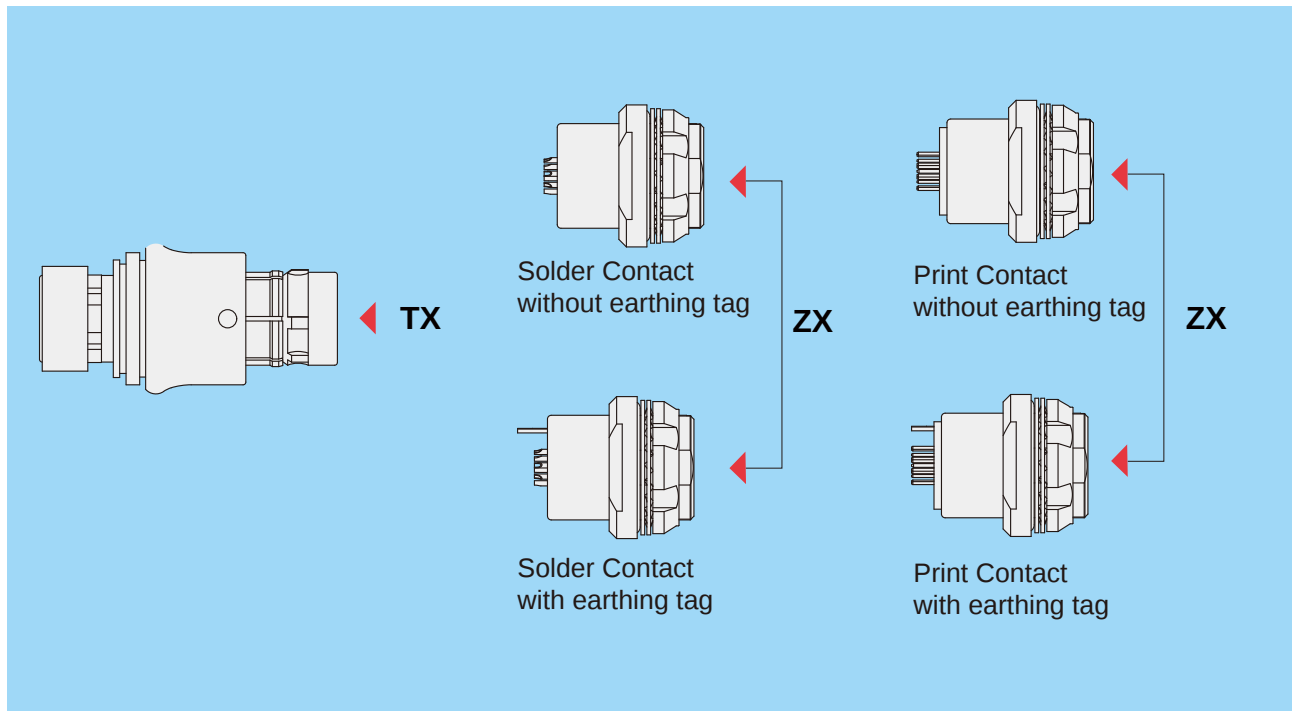


>>> X Series

X Series(Outdoor, Multi Arc-shape Metal Guides)



Body style



Description

X series straight push-pull connectors are used in high-density installations, relatively narrow spaces, and where it is difficult to insert and separate by rotation. Widely used in the military and civilian fields of radio equipment, infantry equipment, reinforced computers, medical equipment, testing equipment, audio and video equipment, data acquisition, industrial control and other occasions for AC and DC, high-speed, radio frequency, optical fiber and other signal connection transmission.

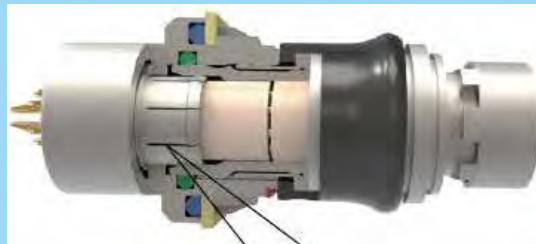
Main features

- **High-Speed Capabilities:** Supports direct transmission of high-speed signals for various standard protocols (USB2.0, USB3.0, Gigabit Ethernet, 10 Gigabit Ethernet, HDMI, SATA, DP, etc.).
- **Single Connector:** Integrates the transmission of multiple signals including low-frequency, power, high-speed, RF, and optical fiber through a single connector.
- **Straight Push-Pull Locking Structure for Plugs and Sockets:** Enables blind mating and allows for quick connections and disconnections.
- **Nut-Fastened Socket Installation:** Equipped with a conductive O-ring, providing shielding and sealing functions.
- **Multi-Key Positioning:** dual error-prevention methods with alignment key structure error-proofing and visual color cues to prevent incorrect insertion.
- **Socket Leakage Rate:** With a pressure differential of 1×10^5 Pa, the leakage rate should be less than $1.0 \text{ Pa} \cdot \text{cm}^3/\text{s}$ (excluding optical fiber and RF products).
- **Water Pressure Resistance:** After mating, the plug and socket can withstand water pressure at a depth of 2 meters for 24 hours (excluding optical fiber and RF products).
- **Pin and Socket Compatibility:** Both plugs and sockets can be fitted with either pins or sockets (excluding optical fiber and RF products).
- **High-Speed and Low-Frequency Electrical Contacts Termination:** Plugs use wire soldering, and sockets are available in wire soldering and straight PCB soldering types.

>>> X Series

Mechanical Performance

- Mechanical Life: 5000 cycles
- Vibration:
 - 2X Shells: Sine Vibration: Frequency 10 ~ 2000Hz, Acceleration 147m/s², ≤1μs interruption
 - 3X, 31X, 4X, 5X Shells: Random Vibration: Power Spectral Density 1.0g²/Hz, Root Mean Square Value 36.6g, ≤1μs interruption
- Shock: Acceleration 2940m/s², ≤1μs interruption

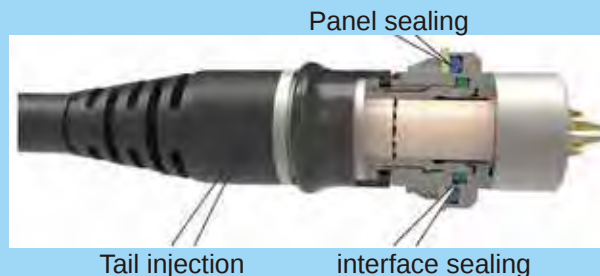


Shielding structure: closely cooperate with the plug to realize the shielding function

Shielding effectiveness: >55dB (1GHz)

Environmental Performance

- Operating Temperature: -55 °C ~ +125 °C
- Relative Humidity: Up to 95% at 40 °C
- Socket Leakage Rate: With a pressure differential of 1×10⁵ Pa, the leakage rate should be no greater than 1.0 Pa·cm³/s (fiber optic and RF products are not hermetic)
- Salt Spray: 96 hours for aluminum alloy, 500 hours for copper alloy
- Water Pressure Resistance: After mating, the plug and socket can withstand water pressure at a depth of 2 meters for 24 hours (excluding fiber optic and RF products)



X Series Part Numbering System

Plug



Housing material	HB: Brass High phosphorus chemical nickel Plating		M: Crimp Cable Collet	Max. Cable φ
Body style				Collet type
Series	2X, 3X, 31X, 4X, 5X			No. of contact
Alignment key	N, A, B, C			Insert configuration
Insulators material	K: PEEK			Contact type
Contact polarity	M: male contact F: female contact			S: solder contact, P: straight PCB contact

Socket



Housing material	HB: Brass High phosphorus chemical nickel Plating	0: Without E: With	Earthing tag
Body style		00: Solder contact	Length of PCB contact
Series	2X, 3X, 31X, 4X, 5X	0: Without Potting S: Potting silicone R: Potting resin	Glue type
Alignment key	N, A, B, C	M: Multipole contact 8: Mixed contact H: High-speed contact	No. of contact
Insulators material	K: PEEK	S: solder contact, P: straight PCB contact	Insert configuration
Contact polarity	M: male contact E: female contact		Contact type

Part Number Example

Straight Plug with Cable Collet:

HBFX4XN-KMSM06-M100 = TX body style, outer shell in high-phosphorus electroless nickel-plated brass, 4X series, straight plug with key (N), PEEK insulator, male solder contacts, multipole type with 6 contacts, M type crimp cable collet for Max. 10.0 mm diameter cable

Fixed Socket:

HBEX31XN-KFSH52-S000 = ZX body style, outer shell in high-phosphorus electroless nickel-plated brass, 31X series, fixed socket with key (N), PEEK insulator, female solder contacts, high-speed needle contact. potting silicone.

HBEX3XN-KFPM12-R690 = ZX body style, outer shell in high-phosphorus electroless nickel-plated brass, 3X series, fixed socket with key (N), PEEK insulator, female straight PCB contacts, multipole type with 12 contacts, potting resin, length of straight print contact with 6.9mm.

HBEX31XN-KFSM19-R00E = ZX body style, outer shell in high-phosphorus electroless nickel-plated brass, 31X series, fixed socket with key (N), PEEK insulator, female solder contacts, multipole type with 19 contacts, potting resin. with earthing tag.

HBEX4XA-KFP822-S69E = ZX body style, outer shell in high-phosphorus electroless nickel-plated brass, 4X series, fixed socket with key (A), PEEK insulator, female straight PCB contacts, mixed contacts, potting silicone, length of straight print contact with 6.9mm. with earthing tag.

>>> Housing



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	
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	First choice alternative
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	Only for S1 Plug and GK Socket

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.

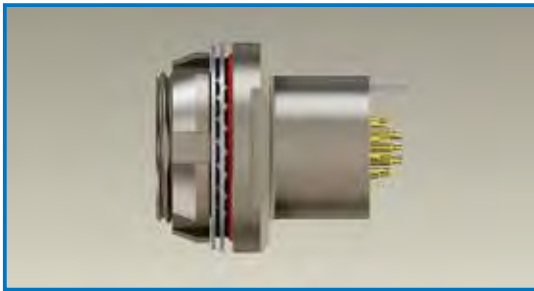
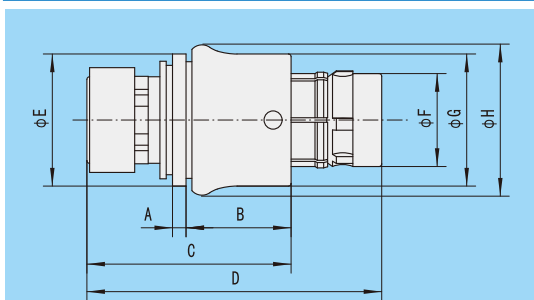


X Series Plug and Socket Dimensions



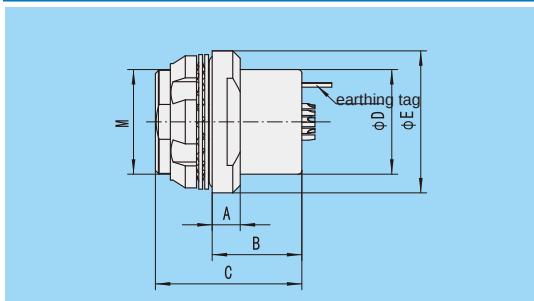
TX body style, Straight short plug, multi-keying and arc-shape metal guides, injection collet style clamp system for cable.

Model	Series	Dimensions (mm)							
		A	B	C	D	E	F	G	H
TX	2X	1.5	10.5	22.3	32.3	11.9	7.0	11.9	13.9
TX	3X	1.5	11.3	23.1	34.1	13.9	9.0	13.9	15.9
TX	31X	1.5	11.8	23.3	33.3	14.5	10.1	14.5	16.5
TX	4X	1.5	12.2	24.0	36.0	17.6	12.0	17.6	19.6
TX	5X	1.5	12.2	23.2	38.3	21.9	15.0	22.0	23.9



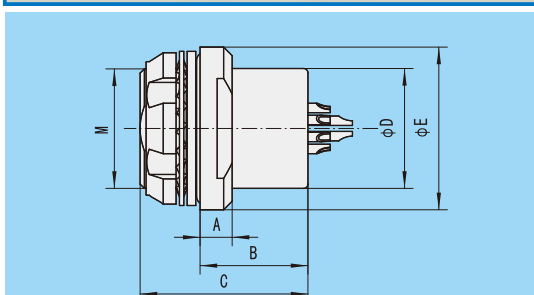
ZX body style, short socket, multi-keying and arc-shape metal guides, solder contact (with earthing tag)

Model	Series	Dimensions (mm)					
		A	B	C	D	E	M
ZX	31X	3.75	12.0	19.6	14.0	19.0	M14x0.75
ZX	4X	4.0	14.5	22.5	15.0	22.0	M16x1.0



ZX body style, short socket, multi-keying and arc-shape metal guides, solder contact (without earthing tag)

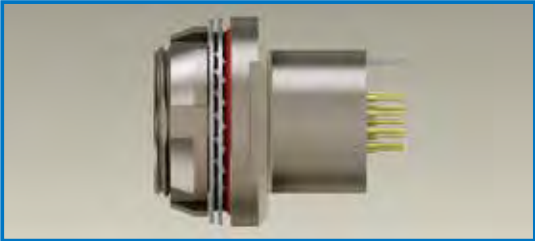
Model	Series	Dimensions (mm)					
		A	B	C	D	E	M
ZX	2X	3.5	8.7	16.7	10.0	15.5	M11x0.75
ZX	3X	3.6	13.1	21.1	12.0	18.8	M14x0.75
ZX	31X	3.75	12.0	19.6	14.0	19.0	M14x0.75
ZX	4X	4.0	14.5	22.5	15.0	22.0	M16x1.0
ZX	5X	4.55	16.1	26.6	21.05	27.1	M20x1.0



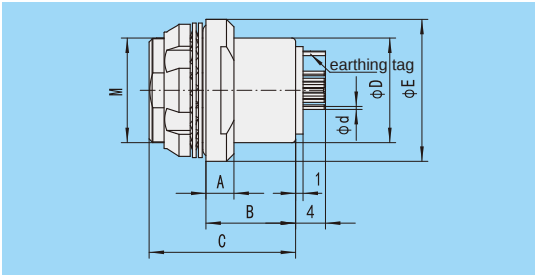
>>> X Series



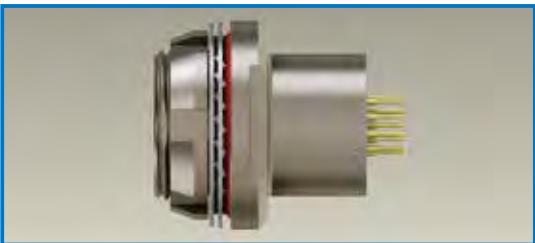
X Series Plug and Socket Dimensions



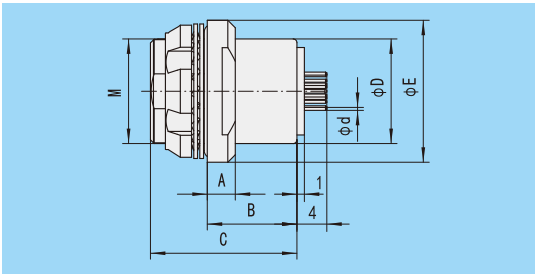
ZX body style, short socket, multi-keying and arc-shape metal guides, print contact (with earthing tag)



Model	Series	Dimensions (mm)					M
		A	B	C	D	E	
ZX	31X	3.75	12.0	19.6	14.0	19.0	M14x0.75
ZX	4X	4.0	14.5	22.5	15.0	22.0	M16x1.0



ZX body style, short socket, multi-keying and arc-shape metal guides, print contact (without earthing tag)



Model	Series	Dimensions (mm)					
		A	B	C	D	E	M
ZX	2X	3.5	8.7	16.7	10.0	15.5	M11x0.75
ZX	3X	3.6	13.1	21.1	12.0	18.8	M14x0.75
ZX	31X	3.75	12.0	19.6	14.0	19.0	M14x0.75
ZX	4X	4.0	14.5	22.5	15.0	22.0	M16x1.0
ZX	5X	4.55	16.1	26.6	21.05	27.1	M20x1.0



>>> Alignment Key

Alignment Key and Polarized Keying System

Plug	Shell Keying	Shell size	Alignment key			
			N	A	B	C
		2X				
		3X				
		31X				
		4X				
		5X				
	Colour Keying		Red	White	Blue	Green

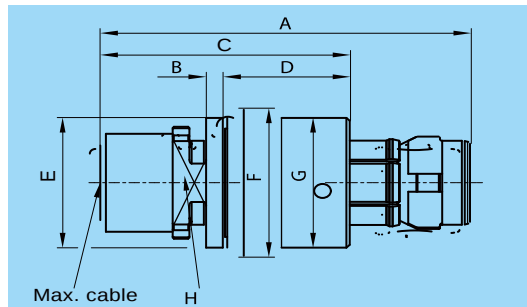
Socket	Shell Keying	Shell size	Alignment key			
			N	A	B	C
		2X				
		3X				
		31X				
		4X				
		5X				
	Colour Keying		Red	White	Blue	Green

>>> X Series(Customized)

X Series(Customized) Plug Dimensions



S1 body style, straight push-pull plug, multi-keying and arc-shape metal guides, injection collet style clamp system for cable.



Series	Dimensions (mm)								
	A	B	C	D	E	F	G	H	Max. Cable Φ
2X	31.4	1.5	21.4	10.4	11.9	14.0	12.0	7.0	5.8
3X	33.2	1.5	22.4	11.4	13.9	15.9	13.9	8.0	7.2
31X	32.7	1.5	22.7	11.7	14.5	16.5	14.5	10.0	8.0
4X	35.2	1.5	23.2	12.2	17.6	19.6	17.6	12.0	10.0
5X	38.3	1.5	23.2	12.2	21.9	23.9	22.0	14.0	11.5

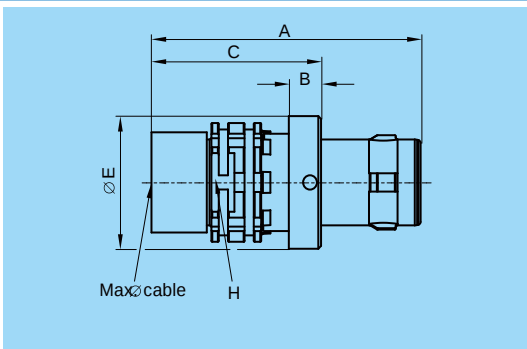
Note: There are several models below, We can also customize connectors of other sizes according to your requirements.

[RAS14XA-KMSH08-M100](#), [RAS131XA-KMSM10-M80](#)

[RAS131XB-KMSM10-M80](#), [RAS131XD-KMSM10-M80](#)



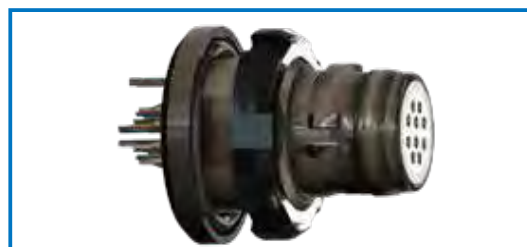
A1 body style, straight Break-Away plug, multi-keying and arc-shape metal guides, injection collet style clamp system for cable.



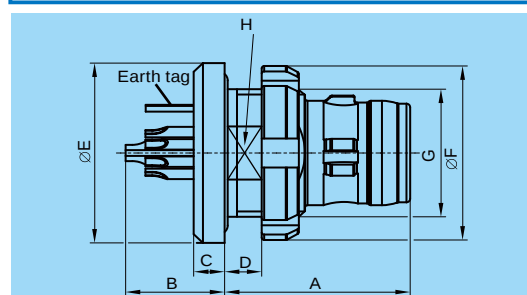
Series	Dimensions (mm)					
	A	B	C	E	H	Max. Cable Φ
2X	25.0	3.0	15.0	11.9	9.0	5.8
3X	29.2	3.5	18.4	13.9	11.0	7.2
31X	28.5	3.5	18.4	15.9	12.0	8.0
4X	31.0	4.0	19.0	17.6	14.0	10.0
5X	37.5	4.0	22.4	21.9	18.0	11.5

Note: There are several models below, We can also customize connectors of other sizes according to your requirements.

[RAA12XB-KMSM07-M58](#)



GW body style, Panel plug rear mount, multi-keying and arc-shape metal guides



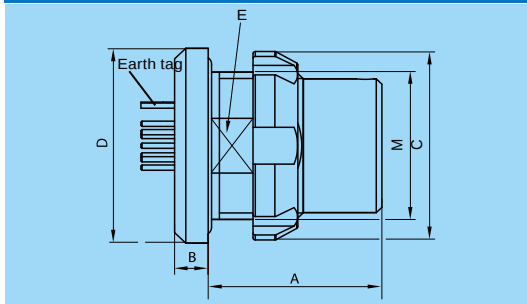
Series	Dimensions (mm)							
	A	B	C	D max	E	F	H	M
2X	15.0	6.4	2.5	3.0	13.2	12.8	9.2	10X0.5
3X	15.0	8.0	2.5	3.5	15.5	15.0	10.0	11X0.75
31X	16.5	9.7	4.0	3.5	17.5	17.9	13.0	14X0.75

Note: There are several models below, We can also customize connectors of other sizes according to your requirements.

[RAGW3XA-KFPM10-R30E](#)

>>> X Series(Customized)

X Series(Customized) Socket Dimensions

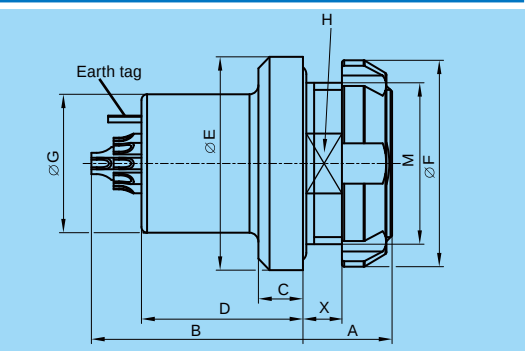


GK body style, socket, multi-keying and arc-shape metal guides, solder contact (with earthing tag) For installation from rear of panel – low profile inside the device

Series	Dimensions (mm)					
	A	B	C	D	E	M
2X	13.0	2.5	15.0	15.5	10.0	M11x0.75
3X	15.5	3.0	17.9	18.5	13.0	M14x1.0
31X	14.2	3.0	17.9	18.9	13.0	M14x1.0
4X	17.5	3.0	21.9	20.8	15.0	M16x1.0

Note: There are several models below, We can also customize connectors of other sizes according to your requirements.

RAGK4XA-KFSH08-R00E

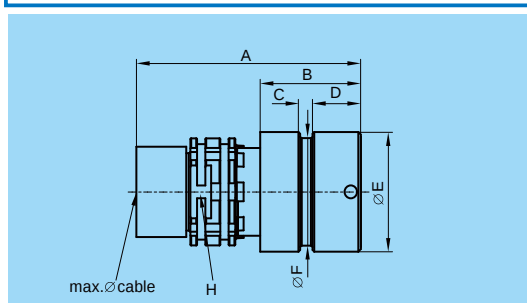


G8 body style, socket, multi-keying and arc-shape metal guides, solder contact (with earthing tag) For installation from rear of panel – low profile inside the device

Series	Dimensions (mm)									
	A	B	C	D	E	F	G	H	X Max	M
2X	6.5	15.5	3.0	11.5	15.5	15.0	10.0	10.0	3.0	M11x0.75
3X	8.0	19.0	4.0	14.5	18.5	17.9	12.0	13.0	3.5	M14x1.0
31X	7.0	17.7	2.5	12.5	18.9	17.9	14.0	13.0	3.0	M14x1.0
4X	8.0	21.5	4.0	15.0	20.8	21.9	14.5	15.0	3.0	M16x1.0
5X	11.0	22.5	4.0	15.5	26.0	25.0	18.0	18.0	5.5	M20x1.0

Note: There are several models below, We can also customize connectors of other sizes according to your requirements.

**RAG82XB-KFSM07-R00E, RAG831XA-KFSM10-R00E
RAG831XB-KFSM10-R00E, RAG831XD-KFSM10-R00E**



K1 body style, In-line Socket, multi-keying and arc-shape metal guides

Series	Dimensions (mm)							
	A	B	C	D	E	F	H	Max.Cable Φ
2X	25.0	13.0	1.5	5.8	11.9	10.5	9.0	5.8
3X	27.0	12.1	1.5	5.8	13.9	12.5	11.0	7.2
31X	27.0	12.0	1.5	5.8	15.9	14.5	12.0	8.0

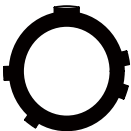
Note: There are several models below, We can also customize connectors of other sizes according to your requirements.

RAK13XA-KMSM10-M72

>>> Alignment Key (Customized)



Alignment Key and Polarized Keying System

	Alignment key			
	A	B	C	D
Plug Front View				
Colour Keying	Light brown	Red	Blue	Green
				



Material of Insulators

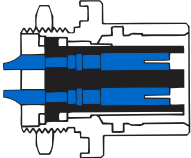
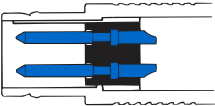
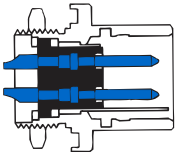
Reference	Material	Contact type	Note
K	PEEK	Solder or print	Special order alternative



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

>>> Contacts Type



Soldering characteristics

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

Contacts type reference for plugs, free or fixed sockets

Contact type	Reference	Contact			Conductor				
					Solid		Stranded		
		ΦA (mm)	ΦC (mm)		AWG Max.	Section max. (mm²)	AWG		Section (mm²)
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.							

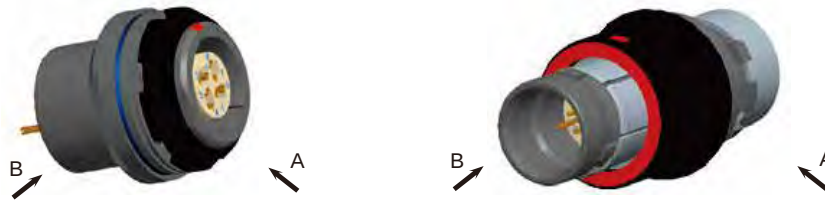
When Multiple Contacts are Working Simultaneously, the Derating Factor for the Rated Operating Current of Individual Contacts Should Comply with the Specifications in the Table Below.

No. of Contact	1~10	11~20	21~30	31~40
Derating Factor for the Rated Operating Current	0	10%	20%	30%



>>> Insert Configuration

X Series High-speed Needle Contact Reference



These specific connectors can transmit common data transmission protocols such as Ethernet CAT5(up to 10 Gigabit), USB 2.0, USB 3.0 and HDMI/DP/DVI standard connectors, but they are not Ethernet, USB 2.0, USB 3.0 and HDMI/DP/DVI standard connectors.

	Solder male contact		Solder female contact		Reference	Number of contacts	Contact ϕ A (mm)	Contact type		Withstanding Voltage(V)	Interface Type	Differential transmission rate
	A	B	A	B				Solder	Print(straight)			
31X Series					H51	8	0.5	√	√	500	10 Gigabit Network	2.5Gbps
					H52	10+2	0.5 0.7	√	√	500	USB3.0 + Power	5Gbps
					H54	4+4	0.5 0.7	√	√	500	USB2.0*2	480Mbps
					H56	8	0.5	√	√	500	Gigabit Network	250Mbps
4X Series					H38	20	0.5	√	√	500	HDMI/DP /DVI	3.4Gbps
					H39	20	0.5	√	√	500	Gigabit Network*2	250Mbps
					H08 ₁₎	8	0.9	√	☆	500	10 Gigabit Network	/

√: First choice alternative, 1).These contact type only for S1N plug and GKN socket

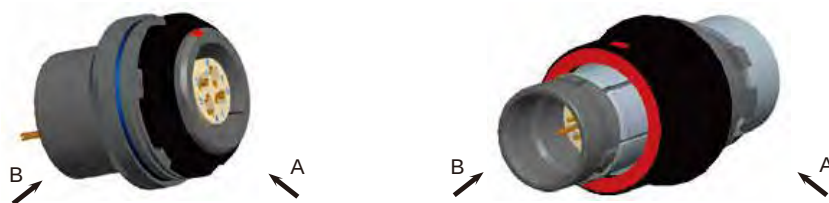
☆:Special order alternative need to ask

High-speed Needle Contact Definition											
1031-H51		1031-H52		1031-H54		1031-H56		104-H38		104-H39	
No.	Definition	No.	Definition	No.	Definition	No.	Definition	No.	Definition	No.	Definition
1	DATA1+	1	VBUS	1	DATA+	1	DATA1+	2	DATA1+	1	1-DATA1+
2	DATA1-	4	GND	7	DATA-	2	DATA1-	7	Shield	8	Signal or Power
3	DATA2+	2	DATA+	2	VCC	3	DATA2+	3	DATA1-	15	Signal or Power
4	DATA2-	3	DATA-	6	GND	4	DATA2-	5	DATA2+	17	Signal or Power
5	DATA3+	5	SSTX+	8	DATA+	5	DATA3+	11	Shield	13	Signal or Power
6	DATA3-	11	GND DRAIN	4	DATA-	6	DATA3-	12	DATA2-	20	Signal or Power
7	DATA4+	6	SSTX-	3	VCC	7	DATA4+	18	DATA3+	4	Signal or Power
8	DATA4-	8	SSRX+	5	GND	8	DATA4-	14	Shield	6	Signal or Power
		12	GND DRAIN					19	DATA3-	6	2-DATA1+
		9	SSRX-					9	DATA4+	18	2-DATA1-
		7	POWER					10	Shield	7	2-DATA2+
		10	GND					16	DATA4-	17	2-DATA2-

>>> Insert Configuration



X Series Multipole Contact Reference



	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)	Withstanding voltage(V)		
2X Series					M02	2	0.9	√	√	875	6.3	≤5.0
					M03	3	0.9	√	√	875	6.3	≤5.0
					M04	4	0.7	√	√	750	3.8	≤12.5
					M05	5	0.7	√	√	750	3.8	≤12.5
					M07	7	0.5	√	√	750	1.8	≤15.0
					M09	9	0.5	√	√	750	1.8	≤15.0
3X Series					M02	2	1.3	√	√	1000	9.0	≤3.0
					M03	3	1.3	√	√	1000	9.0	≤3.0
					M04	4	0.9	√	√	875	6.3	≤5.0
					M05	5	0.9	√	√	875	6.3	≤5.0
					M06	6	0.7	√	√	875	3.8	≤12.5
					M07	7	0.7	√	√	875	3.8	≤12.5
					M08	8	0.7	√	√	750	3.8	≤12.5
					M12	12	0.5	√	√	750	1.8	≤15.0

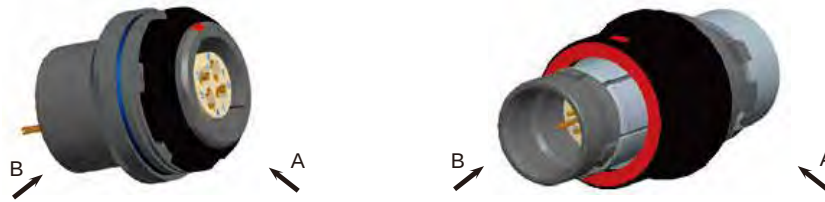
√: First choice alternative,

☆:Special order alternative need to ask



>>> Insert Configuration

X Series Multipole Contact Reference



	Solder male contact		Solder female contact		Reference	Number of contacts	Contact $\varnothing A$ (mm)	Contact type		level Withstanding voltage(V)	Rated current (A)	Resistance(m Ω)
	A	B	A	B				Solder	Print(straight)			
31X Series					M10	10	0.7	√	√	875	3.8	≤12.5
					M12	12	0.7	√	√	875	3.8	≤12.5
					M19	19	0.5	√	√	750	1.8	≤15.0
4X Series					M02	2	1.6	√	√	1000	15.0	≤2.5
					M03	3	1.6	√	√	1000	15.0	≤2.5
					M04	4	1.3	√	√	875	9.0	≤3.0
					M05	5	1.3	√	√	875	9.0	≤3.0
					M06	6	0.9	√	√	875	6.3	≤5.0
					M07	7	0.9	√	√	875	6.3	≤5.0
					M08	8	0.9	√	√	875	6.3	≤5.0
					M11	11	0.9	√	√	875	6.3	≤5.0
					M16	16	0.7	√	√	750	3.8	≤12.5
					M19	19	0.7	√	√	750	3.8	≤12.5
					822	2+2	0.9	√	☆	875	6.3	≤5.0
							2.3	√	☆	875	20.0	≤1.5
					881	8+1	0.9	√	☆	875	6.3	≤5.0
							1.3	√	☆	875	9.0	≤3.0

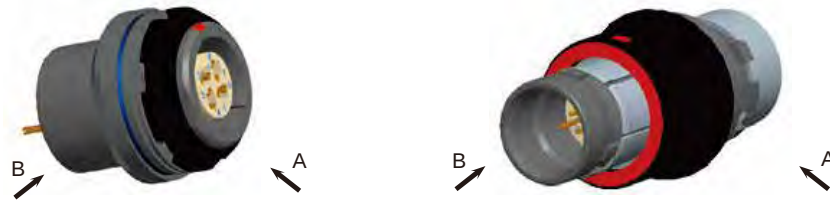
√: First choice alternative,

☆: Special order alternative need to ask

>>> Insert Configuration



X Series Multipole Contact Reference



5X 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)	Withstanding voltage(V)		
					M02	2	2.0	✓	✓	1000	19.0	≤2.0
					M03	3	2.0	✓	✓	1000	19.0	≤2.0
					M04	4	2.0	✓	✓	875	19.0	≤2.0
					M08	8	1.3	✓	✓	875	9.0	≤3.0
					M10	10	1.3	✓	✓	875	9.0	≤3.0
					M12	12	1.3	✓	✓	875	9.0	≤3.0
					M15	15	0.9	✓	✓	875	6.3	≤5.0
					M18	18	0.9	✓	✓	750	6.3	≤5.0
					M24	24	0.7	✓	✓	750	3.8	≤12.5
					M27	27	0.7	✓	✓	750	3.8	≤12.5
					M40	40	0.5	✓	✓	750	1.8	≤15.0
					861	6+1	1.3	✓	☆	875	9.0	≤3.0
							2.0	✓	☆	875	19.0	≤2.0
					881	8+1	1.3	✓	☆	875	9.0	≤3.0
							2.0	✓	☆	875	19.0	≤2.0
					813	10+3	0.7	✓	☆	875	3.8	≤12.5
							1.3	✓	☆	875	9.0	≤3.0
					816	12+4	0.7	✓	☆	875	3.8	≤12.5
				1.6			✓	☆	875	15.0	≤2.5	
				837	27+10	0.5	✓	☆	750	1.8	≤15.0	
						0.7	✓	☆	750	3.8	≤12.5	

✓: First choice alternative,

☆:Special order alternative need to ask



>>> Collets

X Series

	Series	Reference	Collets Type	Max. Cable Φ
	2X	M58	M	5.8
	3X	M72	M	7.2
	31X	M80	M	8.0
	4X	M100	M	10.0
	5X	M115	M	11.5

>>> Panel Cut-out

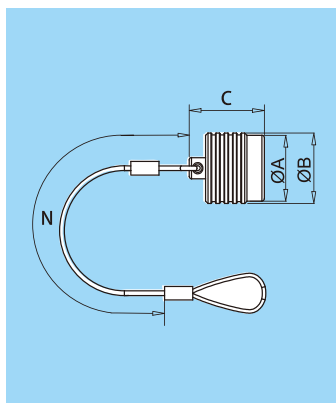
X Series

	Series	A	B	panel max. thickness
	2X	11.1	10.1	3
	3X	14.1	13.1	3
	31X	14.1	13.3	2
	4X	16.1	15.1	2
	5X	20.1	18.1	3

➤➤➤ Accessories

Plug Caps

BF body style, Caps for X series plug



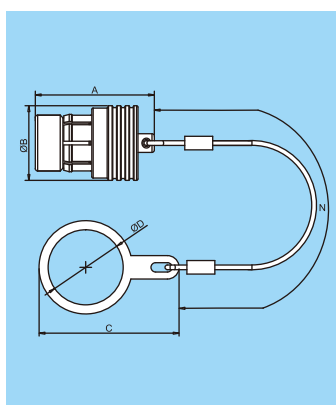
Model	Dimensions (mm)			
	A	B	C	N
BFN.102X.0850.FSS	11.0	12.0	14.7	85.0
BFN.103X.0850.FSS	14.0	15.0	16.0	85.0
BFN.1031X.0850.FSS	15.0	16.0	19.0	85.0
BFN.104X.1350.FSS	16.0	17.0	16.8	135.0

Note: these caps are suitable for use with any alignment key configuration.

- Body material: Nickel-plated brass
- Lanyard material: 304 painted stainless steel
- Gasket material: Silicone rubber
- Maximum operating temperature: -40~125°C
- Watertightness: IP67

Socket Caps

BR body style, Blanking caps for X series sockets

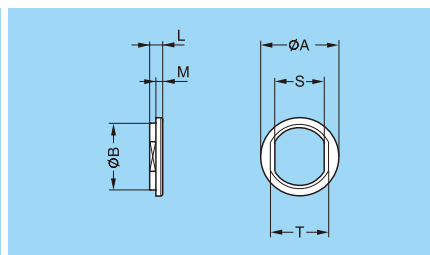
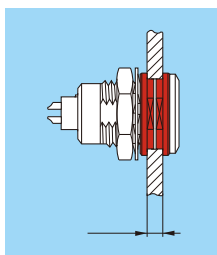


Model	Dimensions (mm)				
	A	B	C	D	N
BRN.102X.0800.FES	23.5	11.0	23.0	11.2	80.0
BRN.103X.0800.FES	24.5	14.0	27.5	14.0	80.0
BRN.1031X.0850.FES	23.5	14.0	27.5	14.0	80.0
BRN.104X.1000.FES	25.5	16.0	30.0	16.0	100.0

Note: these caps are suitable for use with any alignment key configuration.

- Body material: Nickel-plated brass
- Lanyard material: 304 painted stainless steel
- Gasket material: Silicone rubber
- Maximum operating temperature: -40~125°C
- Watertightness: IP67

Insulating Washers

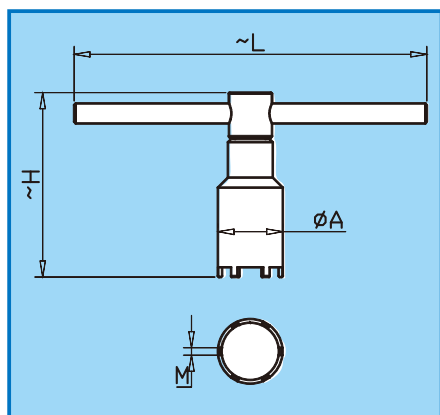


Model	Dimensions (mm)						
	A	B	E	L	M	S	T
GRA.00.269.GG	10.0	8.8	4.5	1.8	1.0	6.4	8.0
GRA.0B.269.GG	12.0	10.8	6.0	1.8	1.0	8.3	9.9
GRA.1B.269.GG	16.0	13.8	6.5	1.8	1.0	10.6	12.2
GRA.2B.269.GG	21.1	17.9	7.3	2.3	1.3	13.6	16.2

Ref.	Colour	Ref.	Colour
A	Blue	N	Black
B	White	R	Red
G	Gray	S	Orange
J	Yellow	V	Green

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)				
	L	H	A	M	Used for series
GB6.102F.LM9	110	47.0	13.0	1.8	102X
GB6.103F.LM14	110	58.0	19.0	2.8	103X
GB6.104F.LM16	110	58.0	20.2	2.3	104X
GB6.105F.LM20	110	58.0	25.2	2.8	105X

››› Cable Assembly

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.

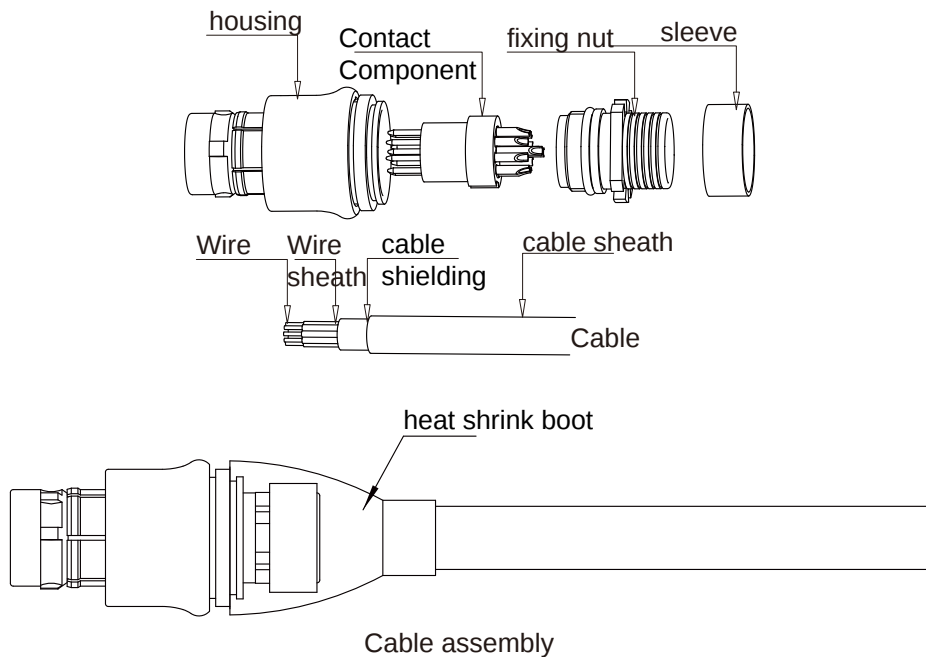
Our competent assembly team tests the complete system according your specifications. Our assembly service promises you the same quality found in our connectors – without compromises.

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



Plug Assembly Instructions for X Series Plug



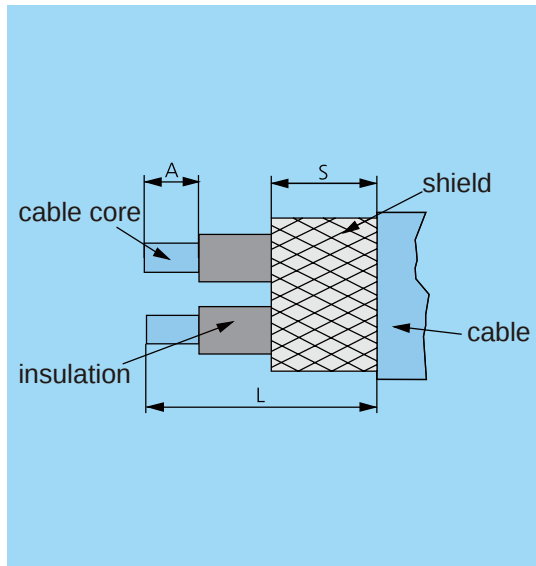
1. Strip the Cable: Strip the cable to the length required for the core wires.
2. Remove the Plug's Fixing Nut: Unscrew the fixing nut from the plug and remove the contact component from inside the plug.
3. Prepare the Cable End:
 - Slide on the heat shrink boot (if applicable).
 - Slide on the crimp sleeve and the fixing nut in sequence.
 - Place an appropriately sized heat shrink tube on each core wire.
4. Heat Shrink Tube Application: After soldering the wires, slide the heat shrink tubes over the solder joints. Heat them to shrink and protect the soldered connections.
5. Install the Contact Component:
 - Insert the contact component into the plug, aligning the slots on the contact component with the keys on the plug housing.
6. Secure the Contact Component: Tighten the fixing nut. After tightening, ensure the contact component does not move along the central axis of the plug.
7. Shielding Layer Preparation: Spread the cable shielding layer evenly and wrap it 360° around the end of the fixing nut.
8. Crimp the Sleeve:
 - Slide the crimp sleeve over the end of the fixing nut.
 - Use a crimping tool to crimp the sleeve into a hexagonal shape and remove any excess shielding material.
9. Apply Heat Shrink Boot: Slide the heat shrink boot up to the shoulder of the plug housing and heat it until it shrinks securely.

>>> Cable Stripping Lengths

Cable Stripping Lengths(X 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

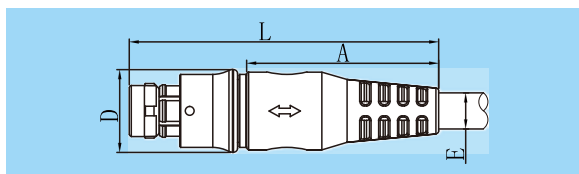


Connector		contact ØA (mm)	Cable stripping lengths (mm)					
Series	Type		T1			T2		
			Solder			Solder		
			L	S	A	L	S	A
2X	302/303	0.9	13.0	7	3.0	18.0	7	3.0
	304/305	0.7	13.0	7	3.0	18.0	7	3.0
	306/307/309	0.5	14.0	7	2.5	19.0	7	2.5
3X	302/303	1.3	14.0	8	3.5	25.0	8	3.5
	304/305	0.9	14.0	8	3.0	25.0	8	3.0
	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
4X	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
5X	302	3.0	24.0	10	4.5	35.0	10	4.5
	303/304	2.0	23.0	10	4.0	34.0	10	4.0
	308/310/312	1.3	22.0	10	3.5	33.0	10	3.5
	318/319	0.9	21.0	10	3.0	32.0	10	3.0
	324/327	0.7	21.0	10	3.0	32.0	10	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(X Series)



For X series straight long plug(FL) ,for various alignment keys(N, A, B, C)

Series	Dimensions(mm)			
	L	A	D	E (Cable Diameter mm)
2X	52.0	30.0	13.5	3.2~5.2
3X	61.0	38.0	15.5	15.5
31X	61.5	38.0	15.5	5.2~9.0
4X	64.0	39.0	18.5	5.2~10.0
5X	70.0	42.0	21.5	5.2~13.5

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

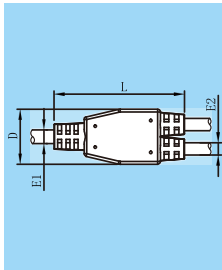
Solder Precautions



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

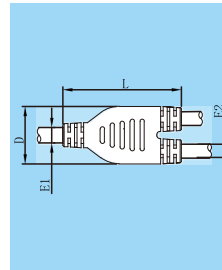
>>> Optional Cable Other End

Cable Other End



Y Type 1

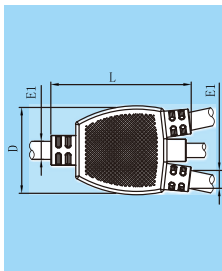
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y01	47.0	20.0	5.0	4.5



Y Type 2

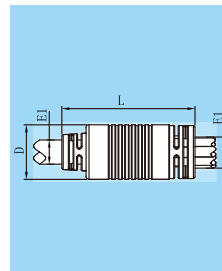
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y02	50.0	23.0	6.5	6.5

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

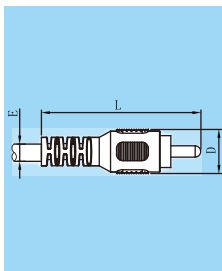
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y03	50.0	31.0	6.5~8.0	5.2~6.5



Y Type 4

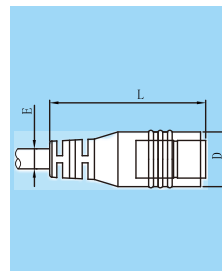
Ref.	Dimensions(mm)			
	L	D	E1 Cable Dia. (mm)	E2 Cable Dia. (mm)
Y04	44.0	18.0	8.0~10.0	11.0

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



RAC

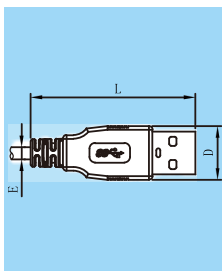
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
RAC	45.0	12.0	3.0~4.5



DC

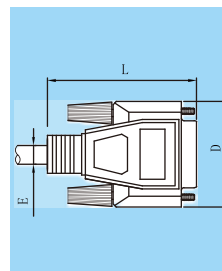
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
DC	33.0	12.0	4.8

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



USB2.0

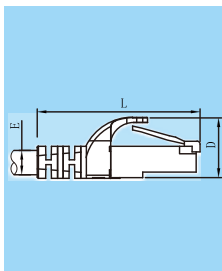
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
USB	46.0	15.0	5.5



DB9

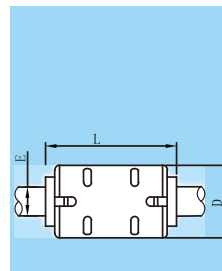
Ref.	Dimensions(mm)		
	L	D	E1 Cable Dia. (mm)
DB9	57.0	33.5	5.0

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												