

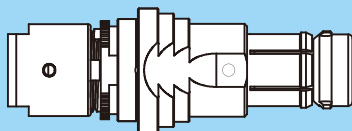
➤➤➤ U Series

U Series (Outdoor, Keyed and Arc-shape Guides)



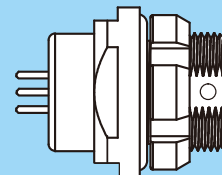
Body style

Straight plug

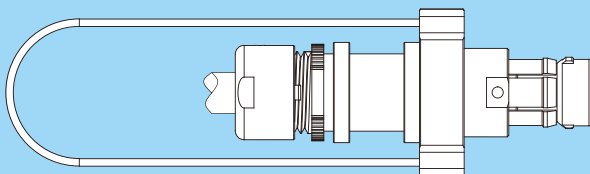


▶ UP

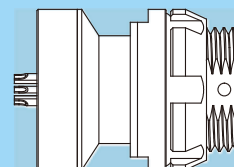
Fixed socket



▶ UR



▶ UL



▶ HR

Description

The U series connector is a push-pull self-locking connector that combines the multi-key position and multi-positioning structure derived from the B-series positioning pin structure and the F-series semi-circular positioning structure. The connector is mainly used for low-frequency signal transmission in electronic equipment. Easy operation, good shielding effect, good sealing, three-key positioning and semi-circular positioning double anti-misinsertion, solid shell, anti-electromagnetic interference, good environmental resistance, long service life and other characteristics. Widely used in medical machinery, communication systems, computers, small communications and other equipment.

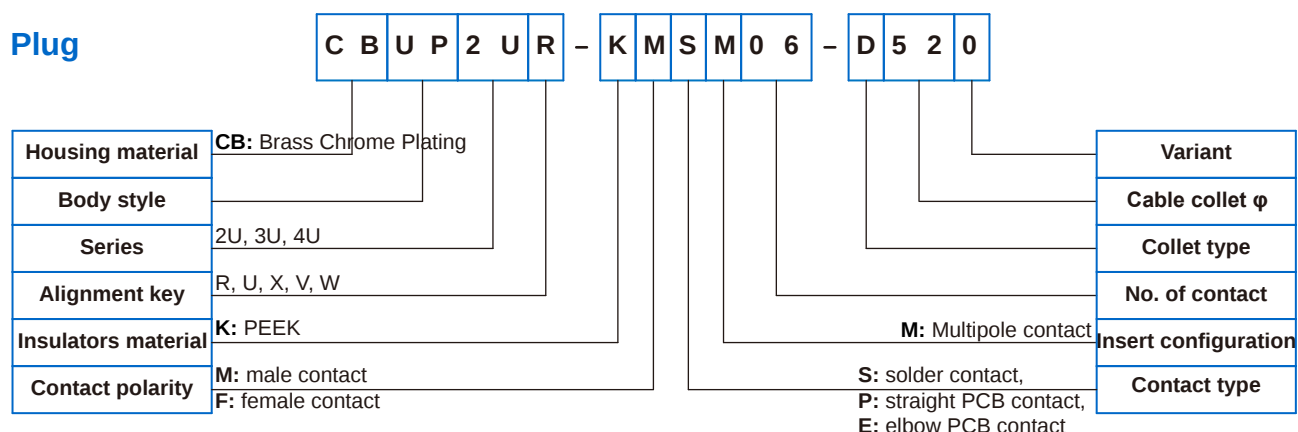
Technical Characteristics

- Mating: 5000
- Vibration: frequency 10~2000Hz, acceleration 147m/s^2 , $\leq 1\mu\text{m}$ momentary break
- Shock: Acceleration 490m/s^2 , $\leq 1\mu\text{m}$ instantaneous break
- Temp: $-55^\circ\text{C} \sim +145^\circ\text{C}$
- Relative humidity: 95% at 40°C Working air pressure: $4.39\text{KPa} \sim 101.33\text{KPa}$;
- Sealing: socket: pressure difference $1.01 \times 10^5\text{Pa}$, no bubble leakage for 1 min ($0.2 \times 10^5\text{Pa}$ at flange); Head seat insertion: 1.5m water depth, no water seepage for 24h (the tail of the plug needs to be sealed and protected);
- Salt spray: 96 hours in 5% NaCl fog;
- Insulation resistance: $5000\text{M}\Omega$ (normal state)

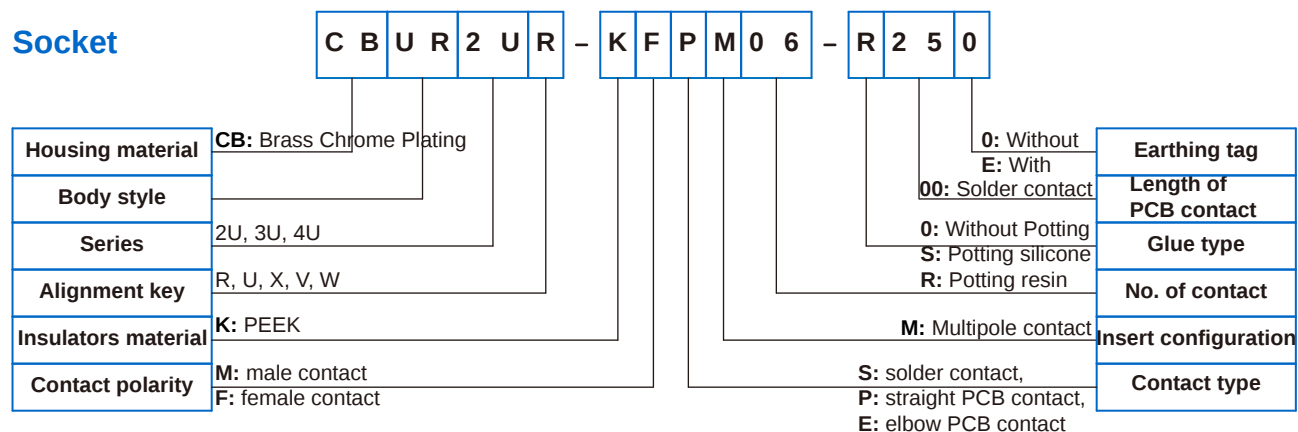
>>> U Series

U Series Part Numbering System

Plug



Socket



Part Number Example

Straight Plug with Cable Collet:

CBUP2UR-KMSM06-D520 = UP body style, outer shell in chrome-plated brass, 2U series, straight plug with key (R), PEEK insulator, male solder contacts, multipole type with 6 contacts, D type cable collet of 5.2 mm diameter

Fixed Socket:

CBHR2UR-KFSM06-S000 = HR body style, outer shell in chrome-plated brass, 2U series, fixed socket with key (R), PEEK insulator, female solder contacts, multipole type with 6 contacts, potting silicone.

CBUR2UR-KFPM06-R250 = UR body style, outer shell in chrome-plated brass, 2U series, fixed watertight socket with key (R), PEEK insulator, female straight PCB contacts, multipole type with 6 contacts, potting resin, length of straight print contact with 2.5mm.



Components Material

Ref.	Outer shell and collet nut		Latch sleeve + earthing crown		Other metallic components		Note
	Material	Surf. treatment	Material	Surf. treatment	Material	Surf. treatment	
CB	Brass	Chrome	Brass/bronze	Nickel	Brass	Nickel	First choice alternative
NB	Brass	Nickel	Brass/bronze	Nickel	Brass	Nickel	
BB	Brass	Black chrome	Brass/bronze	Nickel	Brass	Nickel	
S4	Stainless steel 304	Anodized	Brass/bronze	-	Brass	Nickel	
S6	Stainless steel 316L	Anodized	Stainless steel 316L	-	Stainless steel 316L	-	
SB	Brass	Satin nickel	Brass/bronze	Nickel	Brass	Nickel	
HB	Brass	High phosphorus chemical nickel	Brass/bronze	Nickel	Brass	Nickel	
HA	Aluminium alloy	High phosphorus chemical nickel	Brass/bronze	Nickel	Brass	Nickel	
GB	Brass	Golden yellow	Brass/bronze	Nickel	Brass	Nickel	
RA	Aluminium AlMgSiSn1Bi	Ruthenium over electroless nickel	Brass/bronze	Nickel	Brass	Nickel	

Brass

Connectors are mostly brass case, which can meet most military or civil application requirements. The white surface of brass shell has nickel-chromium protective layer, which has remarkable effect in resisting industrial waste, salt spray and most corrosives. In addition, we also have nickel plating, nickel-gold plating, nickel-black chromium plating and other options for application in specific environments of the anti-corrosion coatings.

Aluminium alloy

In the aviation, aerospace industry, portable mobile devices and so on. It is suitable for the connector with aluminium alloy shell.

In addition to its high mechanical lightness and excellent corrosion resistance, the surface of aluminium alloys can be protected by anodic plating, with a variety of colors to choose from.

Stainless steel

For the use of harsh environment, the surface coating is easy to be damaged. We recommend the use of stainless steel materials. AISI304 stainless steel and AISI316L stainless steel are usually used.

AISI304 stainless steel is recommended for special fields such as nuclear industry. It can resist radiation and nitric acid corrosion.

AISI316L stainless steel is recommended for medical and shipping industries. It has no surface treatment and strong corrosion resistance.

>>> U Series

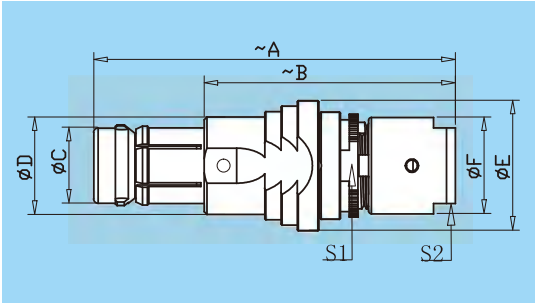
U Series Plug Dimensions



UP body style, straight short plug, alignment key and arc-shape metal guides, prevent vibration.

Protection level: IP68
360° shielding
High corrosion resistance

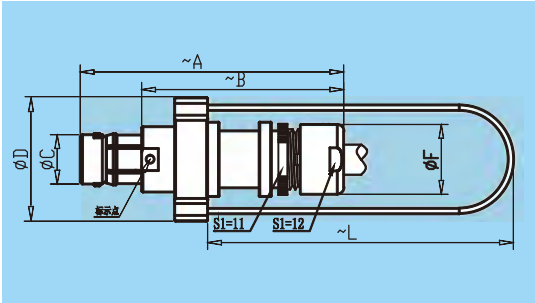
Reference		Dimensions (mm)							
Model	Series	A	B	C	D	E	F	S1	S2
UP	2U	34.0	24.0	6.95	9.0	12.0	8.9	8.0	7.0
UP	3U	38.0	26.8	8.95	11.55	15.0	12.7	11.0	12.0
UP	4U	47.0	34.5	12.0	15.1	18.0	15.8	14.0	14.0



UL body style, straight plug with lanyard release, alignment key and arc-shape metal guides, prevent vibration.

Protection level: IP68
360° shielding
High corrosion resistance

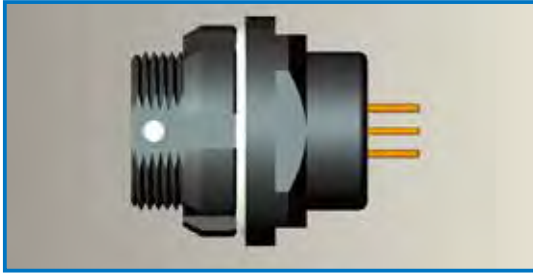
Reference		Dimensions (mm)							
Model	Series	A	B	C	D	E	L	S1	S2
UL	2U	40.0	30.0	6.95	19.1	8.9	55.0	8.0	7.0
UL	3U	48.0	36.8	8.95	22.5	12.7	60.0	11.0	12.0





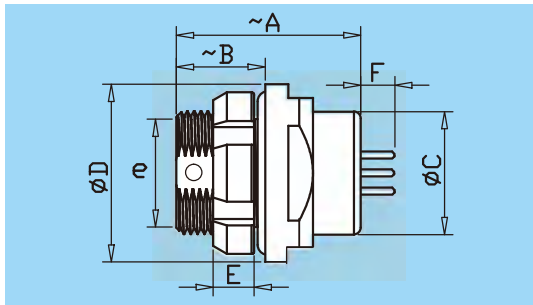
>>> U Series

U Series Socket Dimensions



UR body style, straight short socket, alignment key and arc-shape metal guides, prevent vibration, Micro Vacuum Sealed Receptacle

Protection level: IP68
360° shielding
High corrosion resistance

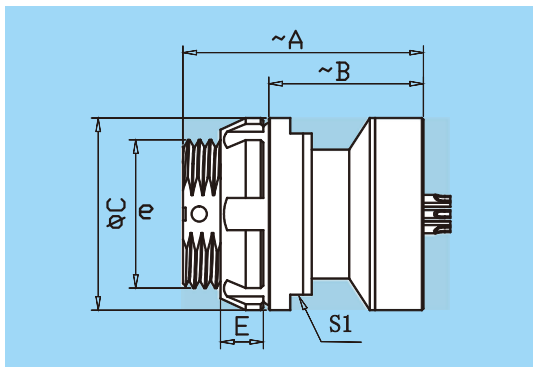


Reference		Dimensions (mm)					
Model	Series	A	B	C	D	E	M
UR	2U	13.5	6.5	9.0	13.0	3.0	M9x0.5
UR	3U	17.0	6.5	12.0	16.4	3.5	M12x1.0



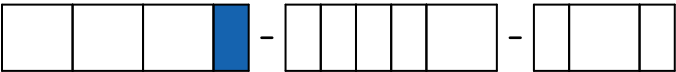
HR body style, fixed socket, alignment key and arc-shape metal guides, prevent vibration, Micro Vacuum Sealed Receptacle

Protection level: IP68
360° shielding
High corrosion resistance



Reference		Dimensions (mm)					
Model	Series	A	B	C	E	S1	M
HR	2U	17.2	10.7	14.0	3.0	11.0	M9x0.5
HR	3U	22.5	14.5	17.9	4.0	15.0	M14x1.0
HR	4U	22.5	14.5	22.0	3.5	17.0	M16x1.0

>>> Alignment Key



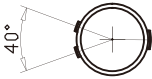
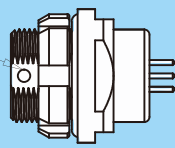
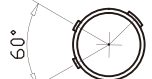
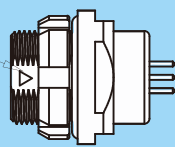
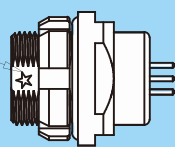
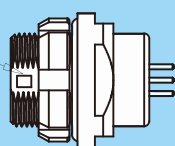
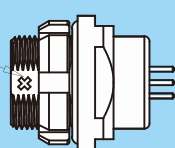
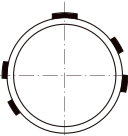
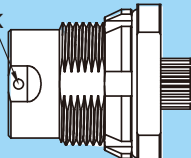
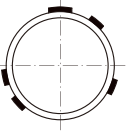
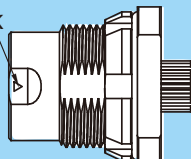
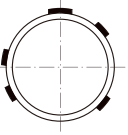
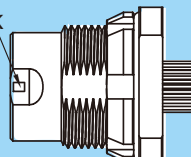
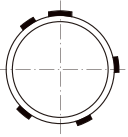
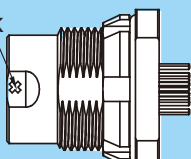
U Series Plug Alignment Key and Polarized Keying System

Shell size	Alignment key	Keying code reference	Appearance and Mark shape
2U and 3U	R		
	U		
	X		
	V		
	W		
4U	R		
	U		
	V		
	W		



>>> Alignment Key

U Series Socket Alignment Key and Polarized Keying System

Shell size	Alignment key	Keying code reference	Appearance and Mark shape
2U and 3U	R	 40°	Mark 
	U	 60°	Mark 
	X	 70°	Mark 
	V	 80°	Mark 
	W	 100°	Mark 
4U	R		Mark 
	U		Mark 
	V		Mark 
	W		Mark 

>>> Insulators



Material of Insulators

Reference	Material	Contact type	Note
S	PPS	Solder or print	Special order alternative
K	PEEK	Solder or print	First choice alternative

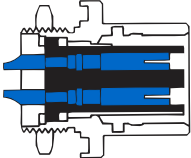
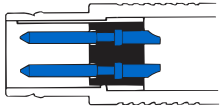
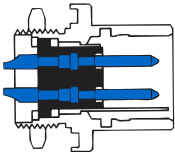
>>> Contact Polarity



Protect users from contact with dangerous voltages

Standard Polarity:
The contacts of the socket are protected against accidental touch.
This version is recommended when voltage is present on the socket

Inverted Polarity:
The contacts of the plug are protected against accidental touch.
This version is recommended when voltage is present on the plug.

	Socket	Plug
Standard Polarity	 F: Female Contact	 M: Male Contact
Inverted Polarity	 M: Male Contact	 F: Female Contact



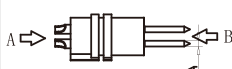
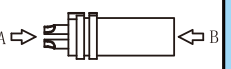
No need to order specific tools, a simple soldering iron is sufficient
Ideal for very small and fragile conductors
Contacts with solder cups to allow the solder to flow

Contact type	Reference	Contact			Conductor							
					Solid		Stranded					
					AWG Max.	Section max. (mm ²)	AWG		Section (mm ²)			
		ΦA (mm)	ΦC (mm)			Min.	Max.	Min.	Max.			
Solder 	S	0.5	0.40	-	28	0.09	-	30	-	0.05		
		0.5	0.45	-	28	0.09	-	28	-	0.09		
		0.7	0.60	-	24	0.25	-	26	-	0.14		
		0.7	0.80	-	22	0.34	-	22	-	0.34		
		0.9	0.80	-	22	0.34	-	22	-	0.34		
		1.3	1.00	-	20	0.50	-	20	-	0.50		
		1.6	1.40	-	16	1.00	-	18	-	1.00		
		2.0	1.80	-	14	1.50	-	16	-	1.50		
		3.0	2.70	-	10	4.00	-	12	-	4.00		
		4.0	3.70	-	10	6.00	-	10	-	6.00		
		Straight PCB 	P	L dimensions and C are detailed in the section on PCB drilling pattern. also you can customize the L dimensions								
Elbow PCB 	E	L dimensions and C are detailed in the section on PCB drilling pattern.										

>>> Insert Configuration



2U series

2U Series	Solder male contact		Solder female contact		Reference	Number of contacts	Contact $\varnothing$ A (mm)	Contact type			level		Rated current (A)	Resistance(m Ω)
			Solder	Print(straight)				Print (elbow)	Rated Voltage(V)	Withstanding voltage(V)				
					M02	2	0.9	√	√	√	875	875	5.0	≤5.0
					M03	3	0.9	√	√	√	750	750	5.0	≤5.0
					M04	4	0.7	√	√	√	750	750	3.0	≤12.5
					M05	5	0.7	√	√	√	750	750	3.0	≤12.5
					M07	7	0.5	√	√	√	500	500	1.0	≤15.0
					M09	9	0.5	√	√	√	500	500	1.0	≤15.0
					M10	10	0.5	√	√	√	500	500	1.0	≤15.0

√: First choice alternative

☆:Special order alternative



>>> Insert Configuration

3U series

	Solder male contact		Solder female contact		Reference	Number of contacts	Contact $\varnothing A$ (mm)	Contact type			level		Rated current (A)	Resistance(m Ω)
	A	B	A	B				Solder	Print(straight)	Print (elbow)	Rated Voltage(V)	Withstanding voltage(V)		
3U Series					M02	2	1.3	√	√	√	1000	1000	10.0	≤5.0
					M03	3	1.3	√	√	√	1000	1000	10.0	≤5.0
					M04	4	0.9	√	√	√	875	875	5.0	≤5.0
					M05	5	0.9	√	√	√	875	875	5.0	≤5.0
					M06	6	0.7	√	√	√	875	875	3.0	≤12.5
					M07	7	0.7	√	√	√	875	875	3.0	≤12.5
					M08	8	0.7	√	√	√	500	500	3.0	≤12.5
					M10	10	0.5	√	√	√	400	400	1.0	≤15.0
					M12	12	0.5	√	√	√	400	400	1.0	≤15.0
					M14	14	0.5	√	√	√	400	400	1.0	≤15.0
					M16	16	0.5	√	√	√	400	400	1.0	≤15.0
					H58	8	0.5	√	√	√	400	400	1.0	≤15.0

√: First choice alternative

☆:Special order alternative

>>> Insert Configuration



4U series

4U Series	Solder male contact		Solder female contact		Reference	Number of contacts	Contact $\varnothing$ A (mm)	Contact type			level		Rated current (A)	Resistance(m Ω)
								Solder	Print(straight)	Print (elbow)	Rated Voltage(V)	Withstanding voltage(V)		
				M02	2	1.6	√	√	√	1000	1000	12.0	≤3.0	
				M03	3	1.6	√	√	√	1000	1000	12.0	≤3.0	
				M04	4	1.3	√	√	√	875	875	10.0	≤5.0	
				M05	5	1.3	√	√	√	875	875	10.0	≤5.0	
				M06	6	0.9	√	√	√	875	875	5.0	≤5.0	
				M07	7	0.9	√	√	√	875	875	5.0	≤5.0	
				M08	8	0.9	√	√	√	875	875	5.0	≤5.0	
				M11	11	0.9	√	√	√	875	875	5.0	≤5.0	
				M16	16	0.7	√	√	√	750	750	3.0	≤12.5	
				M19	19	0.7	√	√	√	750	750	3.0	≤12.5	
				H08	8	0.9	√	√	√	750	750	3.0	≤12.5	
				881	8+1	0.9	√	√	√	875	875	0.9	≤5.0	
						1.3	√	√	√	875	875	1.3	≤3.0	
				822	2+2	0.9	√	√	√	875	875	2.0	≤5.0	
						2.3	√	√	√	1000	1000	20.0	≤2.0	
				841	4+1	0.7	√	√	√	1000	1000	5.0	≤12.5	
					Coax	≤50 Ω	√	√	√	1000	1000			

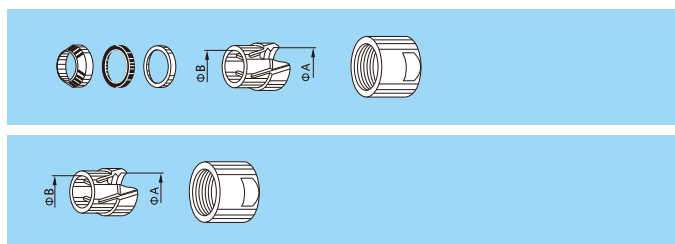
√: First choice alternative

☆:Special order alternative



>>> Collets

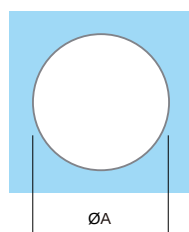
D type collets for U series



	Reference		Collet Φ		Cable Φ	
	Type	Code	ΦA	ΦB	Max.	Min.
2U	D _{UP}	42	4.2	-	4.5	3.5
	D _{UP}	52	5.2	-	5.5	4.5
3U	D _{UP}	52	5.2	-	5.5	4.5
	D _{UP}	72	7.2	-	7.5	6.5
4U	D _{UP}	52	5.2	-	5.5	4.5
	D _{UP}	62	6.2	6.2	6.5	5.5
	D _{UP}	72	7.2	-	7.5	6.5
	D _{UP}	82	8.2	-	8.5	7.5

>>> Panel Cut-out

U Series

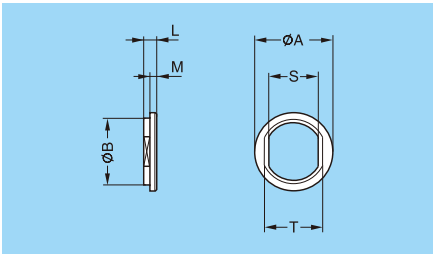
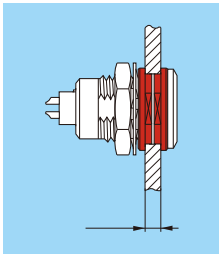


Cut-out types

Series	ΦA	ΦA
2U	9.1	9.1
3U	12.1	14.1
4U		16.1
Model	UR	HR

>>> Accessories

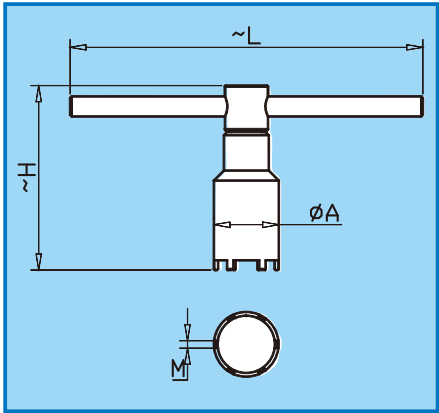
Insulating Washers



Model	Dimensions (mm)							Ref.	Colour	Ref.	Colour
	A	B	E	L	M	S	T	A	Blue	N	Black
GRA.00.269.GG	10.0	8.8	4.5	1.8	1.0	6.4	8.0	B	White	R	Red
GRA.0B.269.GG	12.0	10.8	6.0	1.8	1.0	8.3	9.9	G	Gray	S	Orange
GRA.1B.269.GG	16.0	13.8	6.5	1.8	1.0	10.6	12.2	J	Yellow	V	Green
GRA.2B.269.GG	21.1	17.9	7.3	2.3	1.3	13.6	16.2				

Note: The last letter "G" of the model indicates that the color of the insulating washers is gray. If you need to order other colors of insulating washers, please refer to the above table and replace "G" with the letter of the corresponding color

Tooling



GB6 Spanners for hexagonal nuts

Material: Stainless steel

Model	Dimensions (mm)					Used for series
	L	H	A	M		
GB6.102F.LM9	110	47.0	13.0	1.8		102U
GB6.103F.LM14	110	58.0	19.0	2.8		103U
GB6.104F.LM16	110	58.0	20.2	2.3		104U

Each connection needs its individual cable. Make no compromises when it comes to the quality of the complete connection system. Spring Technology gives you the complete system solution from one source, with no intermediary suppliers. Cable assembly is a very complex subject. It requires equal measures of expertise in the areas of connectors, cables and assembly. Spring Technology meets all these requirements in full.

Our competent assembly team tests the complete system according your specifications. Our assembly service promises you the same quality found in our connectors – without compromises.

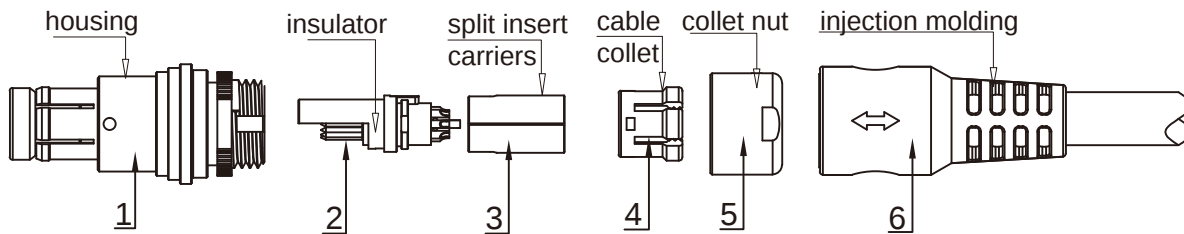
Spring Technology offers you all from one source

- 100 % final inspections
- Automatic processes (cutting, stripping, attaching)
- Extrusion possible with a hot-melt and high pressure/temperature process
- Ultrasound welding
- EMC-compatible assembly
- Application specific labeling
- Widest range of potting possibilities for sealed systems
- Extruded cable crossovers.
- Products with durability and functional reliability
- Inspections, such as crimp force monitoring, during production



>>> Cable Assembly

Plug Assembly Instructions for U Series Short Plug



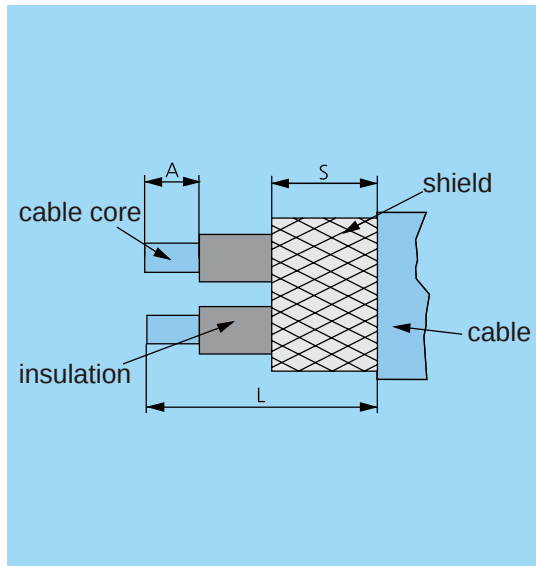
1. The cable is sequentially passed through the collet nut ⑤, the cable collet ④, and soldered to the corresponding pins of the split insert carriers ③ in order.
2. Attach the split insert carriers ③ to the insulator with contacts ②. Note that the protrusion of the split insert carriers ③ corresponds to the notch of the insulator with contacts ②.
3. Install the mounted the insulator with contacts ② into the housing subassy ①, noting that the notch in the split insert carriers ③ corresponds to the protrusion in the housing subassy ①.
4. Screw the collet nut ⑤ onto the housing subassy ⑤.
5. Put the assembled plug collet nut ⑤ on the injection molding machine for injection molding ⑥.

>>> Cable Stripping Lengths

Cable Stripping Lengths(U Series)

T1 straight plugs and sockets with cable collet, clamping type D or M

T2 elbow plugs (90°) with cable collet, clamping type D or M

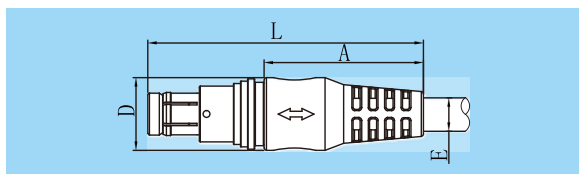


Connector		contact ØA (mm)	Cable stripping lengths (mm)					
Series	Type		T1			T2		
			Solder			Solder		
			L	S	A	L	S	A
2U	302/303	0.9	13.0	7	3.0	18.0	7	3.0
	304/305	0.7	13.0	7	3.0	18.0	7	3.0
	306/307/309	0.5	14.0	7	2.5	19.0	7	2.5
3U	302/303	1.3	14.0	8	3.5	25.0	8	3.5
	304/305	0.9	14.0	8	3.0	25.0	8	3.0
	306/307/308	0.7	14.0	8	3.0	25.0	8	3.0
	310/312/314/316	0.5	16.5	8	2.5	27.5	8	2.5
4U	302	2.0	19.0	9	4.0	30.0	9	4.0
	303	1.6	19.0	9	3.5	30.0	9	3.5
	304/305/306/307	1.3	18.0	9	3.5	29.0	9	3.5
	308/310	0.9	17.0	9	3.0	28.0	9	3.0
	312/314/316/318/319	0.7	17.0	9	3.0	28.0	9	3.0

Note: The tolerances on these dimensions are L $\pm$ 0.5mm, S $\pm$ 0.5mm, A $\pm$ 0.2mm

>>> Plug Injection Molding

Plug Injection Molding(U Series)



For F series straight short plug(SS) ,for various alignment keys(N, A, B)

Series	Dimensions(mm)			
	L	A	D	E (Cable Diameter mm)
2U	57.0	35.0	12.4	3.2~5.8
3U	58.0	34.0	15.5	3.2~7.2
4U	70.0	42.0	18.5	5.2~9.5

Note: The commonly used injection molding material is black PVC/TPE, and the color can be adjusted according to requirements

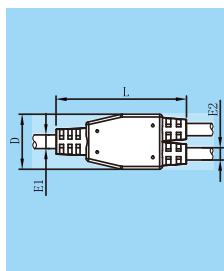
Solder Precautions



1. The outer diameter of the cable should match the size of the cable collet
2. The core specification should match the diameter of the core termination
3. The temperature of the soldering iron is controlled at around 380° (lead-free)
4. One-contact solder time is less than 1s
5. After solder, each core should be covered with heat-shrinkable tube insulation
6. Pay attention to the protection of pins and insulators during soldering

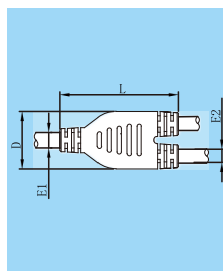
>>> Optional Cable Other End

Cable Other End



Y Type 1

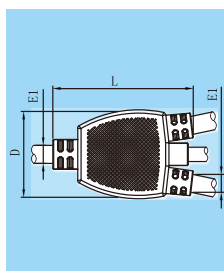
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y01	47.0	20.0	5.0	4.5



Y Type 2

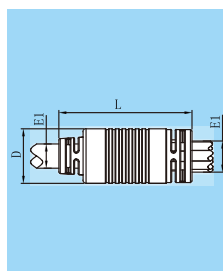
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y02	50.0	23.0	6.5	6.5

Note: The commonly used injection molding material is black PVC/TPE, and the color can be adjusted according to requirements



Y Type 3 for DB9 VGA15

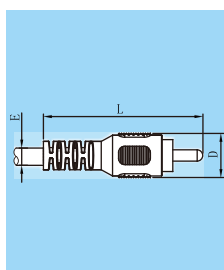
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y03	50.0	31.0	6.5~8.0	5.2~6.5



Y Type 4

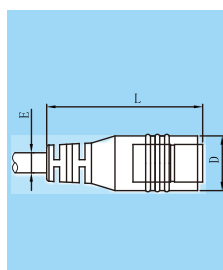
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y04	44.0	18.0	8.0~10.0	11.0

Note: The commonly used injection molding material is black PVC/TPE, and the color can be adjusted according to requirements



RAC

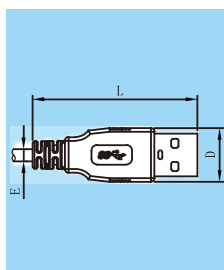
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
RAC	45.0	12.0	3.0~4.5



DC

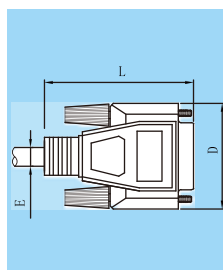
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
DC	33.0	12.0	4.8

Note: The commonly used injection molding material is black PVC/TPE, and the color can be adjusted according to requirements



USB2.0

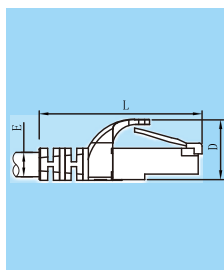
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
USB	46.0	15.0	5.5



DB9

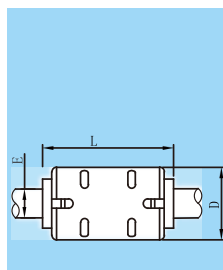
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
DB9	57.0	33.5	5.0

Note: The commonly used injection molding material is black PVC/TPE(USB only used TPE), and the color can be adjusted according to requirements



RJ45

Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
RJ45	40.0	15.0	6.0



Magnetic Ring

Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
M-Ring	28.0	15.5	5.0~7.5

Note: The commonly used injection molding material is black PVC/TPE, and the color can be adjusted according to requirements

➤➤➤ Display of Cable Connection Scheme



>>> Display of Cable Connection Scheme



>>> Summary of Technical Requirements

1) Connector application												
2) Environment												
3) Connector type	Cable Mounted Plug	Cable Mounted Socket	Panel Mounted Socket	Panel Mounted Plug	Panel Mounted Cable Socket							
4) Special version												
5) Style												
6) Size	00	0	1	2	3	31	4	5				
7) Series	don't know	B	S	E	P	K	F	T	U	X	C	Coaxial
8) Keying												
9) Number of contacts												
10) Temmination	Solder	PCB	Elbow PCB									
11) Cross section of wire	_____mm			_____AWG								
12) Cable diameter	_____mm											
13) Cable bend relief(colour)												
14) IP Protection	IP 50	IP 68	other									
15) Operating temperature	_____°C maX			_____°C min								
16)Electrical specs:												
Operating voltage	_____V AC			_____V DC								
Operating current	_____A(constant)			_____A(short-term)					_____sec.			
17) Chemical resistance												
against												
18)Other requirements												
Required quantity												
Prodution quantity												