	f	g	M			Torque
08	8	14.7	16.9	14.0	4	10.9	12.1	12x1	15	TF00.001	2.5 Nm
11	8	14.7	21.8	18.8	4	14.6	16.1	16x1	17	TK00.002	4.5 Nm
18	11	22.3	31.8	26.0	5	23.2	25.1	25x1	27	TQ00.005	10 Nm

All dimensions shown are in millimeters and are for reference only.
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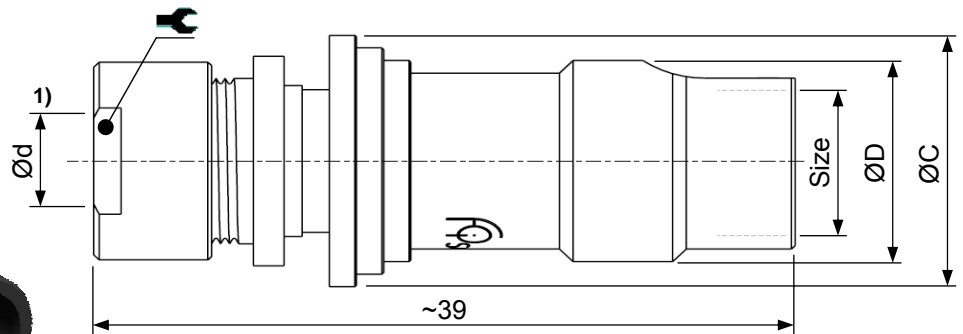
Dimensions

UR03: front mounted low profile panel receptacle



Size	A	B	C	D	E	f	g	M			Torque
11	11.1	7.5	21.8	15	4.5	14.5	16.1	16x1	17	19	4.5 Nm

UR50: short cable receptacle



Size	C	D	d max		Torque
08	15.0	12.0	4.5	10	1.5 Nm
11	18.5	15.5	7.1	12	3.0 Nm

1) Max cable diameter below shield.

All dimensions shown are in millimeters and are for reference only. They are subject to change without prior notice.

Contact Configurations

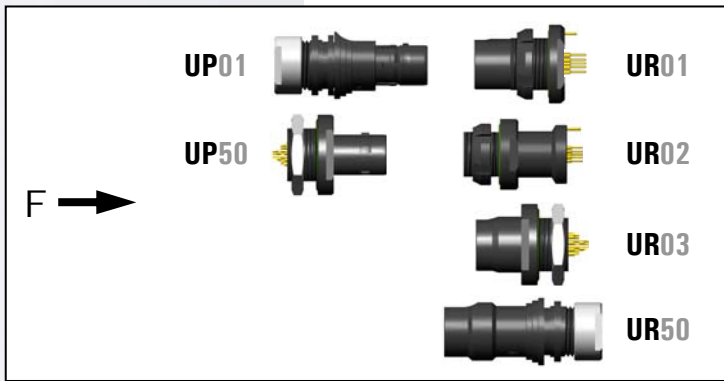
Size	Pin Layout	Number of Contacts	Contact Diameter [mm]	Wire Size (2)		PCB Contacts	Current Rating [A]	Rated Voltage r.m.s. [V]	Test Voltage in mated position [kV]			
				Solder Contacts (1)	Crimp Contacts				Pin Diameter [mm]	IEC 60512-4-1 Test 4a		
						(3)	(4)	AC r.m.s.		DC		
								Contact to Body		Contact to Contact	Contact to Body	Contact to Contact
08		2	0.9	Max Ø0.79 mm AWG21 [1] AWG22 [7/30]	-	0.70	9.2	≤ 250	1.3	1.7	1.8	2.4
		3	0.9	Max Ø0.79 mm AWG21 [1] AWG22 [7/30]	-	0.70	8.2	≤ 250	1.3	1.3	1.8	1.6
		4	0.7	Max Ø0.79 mm AWG21 [1] AWG22 [7/30]	-	0.50	5.5	≤ 200	1.2	1.2	1.7	1.8
		5	0.7	Max Ø0.79 mm AWG21 [1] AWG22 [7/30]	-	0.50	5.2	≤ 160	0.8	1.0	1.3	1.8
		7	0.5	Max Ø0.43 mm AWG26 [1] AWG28 [19/40]	-	0.40	2.0	≤ 160	0.8	1.0	1.3	1.8
		9	0.5	Max Ø0.43 mm AWG26 [1] AWG28 [19/40]	-	0.40	1.7	≤ 160	0.8	1.1	1.2	1.8
11		12	0.7	Max Ø0.79 mm AWG21 [1] AWG22 [7/30]	-	0.50	4.2	≤ 250	1.4	1.5	2.0	2.2
		16	0.5	Max Ø0.43 mm AWG26 [1] AWG28 [19/40]	-	0.40	2.7	≤ 250	1.2	0.9	2.0	1.5
		19	0.5	Max Ø0.43 mm AWG26 [1] AWG28 [19/40]	-	0.40	2.5	≤ 250	1.2	0.9	2.0	1.5
13		27	0.5	-	Max 0.43 mm Min 0.20 mm AWG28-32	0.40	2.0	≤ 200	1.2	0.5	1.8	0.5
18		42	0.7	-	Max 0.62 mm Min 0.38 mm AWG24-28	0.50	3.0	≤ 250	1.5	1.5	2.4	2.5

- (1) Stranding values in brackets.
- (2) For a given AWG the diameter of some stranded conductor designs could exceptionally be larger than the hole diameter of the barrel. Testing may be required.
- (3) Recommended max. operating current per contact at 40°C temperature rise.
- (4) Recommended operating voltage at sea level.

This rated voltage is a general purpose guideline where no other electrical safety standard applies. In case other standards rule a specific use of the connector, then the application specific safety criteria shall be considered first. This must be evaluated in the frame of equipment engineering.

*All dimensions shown are in millimeters and are for reference only.
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Layout and Pin Numbering



Position of ground pin

Size	R	
	UR01	UR02
08	6.0	6.0
11	8.4	8.4
13	9.0	9.0
18	12.0	12.0

Pin layout / PCB hole pattern ⁽¹⁾ - View from F

Size	Polarity ⁽²⁾	Number of Contacts					
		2	3	4	5	7	9
08	Standard						
	Inverted						

Size	Polarity ⁽²⁾	Number of Contacts		
		12	16	19
11	Standard			
	Inverted			

- 1) Recommended PCB hole dimensions may be adjusted to application.
- 2) Standard polarity: Male contacts on Plug / Female contacts on Receptacle
Inverted polarity: Female contacts on Plug / Male contacts on Receptacle

All dimensions shown are in millimeters and are for reference only.
They are subject to change without prior notice.

Layout and Pin Numbering (cont.)

Pin layout / PCB hole pattern ⁽¹⁾ - View from F

Size	Polarity (2)	Number of Contacts	Size	Polarity (2)	Number of Contacts
		27			42
13	Standard		18	Standard	
	Inverted			Inverted	

- 1) Recommended PCB hole dimensions may be adjusted to application.
- 2) Standard polarity: Male contacts on Plug / Female contacts on Receptacle
Inverted polarity: Female contacts on Plug / Male contacts on Receptacle

Technical Library on line:

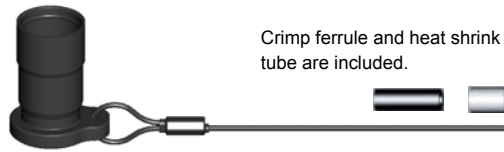
Visit www.fischerconnectors.com/technical to download 3D CAD Models



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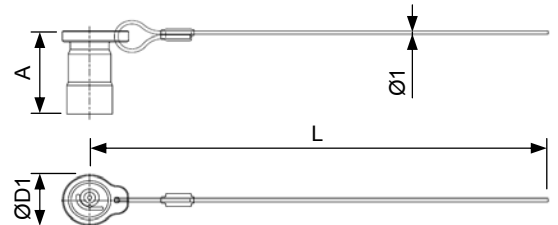
Soft Caps - Lanyard with Nylon Thin Cord

Cable Mounted Plugs

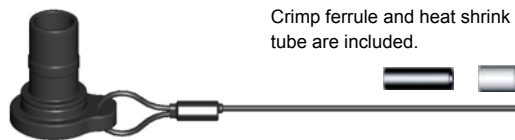


Crimp ferrule and heat shrink tube are included.

Size	A	D1	L	Part Number
08	23.2	15	200	UCP08C 1A1 A200
11	22.0	18	200	UCP11C 1A1 A200

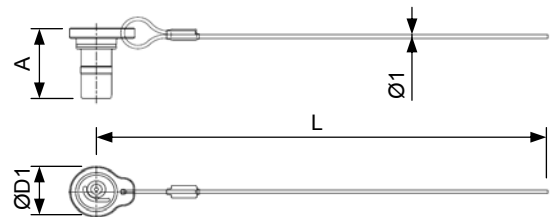


Cable Mounted Receptacles

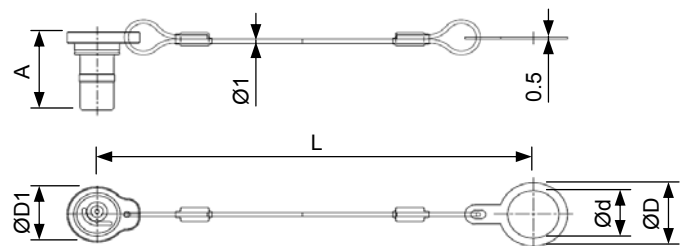


Crimp ferrule and heat shrink tube are included.

Size	A	D1	L	Part Number
08	19.9	15	200	UCR08C 1A1 A200
11	19.2	18	200	UCR11C 1A1 A200



Panel Mounted Receptacles



Size	A	D1	L	d	D	Part Number
08	19.9	15	95	12	16	UCR08P 1A1 A095
11	19.2	18	95	16	21	UCR11P 1A1 A095

Material

Cap: TPV (Flammability UL 94HB)

Cord: Nylon

Fixing lug: Black chrome plated brass (ISO CuZn39Pb3)

Crimp ferrule: Nickel plated copper

All dimensions shown are in millimeters and are for reference only.

They are subject to change without prior notice.

Technical Data

Environmental & Mechanical Data

Characteristic	Performance and Standard
Sealing Performance Mated and Unmated	IP68: 2 m submersion for 24 hours, IEC 60529 IP69K (1)
Operating Temperature Range	-55°C to +135°C (2) IEC 60512-6-11 i+j IEC 60068-2-14-Nb
Corrosion Resistance	Salt mist, 96 hours, 5% salt solution, 35°C IEC 60068-2-11 Test Ka MIL-STD-202 Method 101 Condition A EIA-364-26
Endurance	10'000 mating cycles IEC 60512-5-9a EIA-364-09
Vibration, random	MIL-STD-202 Method 214 EIA-364-28
Shock	300 g amplitude, half sine pulse of 3ms, no discontinuity > 1 us MIL-STD-202 Method 213 EIA-364-27

- (1) Dust tight, protected against the effects of high-pressure liquids. The test requirements for IP69K exist only in DIN 40050-9, the German version of IEC 60529.
- (2) Min mating temperature of -20°C with EPDM interface o-ring. Other materials on request. Temperature range of -40°C to +125°C for cable connectors overmolded with TPU material.

Electrical Data

Characteristic	Contact Size	Performance and Standard
Contact Resistance over 10'000 Mating Cycles	Ø0.5 mm Ø0.7 mm Ø0.9 mm	5 mΩ IEC 60512-2-1-2a 5 mΩ IEC 60512-2-2-2b 4 mΩ
Shell Resistance (3)		5 mΩ IEC 60512-2-6-2f
Insulation Resistance		> 10 ¹⁰ Ω, IEC 60512-3-1-3a
Shielding Effectiveness (4)	- Grey - Black	> 65 dB (excellent) > 55 dB (very good) up to 1 GHz, IEC 60512-23-3

- (3) Measured for a mated pair of Panel Receptacle (UR01) and Cable Plug (UP01) between the panel and the cable shielding.
- (4) Size 08 connector pair

Material & Surface Treatments

Metal Parts	Material		Finish	
	Designation	ISO	Standard	Standard
Housings, Nut	Aluminium	AlMgSiSn1Bi	EN-AW-6023	Chrome over Nickel SAE-AMS2460
Back Nut (Plug)	Aluminium	AlMgSiSn1Bi	EN-AW-6023	Nickel SAE-AMS-QQ-N-290 SAE-AMS2404
Ground Contact	Brass	CuZn39Pb3	CW614N UNS C 38500	Nickel SAE-AMS-QQ-N-290 SAE-AMS2404
Contacts	- Male, Ground Pin	Brass	CuZn39Pb3 CW614N UNS C 38500	1 µm Gold over Nickel MIL-DTL-45204D Type I ASTM B488
	- Female	Bronze	CuSn4Zn4Pb4 CW456K ASTM B 139 UNS C 54400	
Insulator and Sealing		International Symbol	Flammability	
Insulator	- Screw-machined	PETP	UL 94 HB	
	- Molded	PBT	UL 94 V-0	
Inner Sleeve	- Cable connectors	POM	UL 94 HB	
O-rings	- General	FPM (Viton®)	UL 94 V-0	
	- Interface	EPDM	UL 94 HB	
Sealant Materials	- Cable connectors	Bi-component epoxy	-	
	- Panel receptacles	Silicon compound	UL 94 V-0	
Overmolding Material	- Cable connectors	TPU	UL 94 V-0	



Our products are RoHS compliant and conform with the EC Directive 2002/95/EC

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Edition 1.3

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