

X4 Series Metallic Rack and Panel Connector

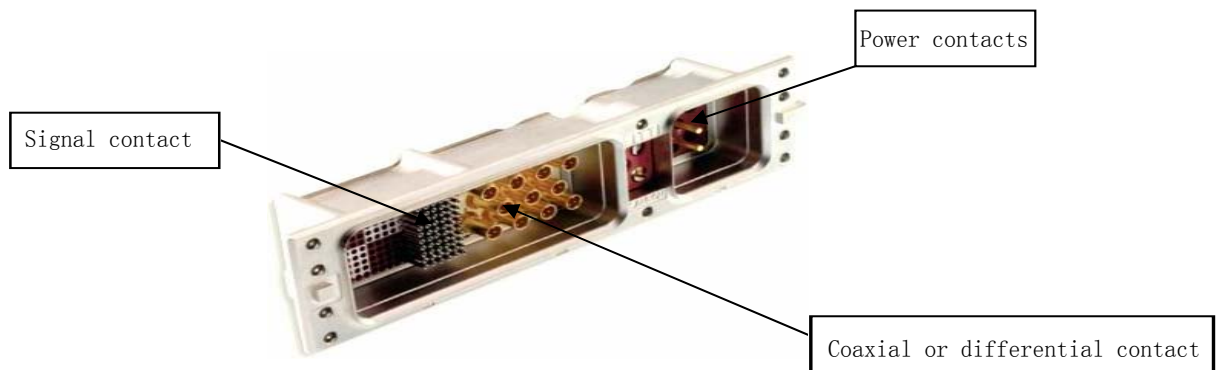
Description

- In accordance with ARINC600
- Module structure, differential P/Ns which are formed by mating the insulator with the shell can meet the differential customers' requirements
- Mixed power, high speed, high frequency and optical contacts, signal integration transmission can be achieved
- Transmission speed for 8# high speed and differential contact can be 1.65 Gbps
- Applicable to aerospace and military rack, environment resistant
- Enterprise standard: Q/21EJ719-2009



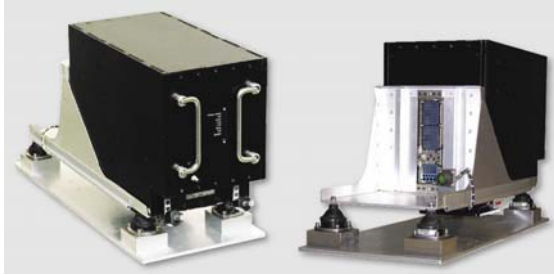
Contact type

X4 series metallic rack and panel connector can install the power, signal, high speed, high frequency and coaxial contacts at the same time and multiple signal integration transmission can be achieved. #8 contact cavities can install #8 high speed differential contacts or #8 coaxial contacts. #16 contact cavities can install #16 coaxial, power or optical contacts. #12 contact cavities can install #12 coaxial, power or optical fiber contacts.



Application

X4 series connectors are applicable to transmit the electrical signal, RF signal, optical signal, differential signal and bus signal between equipment and rack. It is applicable to the severe environment and reduces the quantities of the interfaces and cable assembly to meet the requirements of the integration, modularization and standardization. The common usage method is shown as follows.



Performance

[Mechanical]

- Shell: High strength aluminum alloy, cadmium or nickel plating
- Insulator: thermoplastic
- Seals and grommets: silicon rubber
- Contact: copper alloy, gold plating
- Durability: 500 cycles
- Shock: 11ms half sine wave, acceleration 50g
- Random vibration: 10~2000Hz, Power spectral density 0.126g²/Hz, duration: 8 hours

[Environmental]

- Temperature: -65°C~+150°C
- High temperature durability: 1000 hours (150°C)
- Salt spray: 500 hours (cadmium plated); 96 hours (nickel plated)
- Fluid resistance: aerospace oil, hydraulic, coolant

[High speed differential signal]

8# high speed differential contacts can be installed to transmit the high speed differential signal.

Transmission Speed	1.65Gbps
NEXT	≥46dB
Characteristic Impedance	100Ω

[CAN bus signal and ARINC429 signal]

CAN bus signal contact can be installed to transmit CAN bus signal and ARINC429 signal

Transmission Speed	1Mbps
Characteristic Impedance	120Ω

[Electrical]

- Insulation resistance: ≥5000MΩ (500Vdc)
- Contact resistance and rated current:

Contact	Wire gauge (AWG)	Rated current (A)	Contact resistance (mΩ)
22D	22	5	17
	24	3	23
	26	2	38
20#	20	7.5	11
	22	5	17
	24	3	23
16#	16	13	6
	18	10	8
	20	7.5	10
12#	12	23	3.35
	14	17	4.24



Rated voltage		50V
Voltage drop	Center contact	<15 mV /1A
	Intermediate contact	<15 mV /1A
	Outer contact	<35 mV /12A
Shielding	3GHz	50dB
	1~2 GHz	55dB
	0.1 GHz	58dB

[Power signal]

Power contact can be installed to transmit the high current

Contact size		16 [#] contact	12 [#] contact
Withstanding voltage	Sea level	1500V	1500V
	30480m	750V	750V
Rated current		13A	23A

[1553Bsignal]

#8 coaxial contact can be installed to transmit 1550B signal

Transmission Bandwidth		0~20MHz
Characteristic Impedance		77Ω
Withstanding voltage	Sea level	500V
	21000m	150V
Voltage drop	Center contact	<15 mV /1A
	Intermediate contact	<15 mV /1A
	Outer contact	<35 mV /12A

[Common signal]

Power contact can be installed to transmit the common signal

Contact size		22D contact	20 [#] contact
Withstanding voltage	Sea level	1300V	1500V
	30480m	750V	750V
Rated current		5A	7.5A

[High frequency signal]

Coaxial contact can be installed to transmit the high frequency signal

Coaxial contact		16 [#] coaxial	12 [#] coaxial	8 [#] coaxial	5 [#] coaxial
Bandwidth		0~500MHz	0~3GHz	0~500MHz	0~500MHz
Withstanding voltage	Sea level	800V	900V	800V	800V
	21000m	250V	250V	250V	250V
Voltage drop	Center contact	<120mV/1A	<120mV/1A	<120mV/1A	<120mV/1A
	Outer contact	<80mV/12A	<75mV/12A	<80mV/12A	<80mV/12A

Performance for 1# coaxial contact:



- Frequency: 0~2GHz
- Insertion loss: $\leq 0.3\text{dB}$
- Contact resistance: Body $\leq 0.2\text{ m}\Omega$
Center contact $\leq 1.0\text{ m}\Omega$
- Insulation resistance: $\geq 1000\text{ M}\Omega$
- Dielectric withstanding voltage: 2500V (sea level)

[Optical signal]

Optical fiber contact can be installed to transmit the optical signal.

Contact size	16 [#] contact	12 [#] contact
Insertion loss	$\leq 0.5\text{dB}$	$\leq 0.5\text{dB}$
Repetition	$\leq 0.3\text{dB}$	$\leq 0.3\text{dB}$

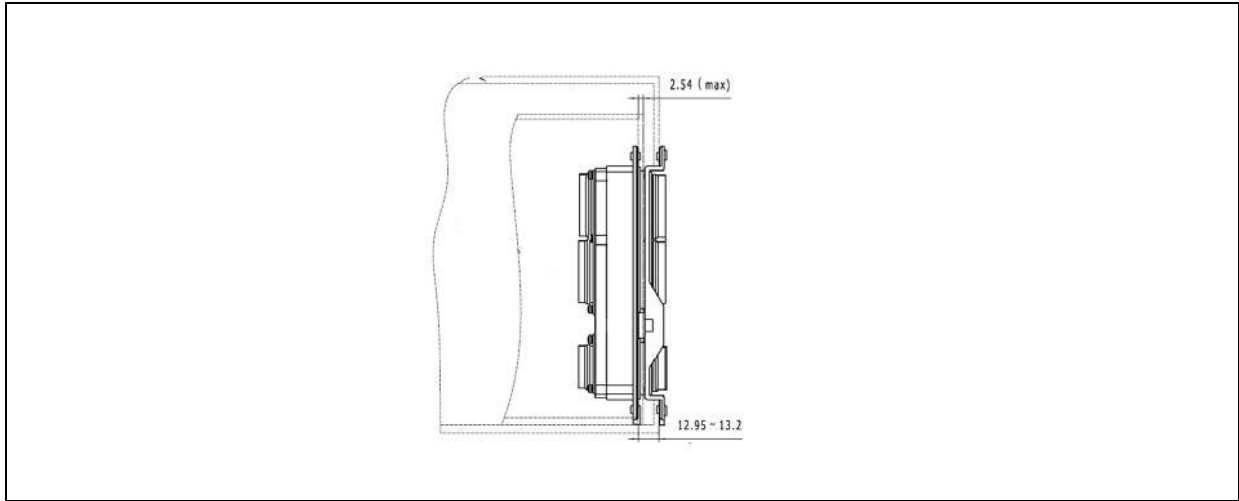


Ordering information

Basic series	X4	W	2	TS	B	0005	F	-S
Connector type	Blank—Environment resistant (sealed) N—Non-environment resistant (unsealed)							
Plating	F—Nickel (salt spray 96 hours) W—Cadmium (salt spray 500 hours)							
Shell size	1—3 cavities narrow shell 2—3 cavities standard shell 3—6 cavities standard shell							
Plug and receptacle, contact size	TS—Plug (with socket) ZP—Receptacle (with pin)							
Termination type	Y—Crimp B—PCB receptacle, rear removal B1—PCB receptacle, front removal (3.8mm extension) B2—PCB receptacle, front removal (6.35mm extension) B3—PCB receptacle, front removal (9.5mm extension) Note 1: PCB type is only applicable to X4-2 and X4-3 series receptacles and not applicable to plug Note 2: B2 type front removal PCB receptacle can replace B type removal PCB receptacle (see Annex V)							
Insert arrangement	0005 (see insert arrangement table)							
Mounting style	Blank—Standard Floating mounting—F							
Shielded device	Blank—Non-shielded product -S—Shielded product (only applicable to plug)							

[Notes]

1. Pins should be installed in the 22D insert of plug and sockets should be installed in the other inserts. Sockets should be installed in the 22D insert of receptacle and pins should be installed in the other inserts. Other contact sizes, not 22D contact size, would be considered during ordering;
2. 22D、20[#]、16[#] and 12[#] contacts can be supplied with the finished products and applicable high frequency, coaxial, differential and optical fiber contacts should be ordered separately
3. There is no locking mechanism between plug and receptacle and the locking can be met by the locking mechanism of the applicable equipments. The mounting style and the mating dimension are as follows:



Insert arrangements (Front face view of male insert)

[Standard shell A, B, D or E cavity insert arrangement]

I - 150	I - 60	I - 36A	I - 24
<p>150-22D</p>	<p>60-20[#]</p>	<p>36-16[#]</p>	<p>24-12[#]</p>
I - 126	I - 121	I - 110	I - 70C1
<p>120-22D, 6-16[#]</p>	<p>110-22D, 6-20[#], 5-16[#]</p>	<p>100-22D, 5-20[#], 5-12[#]</p>	<p>70-22D, 1-1[#]</p>
I - 120T2	I - 47T2	I - 11T11	I - 10T10

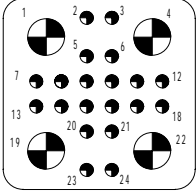
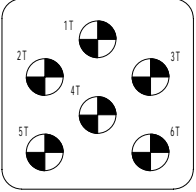
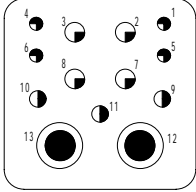
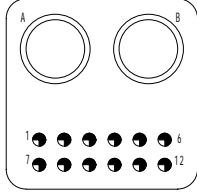
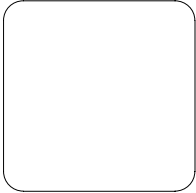
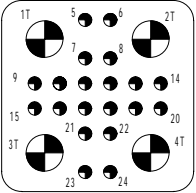
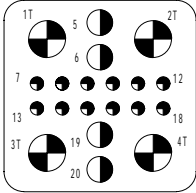
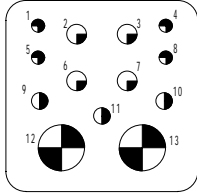


<p>118-22D, 2-8[#]</p>	<p>47-20[#], 2-8[#]</p>	<p>11-8[#]</p>	<p>10-8[#]</p>
I - 0		I-72T4	
<p>No contact</p>	<p>62-22D, 6-16[#], 4-8[#]</p>	<p>4-1[#]</p>	<p>12-16[#]optical fiber, 8-8[#]</p>

Contact specifications 22D ○ ●20# ●16# ●16# ○12# ●8# ●5# ○1#
 optical fiber

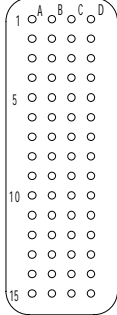
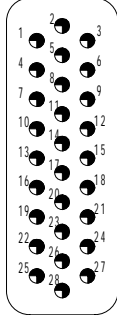
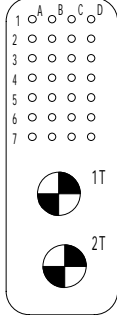
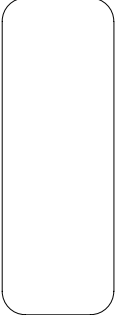
[Standard shell C or F cavity insert arrangement]

<p>II - 100</p> <p>100-22D</p>	<p>II - 25</p> <p>25-16[#]</p>	<p>II - 34</p> <p>24-20[#], 10-16[#]</p>	<p>II - 59</p> <p>50-22D, 5-16[#], 4-12[#]</p>
II - 84	II - 85	II - 70T2	II - 64T2
<p>80-22D, 4-20[#]</p>	<p>80-22D, 4-20[#], 1-16[#]</p>	<p>68-22D, 2-8[#]</p>	<p>60-22D, 2-16[#], 2-8[#]</p>

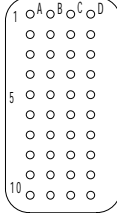
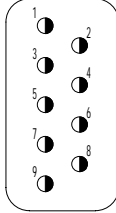
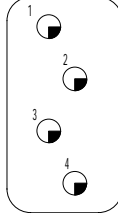
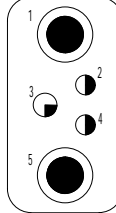

II - 20T4	II - 6T6	II - 13W2	II - CAN
 <p>20-20[#], 4-8[#]</p>	 <p>6-8[#]</p>	 <p>4-20[#], 3-16[#], 4-12[#], 2-5[#]</p>	 <p>12-20[#], 2-CAN contacts</p>
II - 0	II - 20T4A	II - 20T4G4	II - 11T2
 <p>No contact</p>	 <p>20-20[#], 4-8[#]</p>	 <p>20-20[#], 4-16[#], 4-8[#]</p>	 <p>4-20[#], 3-16[#], 4-12[#], 2-8[#]</p>

Contact specification \circ 22D \bullet 20[#] \bullet 16[#] \bullet 12[#] \bullet 8[#] \bullet 5[#] \circ 1[#]

[Narrow type shell A or B cavity insert arrangement]

I - 60	I - 28	I - 30T2	I - 0
 <p>60-22D</p>	 <p>28-20[#]</p>	 <p>28-22D, 2-8[#]</p>	 <p>No contact</p>

[Narrow type shell C cavity inserts arrangement]

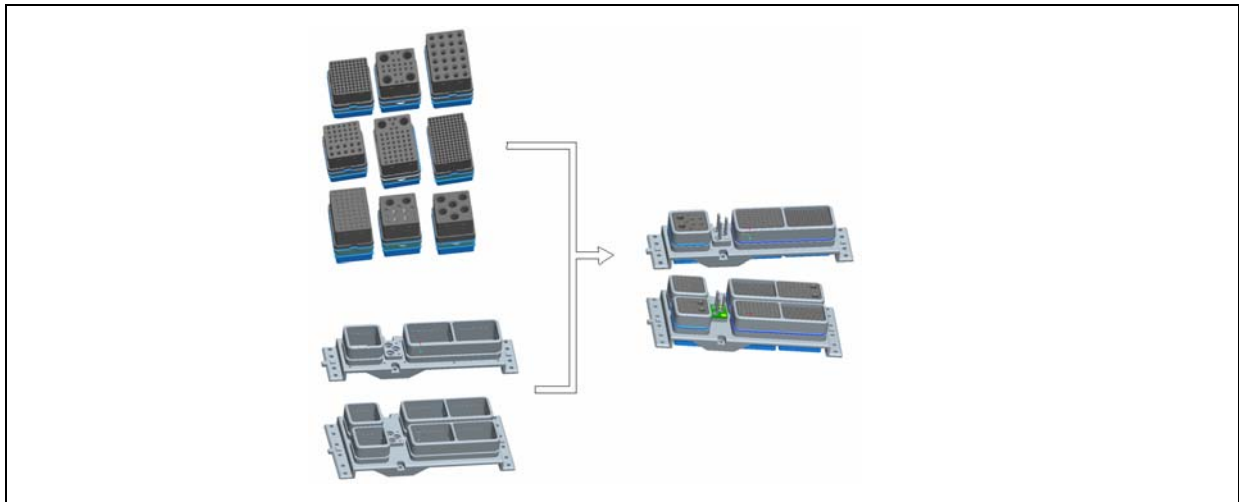
II - 40	II - 9	II - 4	II - 5W2	II - 0
 <p>40-22D</p>	 <p>9-16[#]</p>	 <p>4-12[#]</p>	 <p>2-16[#], 1-12[#], 2-5[#]</p>	 <p>No contact</p>

Note: please contact for any other insert arrangements .

Contact specification ○22# ●20# ◐16# ◑12# ◒8# ◓5# ◔1#

Product Combination Code Table

X4 series products can combine any module and customers can choose P/N according to their needs. When ordering, customers know what kind of module they need and look for the combination code according to the following table. If there is no module which you need, please contact us.



Product code	Shell size	Insert arrangements					
		A	B	C	D	E	F
0005	1#	I -0	I -0	II -5W2	—	—	—
0037	1#	I -0	I -28	II -9	—	—	—
0060	1#	I -0	I -60	II -0	—	—	—
A060	1#	I -60	I -0	II -0	—	—	—
0065	1#	I -0	I -60	II -5W2	—	—	—
A065	1#	I -60	I -0	II -5W2	—	—	—
0069	1#	I -30T2	I -30T2	II -9	—	—	—
0099	1#	I -A60	I -30T2	II -9	—	—	—
0120	1#	I -60	I -60	II -0	—	—	—
0125	1#	I -60	I -60	II -5W2	—	—	—
0160	1#	I -60	I -60	II -40	—	—	—
0013	2#	I -0	I -0	II -13W2	—	—	—
0046	2#	I -11T11	I -11T11	II -20T4			
0054	2#	I -24	I -24	II -6T6	—	—	—
0084	2#	I -10T10	I -10T10	II -64T2	—	—	—
A084	2#	I -60	I -11T11	II -13W2	—	—	—
0086	2#	I -11T11	I -11T11	II -64T2			
A086	2#	I -24	I -36	II -25			
0092	2#	I -11T11	I -11T11	II -70T2			
0096	2#	I -11T11	I -60	II -25			
A099	2#	I -24	I -11T11	II -64T2			
0100	2#	I -0	I -0	II -100	—	—	—
0105	2#	I -11T11	I -60	II -34	—	—	—
0116	2#	I -110	I -0	II -6T6			
A120	2#	I -10T10	I -10T10	II -100			
0127	2#	I -121	I -0	II -6T6			
0133	2#	I -60	I -60	II -13W2	—	—	—
0137	2#	I -121	I -10T10	II -6T6	—	—	—



0138	2 [#]	I -121	I -11T11	II -6T6	—	—	—
T141	2 [#]	I -120T2	I -10T10	II -13W2	—	—	—
0144	2 [#]	I -120T2	I -11T11	II -13W2	—	—	—
A144	2 [#]	I -60	I -60	II -20T4A			
0150	2 [#]	I -0	I -150	II -0	—	—	—
A150	2 [#]	I -150	I -0	II -0	—	—	—
0151	2 [#]	I -121	I -24	II -6T6	—	—	—
0154	2 [#]	I -60	I -60	II -34	—	—	—
0155	2 [#]	I -70C1	I -70C1	II -13W2			
0162	2 [#]	I -126	I -11T11	II -13W2			
0163	2 [#]	I -0	I -150	II -13W2	—	—	—
A163	2 [#]	I -150	I -0	II -13W2	—	—	—
0173	2 [#]	I -150	I -10T10	II -13W2	—	—	—
A173	2 [#]	I -10T10	I -150	II -13W2	—	—	—
0174	2 [#]	I -150	I -11T11	II -13W2	—	—	—
A174	2 [#]	I -150	I -24	II -0			
B174	2 [#]	I -24	I -150	II -0			
0186	2 [#]	I -150	I -11T11	II -25			
0199	2 [#]	I -20G12F8	I -120T2	II -59			
0215	2 [#]	I -121	I -60	II -34	—	—	—
0220	2 [#]	I -150	I -0	II -70T2	—	—	—
0221	2 [#]	I -121	I -0	II -100	—	—	—
0229	2 [#]	I -150	I -20G12F8	II -59			
0233	2 [#]	I -150	I -60	II -13W2	—	—	—
0244	2 [#]	I -150	I -60	II -34	—	—	—
0246	2 [#]	I -120T2	I -120T2	II -6T6	—	—	—
0248	2 [#]	I -121	I -121	II -6T6	—	—	—
0250	2 [#]	I -0	I -150	II -100	—	—	—
A250	2 [#]	I -150	I -0	II -100	—	—	—
0253	2 [#]	I -120T2	I -120T2	II -13W2	—	—	—
0260	2 [#]	I -150	I -10T10	II -100			
0261	2 [#]	I -150	I -11T11	II -100			
0262	2 [#]	I -126	I -36	II -100			
0266	2 [#]	I -150	I -110	II -6T6			
0275	2 [#]	I -121	I -60	II -34	—	—	—
0277	2 [#]	I -121	I -150	II -6T6			
0283	2 [#]	I -150	I -120T2	II -13W2			
A283	2 [#]	I -120T2	I -150	II -13W2			
0284	2 [#]	I -150	I -121	II -13W2	—	—	—
B284	2 [#]	I -150	I -110	II -20T4			
C284	2 [#]	I -150	I -110	II -20T4A			
0300	2 [#]	I -150	I -150	II -0	—	—	—
0305	2 [#]	I -150	I -121	II -34	—	—	—
0306	2 [#]	I -150	I -150	II -6T6	—	—	—
0313	2 [#]	I -150	I -150	II -13W2	—	—	—
0324	2 [#]	I -150	I -150	II -20T4			
B324	2 [#]	I -150	I -150	II -20T4A			
0334	2 [#]	I -150	I -150	II -34	—	—	—
0340	2 [#]	I -120T2	I -120T2	II -100	—	—	—
0364	2 [#]	I -150	I -150	II -64T2			
0370	2 [#]	I -150	I -120T2	II -100	—	—	—
A370	2 [#]	I -120T2	I -150	II -100	—	—	—
0400	2 [#]	I -150	I -150	II -100	—	—	—
0026	3 [#]	I -0	I -0	II -13W2	I -0	I -0	II -13W2
0056	3 [#]	I -11T11	I -11T11	II -6T6	I -11T11	I -11T11	II -6T6
0113	3 [#]	I -0	I -0	II -100	I -0	I -0	II -13W2
A113	3 [#]	I -0	I -0	II -13W2	I -0	I -0	II -100
0168	3 [#]	I -11T11	I -11T11	II -100	I -11T11	I -11T11	II -20T4
0179	3 [#]	I -121	I -24	II -6T6	I -11T11	I -11T11	II -6T6
0231	3 [#]	I -121	I -10T10	II -100	I -0	I -0	II -0
0251	3 [#]	I -11T11	I -11T11	II -34	I -11T11	I -150	II -34



0254	3 [#]	I -110	I -110	II -6T6	I -11T11	I -11T11	II -6T6
0263	3 [#]	I -0	I -0	II -13W2	I -0	I -150	II -100
0267	3 [#]	I -36	I -36	II -59	I -36	I -36	II -64T2
0271	3 [#]	I -C4	I -C4	II -13W2	I -0	I -150	II -100
A284	3 [#]	I -10T10	I -10T10	II -100	I -120T2	I -10T10	II -34
0287	3 [#]	I -11T11	I -11T11	II -100	I -120T2	I -11T11	II -34
0291	3 [#]	I -10T10	I -72T4	II -25	I -60	I -60	II -64T2
0295	3 [#]	I -72T4	I -60	II -25	I -72T4	I -60	II -25
0302	3 [#]	I -36	I -110	II -59	I -36	I -36	II -25
A313	3 [#]	I -150	I -0	II -13W2	I -150	I -0	II -0
A324	3 [#]	I -10T10	I -10T10	II -0	I -150	I -120T2	II -34
0326	3 [#]	I -0	I -150	II -13W2	I -0	I -150	II -13W2
0330	3 [#]	I -150	I -120T2	II -34	I -10T10	I -10T10	II -6T6
0344	3 [#]	I -36	I -36	II -100	I -36A	I -36A	II -100
A344	3 [#]	I -72T4	I -60	II -25	I -121	I -60	II -6T6
A348	3 [#]	I -150	I -11T11	II -13W2	I -150	I -11T11	II -13W2
0348	3 [#]	I -60	I -60	II -20T4	I -60	I -110	II -34
0353	3 [#]	I -11T11	I -11T11	II -25	I -150	I -150	II -6T6
0358	3 [#]	I -150	I -120T2	II -34	I -10T10	I -10T10	II -34
0434	3 [#]	I -150	I -150	II -0	I -121	I -0	II -13W2
0437	3 [#]	I -150	I -150	II -6T6	I -121	I -10T10	II -13W2
0444	3 [#]	I -150	I -121	II -13W2	I -150	I -10T10	II -0
0450	3 [#]	I -150	I -150	II -6T6	I -121	I -10T10	II -13W2
0463	3 [#]	I -150	I -0	II -13W2	I -150	I -150	II -0
0492	3 [#]	I -11T11	I -150	II -100	I -10T10	I -10T10	II -34
0494	3 [#]	I -121	I -120T2	II -6T6	I -121	I -120T2	II -6T6
0496	3 [#]	I -121	I -121	II -6T6	I -121	I -121	II -6T6
0510	3 [#]	I -121	I -121	II -13W2	I -121	I -121	II -13W2
0514	3 [#]	I -150	I -150	II -64T2	I -120T2	I -24	II -6T6
0537	3 [#]	I -150	I -150	II -100	I -121	I -10T10	II -6T6
0547	3 [#]	I -60	I -150	II -13W2	I -150	I -150	II -20T4
0550	3 [#]	I -150	I -150	II -100	I -150	I -0	II -0
0552	3 [#]	I -121	I -121	II -34	I -121	I -121	II -34
0563	3 [#]	I -0	I -150	II -100	I -150	I -150	II -13W2
0568	3 [#]	I -60	I -150	II -34	I -150	I -150	II -20T4
0579	3 [#]	I -150	I -150	II -64T2	I -121	I -60	II -34
0600	3 [#]	I -150	I -150	II -0	I -150	I -150	II -0
0601	3 [#]	I -150	I -150	II -20T4	I -150	I -121	II -6T6
0608	3 [#]	I -120T2	I -150	II -34	I -120T2	I -150	II -34
0613	3 [#]	I -150	I -150	II -13W2	I -150	I -150	II -0
0615	3 [#]	I -150	I -60	II -100	I -150	I -150	II -25
0620	3 [#]	I -150	I -60	II -100	I -150	I -60	II -100
A620	3 [#]	I -150	I -150	II -100	I -60	I -60	II -100
0621	3 [#]	I -150	I -11T11	II -100	I -150	I -110	II -100
0626	3 [#]	I -150	I -150	II -13W2	I -150	I -150	II -13W2
0630	3 [#]	I -150	I -150	II -6T6	I -150	I -150	II -20T4
A630	3 [#]	I -150	I -150	II -6T6	I -150	I -150	II -20T4A
B630	3 [#]	I -150	I -150	II -25	I -150	I -150	II -20T4A
0632	3 [#]	I -150	I -11T11	II -100	I -150	I -121	II -100
0648	3 [#]	I -150	I -150	II -20T4	I -150	I -150	II -20T4G4
A648	3 [#]	I -150	I -150	II -20T4A	I -150	I -150	II -20T4A
0668	3 [#]	I -150	I -150	II -34	I -150	I -150	II -34
0695	3 [#]	I -150	I -150	II -20T4	I -150	I -121	II -100
0698	3 [#]	I -150	I -150	II -64T2	I -150	I -150	II -34
0713	3 [#]	I -150	I -150	II -100	I -150	I -150	II -13W2
A713	3 [#]	I -150	I -150	II -13W2	I -150	I -150	II -100
0724	3 [#]	I -150	I -150	II -100	I -150	I -150	II -20T4
0734	3 [#]	I -150	I -150	II -100	I -150	I -150	II -34
0742	3 [#]	I -121	I -150	II -100	I -121	I -150	II -100
0800	3 [#]	I -150	I -150	II -100	I -150	I -150	II -100

RF contact

8# RF contacts can be installed in #8 insert of X4 series product to transmit RF signal. The operating frequency is 0~500MHz for #8 RF contact and P/Ns are as follows:

Ordering information for standard #8 RF contact

Basic series	S7	-RF	2	P	-8#	B
Contact name	RF coaxial					
Contact type	Blank—Common coaxial contact 2- Shielded twisted contact for transmitting 1553B signal					
Contact style	S—Socket P—Pin					
Contact size						
Termination	B- PCB solder (Only for pin) Blank- Crimp					

Notes: S6 and S7 series coaxial contacts are applied in ARINC600 connectors and MIL-DTL-83527B rectangular rack and panel connectors. Because there is gap existing between rack and shelf, RF pin and RF socket can not mated in place and the mating face of pin and socket of many contacts are not same, therefore, impedance discontinuity would exist in RF signal transmission channels, VSWR would be increased and reflection loss and transmission loss would be increased. Which causes the equipment is not in good condition. ARINC 600 and MIL-DTL-83527B rectangular rack and panel connectors are multiple-way connectors which have decades of and dozens of ways of RF signals. RF contacts assembled in cable would be displaced due to the cable weight or pull force, so connectors would not be mated in place and RF contacts would be damaged. When rack and panel equipments are exposed to outdoor, they would be damaged because rain flows into the interior of the equipment. For solving the above problems, S7 series RF contacts with axial floating, radial floating and sealing are designed.

Besides meeting the requirements of ARINC and MIMIL-DTL-83527B, S7 RF contacts can meet the following requirements:

- Impedance: 50Ω
- Operating temperature: -65℃~135℃
- The highest frequency: 18GHz
- Insertion loss: no more than 0.3dB
- Applicable to stable phrase and low loss RF cable

According to customers' requirements, the wires can be applied,

Ordering information

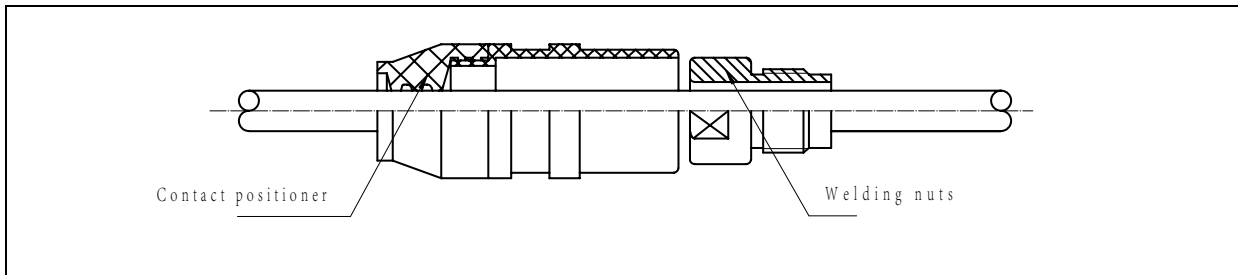
Basic series	S7	-RF	P	—8#	—1801
Contact name					
Contact style	P: Pin S: Socket				
Contact size	8#				
Applicable cable code	086, 141, 1801, 3449, 32055				

Cross reference of cable code and P/N

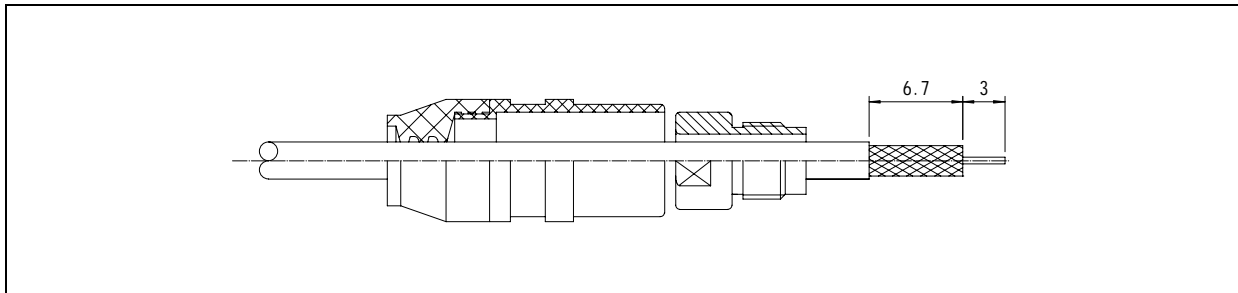
Cable code	Cable P/N	The highest frequency (GHz)
141	SFT-50-3-1, 670-141, 670-141SXE	18.0
1801	IW1801	34.0
3449	CXN3449	18.0

Notes on wire assembly: (For example: S7-RFP-8#-3449)

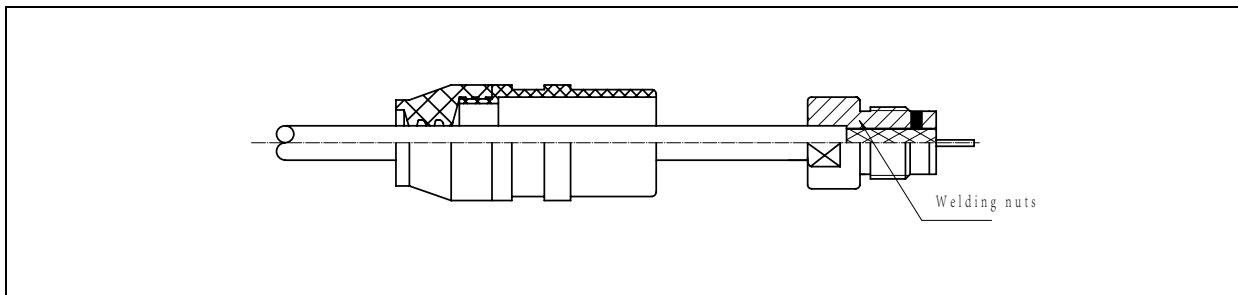
① Install the locator and nut on the cable as shown in the below.



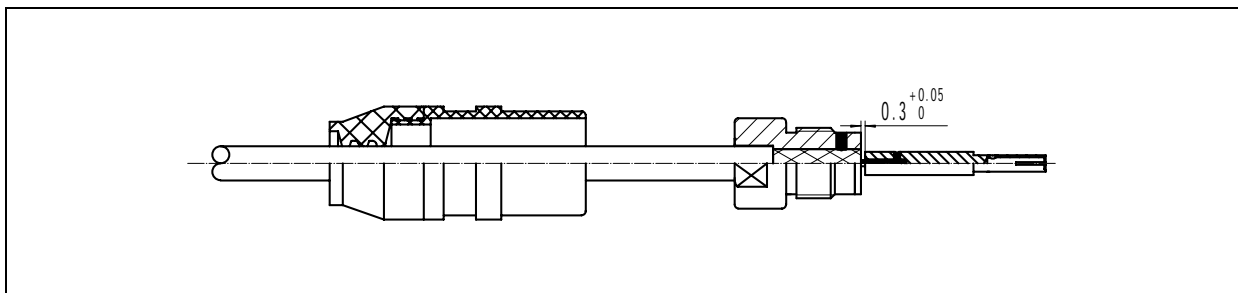
② Strip the cable to the required dimension (if the cable is flexible, it should be tin-dipped and the diameter of cable after the tin-dipped treatment shall not be more than 0.1mm)



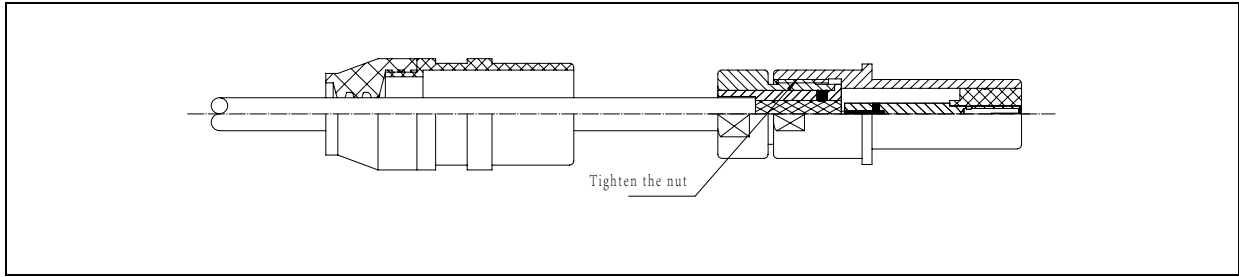
③ After solder the wire, there should be no soldered left in the outer wall and the product should be firm.



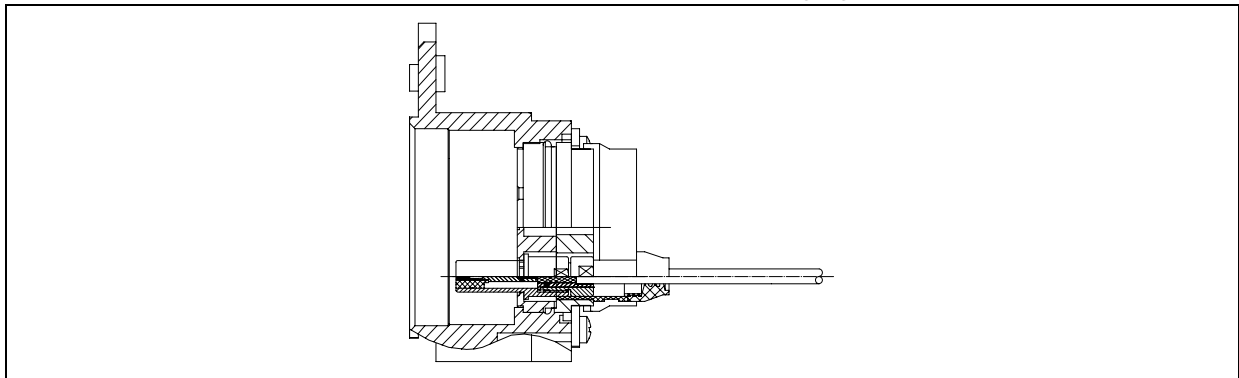
④ Solder the center conductor, 0.3+0.05 should be ensured with the tool.



⑤ Install the soldered assembly, install the assembly into the outer contact, the thread glue and the rivet are used to avoid loosening.



⑥ Install high frequency contacts into X4\X0 rack and panel connectors, click will be audible when the contacts are in place. If contacts are pulled and not be loosened, it means that contacts are in place, then the locator is installed, as shown in the following figure

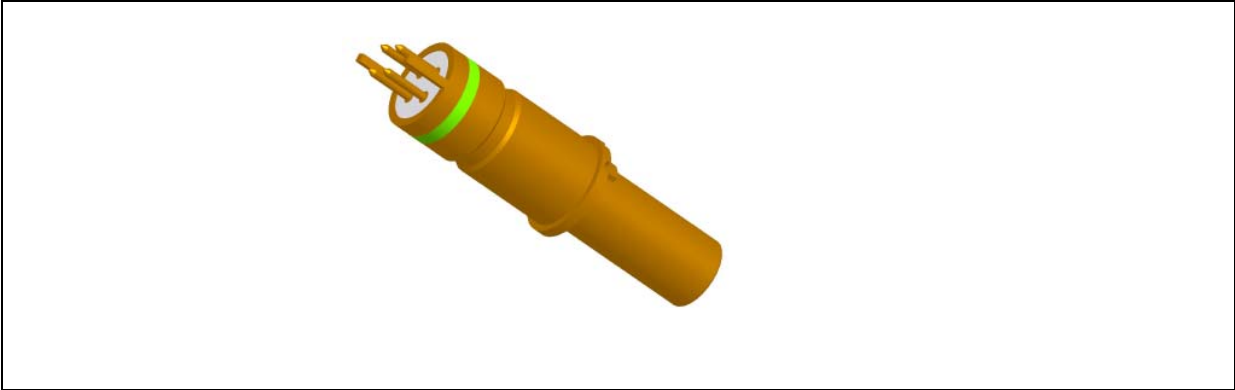


Differential contact

8# differential contacts can be installed in #8 insert of X4 series product to transmit the differential signal, ARINC429 signal and AFDX signal. P/Ns are as follows:

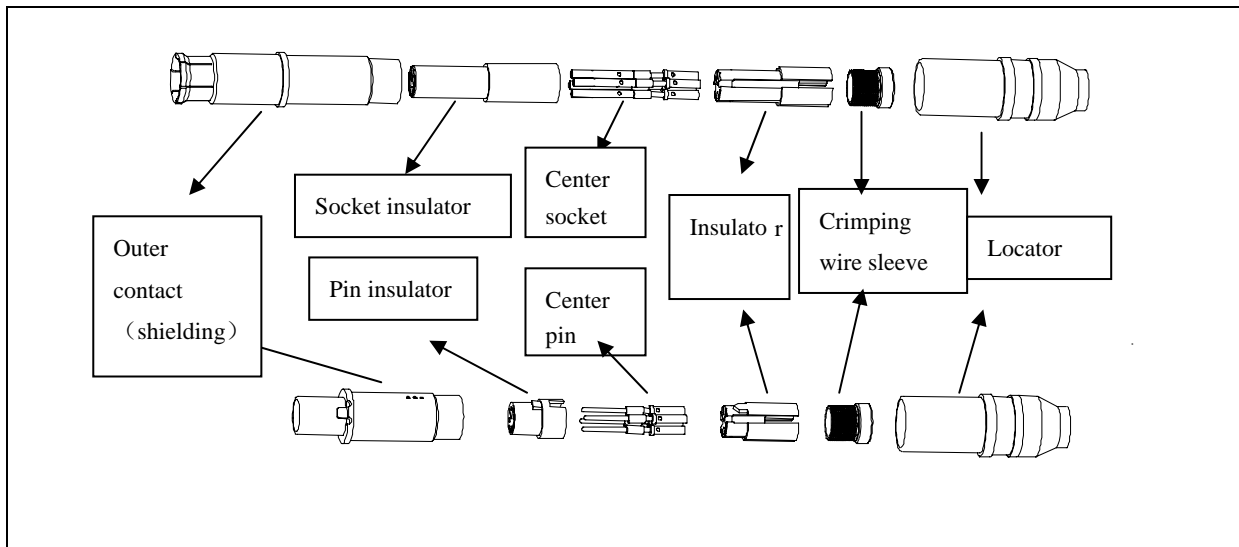
Basic series	CF	81/	411	-03
Contact style	81/- Pin 82/- Socket			
Contact type	211—a pair of crimped differential signals 411- two pairs of crimped differential signals 231- a pair of soldered PCB differential signals (Only for pin) 431- two pairs of soldered PCB differential signals (Only for pin)			
Contact length	Contact length (-03 denote the length of X4 and X0 contacts)			

The assembled #8 PCB differential contacts are delivered to customer. Customer only needs to install #8 PCB differential contacts in 8# insert and then solder it on PCB. During installing it in the connector, it should be noted that the protruding key should be in align with white “■” marked on the code plate. The contacts are in place when click is audible and contacts can not be rotated in the connector



8# crimped (wired) differential contacts are supplied in bulk and customers crimp the wire according to their requirements. For crimped contacts transmitting two pairs of differential signals (or AFDX bus), RAYCHEN CEC-RWC-18664 A-B wire is recommended. For crimped contacts transmitting one pair of differential signals (or ARINC429 bus), HPD700001070 Habia wire is recommended, for example crimped contacts transmitting two pairs of differential signals.

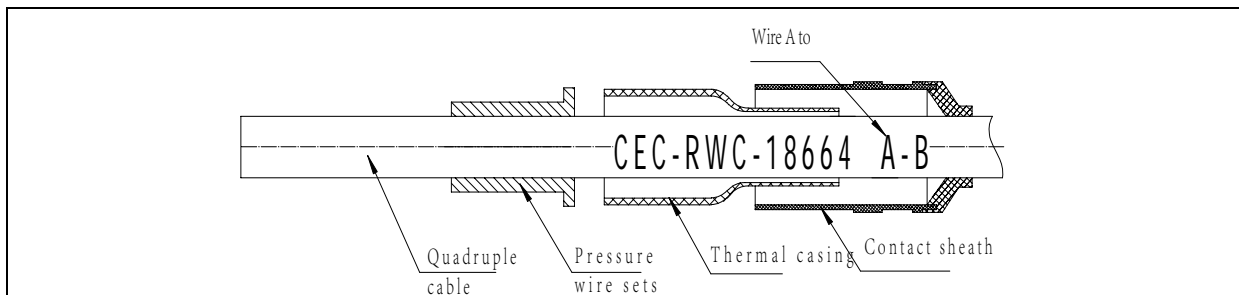
Contact structure



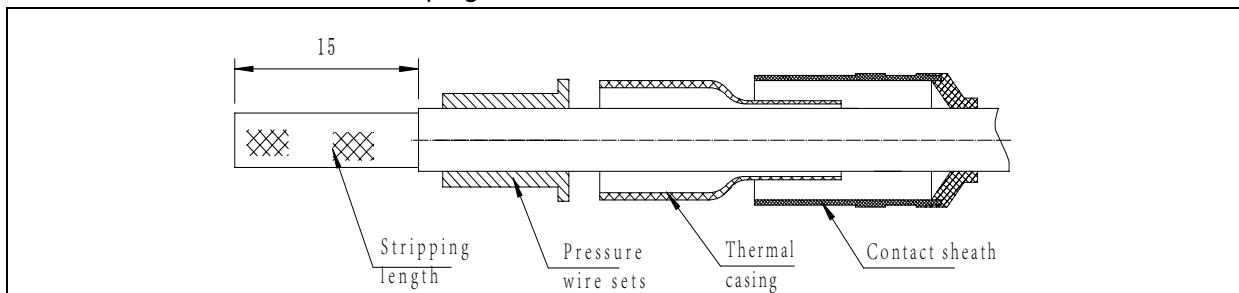
Strip wire

RAYCHEN CEC-RWC-18664 A-B (four cores) is used, A-B denotes the direction of wire, A direction is applicable to socket and B direction is applicable to pin, take the socket assembly as an example.

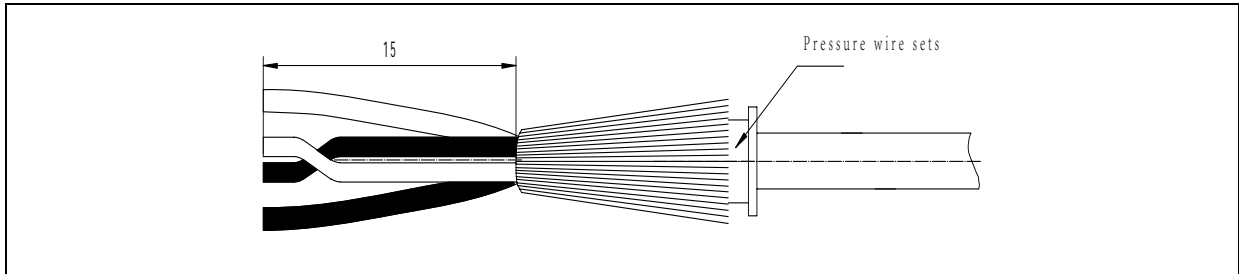
①: For example socket. Install the transparent heat shrinkage tube and sleeve for stress protection and the crimping sleeve for cable shielding and inner core fixation on the cable with wire A direction.



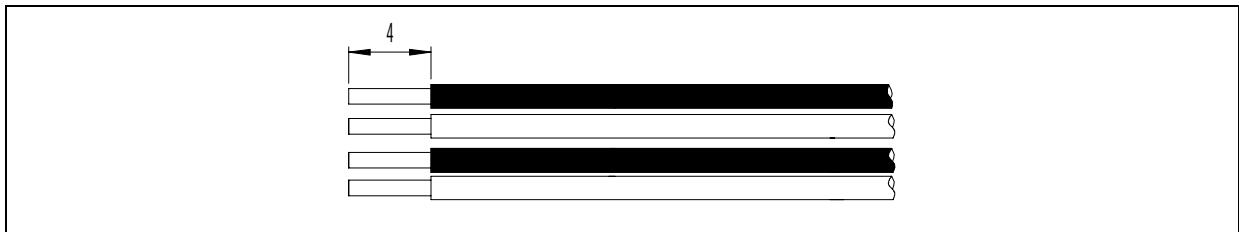
②: Strip the cable to the required dimension (10mm for pin and 15mm for socket), smooth the braid and fold back it on the crimping sleeve. Cut the inner stuff.



③

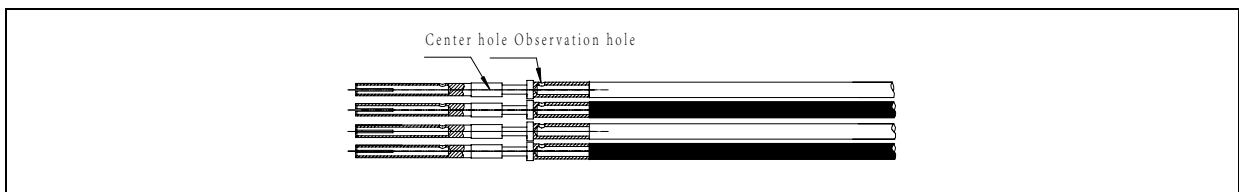


④: Strip the insulation of the core with four colors to the required dimension. Strands should be of equal length and be trim.



Crimp contact

The stripped cable is installed and crimped on the center contact as shown in the following figure, The procedures are as follows:

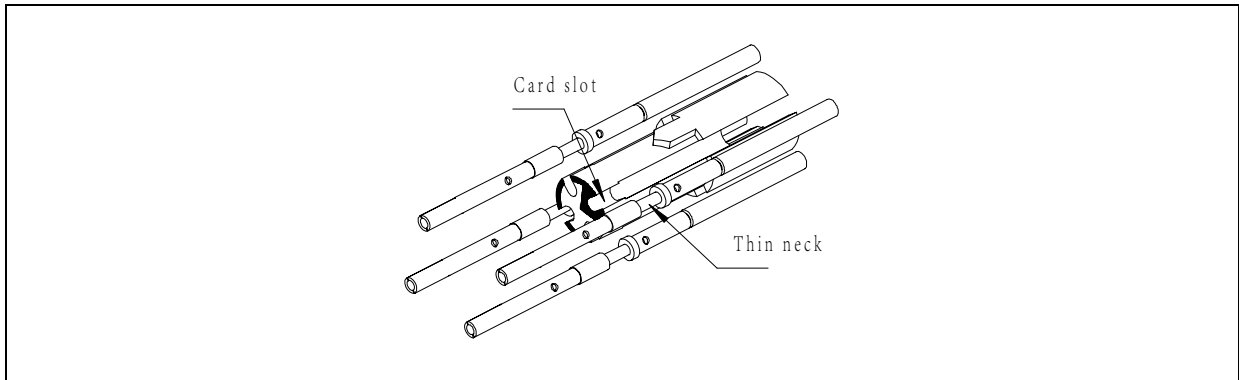


- ①: The core should exceed the inspection hole positioned on the crimping sleeve of the center contact;
- ②: Select the applicable crimping tool (YJQ-02 or M22520/2-01) and the positioner (XDWQ-CF01, XDWQ-CF02) and adjust the dial of the crimping tool (gear 4) according to the wire size;
- ③: Place the center contact in the adjusted crimping tool and insert the wire in the crimping sleeve of the center contact;
- ④: Squeeze the handle to the closed position, the handle will be loosened automatically. Remove the crimped contact.
- ⑤: The crimped contact should be clean and free from dirty, rust, deformation, the non-anticipated sharp edge, burr, the damaged plating and other defects. The indentation should be clear.

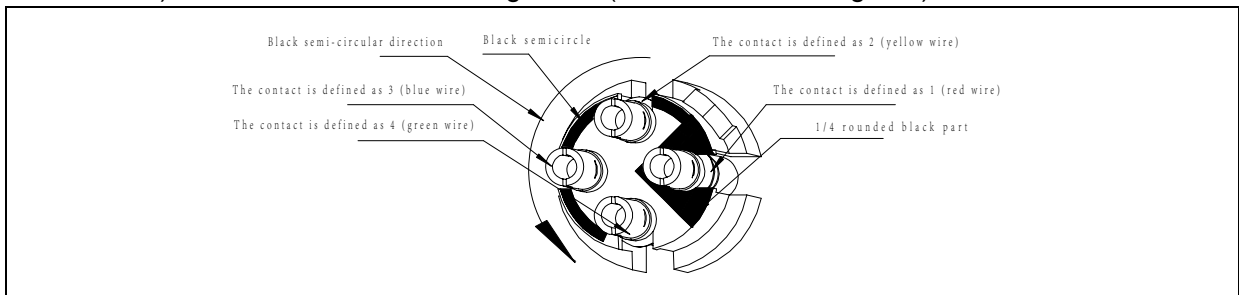
Install the center contact

Install the crimped center contact in the insulator and then in the outer contact. The details are as follows:

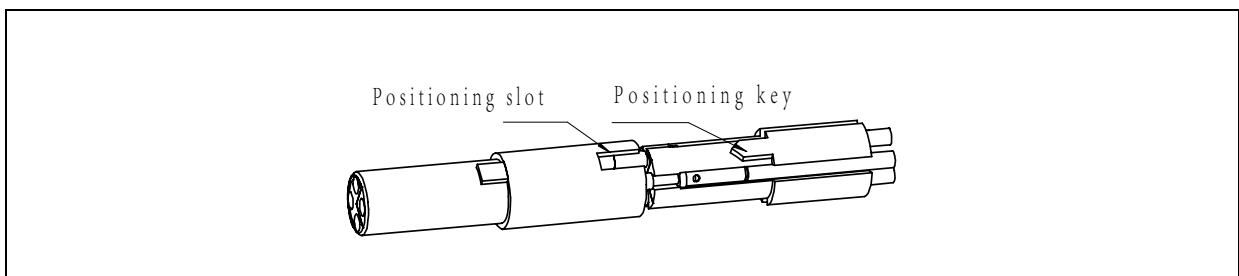
- ①: The narrow part on the center hole are installed on the groove of the insulator as shown in the following figure:



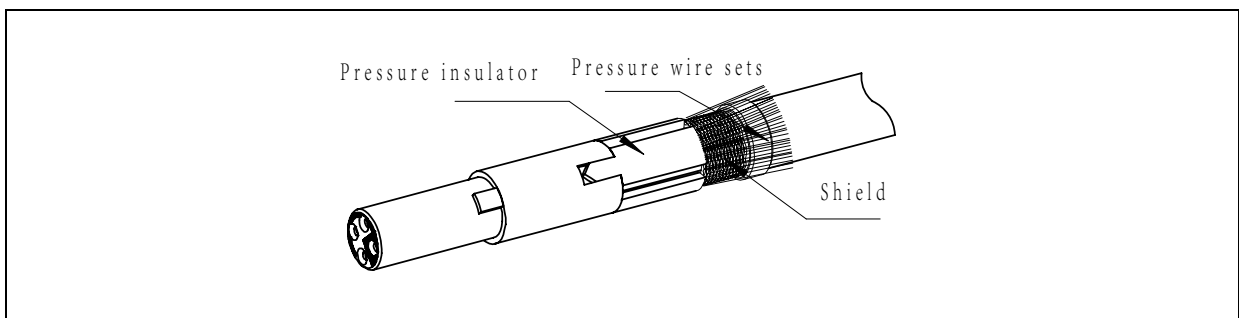
②: Center contact with No. 1 insert arrangement (the color of wire is red) should be installed in a quarter of circle with darkened segment along the direction of half of circle. The center contacts with No. 2 insert arrangement (the color of wire is yellow), with No. 3 insert arrangement (the color of wire is blue) and with No. 4 insert arrangement (the color of wire is green) are as shown



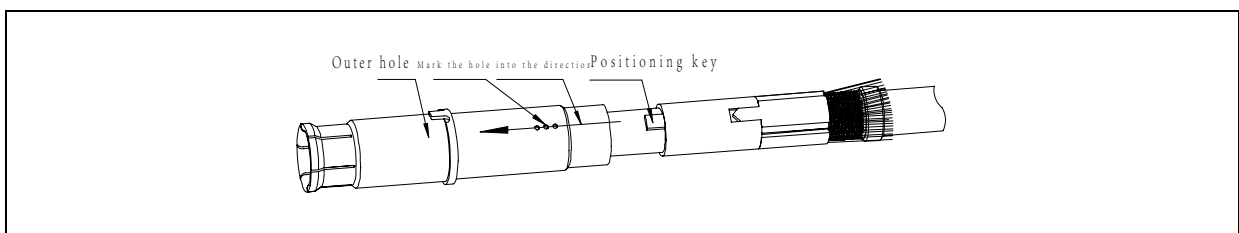
③: Mate the locating key with the locating keyway as shown in the following figure



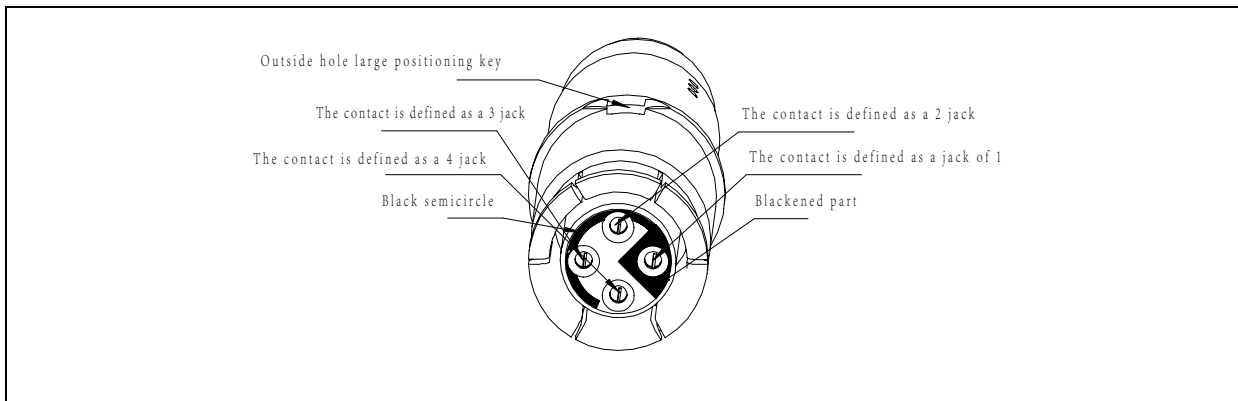
④: Push the crimping sleeve and make it close to the insulator. Unfold outside the braid.



⑤: The locating key is align with the marking hole and then is pushed into the outer hole. Press the crimping sleeve.

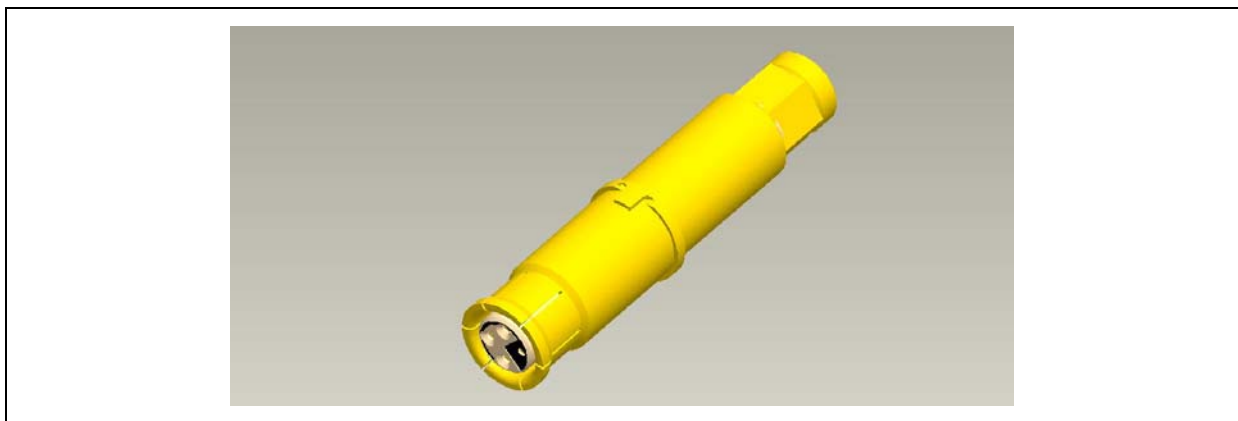


⑦: The correctly assembled contact is as shown

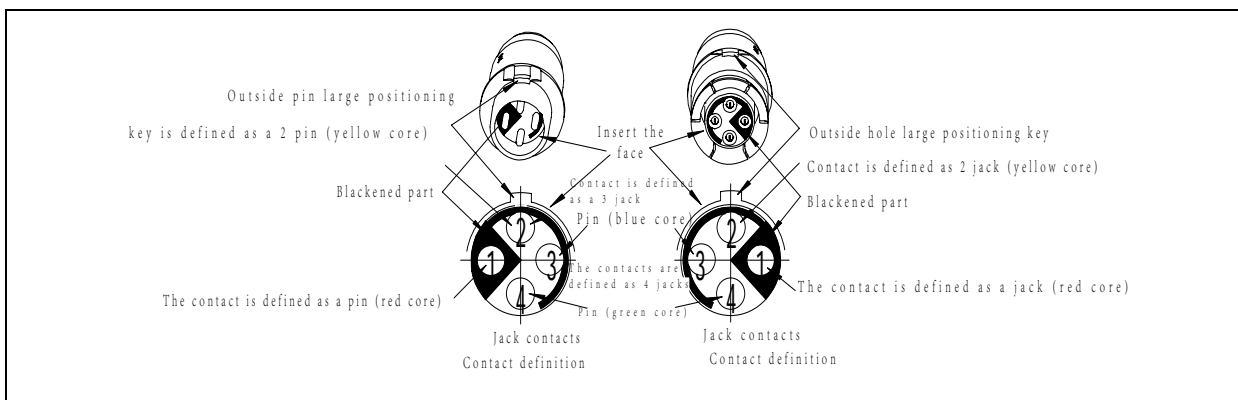


Crimp the outer contact

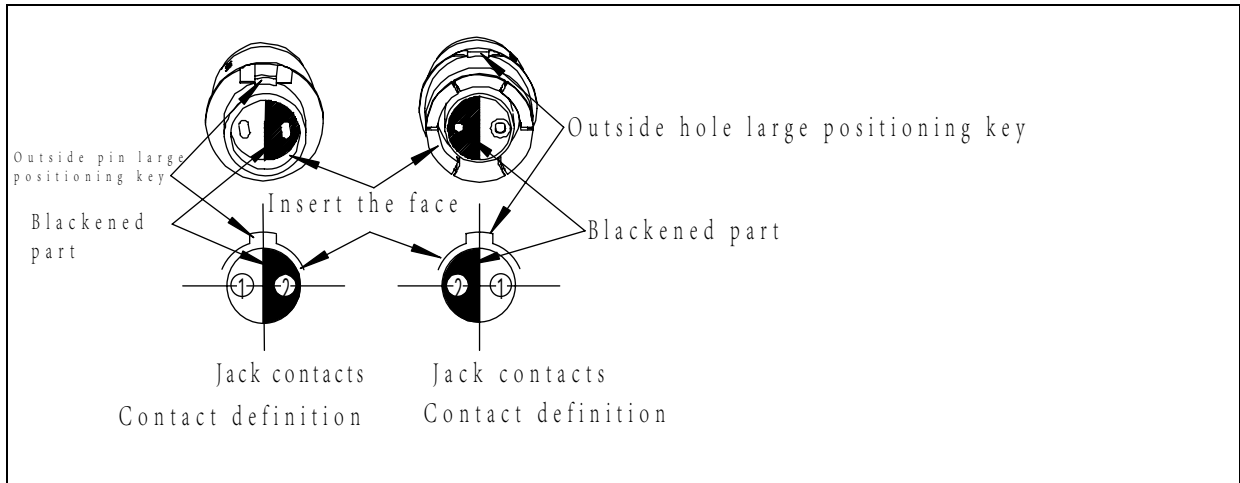
Hexagonally crimp the end of outer contact with the recommended crimping tool (M22520/5-01) and die (Y631) in accordance with the following figure. Trim the excessive braid and heat shrink the tube.



The insert arrangements after the crimping are as shown:



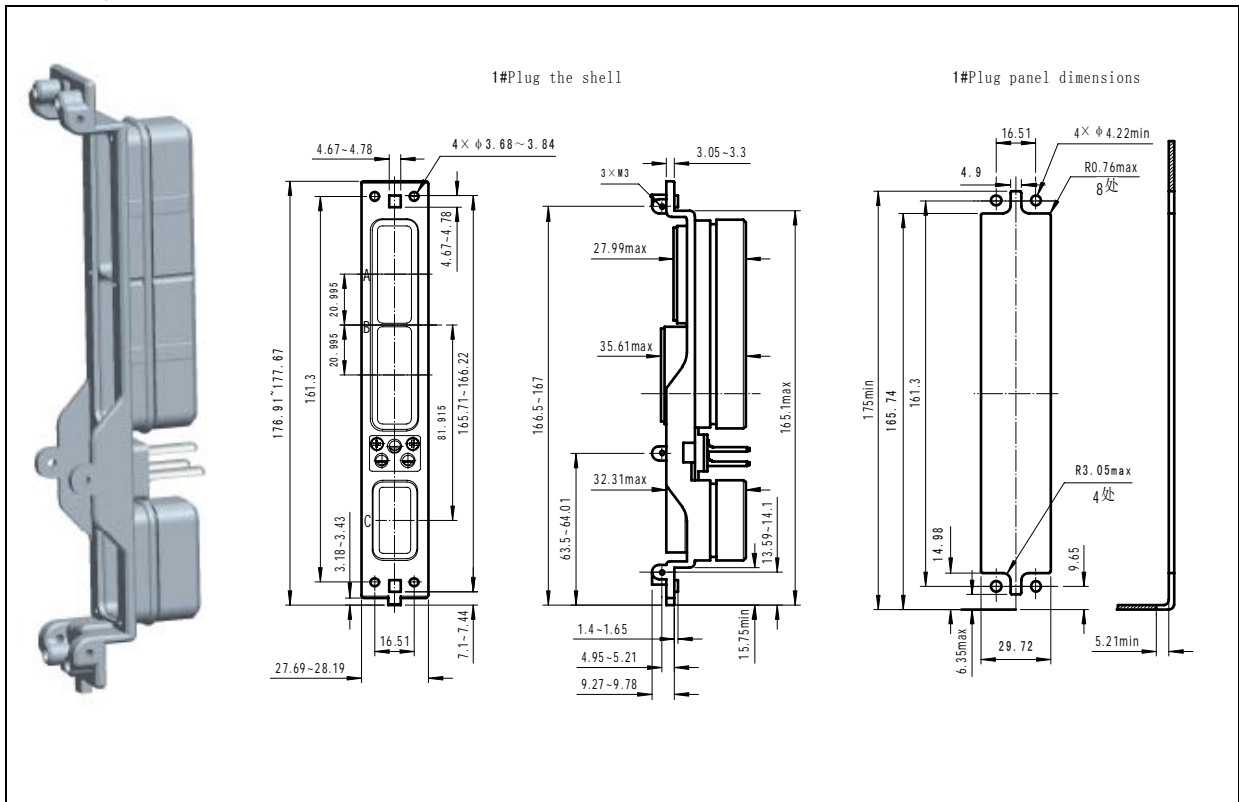
For crimped contacts transmitting a pair of differential signal (ARINC429 bus) , HPD700001070 Habia is recommended. Its crimping procedures and methods are same as those of the contact transmitting two pairs of differential signal. The effect figure and insert arrangement are as follows :



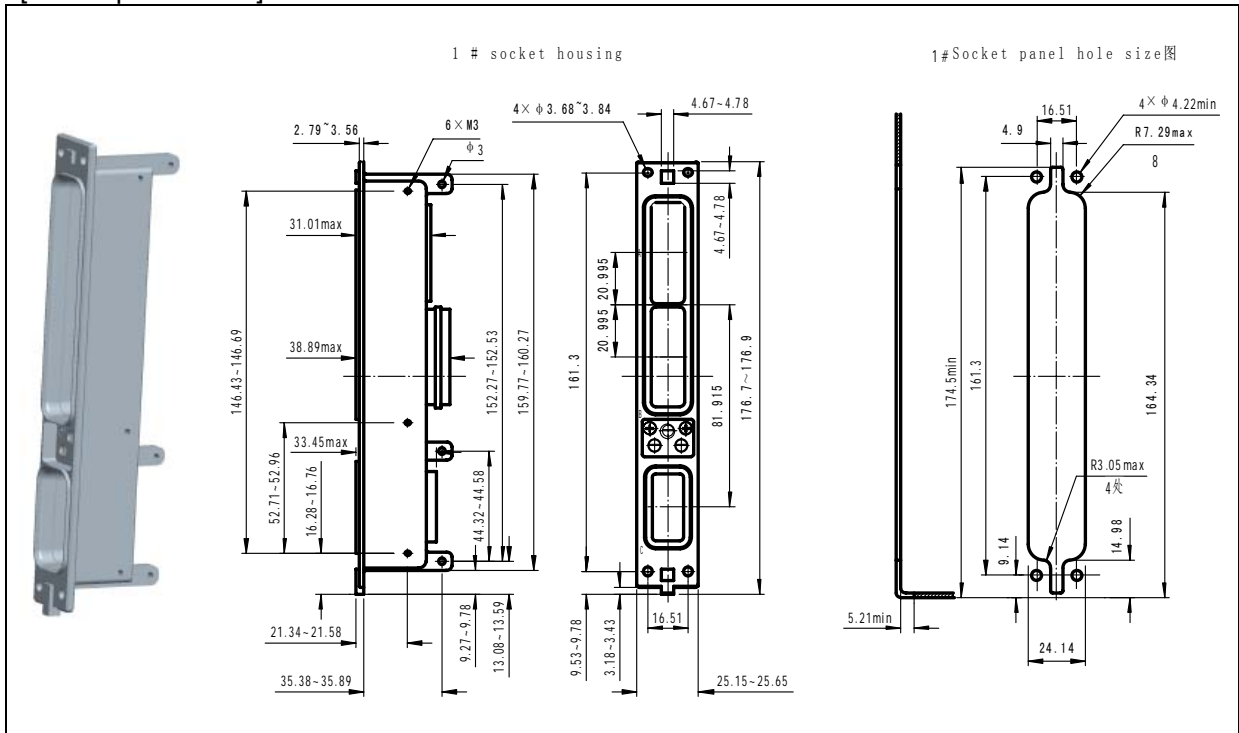


Outline dimensions

[1 # plug shell]

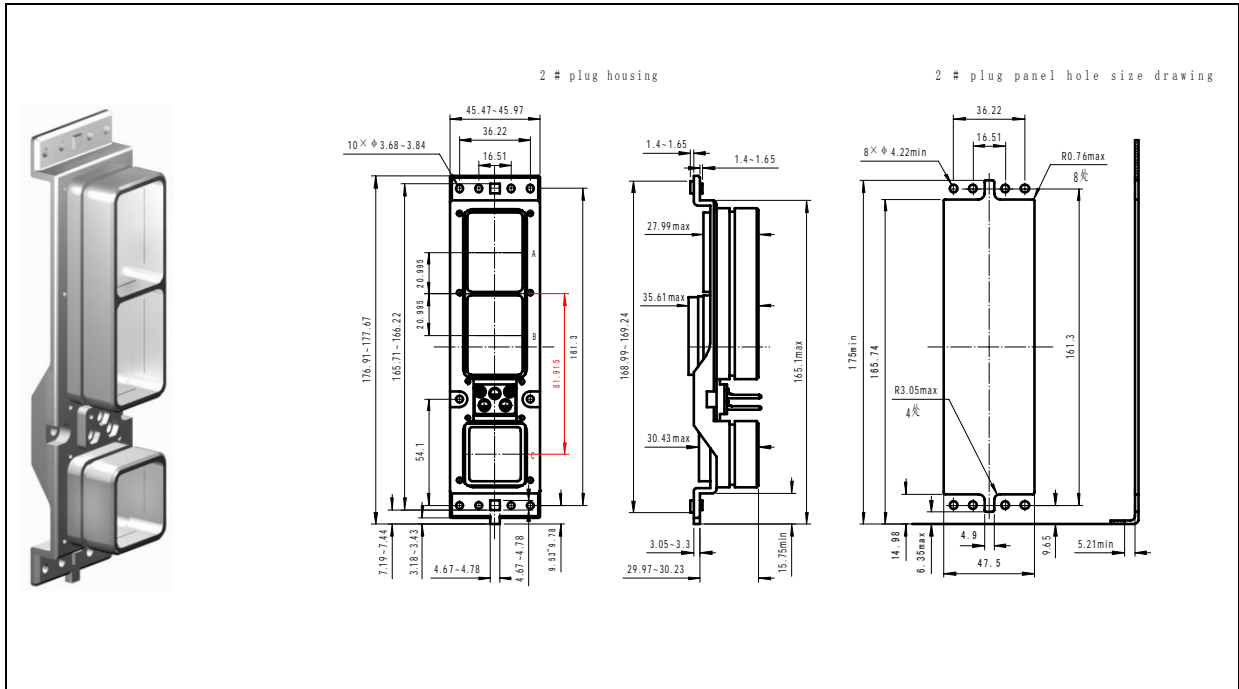


[1 # receptacle shell]

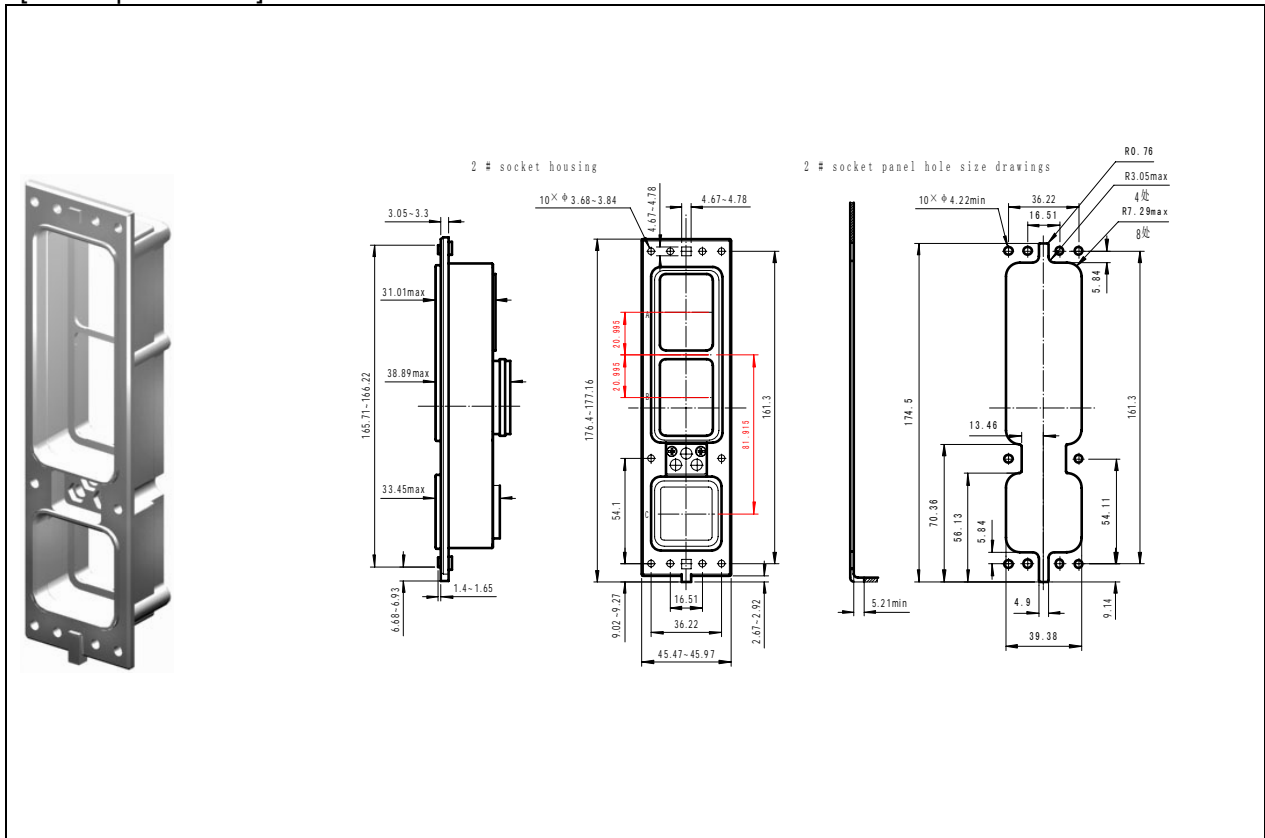




[2# plug shell]

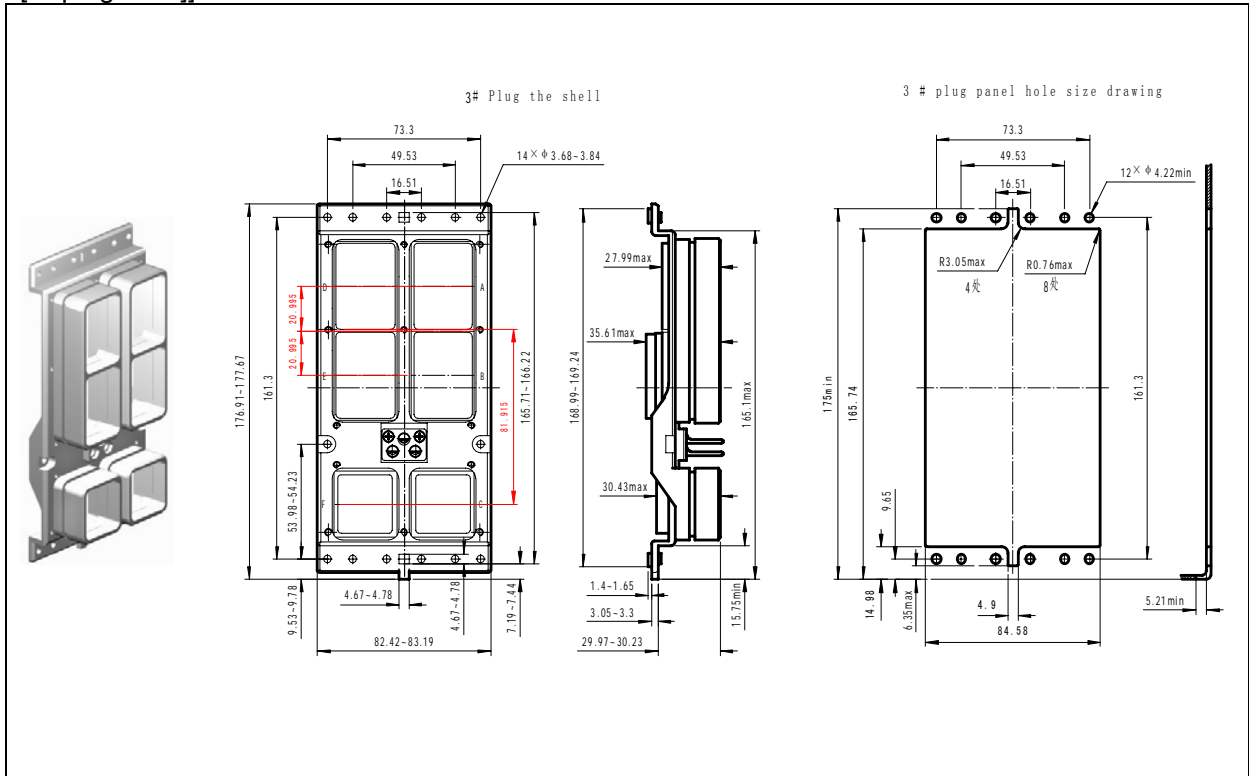


[2# receptacle shell]

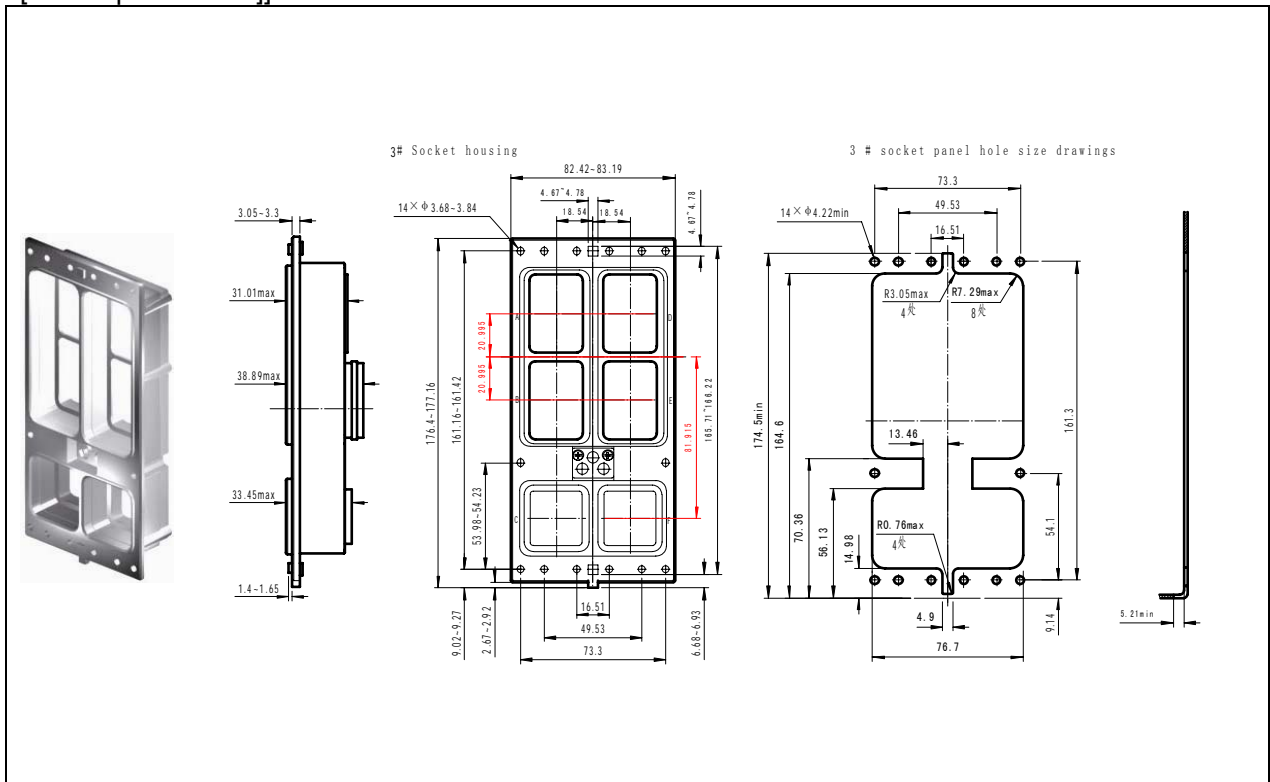




[3# plug shell]]

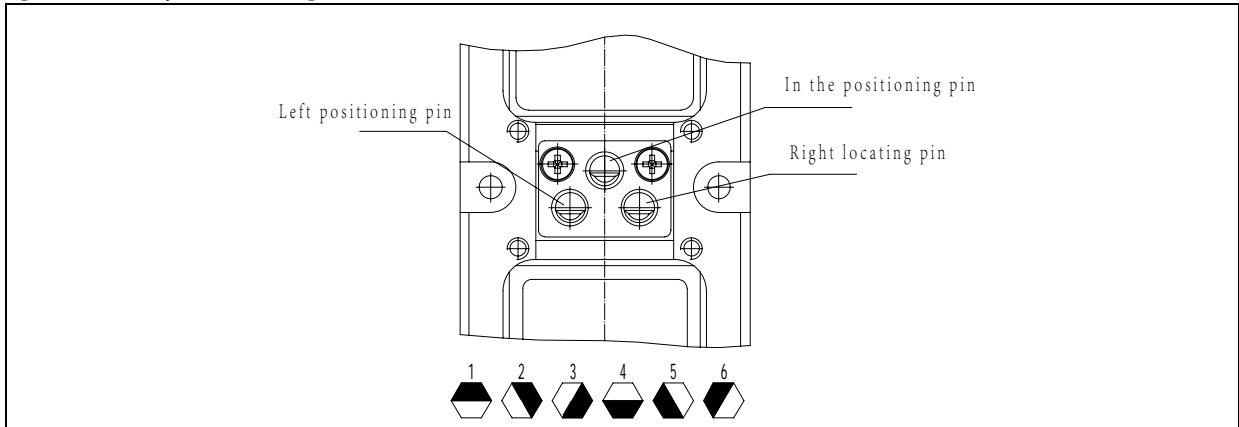


[3# receptacle shell]]



Mis-mating proof device

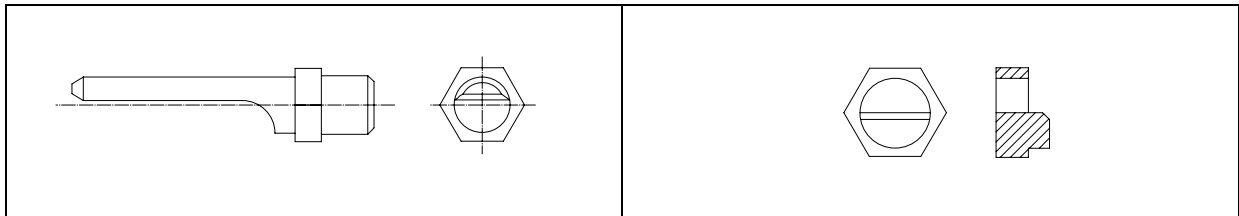
[Connector polarization]



Black area represents key position

[Key]

[Keyway]



Plug				Receptacle				Plug				Receptacle			
Left	Center	Right		Left	Center	Right		Left	Center	Right		Left	Center	Right	
00	—	—	—	00	—	—	—	25	1	1	3	25	2	4	4
01	1	1	1	01	4	4	4	26	2	1	3	26	2	4	3
02	2	1	1	02	4	4	3	27	3	1	3	27	2	4	2
03	3	1	1	03	4	4	2	28	4	1	3	28	2	4	1
04	4	1	1	04	4	4	1	29	5	1	3	29	2	4	6
05	5	1	1	05	4	4	6	30	6	1	3	30	2	4	5
06	6	1	1	06	4	4	5	31	1	1	2	31	3	4	4
07	1	1	6	07	5	4	4	32	2	1	2	32	3	4	3
08	2	1	6	08	5	4	3	33	3	1	2	33	3	4	2
09	3	1	6	09	5	4	2	34	4	1	2	34	3	4	1
10	4	1	6	10	5	4	1	35	5	1	2	35	3	4	6
11	5	1	6	11	5	4	6	36	6	1	2	36	3	4	5
12	6	1	6	12	5	4	5	37	1	2	1	37	4	3	4
13	1	1	5	13	6	4	4	38	2	2	1	38	4	3	3
14	2	1	5	14	6	4	3	39	3	2	1	39	4	3	2
15	3	1	5	15	6	4	2	40	4	2	1	40	4	3	1
16	4	1	5	16	6	4	1	41	5	2	1	41	4	3	6
17	5	1	5	17	6	4	6	42	6	2	1	42	4	3	5
18	6	1	5	18	6	4	5	43	1	2	6	43	4	3	4
19	1	1	4	19	1	4	4	44	2	2	6	44	5	3	3
20	2	1	4	20	1	4	3	45	3	2	6	45	5	3	2
21	3	1	4	21	1	4	2	46	4	2	6	46	5	3	1
22	4	1	4	22	1	4	1	47	5	2	6	47	5	3	6
23	5	1	4	23	1	4	6	48	6	2	6	48	5	3	5
24	6	1	4	24	1	4	5	49	1	2	5	49	6	3	4

Plug			Receptacle			Plug			Receptacle						
Left	Center	Right	Left	Center	Right	Left	Center	Right	Left	Center	Right				
50	2	2	5	50	6	3	3	75	3	3	1	75	4	2	2
51	3	2	5	51	6	3	2	76	4	3	1	76	4	2	1
52	4	2	5	52	6	3	1	77	5	3	1	77	4	2	6
53	5	2	5	53	6	3	6	78	6	3	1	78	4	2	5
54	6	2	5	54	6	3	5	79	1	3	6	79	5	2	4
55	1	2	4	55	1	3	4	80	2	3	6	80	5	2	3
56	2	2	4	56	1	3	3	81	3	3	6	81	5	2	2
57	3	2	4	57	1	3	2	82	4	3	6	82	5	2	1
58	4	2	4	58	1	3	1	83	5	3	6	83	5	2	6
59	5	2	4	59	1	3	6	84	6	3	6	84	5	2	5
60	6	2	4	60	1	3	5	85	1	3	5	85	5	2	4
61	1	2	3	61	2	3	4	86	2	3	5	86	5	2	3
62	2	2	3	62	2	3	3	87	3	3	5	87	6	2	2
63	3	2	3	63	2	3	2	88	4	3	5	88	6	2	1
64	4	2	3	64	2	3	1	89	5	3	5	89	6	2	6
65	5	2	3	65	2	3	6	90	6	3	5	90	6	2	5
66	6	2	3	66	2	3	5	91	1	3	4	91	1	2	4
67	1	2	2	67	3	3	4	92	2	3	4	92	1	2	3
68	2	2	2	68	3	3	3	93	3	3	4	93	1	2	2
69	3	2	2	69	3	3	2	94	4	3	4	94	1	2	1
70	4	2	2	70	3	3	1	95	5	3	4	95	1	2	6
71	5	2	2	71	3	3	6	96	6	3	4	96	1	2	5
72	6	2	2	72	3	3	5	97	1	3	3	97	2	2	4
73	1	3	1	73	4	2	4	98	2	3	3	98	2	2	3
74	2	3	1	74	4	2	3	99	3	3	3	99	2	2	2

Contact insertion and extraction and the crimping tool

Contact size	Contact style	The mating dia. (mm)	I.D. of wire barrel (mm)	Cross section (mm ²)	Wire gauge AWG	O.D. of wire insulation (mm)	Crimping tool P/N
22D	Pin	Φ0.77±0.01	Φ0.89	0.125	26	0.76~1.37	M81969/ 1-01
	Socket			0.2	24		
20 [#]	Pin	Φ1.00	Φ1.00	0.3	22	1.02~2.11	M81969/ 1-02
	Socket			0.5	20		
16 [#]	Pin	Φ1.60	Φ1.68	0.5	20	1.65~2.77	M81969/ 1-03
	Socket			0.8	18		
12 [#]	Pin	Φ2.40	Φ2.50	1.0	16	2.46~3.61	M81969/ 28-02
	Socket			1.2	14		
				2.0	12		
				3.0			

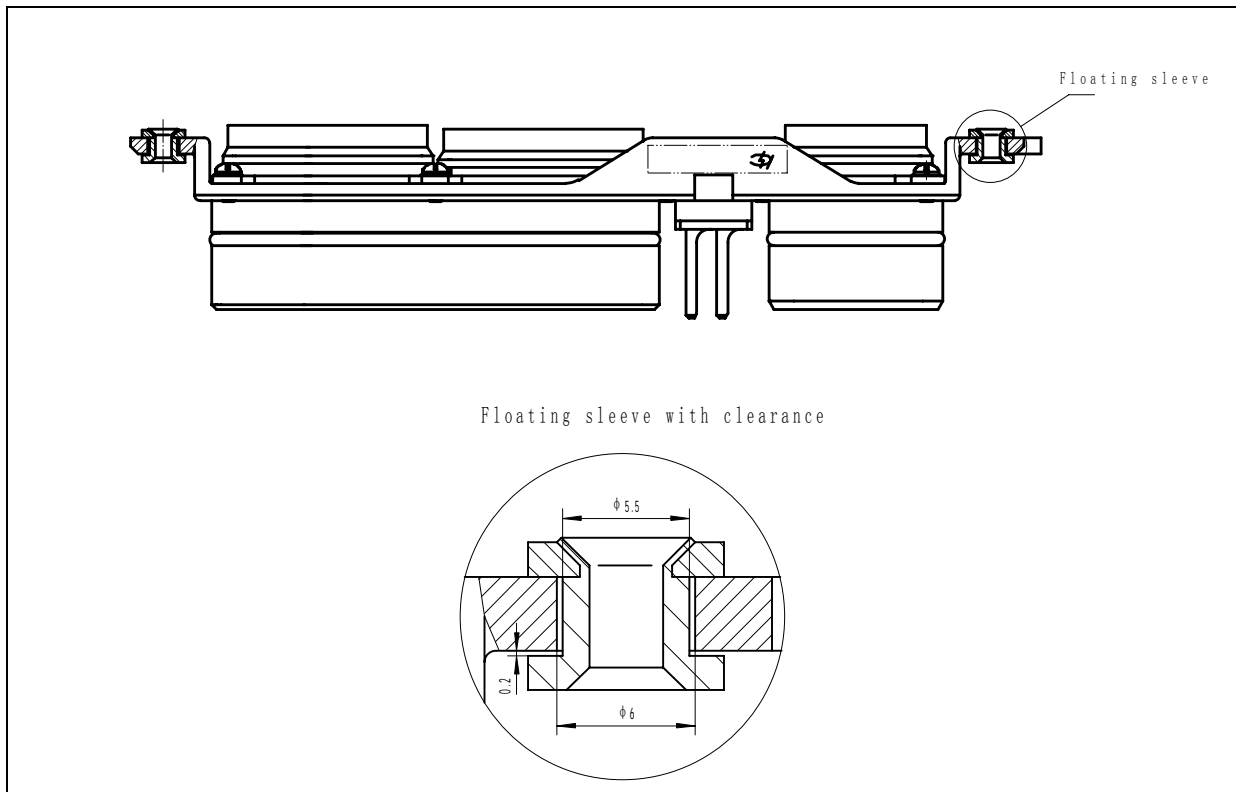
Note: the removal tool is supplied with products. It can not be mixed with other removal tool especially for LA711 removal tool in case of failed locking of contact

Contact size, wire and dial for X4 and X0 series products:

No.	Crimping tool P/N	Positioner P/N	Contact size	Wire barrel		Stripped length (L)mm	Wire gauge AWG (cross section mm ²)	National wire gauge (mm ²)	Dia.
				O.D. (mm)	I.D. (mm)				
1	YJQ-02	XDWQ-33	22D contact	1.32	0.89	3.5~4.0	26 (0.13)	0.125	2
							24 (0.2)	0.2	3
							22 (0.32)	0.3	4
2	YJQ-02	XDWQ-34	20# contact	1.78	1.0	4.5~5	24 (0.2)	0.2	8
							22 (0.32)	0.3	8
							20 (0.52)	0.52	8
3	XCXY-02	DWQ-47	16# contact	2.62	1.68	7~7.5	16 (1.3)	1.3	5
							18 (0.82)	0.82	6
							20 (0.52)	0.52	7
4	XCXY-02	DWQ-48	12# contact	3.84	2.5	7~7.5	12 (3.3)	3.3	3
							14 (2)	2	3

Float mounting figure

Install the float axis on the installation hole of plug or receptacle to mate plug and receptacle. The following figure is the float mounting of X4 series plug shell



Annex V: PCB receptacle and recommended PCB cut-out dimensions

X4 series receptacle is composed of the standard crimped receptacle and PCB soldered receptacle. PCB soldered receptacle consists of the front removal PCB receptacle and the rear removal PCB receptacle. At present, the rear removal PCB receptacle is widely used and is of sealing. However, contact can be installed and removed only from the rear of the connector, if the connector is soldered on PCB, the contacts can not be removed or replaced. The front removal contact can be installed and removed only from the front of the connector, even if the connector is soldered on PCB, the several contacts can be still replaced and the maintenance can be improved. Therefore, we recommend that the rear removal PCB receptacle should be replaced by the front removal PCB receptacle.

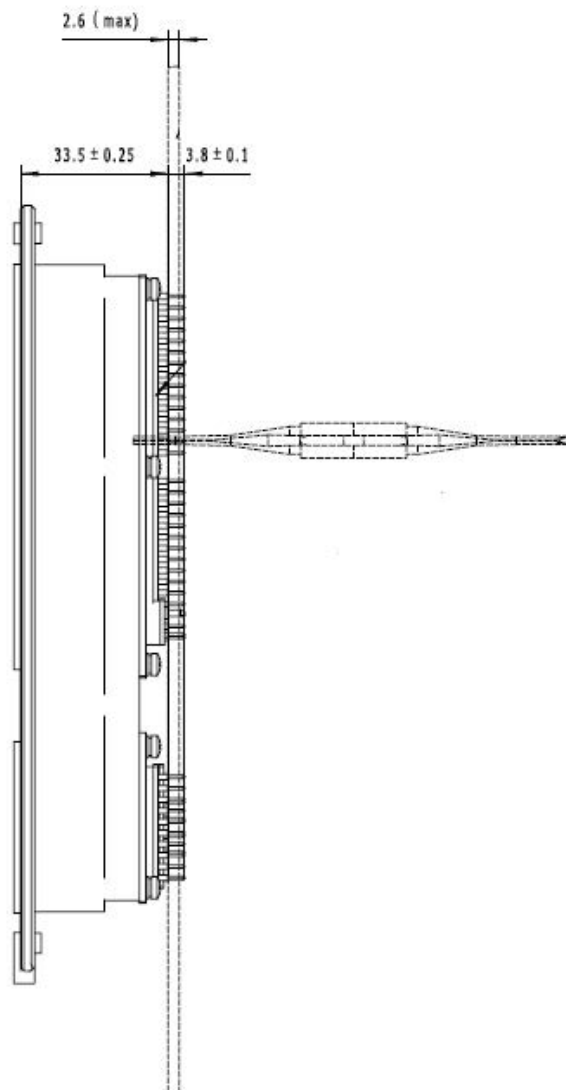


Figure 5.1: Rear removal PCB receptacle

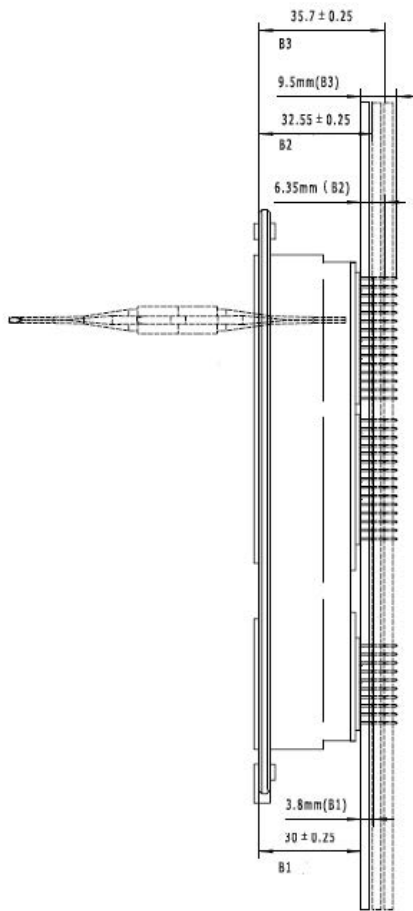
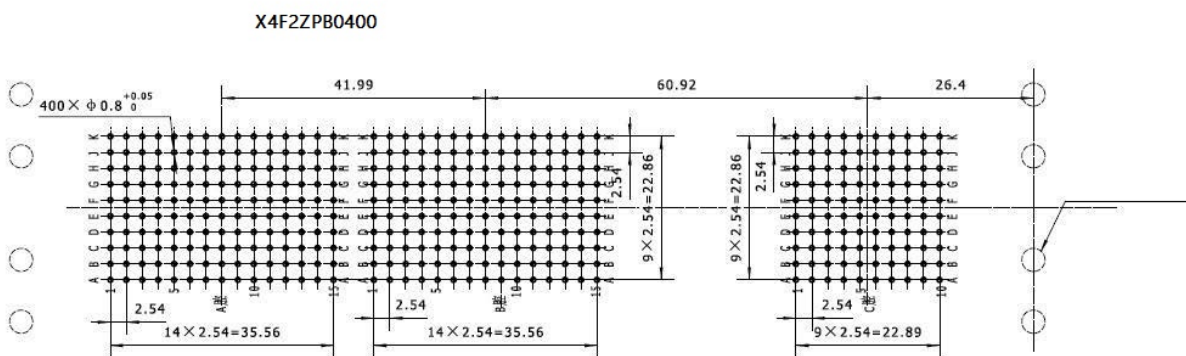


Figure 5.2: Front removal PCB receptacle

X4 series products can combine any module according to customer's requirements. The product with the same size shell and the different combination has the same outline dimensions and installation dimension and the relative positions of every cavity are same. Therefore the recommended cut-out dimension of one product can represents that of every shell size of product, the module in the corresponding cavity can be replaced by the module in table 5 and the cut-out dimensions can be replaced by the those in table5

1. Take X4F2ZPB0400 as an example for X4-2 series product:



2. Take X4F3ZPB0771 as an example for X4-3 series product:

X4F3ZPB0771

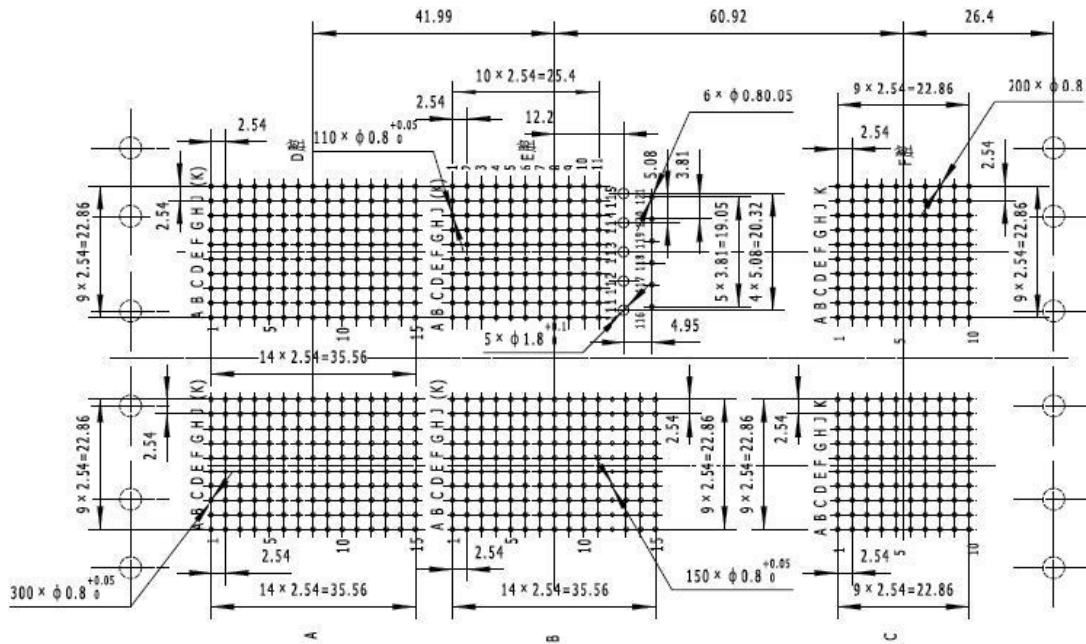
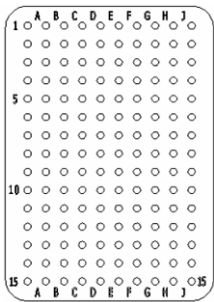
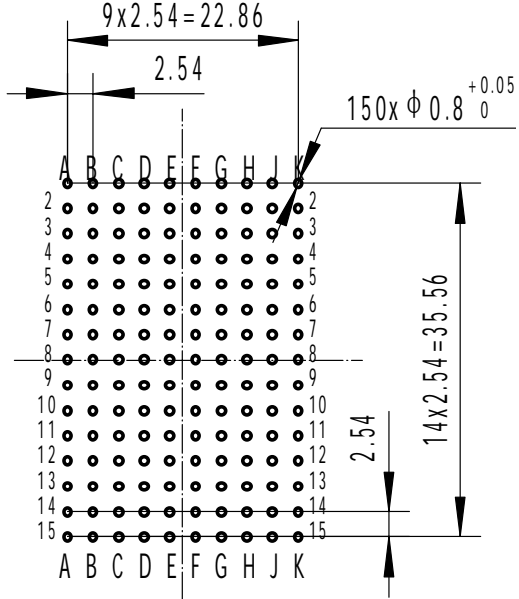
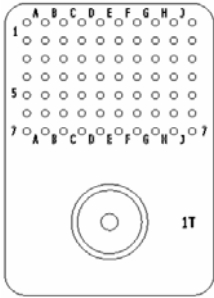
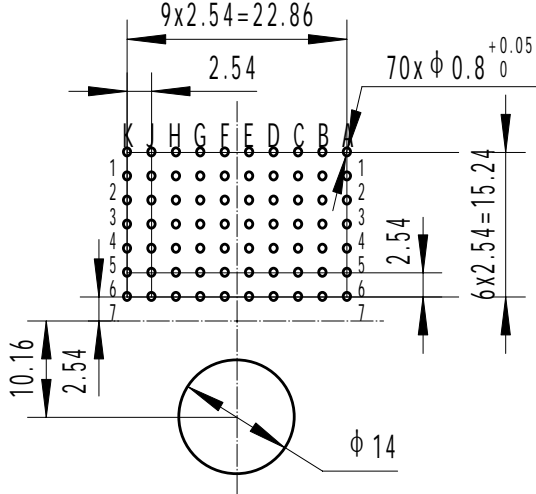
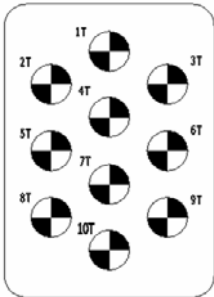
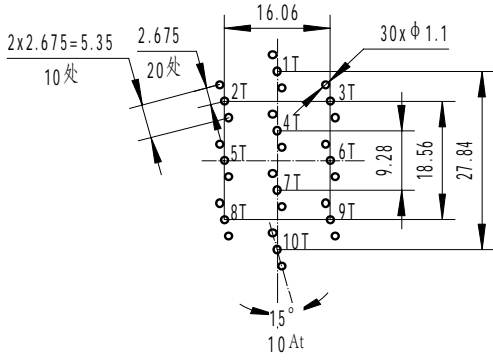
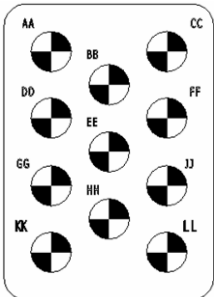
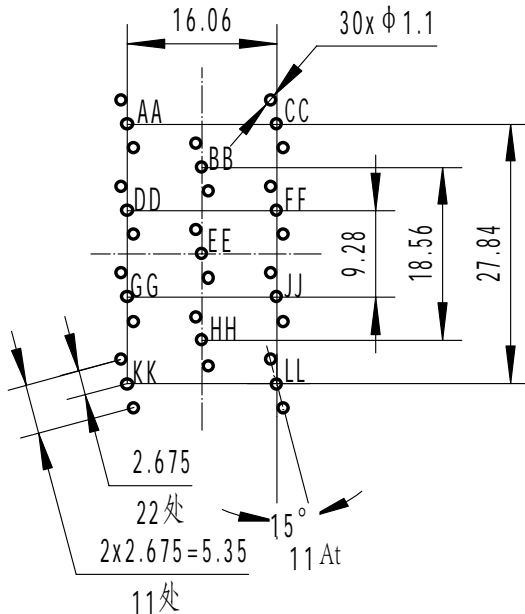
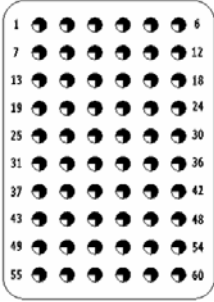
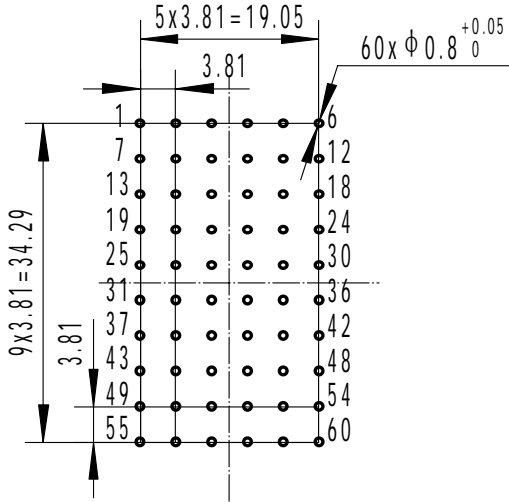
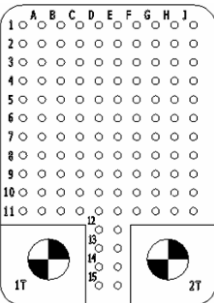
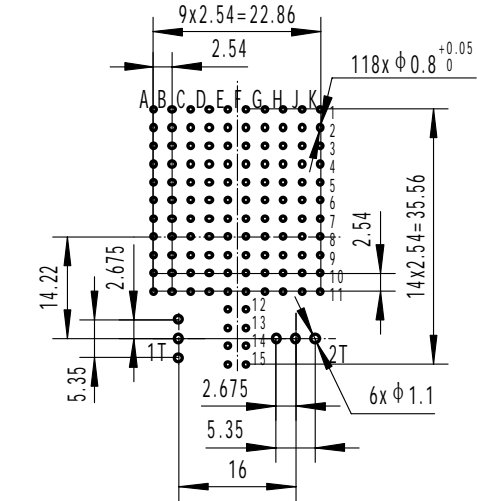
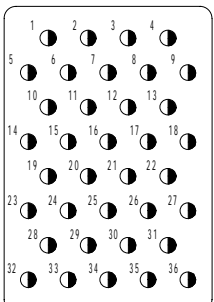
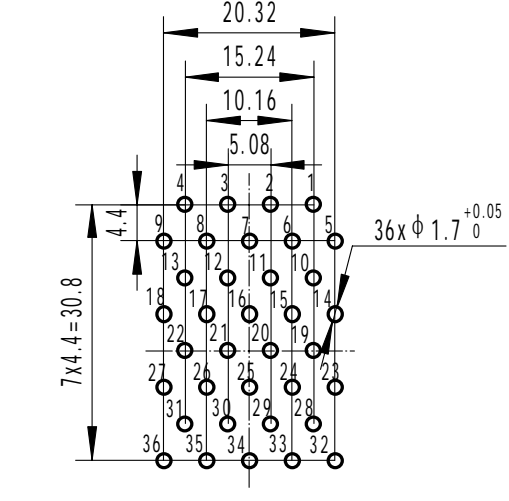
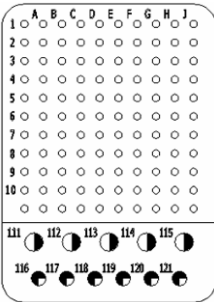
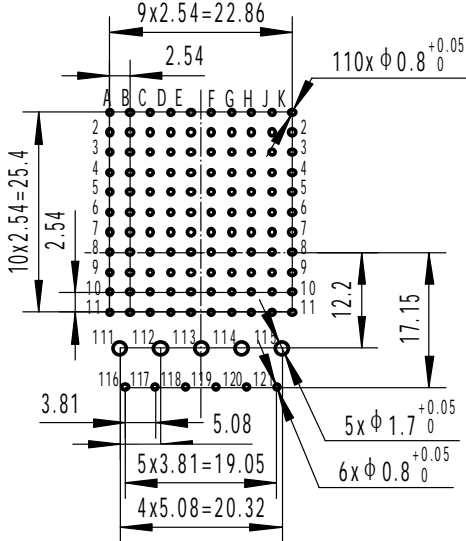
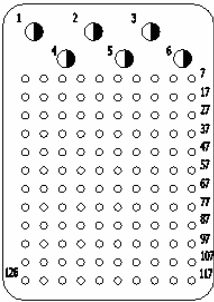
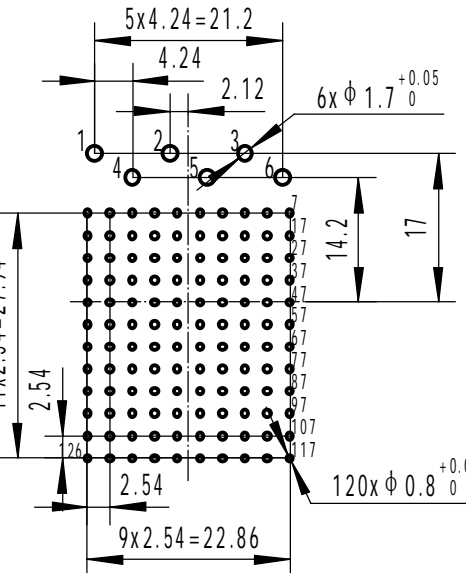
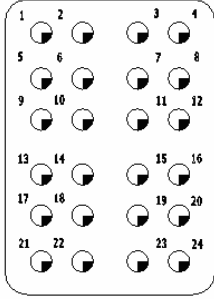
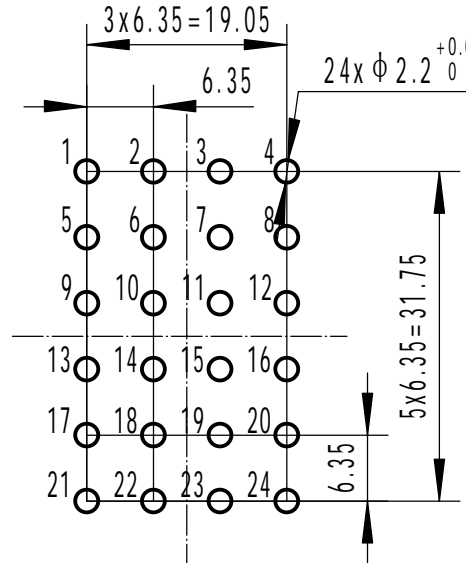


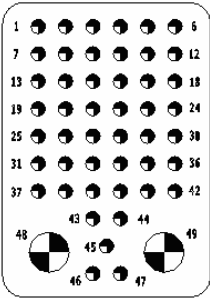
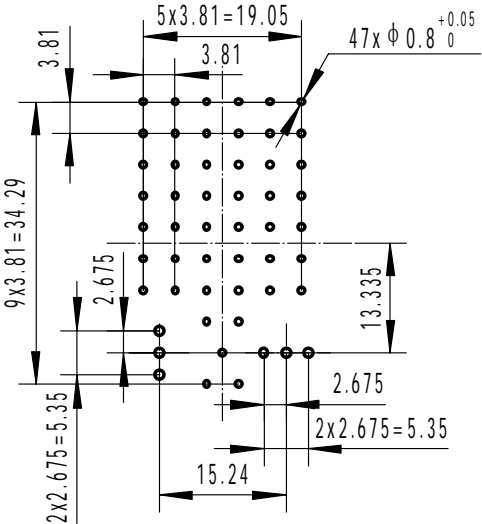
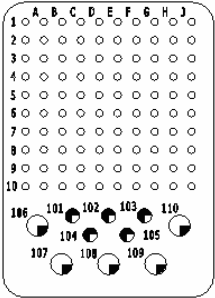
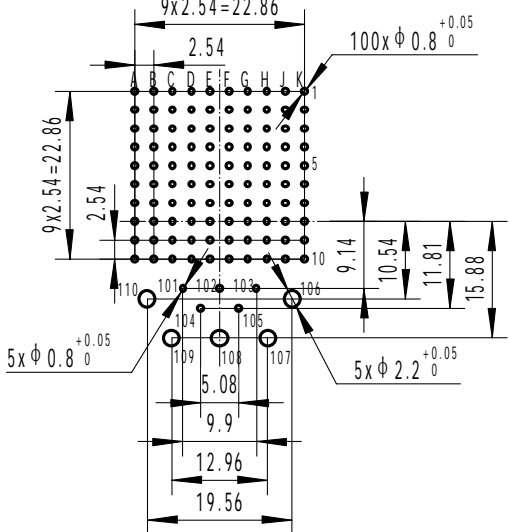
Table5: Recommended Panel Cut-out Dimensions for X4 Series Products Insert Arrangement

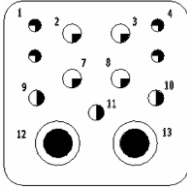
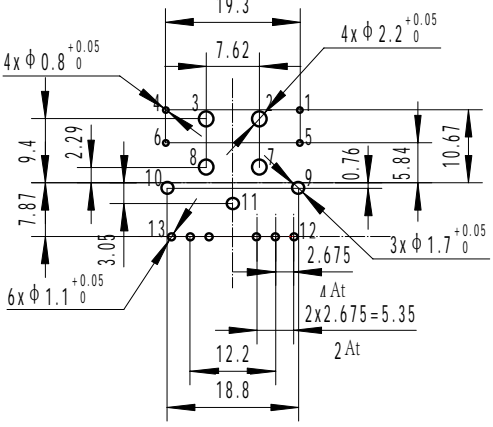
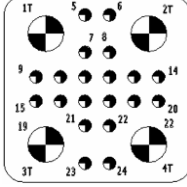
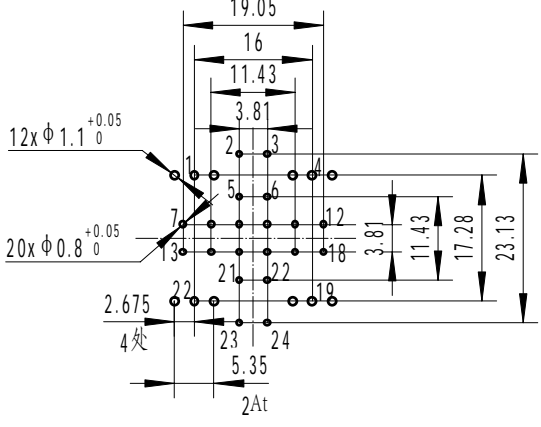
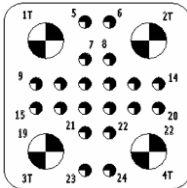
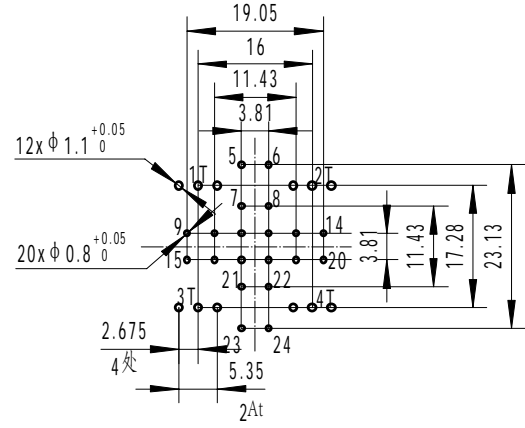
Standard Shell A, B, D or E Cavity Insert Arrangements				
No	Insulator code	Contact type/quantity	Insert arrangement (Front face view of male insert)	PCB cut-out dimension
1	I - 150	150-22D		

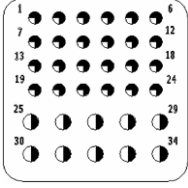
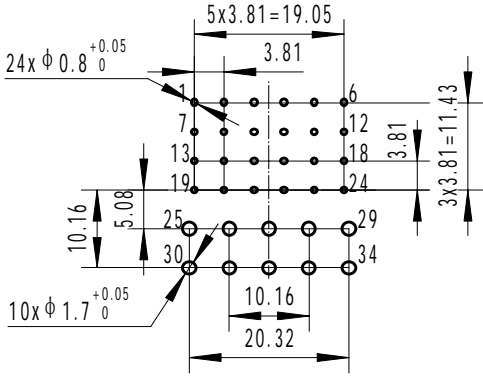
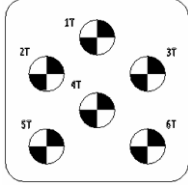
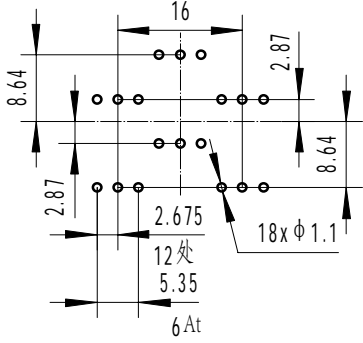
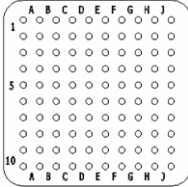
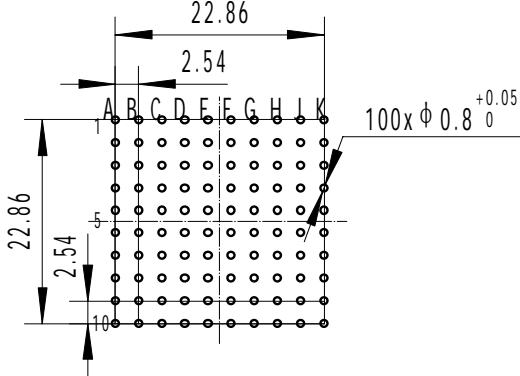
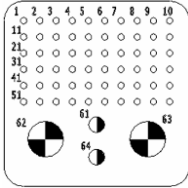
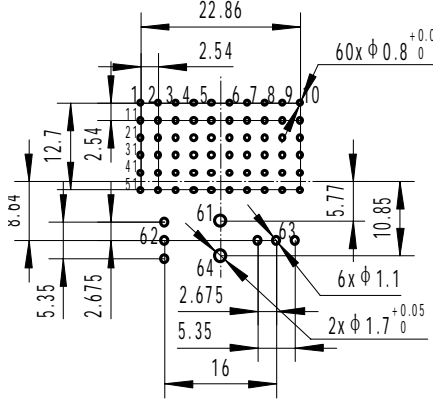
2	I - 70C1	70-22D 1-1#		
3	I - 10T10	10-8#		
4	I - 11T11	11-8#		

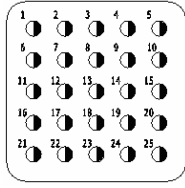
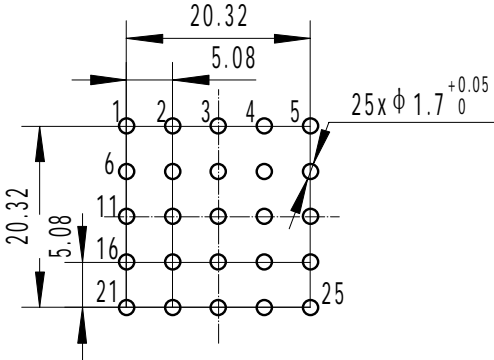
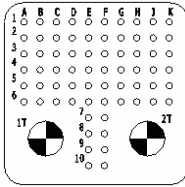
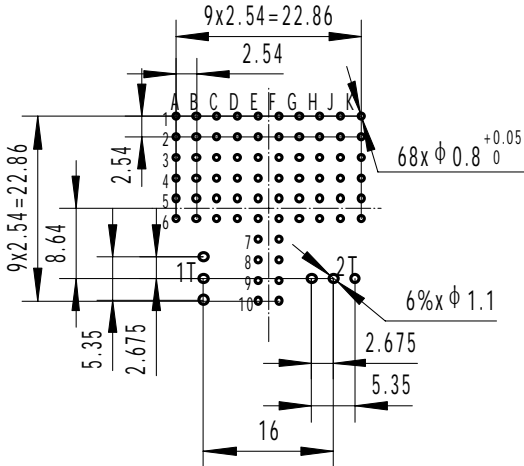
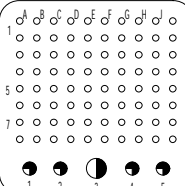
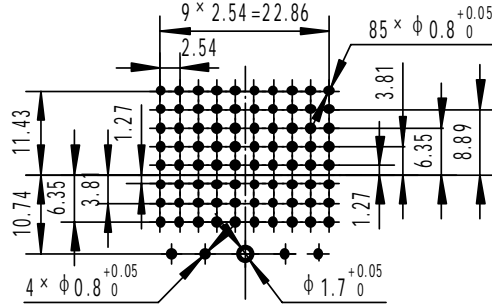
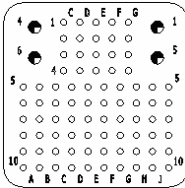
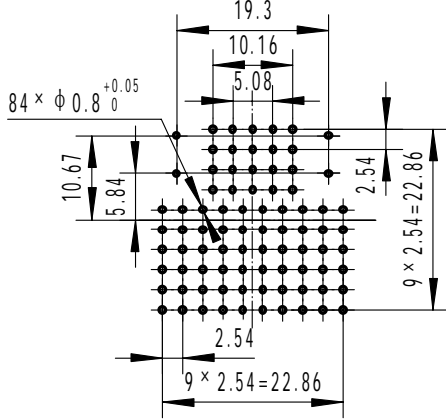
5	I - 60	60-20#		
6	I - 120T2	118-22D 2-8#		
7	I - 36A	36-16#		

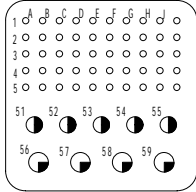
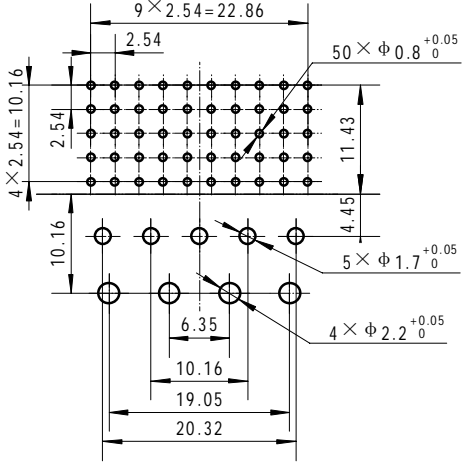
8	I - 121	110-22D 6-20# 5-16#		
9	I - 126	120-22D 6-16#		
10	I - 24	24-12#		

11	I - 47T2	47-20# 2-8#		
12	I - 110	100-22D 5-20# 5-12#		

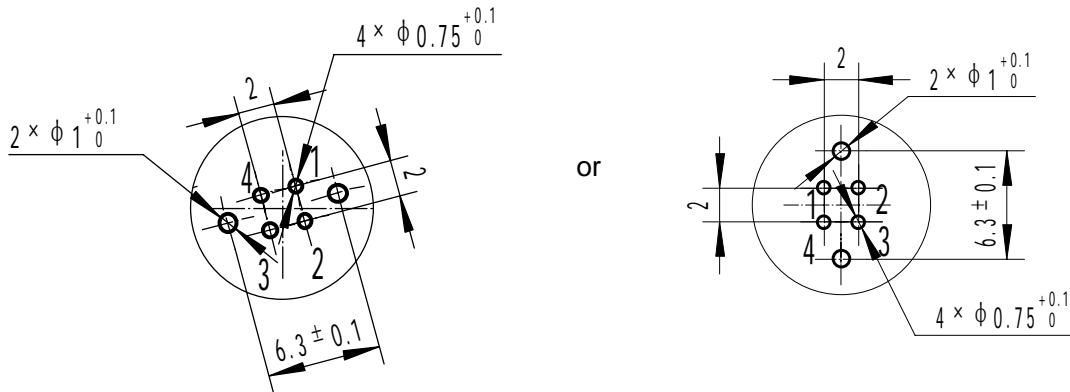
Standard Shell C or F Cavity Insert Arrangements				
No	Insulat or code	Contact type/quantity	Insert arrangement (Front face view of male insert)	PCB cut-out dimension
1	II-13W2	4-20# 3-16# 4-12# 2-5#		
2	II-20T4	20-20# 4-8#		
3	II-20T4A	20-20# 4-8#		

3	II - 34	24-20# 10-16#		
4	II - 6T6	6-8#		
5	II - 100	100-22D		
6	II - 64T2	60-22D 2-16# 2-8#		

7	II - 25	25-16#		
8	II - 70T2	68-22D 2-8#		
9	II - 85	80-22D 4-20# 1-16#		
11	II - 84	80-22D 4-20#		

12	II -59	50-22D 5-16# 4-12#		
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Note: In the above PCB cut-out dimensions, #8 coaxial contacts are installed in the #8 insert. If #8 differential contacts are installed in #8 insert, PCB cut-out dimension of #8 insert should be changed to the following dimensions:



The direction should be same as that of PCB cut-out dimension of #8 coaxial contacts (the direction of the two holes on the outer side of the above #8 differential contact should be in consistent with that of #8 coaxial contacts)