

## 捷科科技 ///VITA 系列连接器

## JETSTEC TECHNOLOGY /// VITA SERIES CONNECTOR



LEADER FOR CONNECTIVITY SOLUTIONS

连接解决方案领跑者



📍 No. 8, Longjiang Road, Shangjie District, Zhengzhou City, Henan Province

✉ jesse.w@jetstec-connect.com

☎ 0086 187 3631 8801

🌐 www.jetstec-connect.com

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## RT2 Series of high-speed backplane connectors

### Background Information

The RT2 series high-speed backplane connector can achieve high-speed data transmission between backboards, with a transmission rate of 6.25Gb/s and the ability to expand to 10Gb/s. It is an important interface for VME bus systems. VE bus is a bus designed by Motorola and other companies for Euroboard in 1981, which can support the bus backplane architecture standard of multiprocessor computer systems, and the bandwidth has increased from the initial 40Mb/s to 320Mb/s. With the rapid development of communication technology, in order to meet the demand for higher bandwidth in data transmission between VE bus boards, the VSO organization under VITA (VME International Trade Organization Association) has developed and launched new standards, mainly VITA41, VITA46, and VITA48. All three standards are based on RT2 connectors, and the increase in bandwidth has led to the gradual adoption of VME bus in radar, image processing, and broadband communication fields.

VITA41 (also known as VXS, short for VEBus Switched Serial) is a switch based serial expansion standard that adds i-switching structure technology to the traditional VME bus, replacing the P0/J0 connectors of the WE module with RT2 connectors to improve the data bus transmission bandwidth. VITA46, also known as VPX (short for Versatile Protocol Switching), replaces all connectors with RT2 connectors that support high-speed differential signal transmission, in order to achieve higher transmission speed and more signal pins, meeting users' requirements for bandwidth. VITA48 stands for Enhanced Reinforcement Design Mechanical Specification, which supplements VITA46 in module structure, reinforcement cooling, and other aspects to meet the impact of harsh military environments such as airborne Requirements for vibration, temperature, altitude, etc.

### Product Introduction

- Compliant with VITA41/VITA46/48 standards, applied to VME bus systems
- Military high-density, high-speed, modular, universal connectors
- Modular combination structure, which can achieve integrated mixed transmission of various signals such as differential, single ended, power supply, etc
- The transmission rate can reach 6.25Gbps and can be expanded to 10Gbps
- The number of differential pairs in a single module is 32 pairs, with a node density of 113/inch (56 pairs/inch)
- The termination method is press fit without welding

### Main technical indicators

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- Military high-density, high-speed, modular, universal connectors
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- The termination method is press fit without welding

### [Mechanical Properties]

Random vibration: 10-2000Hz, power spectral density 0.2g<sup>2</sup>/Hz  
 Sinusoidal vibration: 10-2000Hz, 20g  
 Impact: 294m/s<sup>2</sup>, half sine wave, 11ms  
 Mechanical lifespan: 500 cycles

### [Electrical Performance]

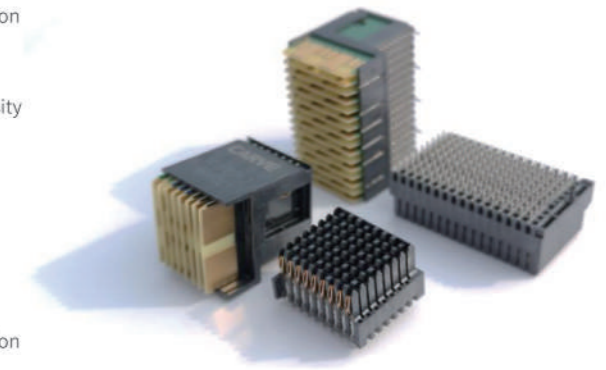
Low level contact resistance: ≤ 40 mΩ  
 Rated current: 8A for single power supply, 1A for single signal  
 Insulation resistance: power contacts ≥ 10000MΩ  
 Signal contact piece ≥ 1000MΩ  
 Voltage endurance: 500V  
 Differential characteristic impedance: 100Ω  
 Transmission rate: 6.25Gbps, expandable to 10Gbps  
 Crosstalk: better than -30dB

### [Environmental Performance]

Operating temperature: -55 °C~125 °C  
 Salt spray: 96 hours  
 Flame retardant grade: UL94V-0

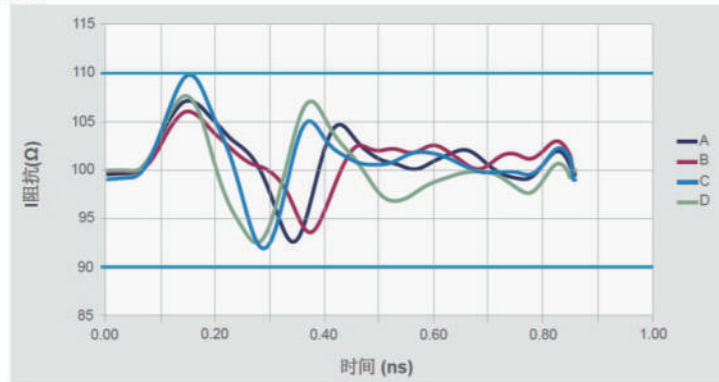
### [Supported communication protocols]

1000BASE-KX  
 10GBASE-KX4  
 InfiniBand SDR, DDR, and QDR  
 PCIe Gen 1, 2 and 3  
 Serial RapidIO 2.5, 3.125, 5, and 6.25 Gbaud

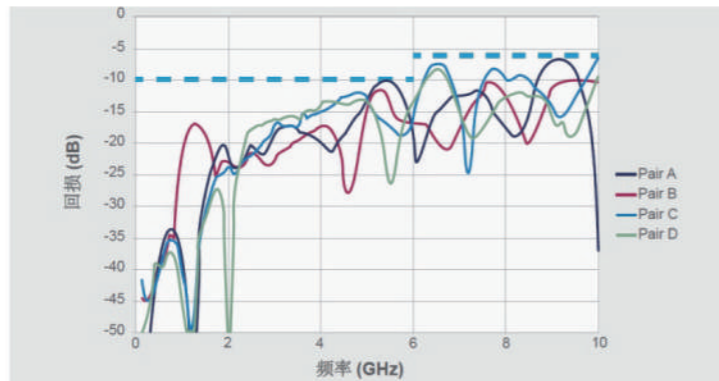
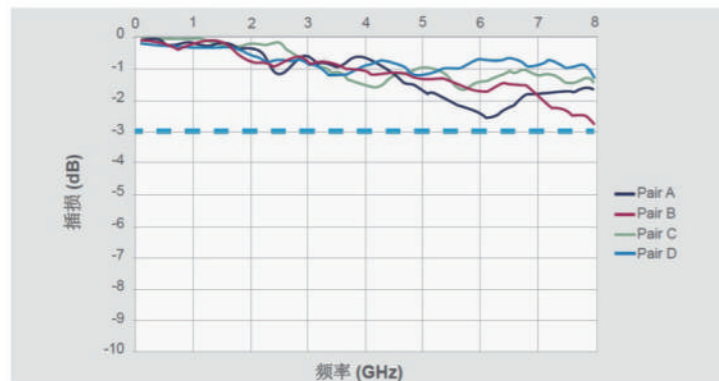


High-speed transmission performance

Differential characteristic impedance

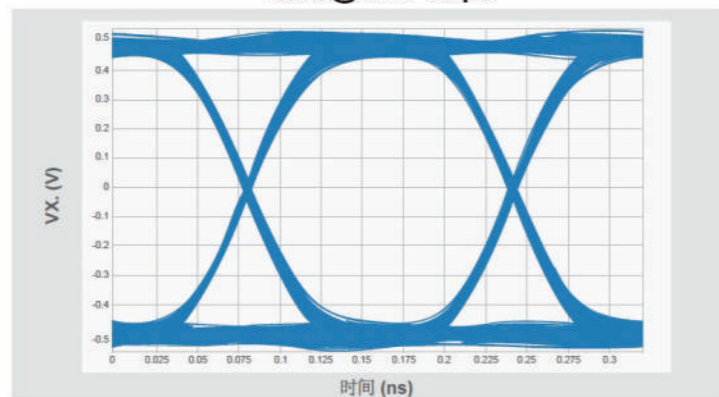


[Insertion loss and return loss]

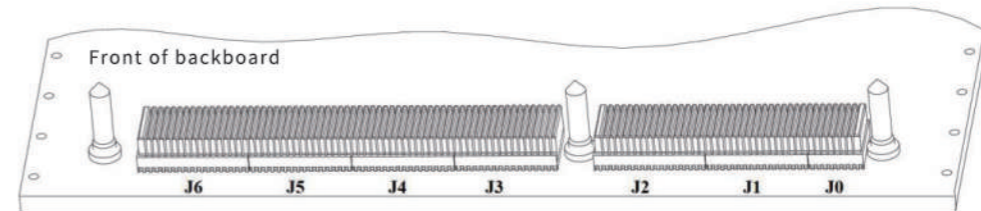
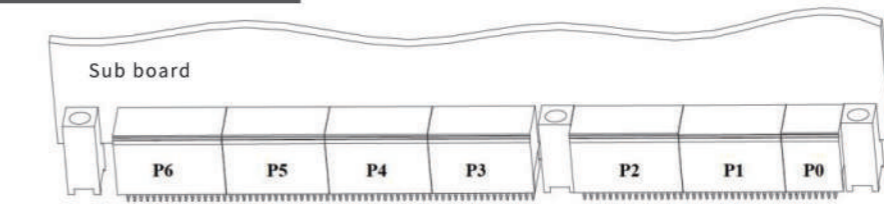


[eye pattern]

眼图 @ 6.25 Gbps

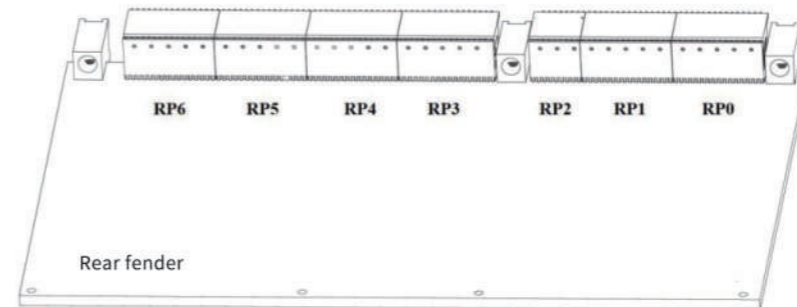
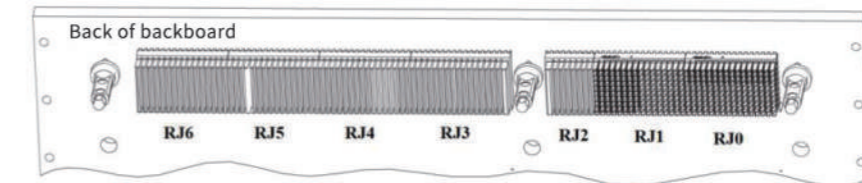


Product ordering model



Position of plug connector	Order model	
P0	JT1410189-3	
P1、P2、P3、P4、P5、P6	Differential module	JT1410187-3
	Single ended module	JT1410190-3
Identify the guide sleeve	JT1-1469492- $\alpha^1$	

Position of socket connector	Order model
J0	JT1410186-1
J1、J3、J4、J5	JT1410140-1
J2、J6	JT1410142-1
Identify guide pins	JT1-1469491- $\beta^1$



Position of plug connector	Order model	
RP0	JT1410968-3	
RP1	Differential module	JT1410975-3
	Differential and single ended modules	JT1410970-3
RP2	Differential module	JT1410971-3
	Differential and single ended modules	JT1410972-3
RP3、RP4、RP5、RP6	Differential module	JT1410975-3
	Single ended module	JT1410190-3
Identify the guide sleeve	JT1-1469492- $\alpha^1$	

Position of socket connector	Order model
RJ0	JT1410964-1
	JT1410965-1
RJ1	JT1410140-1
	JT1410966-1
RJ2	JT1410186-1 <sup>2</sup>
RJ3	JT1410142-1 <sup>2</sup>
RJ4、RJ5、RJ6	JT1410140-1
Identify guide pins	JT1410956-1 <sup>1</sup>

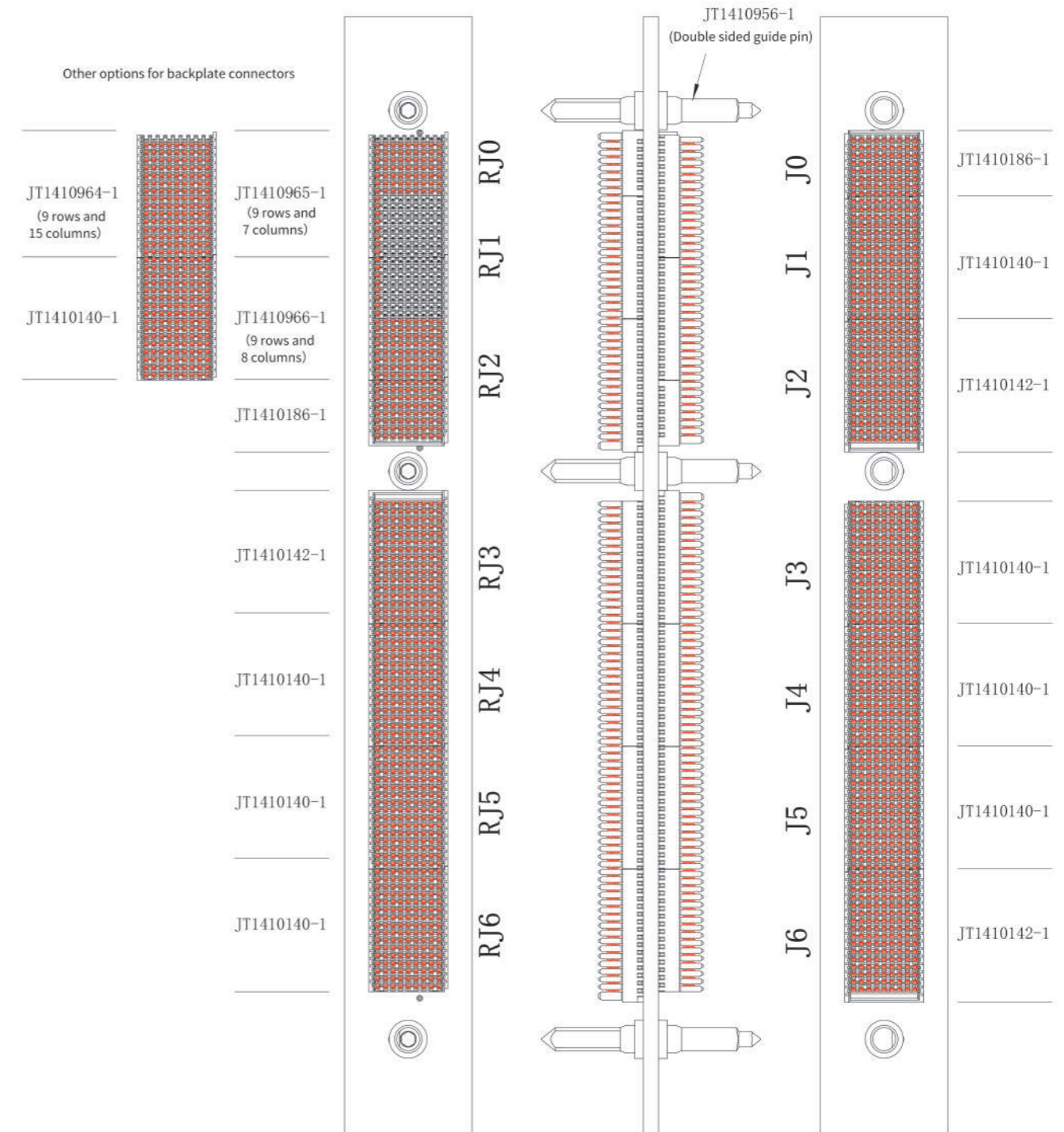
Note: 1. Identify the key position represented by 'a' in the order model of the guide sleeve, please refer to pages P14-P15 for details. Identify the lead pin ordering model, where  $\beta$  indicates that it can be adapted to printed boards of different thicknesses. Please refer to page P16 for details.  
2. When used on the back panel, the plastic guide pillar should be broken off.

RT2 series high-speed backplane connector

Definition of plug signal arrangement

Order model	Connector position	Signal arrangement	Instructions
JT1410189-3	P0	<p>8 1</p>	Half module, 3 columns of power supply, 3 columns of single ended, 2 columns of differential, a total of 6-core power supply/ 16 core single ended/ 4 pairs of differential
JT1410187-3	P1, P2, P3, P4, P5, P6	<p>16 1</p>	Differential full module, 16 columns of differential, a total of 32 pairs of differential/8-core single ended
JT1410190-3	P1, P2, P3, P4, P5, P6, RP3, RP4, RP5, RP6	<p>16 1</p>	Single ended full module, 16 columns single ended, totaling 80Single ended chip
JT1410968-3	RP0	<p>1 16</p>	Rear full module, 12 columns of differential, 3 columns of single ended, 2 columns of power supply, a total of 20 pairs of differential/ 20 core single ended/ 4-core power supply
JT1410975-3	RP1, RP3, RP4, RP5, RP6	<p>1 16</p>	Rear differential full module, 16 columns of differential: a total of 32 pairs of differential/ 8-core single ended
JT1410970-3	RP1	<p>1 16</p>	Full module behind the board, 8 columns of differential/ 8 columns of single ended, a total of 16 pairs of differential/44 core single ended
JT1410971-3	RP2	<p>1 8</p>	Rear half module of the board, 8 columns of differential, a total of 16 pairs of differential/ 4-core single ended
JT1410972-3	RP2	<p>1 8</p>	Rear half module of the board, 8 columns of single ended, with a total of 40 cores of single ended

Definition of socket signal arrangement



The following precautions should be taken when selecting and using socket connectors:

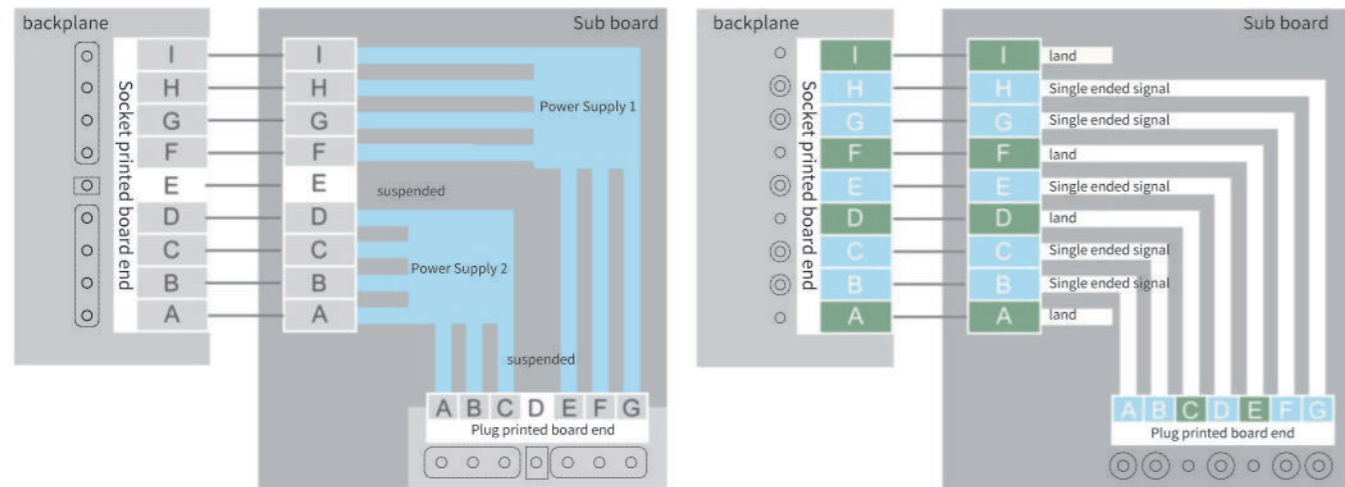
1. Red represents the socket. The absence of a red position indicates that there is no socket installed at that location.
2. When installing connectors on the back of the backplane, the thickness of the backplane should not be less than 3.6mm.
3. When installing connectors on the back of the backplane, double-sided guide pins JT1410956-1 should be selected.

Head seat signal correspondence

power supply	Single ended signal	differential signal	Ground pin	Suspended pins
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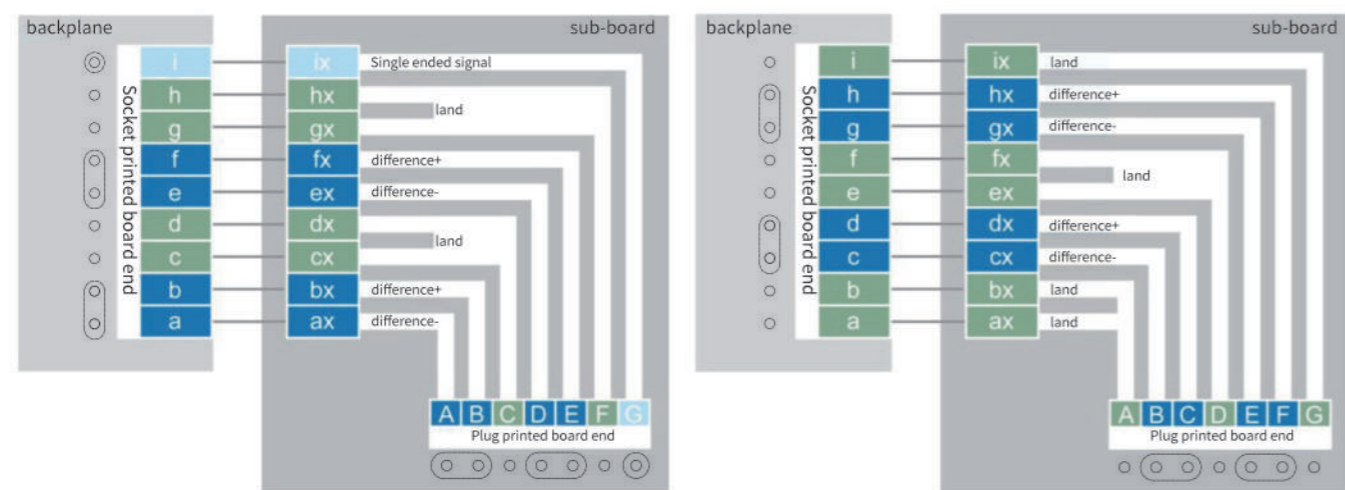
[ Power column ]

[ Single ended signal column ]



[ Odd Difference Column ]

[ Even difference column ]



P0 (JT1410189 -3) pin definition

	Wafer Type	Row G	Row F	Row E	Row D	Row C	Row B	Row A
1	Power	Vs1	Vs1	Vs1	No Pad	Vs2	Vs2	Vs2
2	Power	Vs1	Vs1	Vs1	No Pad	Vs2	Vs2	Vs2
3	Power	Vs3	Vs3	Vs3	No Pad	Vs3	Vs3	Vs3
4	Single-ended	SM2	SM3	GND	-12V_AUX	GND	SYSRESET*	NVMRO
5	Single-ended	GAP*	GA4*	GND	3.3V_AUX	GND	SM0	SM1
6	Single-ended	GA3*	GA2*	GND	+12V_AUX	GND	GA1*	GA0*
7	Differential	TCK	GND	TDO	TDI	GND	TMS	TRST*
8	Differential	GND	REF_CLK-	REF_CLK+	GND	RES_BUS-	RES_BUS+	GND

Fully differential module (JT1410187-3) pin definition

	Row G	Row F	Row E	Row D	Row C	Row B	Row A
1	P2-SE0	GND	P2-DP1-	P2-DP1+	GND	P2-DP0-	P2-DP0+
2	GND	P2-DP3-	P2-DP3+	GND	P2-DP2-	P2-DP2+	GND
3	P2-SE1	GND	P2-DP5-	P2-DP5+	GND	P2-DP4-	P2-DP4+
4	GND	P2-DP7-	P2-DP7+	GND	P2-DP6-	P2-DP6+	GND
5	P2-SE2	GND	P2-DP9-	P2-DP9+	GND	P2-DP8-	P2-DP8+
6	GND	P2-DP11-	P2-DP11+	GND	P2-DP10-	P2-DP10+	GND
7	P2-SE3	GND	P2-DP13-	P2-DP13+	GND	P2-DP12-	P2-DP12+
8	GND	P2-DP15-	P2-DP15+	GND	P2-DP14-	P2-DP14+	GND
9	P2-SE4	GND	P2-DP17-	P2-DP17+	GND	P2-DP16-	P2-DP16+
10	GND	P2-DP19-	P2-DP19+	GND	P2-DP18-	P2-DP18+	GND
11	P2-SE5	GND	P2-DP21-	P2-DP21+	GND	P2-DP20-	P2-DP20+
12	GND	P2-DP23-	P2-DP23+	GND	P2-DP22-	P2-DP22+	GND
13	P2-SE6	GND	P2-DP25-	P2-DP25+	GND	P2-DP24-	P2-DP24+
14	GND	P2-DP27-	P2-DP27+	GND	P2-DP26-	P2-DP26+	GND
15	P2-SE7	GND	P2-DP29-	P2-DP29+	GND	P2-DP28-	P2-DP28+
16	GND	P2-DP31-	P2-DP31+	GND	P2-DP30-	P2-DP30+	GND

Fully differential module (JT1410190 -3) pin definition

	Row G	Row F	Row E	Row D	Row C	Row B	Row A
1	P2-SE04	P2-SE03	GND	P2-SE02	GND	P2-SE01	P2-SE00
2	P2-SE09	P2-SE08	GND	P2-SE07	GND	P2-SE06	P2-SE05
3	P2-SE14	P2-SE13	GND	P2-SE12	GND	P2-SE11	P2-SE10
4	P2-SE19	P2-SE18	GND	P2-SE17	GND	P2-SE16	P2-SE15
5	P2-SE24	P2-SE23	GND	P2-SE22	GND	P2-SE21	P2-SE20
6	P2-SE29	P2-SE28	GND	P2-SE27	GND	P2-SE26	P2-SE25
7	P2-SE34	P2-SE33	GND	P2-SE32	GND	P2-SE31	P2-SE30
8	P2-SE39	P2-SE38	GND	P2-SE37	GND	P2-SE36	P2-SE35
9	P2-SE44	P2-SE43	GND	P2-SE42	GND	P2-SE41	P2-SE40
10	P2-SE49	P2-SE48	GND	P2-SE47	GND	P2-SE46	P2-SE45
11	P2-SE54	P2-SE53	GND	P2-SE52	GND	P2-SE51	P2-SE50
12	P2-SE59	P2-SE58	GND	P2-SE57	GND	P2-SE56	P2-SE55
13	P2-SE64	P2-SE63	GND	P2-SE62	GND	P2-SE61	P2-SE60
14	P2-SE69	P2-SE68	GND	P2-SE67	GND	P2-SE66	P2-SE65
15	P2-SE74	P2-SE73	GND	P2-SE72	GND	P2-SE71	P2-SE70
16	P2-SE79	P2-SE78	GND	P2-SE77	GND	P2-SE76	P2-SE75

J0 (JT1410186 -1) pin definition

	Wafer Type	Row i	Row h	Row g	Row f	Row e	Row d	Row c	Row b	Row a
1	Power	Vs1	Vs1	Vs1	Vs1	None	Vs2	Vs2	Vs2	Vs2
2	Power	Vs1	Vs1	Vs1	Vs1	None	Vs2	Vs2	Vs2	Vs2
3	Power	Vs3	Vs3	Vs3	Vs3	None	Vs3	Vs3	Vs3	Vs3
4	Single ended	GND	SM2	SM3	GND	-12V_AUX	GND	SYSRESE*	NVMRO	GND
5	Single ended	GND	GAP*	GA4*	GND	3.3V_AUX	GND	SMO	SMI	GND
6	Single ended	GND	GA3*	GA2*	GND	+12V_AUX	GND	GA1*	GA0*	GND
7	Odd Diff	TCK	GND	GND	TDO	TDI	GND	GND	TMS	TRST*
8	Even Diff	GND	REF_CLK-	REF_CLK+	GND	GND	RES_BUS-	RES_BUS+	GND	GND

JT1410140 -1, JT1410142 -1 pin definition (Adapt to fully differential modules(JT1410187 -3)time)

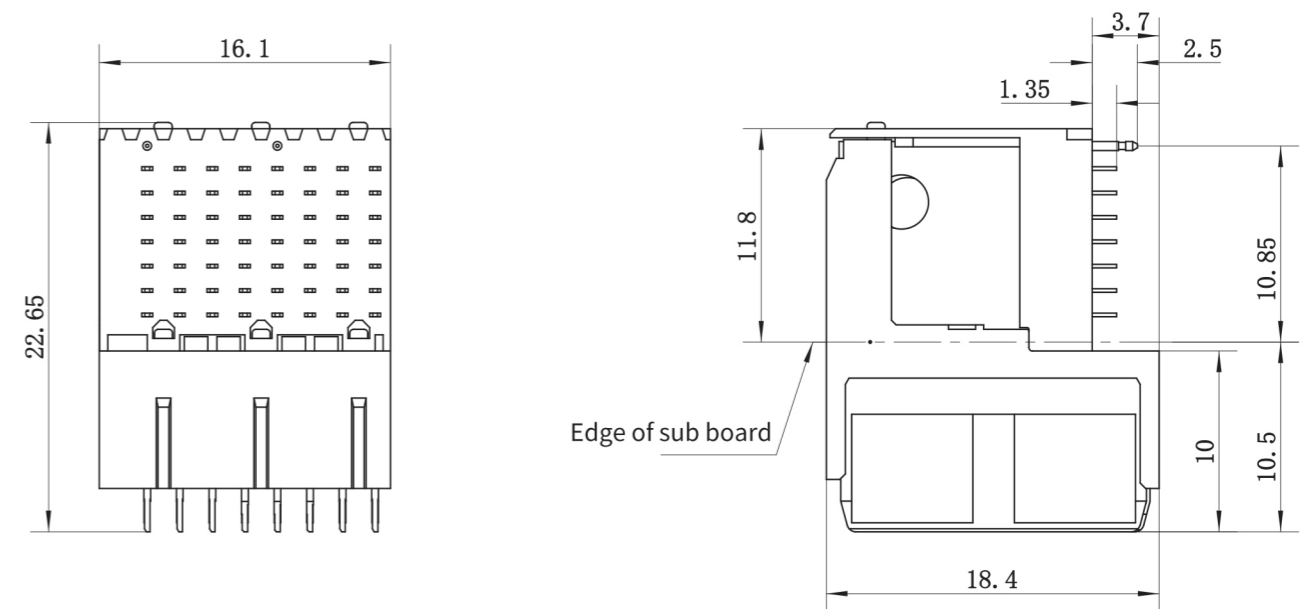
	Row i	Row h	Row g	Row f	Row e	Row d	Row c	Row b	Row a
1	P2-SE0	GND	GND	P2-DP1-	P2-DP1+	GND	GND	P2-DP0-	P2-DP0+
2	GND	P2-DP3-	P2-DP3+	GND	GND	P2-DP2-	P2-DP2+	GND	GND
3	P2-SE1	GND	GND	P2-DP5-	P2-DP5+	GND	GND	P2-DP4-	P2-DP4+
4	GND	P2-DP7-	P2-DP7+	GND	GND	P2-DP6-	P2-DP6+	GND	GND
5	P2-SE2	GND	GND	P2-DP9-	P2-DP9+	GND	GND	P2-DP8-	P2-DP8+
6	GND	P2-DP11-	P2-DP11+	GND	GND	P2-DP10-	P2-DP10+	GND	GND
7	P2-SE3	GND	GND	P2-DP13-	P2-DP13+	GND	GND	P2-DP12-	P2-DP12+
8	GND	P2-DP15-	P2-DP15+	GND	GND	P2-DP14-	P2-DP14+	GND	GND
9	P2-SE4	GND	GND	P2-DP17-	P2-DP17+	GND	GND	P2-DP16-	P2-DP16+
10	GND	P2-DP19-	P2-DP19+	GND	GND	P2-DP18-	P2-DP18+	GND	GND
11	P2-SE5	GND	GND	P2-DP21-	P2-DP21+	GND	GND	P2-DP20-	P2-DP20+
12	GND	P2-DP23-	P2-DP23+	GND	GND	P2-DP22-	P2-DP22+	GND	GND
13	P2-SE6	GND	GND	P2-DP25-	P2-DP25+	GND	GND	P2-DP24-	P2-DP24+
14	GND	P2-DP27-	P2-DP27+	GND	GND	P2-DP26-	P2-DP26+	GND	GND
15	P2-SE7	GND	GND	P2-DP29-	P2-DP29+	GND	GND	P2-DP28-	P2-DP28+
16	GND	P2-DP31-	P2-DP31+	GND	GND	P2-DP30-	P2-DP30+	GND	GND

JT1410140 -1, JT1410142 -1 pin definition (ACompatible with all single ended modules(JT1410187 -3)time)

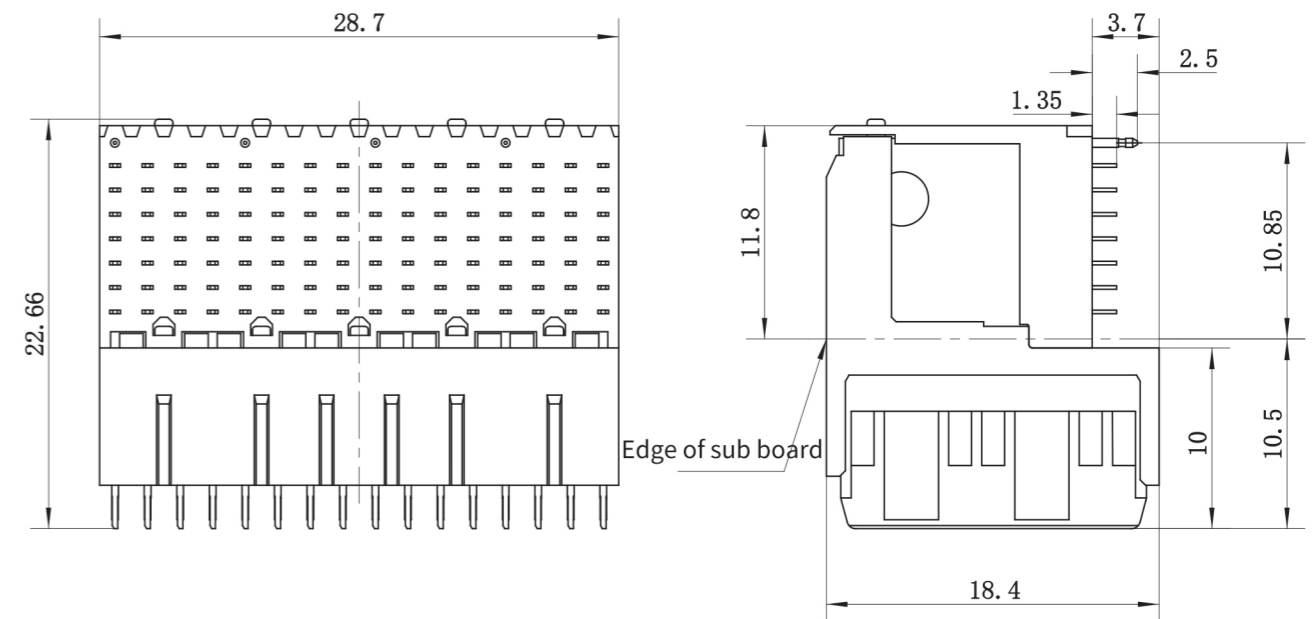
	Row i	Row h	Row g	Row f	Row e	Row d	Row c	Row b	Row a
1	GND	P2-SE04	P2-SE03	GND	P2-SE02	GND	P2-SE01	P2-SE00	GND
2	GND	P2-SE09	P2-SE08	GND	P2-SE07	GND	P2-SE06	P2-SE05	GND
3	GND	P2-SE14	P2-SE13	GND	P2-SE12	GND	P2-SE11	P2-SE10	GND
4	GND	P2-SE19	P2-SE18	GND	P2-SE17	GND	P2-SE16	P2-SE15	GND
5	GND	P2-SE24	P2-SE23	GND	P2-SE22	GND	P2-SE21	P2-SE20	GND
6	GND	P2-SE29	P2-SE28	GND	P2-SE27	GND	P2-SE26	P2-SE25	GND
7	GND	P2-SE34	P2-SE33	GND	P2-SE32	GND	P2-SE31	P2-SE30	GND
8	GND	P2-SE39	P2-SE38	GND	P2-SE37	GND	P2-SE36	P2-SE35	GND
9	GND	P2-SE44	P2-SE43	GND	P2-SE42	GND	P2-SE41	P2-SE40	GND
10	GND	P2-SE49	P2-SE48	GND	P2-SE47	GND	P2-SE46	P2-SE45	GND
11	GND	P2-SE54	P2-SE53	GND	P2-SE52	GND	P2-SE51	P2-SE50	GND
12	GND	P2-SE59	P2-SE58	GND	P2-SE57	GND	P2-SE56	P2-SE55	GND
13	GND	P2-SE64	P2-SE63	GND	P2-SE62	GND	P2-SE61	P2-SE60	GND
14	GND	P2-SE69	P2-SE68	GND	P2-SE67	GND	P2-SE66	P2-SE65	GND
15	GND	P2-SE74	P2-SE73	GND	P2-SE72	GND	P2-SE71	P2-SE70	GND
16	GND	P2-SE79	P2-SE78	GND	P2-SE77	GND	P2-SE76	P2-SE75	GND

Product dimensions

「 Half module plug JT1410189-3 」

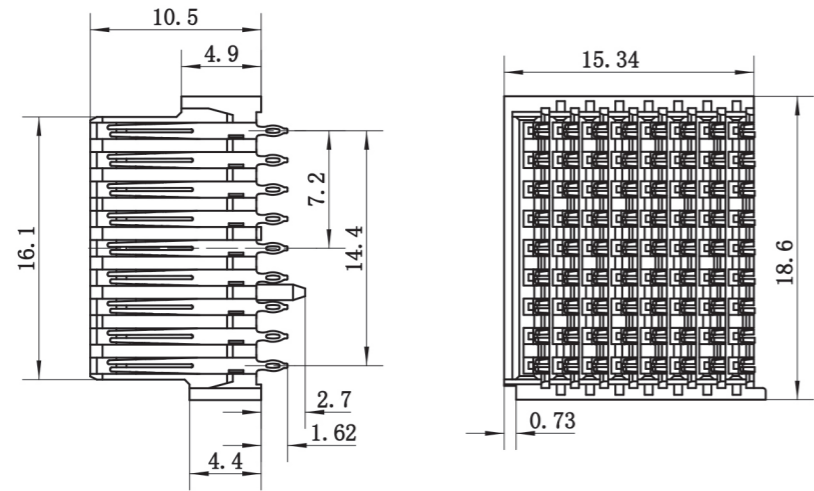


「 Full module plug JT1410187-3 and JT1410190-3 」

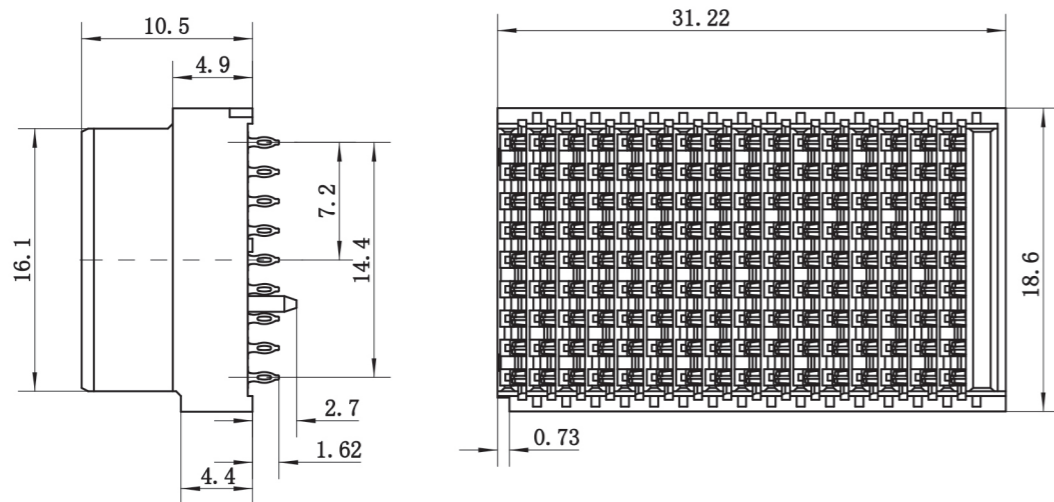


RT2 series high-speed backplane connector

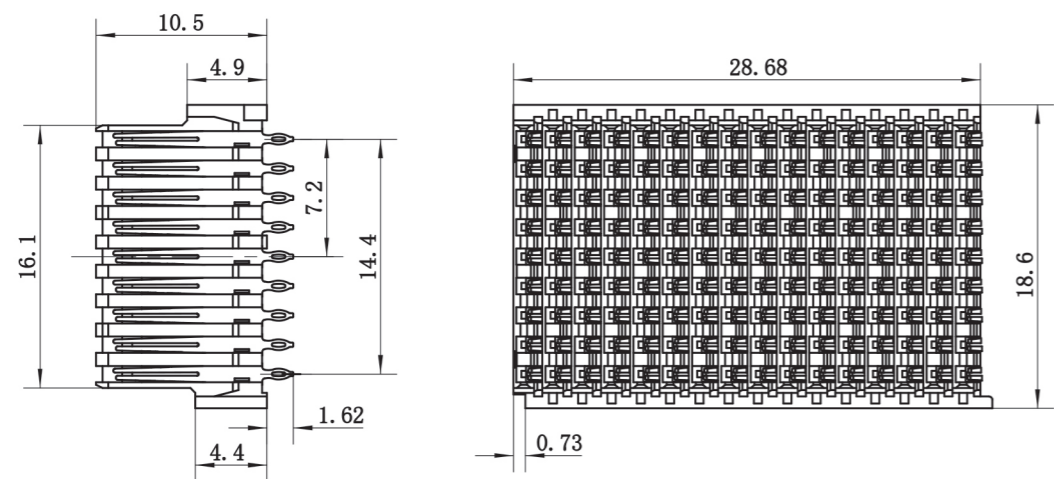
[ Half module socket JT1410186-1 ]



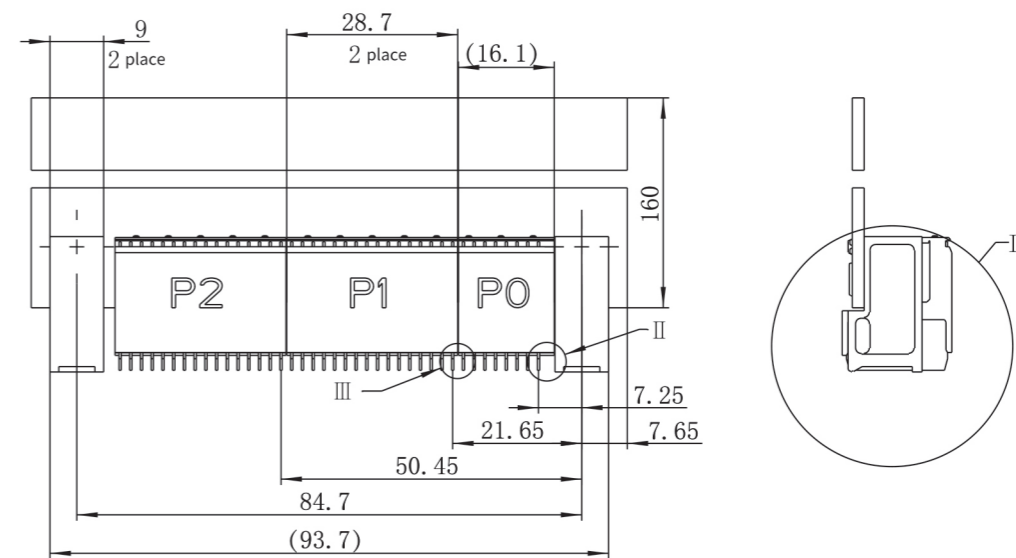
[ Full module socket (side module) JT1410142-1 ]



[ Full module socket (middle module) JT1410140-1 ]



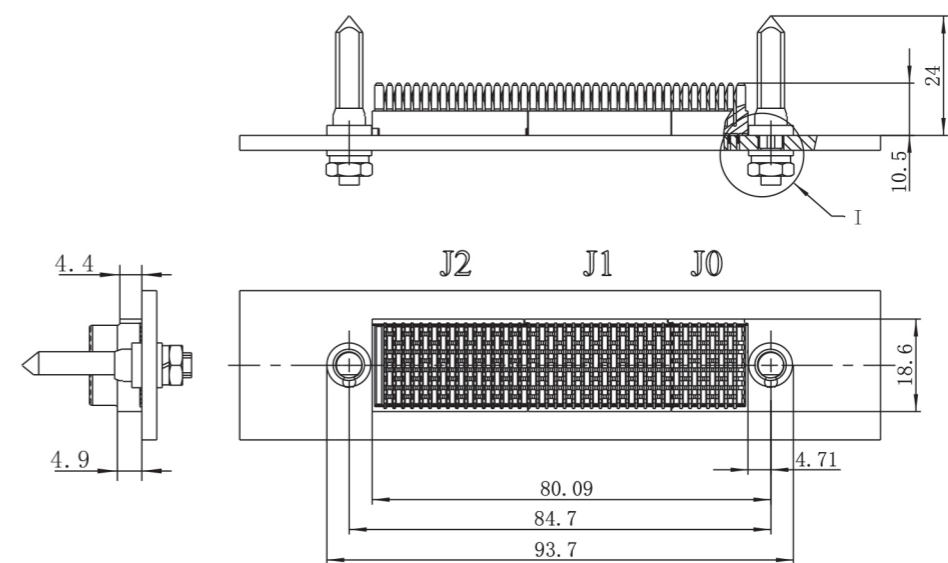
[ 3U plug combination ]



note:Partial views I, II, and III are detailed in P12.

Please refer to P14-P15 for the order model of the identification guide sleeve

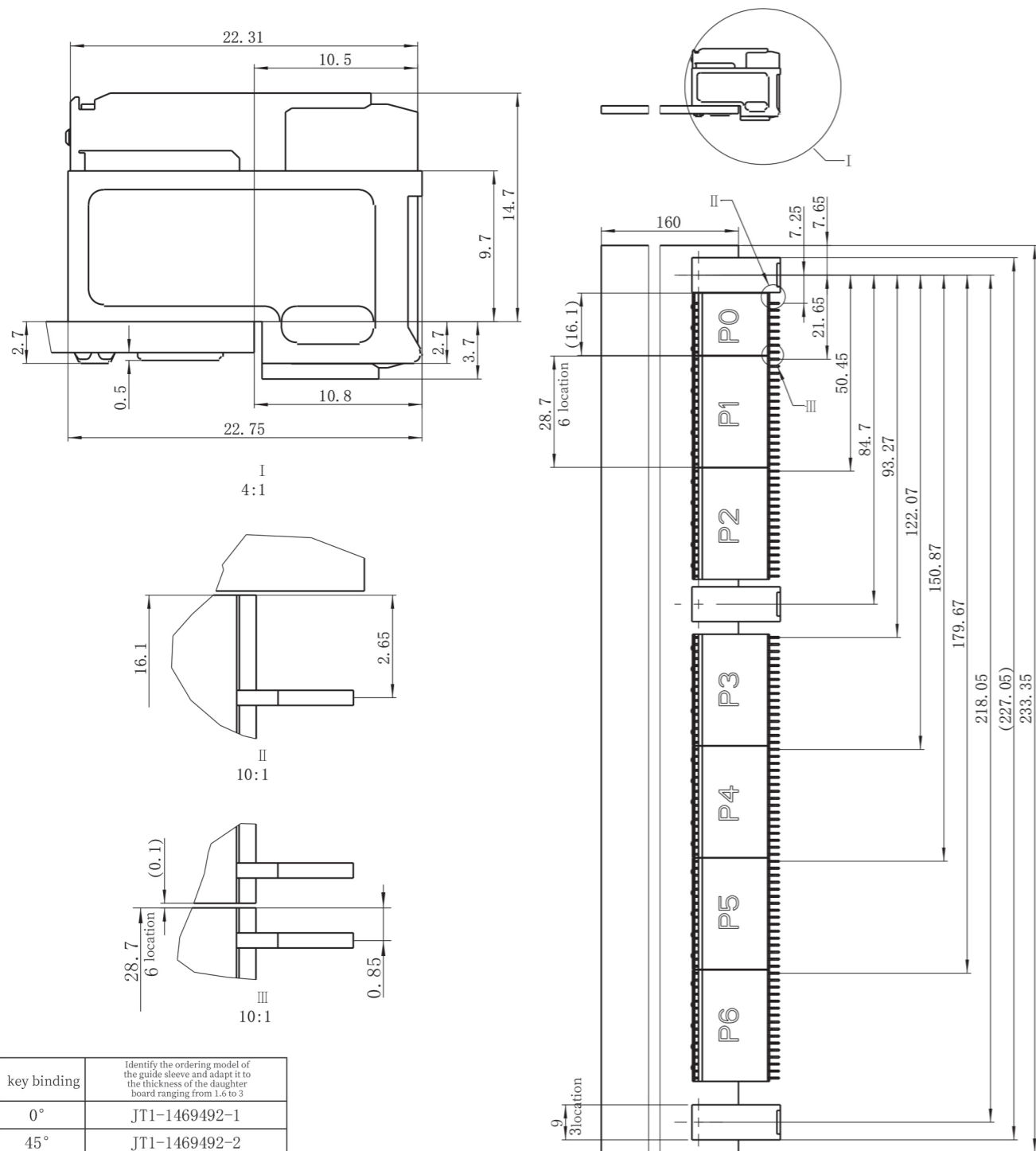
[ 3U socket combination ]



note:Partial view [see page 13 for details]

Please refer to page P16 for details on identifying the ordering model of the guide pin

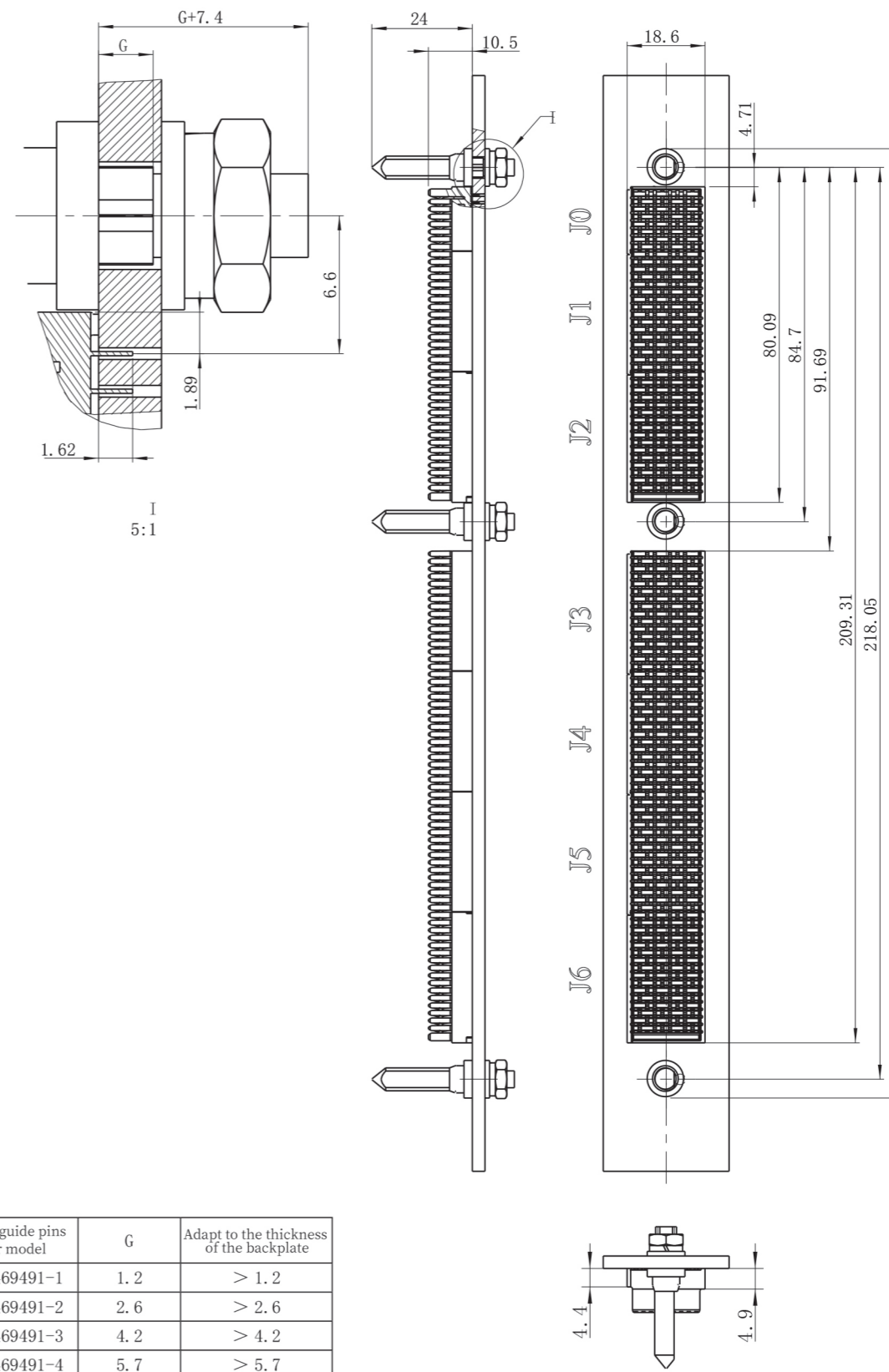
「6U Plug combination」



key binding	Identify the ordering model of the guide sleeve and adapt it to the thickness of the daughter board ranging from 1.6 to 3
0°	JT1-1469492-1
45°	JT1-1469492-2
90°	JT1-1469492-3
270°	JT1-1469492-7
315°	JT1-1469492-8
none	JT1-1469492-9
Variable key position	JT1-1469492-X

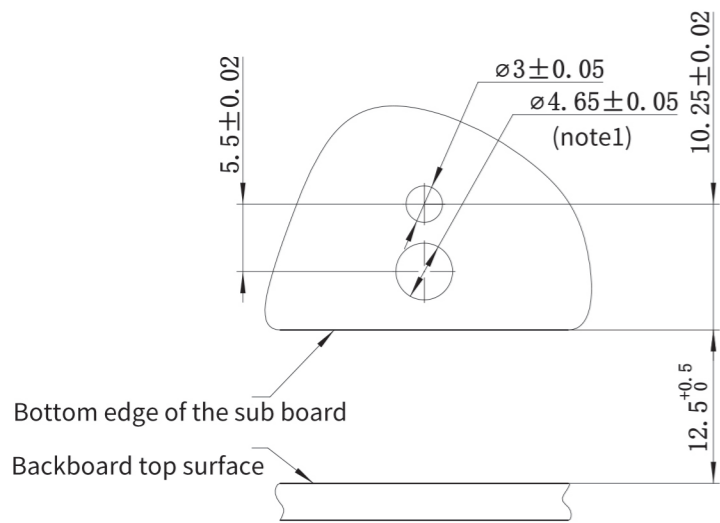
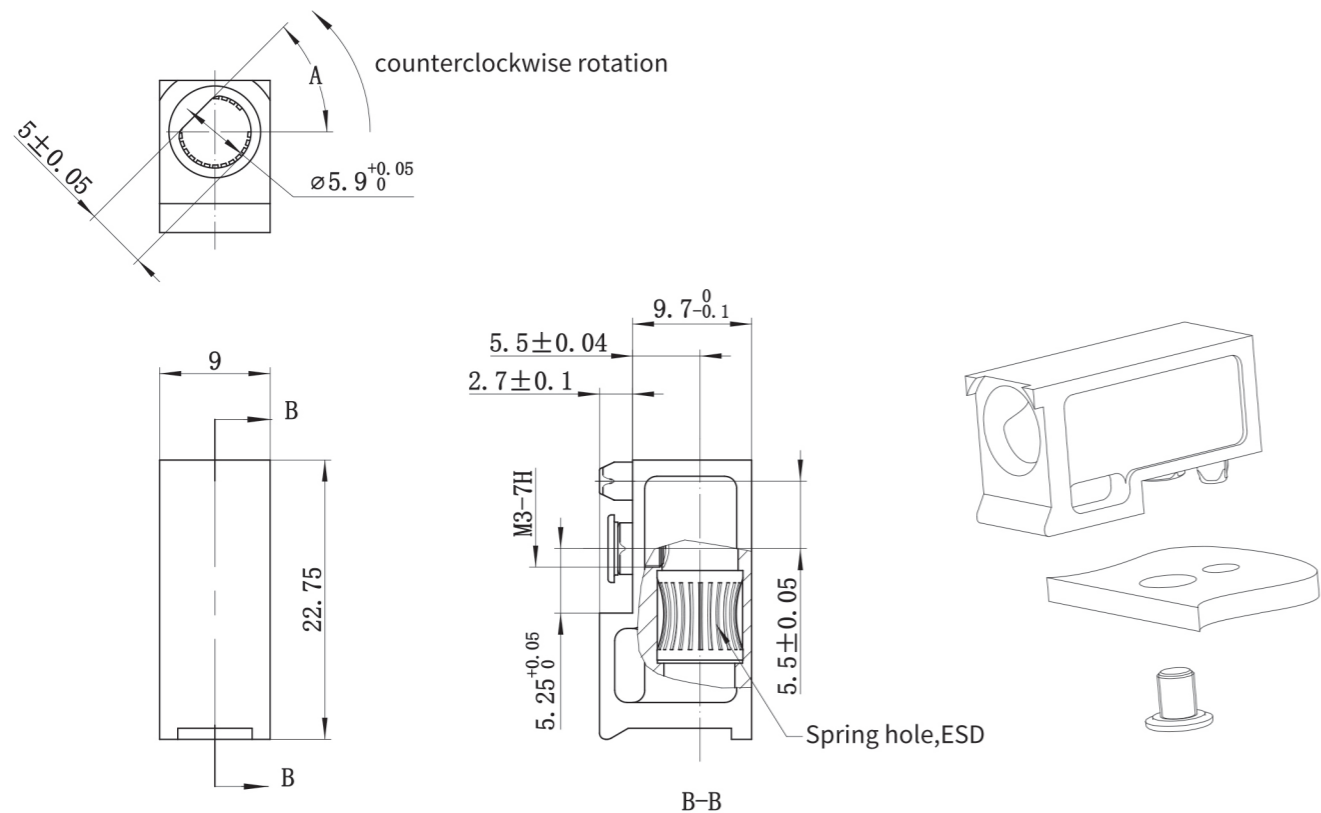
note: When the thickness of the sub board is greater than 3mm, it is recommended to open countersunk holes on the printed board.

「6U Socket combination」



Identify guide pins Order model	G	Adapt to the thickness of the backplate
JT1-1469491-1	1.2	> 1.2
JT1-1469491-2	2.6	> 2.6
JT1-1469491-3	4.2	> 4.2
JT1-1469491-4	5.7	> 5.7

[ Identify the guide sleeve ]

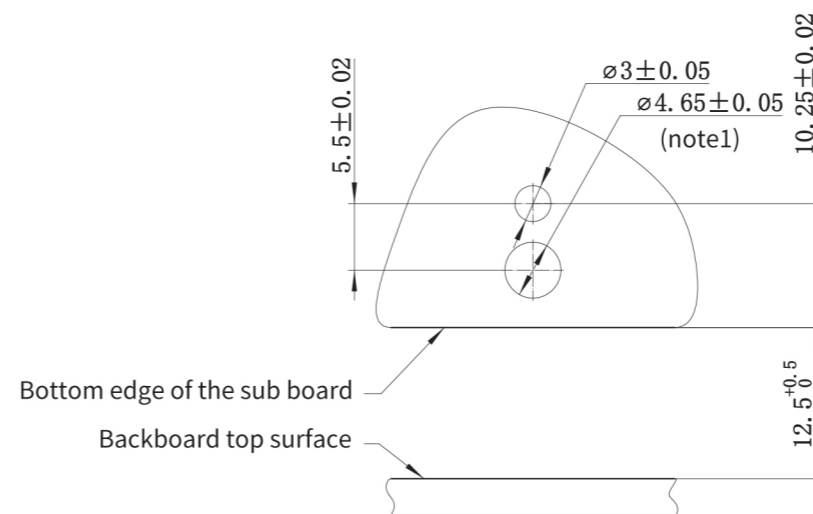
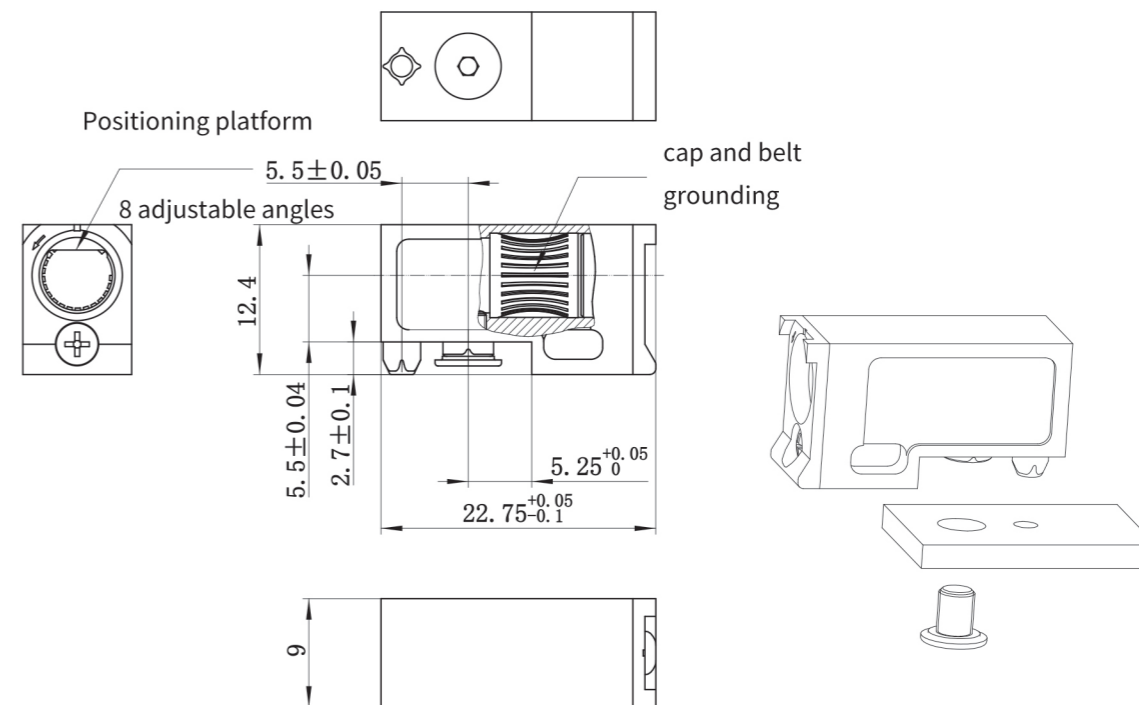


note:

1. Metallized holes, grounding, PCB top and bottom solder pads with a diameter of 5.0
2. The graphic key position is 45°, corresponding to the recognized guide sleeve model JT1-1469492-2.
3. When the thickness of the sub board is greater than 3mm, it is recommended to open countersunk holes on the printed board.

key binding	Identify the ordering model of the guide sleeve and adapt it to the thickness of the daughter board ranging from 1.6 to 3
0°	JT1-1469492-1
45°	JT1-1469492-2
90°	JT1-1469492-3
270°	JT1-1469492-7
315°	JT1-1469492-8
none	JT1-1469492-9

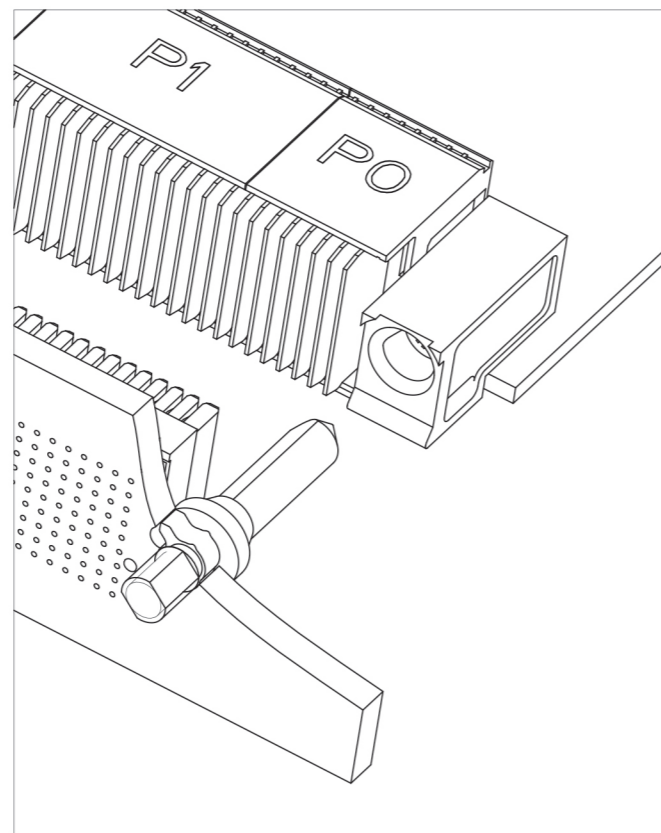
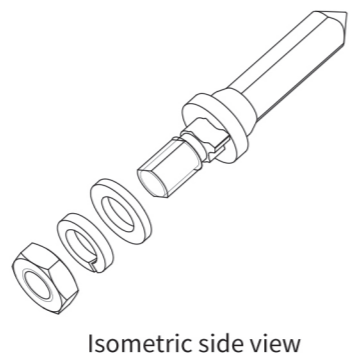
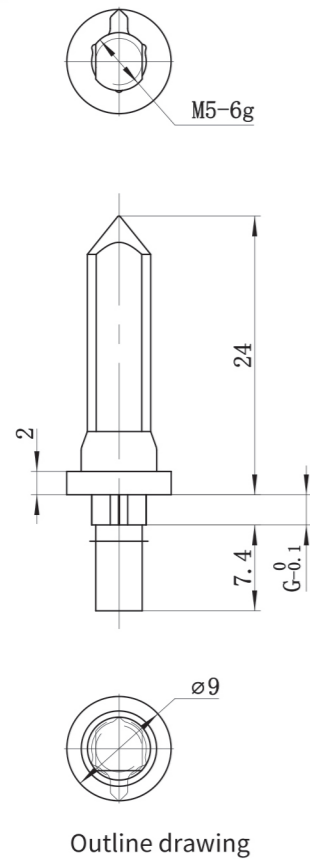
[ Variable key guide sleeve JT1-1469492-X ]



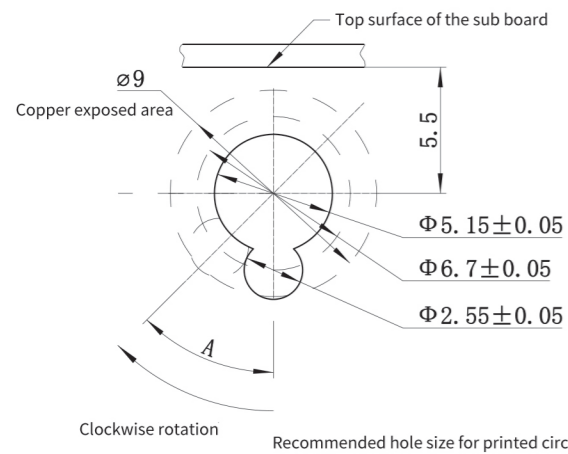
note:

1. Metallized holes, grounding, PCB top and bottom solder pads 5.0.
2. The graphic key position is 0°, and the angle of the key position can be adjusted according to actual needs.
3. The key position angles can be 0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°.
- 4°. When the thickness of the sub board is greater than 3mm, it is recommended to open countersunk holes on the printed board.

[ Single sided guide pin ]

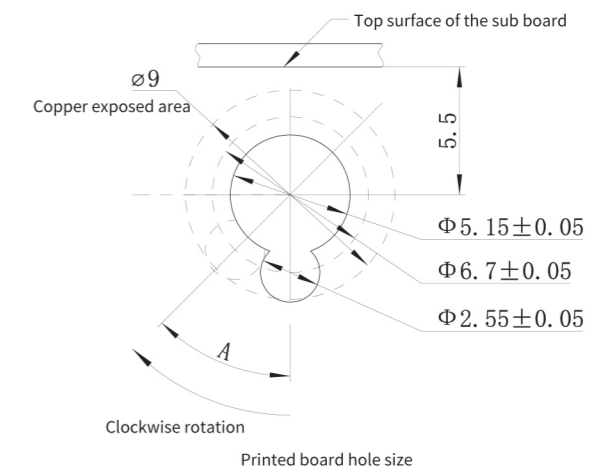
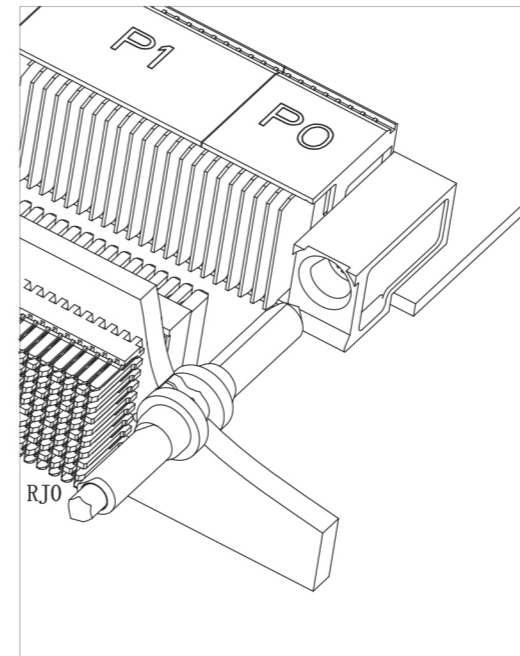
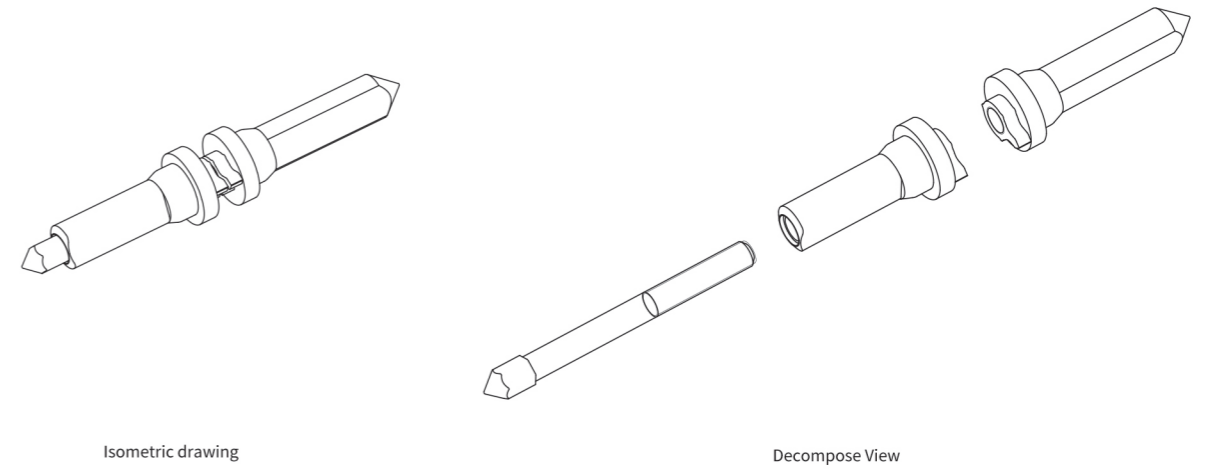
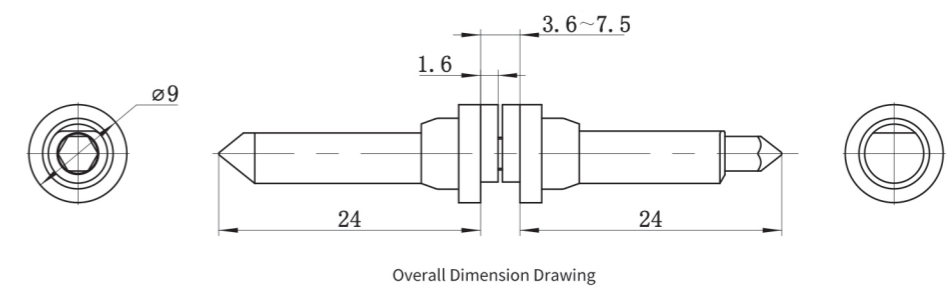


Identify guide pins Order model	G	Adapt to the thickness of the backplate
JT1-1469491-1	1.2	> 1.2
JT1-1469491-2	2.6	> 2.6
JT1-1469491-3	4.2	> 4.2
JT1-1469491-4	5.7	> 5.7



Note: 1. A is 0°, 45°, 90°, 270°, or 315°, corresponding to the key positions of the identification guide sleeve on the daughter board end.  
2. The guide pin itself does not have a key position, and the key positions of the guide pin are set by changing the opening A on the back plate.

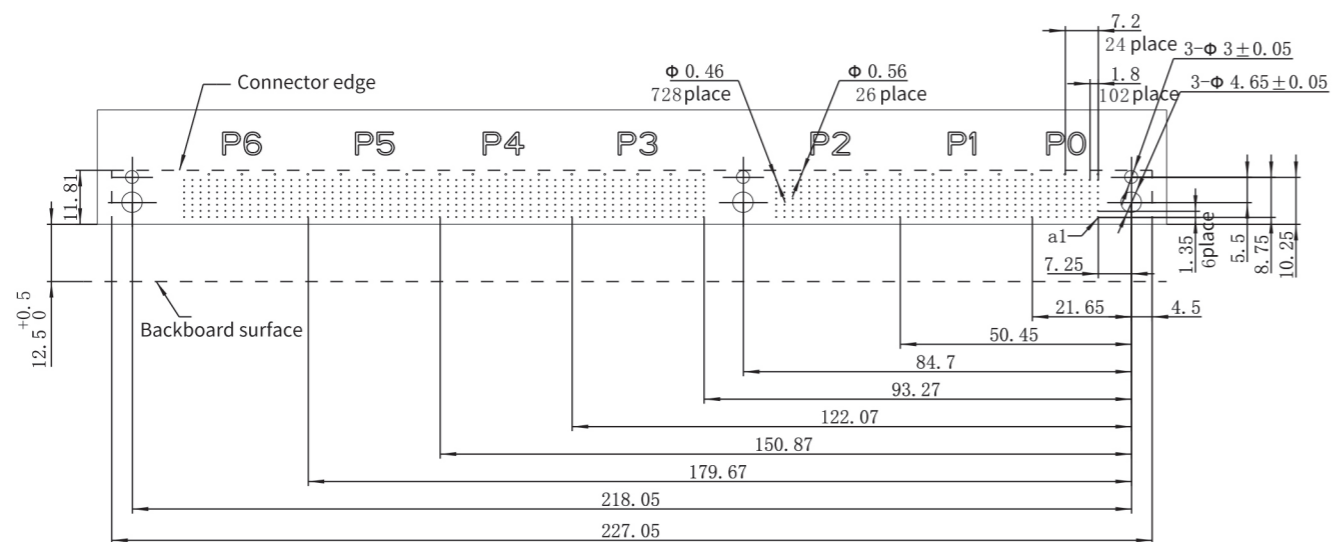
[ Double sided guide pin JT1410956-1 ]



Note: 1. A is 0°, 45°, 90°, 270°, or 315°, corresponding to the key positions of the identification guide sleeve on the daughter board end.  
2. The guide pin itself does not have key positions, and the key positions of the guide pin are set through the changes in the back panel opening A.  
3. The identification backboard thickness cannot be less than 3.6mm or thicker than 7.5mm.  
4. Tightening torque 4.5NM max.

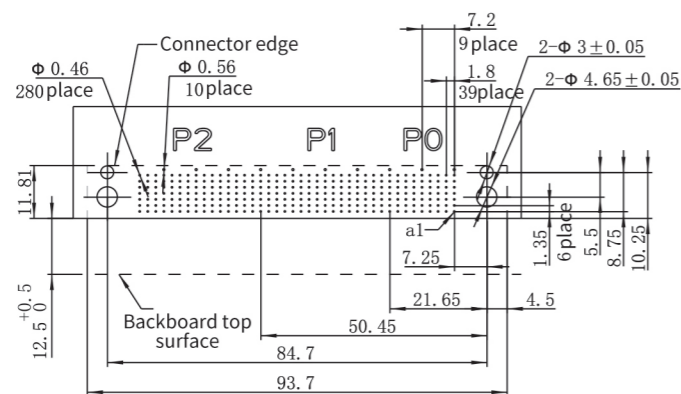
Printed board packaging size

[ 6U plug combination ]



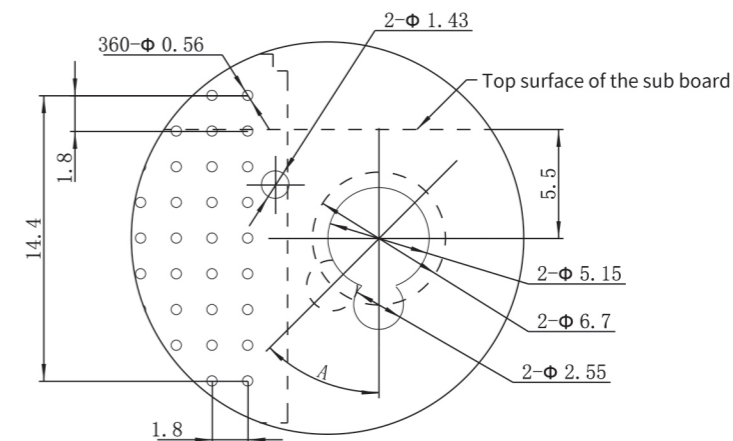
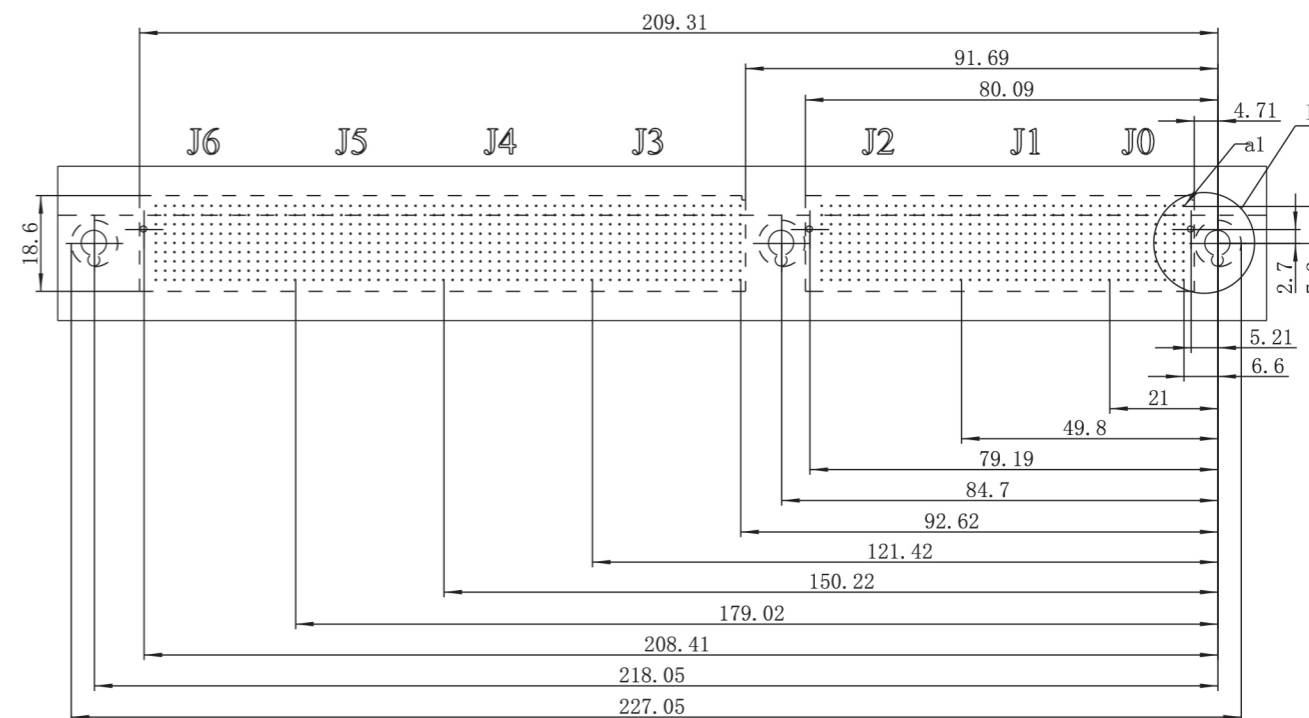
- note:
1. The unmarked tolerance is ± 0.02
  2. Please refer to P22 for specific hole dimensions

[ 3U plug combination ]



- note:
1. The unmarked tolerance is ± 0.02
  2. Please refer to P22 for specific hole dimensions

[ 6U socket combination ]



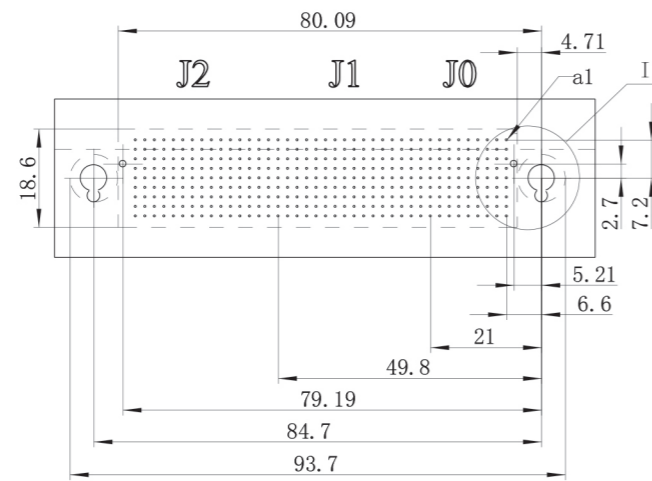
A为0°、45°、90°、270°或315°，Representing 5 key positions.

1/2:1

- note:
1. The unmarked tolerance is ± 0.02.
  2. Please refer to P22 for specific hole dimensions.

RT2 series high-speed backplane connector

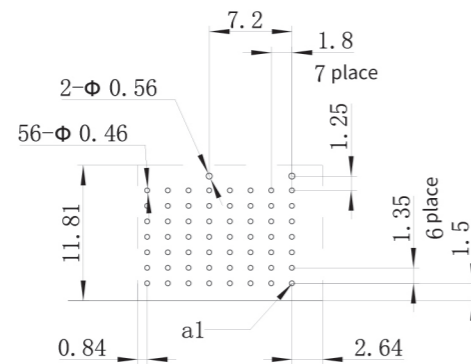
「3U Socket combination」



note:

1. Partial view [see P19 for details].
2. The unmarked tolerance is  $\pm 0.02$
3. Please refer to P22 for specific hole dimensions.

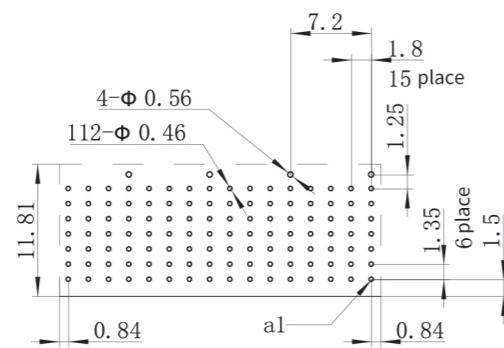
「Half module plug JT1410189-3」



note:

1. The unmarked tolerance is  $\pm 0.02$ .
2. Please refer to P22 for specific hole dimensions.

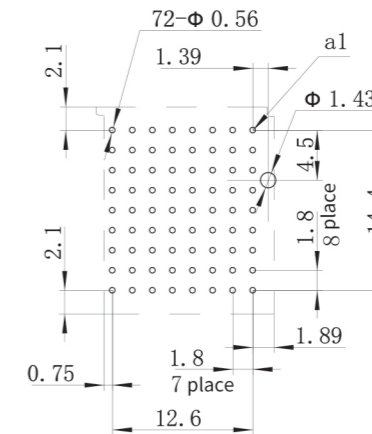
「Full module plug JT1410187-3 and JT1410190-3」



note:

1. The unmarked tolerance is  $\pm 0.02$ .
2. Please refer to P22 for specific hole dimensions.

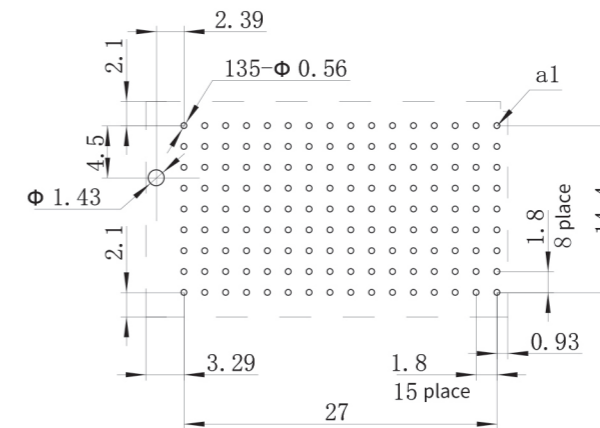
「Half module socket JT1410186-1」



note:

1. The unmarked tolerance is  $\pm 0.02$ .
2. Please refer to P22 for specific hole dimensions.

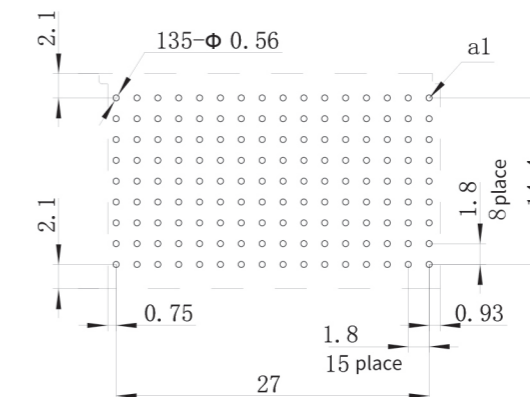
「Full module socket (side module) JT1410142-1」



note:

1. The unspecified tolerance is soil 0.02.
2. Please refer to P22 for specific hole dimensions.

「Full module socket (middle module) JT1410140-1」

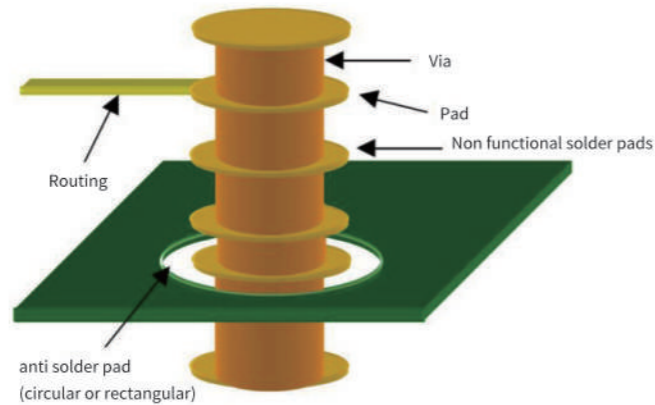


note:

1. The unmarked tolerance is  $\pm 0.02$ .
2. Please refer to P22 for specific hole dimensions.

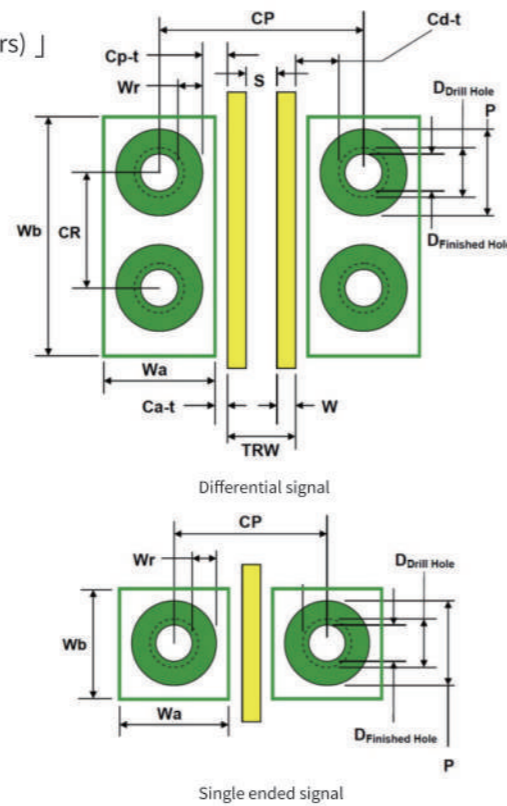
Suggestions for PCB wiring

- The through-hole on the printed circuit board is a serious impedance discontinuity point. By optimizing the diameter of the through-hole, solder pad, and anti solder pad, the impedance discontinuity problem can be significantly improved.
- The solder pad is the support around the hole. While ensuring the reliability of the soldering, the actual process parameters of the printed board solder pad can be referred to as much as possible to minimize the solder pad and reduce the resistance at that location Resist discontinuity.
- For high-speed applications, non wiring layer pads (excluding top and bottom layers) should be removed.
- For high-speed applications, the size of the anti solder pad should be increased as much as possible, provided that the differential routing reference ground is continuous;
- For high-speed applications, to achieve better transmission performance, it is recommended to use sheet materials such as M6, R04350B, or materials with a dielectric loss factor less than 0.0034.



[ Drilling, finished holes, pad and reverse pad hole sizes (in millimeters) ]

		Differential signal		Single ended signal	
		Sub-board	Master plate	Sub-board	Master plate
column spacing	CP	1.8	1.8	1.8	1.8
line spacing	CR	1.35	1.8	1.35	1.8
drilling	$D_{\text{Drill Hole}}$	0.55	0.65	0.55	0.65
Finished hole	$D_{\text{Finished Hole}}$	$0.46 \pm 0.02$	$0.56 \pm 0.02$	$0.46 \pm 0.02$	$0.56 \pm 0.02$
Pad ②	P	0.86	0.96	0.86	0.96
Reverse solder pad	Wa	1.3	1.3	1.3	1.3
Reverse solder pad	Wb	3.13	4.38	1.78	2.58
Ring width	Wr	0.2	0.2	0.2	0.2
Line width ①	W	0.15	0.15	---	---
Line spacing	S	0.127	0.127	---	---
Bus width	TRW	0.427	0.427	---	---
Drilling and walking Line gap	Cd-t	0.4115	0.3615	---	---
Solder pads and walking Line gap	Cp-t	0.2565	0.2065	---	---
Reverse solder pad and Wire gap	Ca-t	0.0365	0.0365	---	---

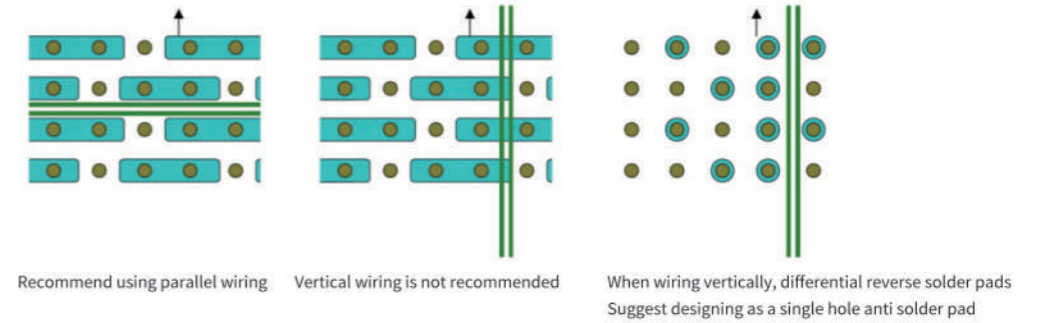


Note:

- ① Line width and spacing are only examples.
- ② To achieve better signal integrity, the diameter of the sub board solder pad can be 0.81, and the back board can be 0.91, or even smaller

[ Parallel or vertical routing ]

It is recommended to use parallel wiring instead of vertical wiring. If vertical wiring is used, it is recommended to design differential solder pads as single hole solder pads.

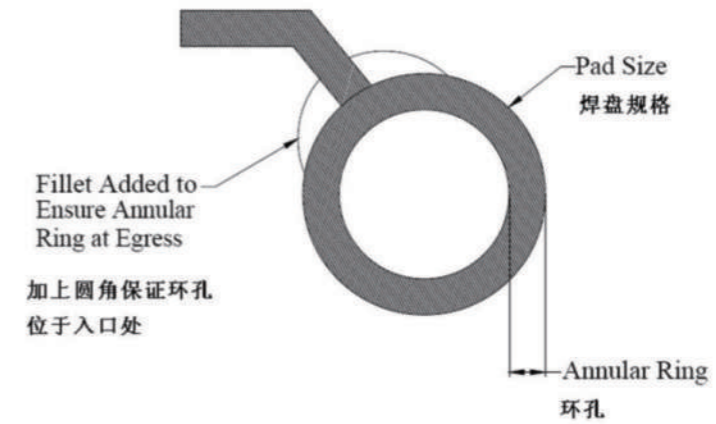


[ Compensation for wiring length ]

When designing the connector, length compensation is performed, which means that the internal differential length of the connector is equal. Therefore, in the design of printed circuit boards, it is only necessary to ensure that the wiring inside the board is of equal length.

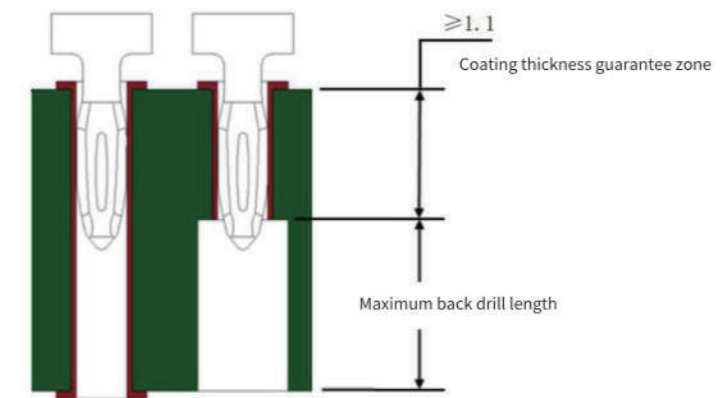
[ Tear Drop Design ]

When using small solder pads, it is recommended to add tears at the junction of routing and solder pads to improve the yield of printed circuit boards



[ Back drill ]

In general, the thickness of a printed circuit board is much longer than that of a connector pin. If there is no wiring in the extended part, a "short pile effect" will occur in the longer part, thereby deteriorating signal integrity. Backdrilling technology can be used to drill out the through holes from the wiring layer to the bottom of the backplate, which can eliminate the influence of "short pile effect" and improve signal integrity. Therefore, to achieve good signal quality, it is recommended to use back drilling technology to eliminate excess through-hole length.



**RT2-R, RT2-S, RT3**  
Series of high-speed backplane connectors

**Product Introduction**

- Complies with VITA41/VITA46/48/72 standards
- Compliant with VITA78 SpaceVPX space application standards
- Military high-density, high-speed, modular, universal connectors
- Durable and reliable in high-frequency vibration environments
- Optimize internal wiring, use high-frequency boards to improve signal integrity
- The transmission rate can reach 12.5-25Gbps
- Compatible with existing VPX products

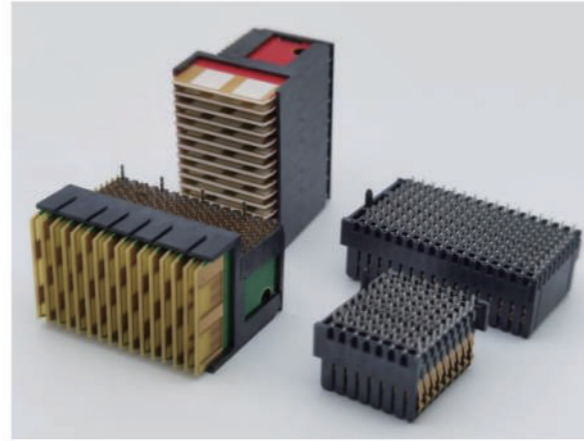
**Main technical indicators**

**[ Mechanical properties ]**

- Random vibration: 10-2000Hz, power spectral density 0.2g2/Hz
- Sinusoidal vibration: 10-2000Hz, 20g
- Shock: Half sine wave, 80g, lasting for 11ms
- Mechanical lifespan: 500 cycles

**[ Electrical performance ]**

- Low level contact resistance:  $\leq 40\text{ m}\Omega$
- Rated current: 8A for single power supply, 1A for single signal
- Insulation resistance: power contacts  $\geq 10000\text{M}\Omega$   
Signal contact piece  $\geq 1000\text{ M}\Omega$
- Voltage endurance: 500V
- Differential characteristic impedance: 100  $\Omega$
- Transmission rate: 12.5+Gbps (RT2-R)  
20+Gbps(RT2-S)  
25+Gbps(RT3)
- Crosstalk: better than -30dB




**[ Environmental Performance ]**

- Operating temperature: -55 °C~125 °C
- Salt spray: 96 hours
- Flame retardant grade: UL94V-0

**[ Supported communication protocols ]**

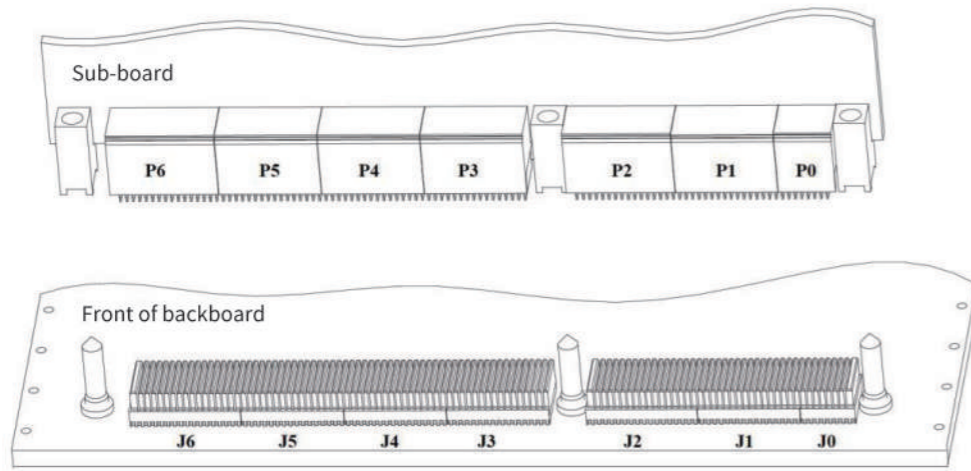
- 1000BASE-KX
- 10GBASE-KX4
- 40 Gigabit Ethernet
- 100 Gigabit Ethernet
- InfiniBand SDR, DDR, and QDR
- PCIe Gen 1, 2, 3, 4
- Serial RapidIO 2.5, 3.125, 5, 6.25, 10, 12.5, 25 Gbaud
- InfiniBand

**Main technical indicators**

				
	RT2 series	RT2-R series	RT2-S series	RT3 series
transmission speed	6.25+Gbps	12.5+Gbps	20+Gbps	25+Gbps
Contact characteristics	3 contacts	4contacts	4contacts	4contacts
Flexible configuration and combination of drawing boards	✓	✓	✓	✓
Compliant with VITA46 specifications	✓	✓	✓	✓
PCB backplate drilling diameter (mm)	0.56	0.56	0.56	0.37
PCB Daughter Board Drilling Diameter (mm)	0.46	0.46	0.46	0.32
Compliant standards	VITA 46.0	VITA 46.0	VITA 46.0	VITA 46.30

RT2-R, RT2-S, RT3 series high-speed backplane connector

Product ordering model



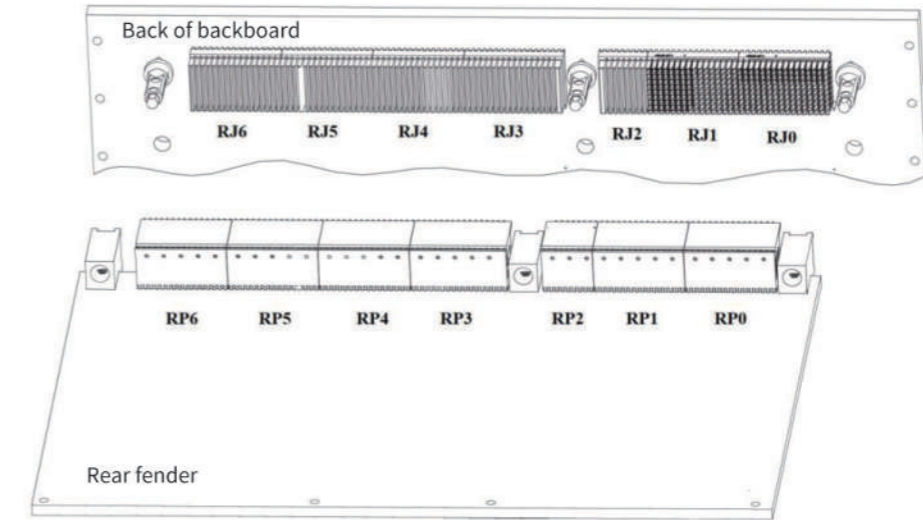
Position of plug connector		Order model		
		RT2-R	RT2-S	RT3
P0		JT2102772-1	JT2102772-1S	JT2102772-1S JT2332816-1(25Gbps)
P1, P2, P3, P4, P5, P6	Differential module	JT2102771-1	JT2302317-1	JT2302785-1
	Single ended module	JT2102847-1	JT2102847-1	JT2102847-1
Identify the guide sleeve		JT1-1469492- $\alpha$	JT1-1469492- $\alpha$	JT1-1469492- $\alpha$

Position of plug connector		Order model		
		RT2-R	RT2-S	RT3
J0		JT2102735-1	JT2102735-1	JT2102735-1 JT2332817-1(25Gbps)
J1, J3, J4, J5		JT2102736-1	JT2102736-1	JT2302789-1
J2, J6		JT2102737-1	JT2102737-1	JT2302790-1
Identify guide pins		JT1-1469491- $\beta$	JT1-1469491- $\beta$	JT1-1469491- $\beta$

note:

Identify the key position represented by 'a' in the order model of the guide sleeve, see P14-P15 for details.

Identify the order model of the guide pin, where 'b' indicates that it can be adapted to printed boards of different thicknesses. Please refer to page P16 for details.



Position of plug connector		Order model		
		RT2-R	RT2-S	RT3
P0		JT2102773-1	JT2302319-1	JT2302794-1
RP1	Differential module	JT2102774-1	JT2302320-1	JT2302795-1
	Differential and single ended modules	JT2102849-1	JT2102849-1	JT2102849-1
RP2	Differential module	JT2102775-1	JT2302321-1	JT2302796-1
	Differential and single ended modules	JT2102848-1	JT2102848-1	JT2102848-1
RP3, RP4, RP5, RP6	Differential module	JT2102774-1	JT2302320-1	JT2302795-1
	Single ended module	JT2102847-1	JT2102847-1	JT2102847-1
Identify the guide sleeve		JT1-1469492- $\alpha$ <sup>1</sup>	JT1-1469492- $\alpha$ <sup>1</sup>	JT1-1469492- $\alpha$ <sup>1</sup>

Position of plug connector		Order model		
		RT2-R	RT2-S	RT3
RJ0		JT2102768-1	JT2102768-1	JT2302791-1
		JT2102850-1	JT2102850-1	JT2302792-1
RJ1		JT2102736-1	JT2102736-1	JT2302789-1
		JT2102851-1	JT2102851-1	JT2302793-1
RJ2		JT2102735-1 <sup>2</sup>	JT2102735-1 <sup>2</sup>	JT2302788-1 <sup>2</sup>
RJ3		JT2102737-1 <sup>2</sup>	JT2102737-1 <sup>2</sup>	JT2302790-1 <sup>2</sup>
RJ4, RJ5, RJ6		JT2102736-1	JT2102736-1	JT2302789-1
Identify the guide sleeve		JT1410956-1 <sup>1</sup>	JT1410956-1 <sup>1</sup>	JT1410956-1 <sup>1</sup>

note:

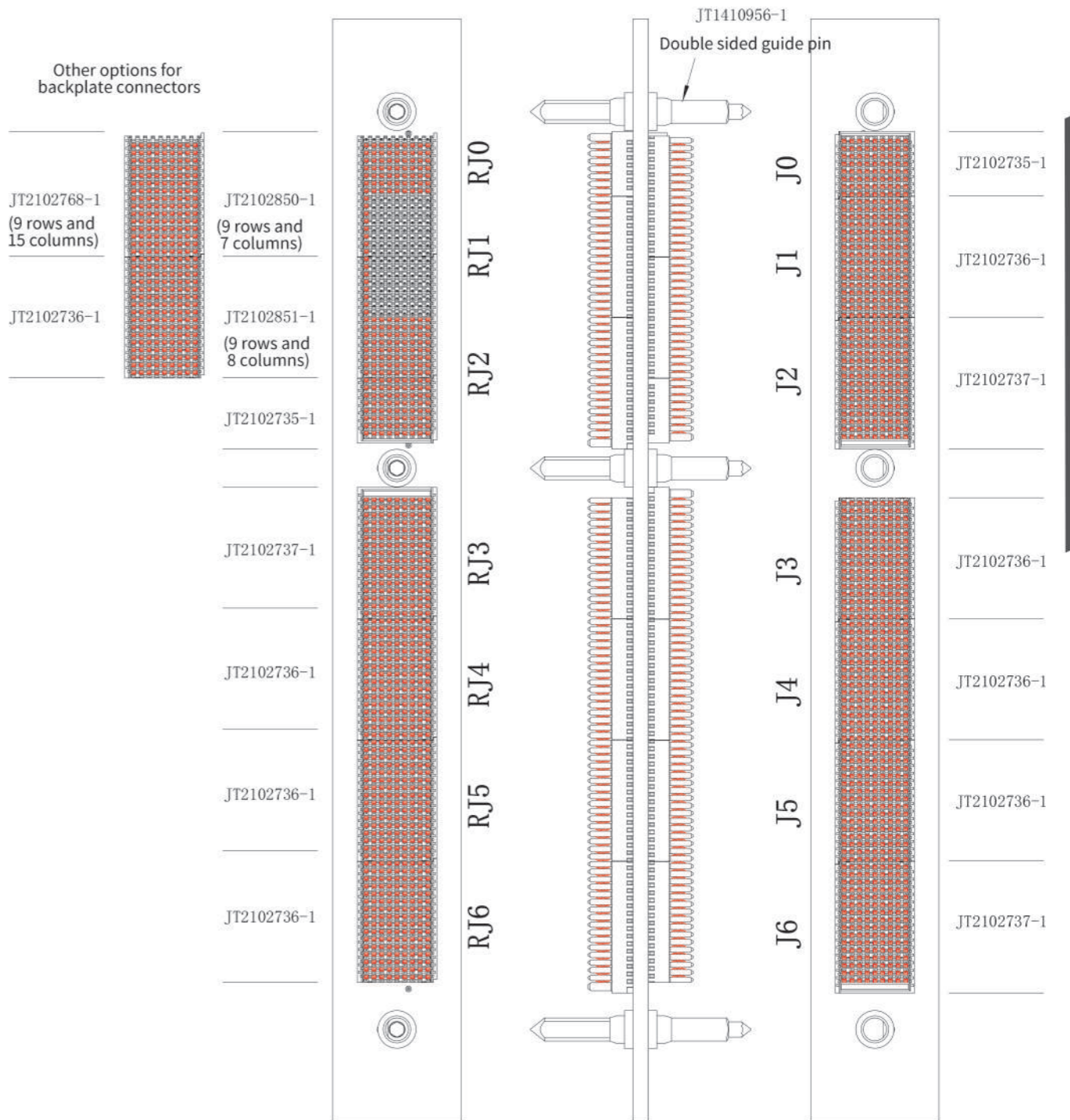
1. Identify the key position 'a' in the order model of the guide sleeve, see P14-P15 for details. Please refer to page P16 for details on identifying the ordering model of the guide pin
2. When used on the back panel, the plastic guide pillar should be broken off,

Definition of plug signal arrangement

Order model	Connector position	Signal arrangement	Instructions
JT2102772-1 JT2102772-1S JT2332816-1	P0		Half module, 3 columns of power supply, 3 columns of single ended 2 columns of differential, a total of 6-core power supply/16 core single ended/4 pairs of differential
JT2102771-1 JT2302317-1 JT2302785-1	P1、P2、P3、P4、P5、P6		Differential full module, 16 columns of differential, a total of 32 pairs of differential/8-core single ended
JT2102847-1	P1、P2、P3、P4、P5、P6、RP3、RP4、RP5、RP6		Single ended full module, 16 columns single ended, with a total of 80 cores single ended
JT2102773-1 JT2302319-1 JT2302794-1	RP0		Full module behind the board, 12 columns of differential, 3 columns of single ended, 2 columns of power supply, a total of 20 pairs of differential/20 core single ended/4-core power supply
JT2102774-1 JT2302320-1 JT2302795-1	RP1、RP3、RP4、RP5、RP6		Differential full module behind the board, 16 columns of differential, a total of 32 pairs of differential/8-core single ended
JT2102849-1	RP1		Full module behind the board, 8 columns of differential/8 columns of single ended, a total of 16 pairs of differential/44 core single ended
JT2102775-1 JT2302321-1 JT2302796-1	RP2		Half module behind the board, 8 columns of differential, a total of 16 pairs of differential/4-core single ended
JT2102848-1	RP2		Half module behind the board, 8 columns of single ended, with a total of 40 cores of single ended

Definition of socket signal arrangement

「RT2-R series」 & 「RT2-S series」



When selecting and using socket connectors, the following precautions should be taken:

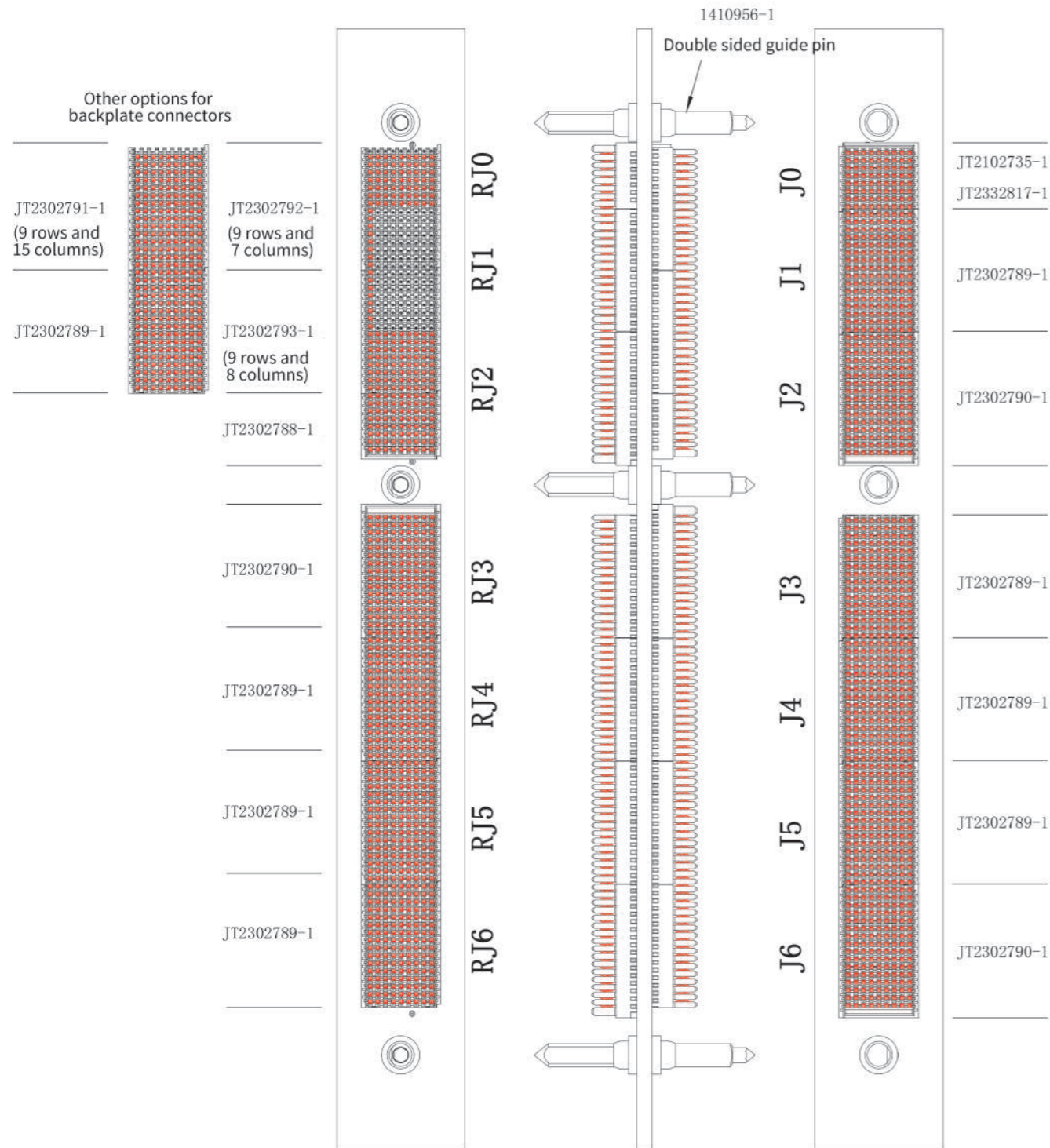
1. Red represents the socket. The absence of a red position indicates that there is no socket installed at that location.

When installing connectors on the back of the backplane, the thickness of the backplane should not be less than 3.6mm.

When installing connectors on the back of the backplane, double-sided guide pins JT1410956-1 should be selected.

RT2-R / RT2-S RT3series high-speed backplane connector

[ RT3 series ]



When selecting and using socket connectors, the following precautions should be taken:

1. Red represents the socket. The absence of a red position indicates that there is no socket installed at that location.
- When installing connectors on the back of the backplane, the thickness of the backplane should not be less than 3.6mm.  
When installing connectors on the back of the backplane, double-sided guide pins JT1410956-1 should be selected.

Head seat signal correspondence

P0 (JT2102772 -1, JT2102772 -1S, JT2102772 -1S, JT2332816 -1 (25Gbps) ) pin definition

	Wafer Type	Row G	Row F	Row E	Row D	Row C	Row B	Row A
1	Power	Vs1	Vs1	Vs1	No Pad	Vs2	Vs2	Vs2
2	Power	Vs1	Vs1	Vs1	No Pad	Vs2	Vs2	Vs2
3	Power	Vs3	Vs3	Vs3	No Pad	Vs3	Vs3	Vs3
4	Single-ended	SM2	SM3	GND	-12V_AUX	GND	SYSRESET*	NVMRO
5	Single-ended	GAP*	GA4*	GND	3.3V_AUX	GND	SMO	SM1
6	Single-ended	GA3*	GA2*	GND	+12V_AUX	GND	GA1*	GA0*
7	Differential	TCK	GND	TDO	TDI	GND	TMS	TRST*
8	Differential	GND	REF_CLK-	REF_CLK+	GND	RES_BUS-	RES_BUS+	GND

Fully differential module (JT2302317 -1, JT2302785 -1) pin definition

	Row G	Row F	Row E	Row D	Row C	Row B	Row A
1	P2-SE0	GND	P2-DP1-	P2-DP1+	GND	P2-DP0-	P2-DP0+
2	GND	P2-DP3-	P2-DP3+	GND	P2-DP2-	P2-DP2+	GND
3	P2-SE1	GND	P2-DP5-	P2-DP5+	GND	P2-DP4-	P2-DP4+
4	GND	P2-DP7-	P2-DP7+	GND	P2-DP6-	P2-DP6+	GND
5	P2-SE2	GND	P2-DP9-	P2-DP9+	GND	P2-DP8-	P2-DP8+
6	GND	P2-DP11-	P2-DP11+	GND	P2-DP10-	P2-DP10+	GND
7	P2-SE3	GND	P2-DP13-	P2-DP13+	GND	P2-DP12-	P2-DP12+
8	GND	P2-DP15-	P2-DP15+	GND	P2-DP14-	P2-DP14+	GND
9	P2-SE4	GND	P2-DP17-	P2-DP17+	GND	P2-DP16-	P2-DP16+
10	GND	P2-DP19-	P2-DP19+	GND	P2-DP18-	P2-DP18+	GND
11	P2-SE5	GND	P2-DP21-	P2-DP21+	GND	P2-DP20-	P2-DP20+
12	GND	P2-DP23-	P2-DP23+	GND	P2-DP22-	P2-DP22+	GND
13	P2-SE6	GND	P2-DP25-	P2-DP25+	GND	P2-DP24-	P2-DP24+
14	GND	P2-DP27-	P2-DP27+	GND	P2-DP26-	P2-DP26+	GND
15	P2-SE7	GND	P2-DP29-	P2-DP29+	GND	P2-DP28-	P2-DP28+
16	GND	P2-DP31-	P2-DP31+	GND	P2-DP30-	P2-DP30+	GND

Full single ended module (JT2102847 -1) pin definition

	Row G	Row F	Row E	Row D	Row C	Row B	Row A
1	P2-SE04	P2-SE03	GND	P2-SE02	GND	P2-SE01	P2-SE00
2	P2-SE09	P2-SE08	GND	P2-SE07	GND	P2-SE06	P2-SE05
3	P2-SE14	P2-SE13	GND	P2-SE12	GND	P2-SE11	P2-SE10
4	P2-SE19	P2-SE18	GND	P2-SE17	GND	P2-SE16	P2-SE15
5	P2-SE24	P2-SE23	GND	P2-SE22	GND	P2-SE21	P2-SE20
6	P2-SE29	P2-SE28	GND	P2-SE27	GND	P2-SE26	P2-SE25
7	P2-SE34	P2-SE33	GND	P2-SE32	GND	P2-SE31	P2-SE30
8	P2-SE39	P2-SE38	GND	P2-SE37	GND	P2-SE36	P2-SE35
9	P2-SE44	P2-SE43	GND	P2-SE42	GND	P2-SE41	P2-SE40
10	P2-SE49	P2-SE48	GND	P2-SE47	GND	P2-SE46	P2-SE45
11	P2-SE54	P2-SE53	GND	P2-SE52	GND	P2-SE51	P2-SE50
12	P2-SE59	P2-SE58	GND	P2-SE57	GND	P2-SE56	P2-SE55
13	P2-SE64	P2-SE63	GND	P2-SE62	GND	P2-SE61	P2-SE60
14	P2-SE69	P2-SE68	GND	P2-SE67	GND	P2-SE66	P2-SE65
15	P2-SE74	P2-SE73	GND	P2-SE72	GND	P2-SE71	P2-SE70
16	P2-SE79	P2-SE78	GND	P2-SE77	GND	P2-SE76	P2-SE75

J0 (JT2102735 -1, JT2332817 -1 (25Gbps) ) pin definition

	Wafer Type	Row i	Row h	Row g	Row f	Row e	Row d	Row c	Row b	Row a
1	Power	Vs1	Vs1	Vs1	Vs1	None	Vs2	Vs2	Vs2	Vs2
2	Power	Vs1	Vs1	Vs1	Vs1	None	Vs2	Vs2	Vs2	Vs2
3	Power	Vs3	Vs3	Vs3	Vs3	None	Vs3	Vs3	Vs3	Vs3
4	Single-ended	GND	SM2	SM3	GND	-12V_AUX	GND	SYSRESE*	NVMRO	GND
5	Single-ended	GND	GAP*	GA4*	GND	3.3V_AUX	GND	SMO	SMI	GND
6	Single-ended	GND	GA3*	GA2*	GND	+12V_AUX	GND	GA1*	GA0*	GND
7	Odd Diff	TCK	GND	GND	TDO	TDI	GND	GND	TMS	TRST*
8	Even Diff	GND	REF_CLK-	REF_CLK+	GND	GND	RES_BUS-	RES_BUS+	GND	GND

JT2102736 -1, JT2102737 -1, JT2302789 -1, JT2302790 -1 pin definition

When adapting to the full differential module (JT202317-1, JT230785-1)

	Row i	Row h	Row g	Row f	Row e	Row d	Row c	Row b	Row a
1	P2-SE0	GND	GND	P2-DP1-	P2-DP1+	GND	GND	P2-DP0-	P2-DP0+
2	GND	P2-DP3-	P2-DP3+	GND	GND	P2-DP2-	P2-DP2+	GND	GND
3	P2-SE1	GND	GND	P2-DP5-	P2-DP5+	GND	GND	P2-DP4	P2-DP4+
4	GND	P2-DP7-	P2-DP7+	GND	GND	P2-DP6-	P2-DP6+	GND	GND
5	P2-SE2	GND	GND	P2-DP9-	P2-DP9+	GND	GND	P2-DP8-	P2-DP8+
6	GND	P2-DP11-	P2-DP11+	GND	GND	P2-DP10-	P2-DP10+	GND	GND
7	P2-SE3	GND	GND	P2-DP13-	P2-DP13+	GND	GND	P2-DP12-	P2-DP12+
8	GND	P2-DP15-	P2-DP15+	GND	GND	P2-DP14-	P2-DP14+	GND	GND
9	P2-SE4	GND	GND	P2-DP17-	P2-DP17+	GND	GND	P2-DP16-	P2-DP16+
10	GND	P2-DP19-	P2-DP19+	GND	GND	P2-DP18-	P2-DP18+	GND	GND
11	P2-SE5	GND	GND	P2-DP21-	P2-DP21+	GND	GND	P2-DP20-	P2-DP20+
12	GND	P2-DP23-	P2-DP23+	GND	GND	P2-DP22-	P2-DP22+	GND	GND
13	P2-SE6	GND	GND	P2-DP25-	P2-DP25+	GND	GND	P2-DP24-	P2-DP24+
14	GND	P2-DP27-	P2-DP27+	GND	GND	P2-DP26-	P2-DP26+	GND	GND
15	P2-SE7	GND	GND	P2-DP29-	P2-DP29+	GND	GND	P2-DP28-	P2-DP28+
16	GND	P2-DP31-	P2-DP31+	GND	GND	P2-DP30-	P2-DP30+	GND	GND

JT2102736 -1, JT2102737 -1, JT2302789 -1, JT2302790 -1 pin definition

When compatible with all single ended modules (T2102847 -1)

	Row i	Row h	Row g	Row f	Row e	Row d	Row c	Row b	Row a
1	GND	P2-SE04	P2-SE03	GND	P2-SE02	GND	P2-SE01	P2-SE00	GND
2	GND	P2-SE09	P2-SE08	GND	P2-SE07	GND	P2-SE06	P2-SE05	GND
3	GND	P2-SE14	P2-SE13	GND	P2-SE12	GND	P2-SE11	P2-SE10	GND
4	GND	P2-SE19	P2-SE18	GND	P2-SE17	GND	P2-SE16	P2-SE15	GND
5	GND	P2-SE24	P2-SE23	GND	P2-SE22	GND	P2-SE21	P2-SE20	GND
6	GND	P2-SE29	P2-SE28	GND	P2-SE27	GND	P2-SE26	P2-SE25	GND
7	GND	P2-SE34	P2-SE33	GND	P2-SE32	GND	P2-SE31	P2-SE30	GND
8	GND	P2-SE39	P2-SE38	GND	P2-SE37	GND	P2-SE36	P2-SE35	GND
9	GND	P2-SE44	P2-SE43	GND	P2-SE42	GND	P2-SE41	P2-SE40	GND
10	GND	P2-SE49	P2-SE48	GND	P2-SE47	GND	P2-SE46	P2-SE45	GND
11	GND	P2-SE54	P2-SE53	GND	P2-SE52	GND	P2-SE51	P2-SE50	GND
12	GND	P2-SE59	P2-SE58	GND	P2-SE57	GND	P2-SE56	P2-SE55	GND
13	GND	P2-SE64	P2-SE63	GND	P2-SE62	GND	P2-SE61	P2-SE60	GND
14	GND	P2-SE69	P2-SE68	GND	P2-SE67	GND	P2-SE66	P2-SE65	GND
15	GND	P2-SE74	P2-SE73	GND	P2-SE72	GND	P2-SE71	P2-SE70	GND
16	GND	P2-SE79	P2-SE78	GND	P2-SE77	GND	P2-SE76	P2-SE75	GND

Product dimensions

Half module plug JT2102772-1, JT2102772-1S, JT2332816-1 ", Full module plug JT2102771-1, JT2102847-1, JT2302317-1, JT2302785-1J ,  
 Half module socket JT2102735-1, JT2332817-1 ", Full module socket (side module) JT2102737-1, JT2302790-1 ", Full module socket (middle module) JT2102736-1.  
 The external dimensions of the JT2302789-1 product are the same as those of the RT2 series, please refer to P9-P10 for details.

The external dimensions of the "3U plug combination", "6U plug combination", "6U socket combination", and "3U socket combination" products are the same as those of the RT2 series, as detailed in P11-P13.

The "identification guide sleeve", "variable key guide sleeve", "single-sided guide pin", and "double-sided guide pin" compatible with RT2-R, RT2-S, and RT3 are the same as the RT2 series, as detailed in P14-P17.

VPX Subboard protective cover



Instructions:

Applicable to 3U product - Model: JT2226808-2

6U Product - Model: JT2226808-1

Provide reliable protection for plug-in products and avoid damage caused by contact

Printed board packaging size

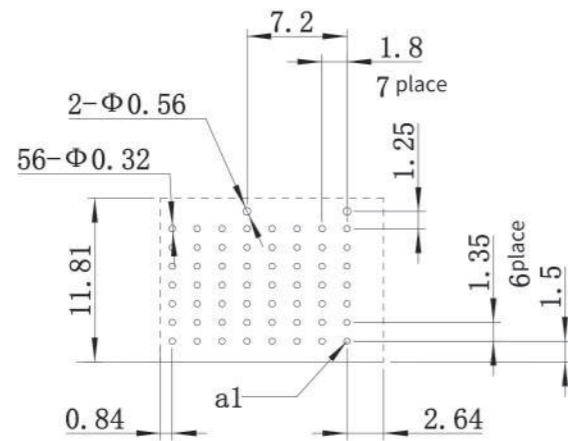
The packaging dimensions of the printed circuit boards for the "3U plug combination", "6U plug combination", "6U socket combination", and "3U socket combination" products are the same as those of the RT2 series. Please refer to P18-P20 for details.

The packaging dimensions of the RT2-R and RT2-S series half module plugs, half module sockets, full module plugs, and full module sockets printed circuit boards are the same as those of the RT2 series, as detailed in P20-P21.

The packaging dimensions of the RT3 series half module plug, half module socket, full module plug, and full module socket printed circuit board are detailed in P34-P35. (Other dimensions are the same as the RT2 series except for the opening size, which is different from the RT2 series)

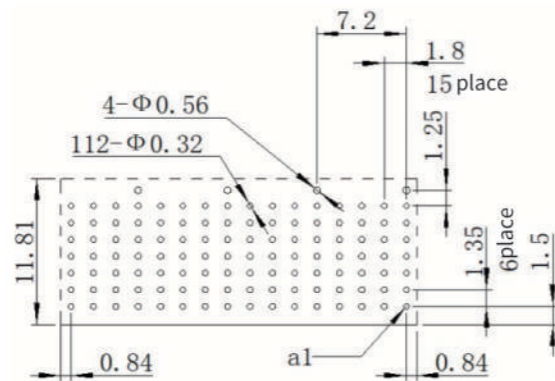
The dimensions of RT3 series half module plugs, half module sockets, full module plugs, and full block sockets are as follows

[ Half module plug JT2332816-1 ]



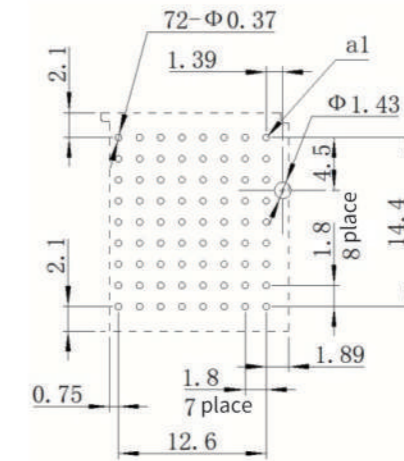
Note:  
1. The tolerance not specified is  $\pm 0.02$ .  
2. The specific opening size is detailed in P36.

[ Full module plug JT2302785-1 ]



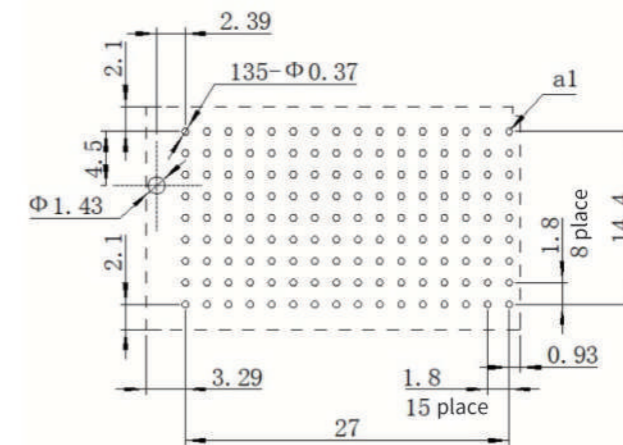
Note:  
1. The tolerance not specified is  $\pm 0.02$ .  
2. Please refer to P36 for specific hole dimensions

[ Half module socket JT2302788-1 ]



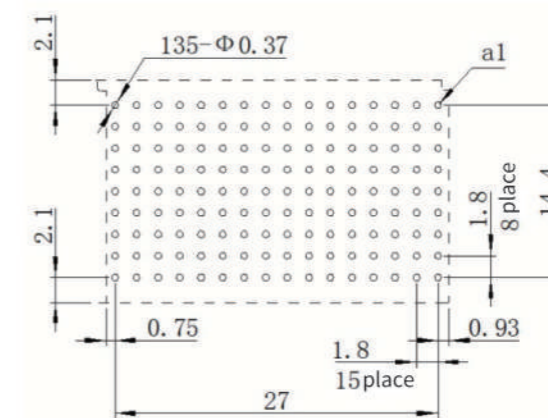
Note:  
1. The tolerance not specified is  $\pm 0.02$ .  
2. The specific opening size is detailed in P36

[ Full module socket (side module) JT2302790-1 ]



Note:  
1. The tolerance not specified is  $\pm 0.02$ .  
2. The specific opening size is detailed in P36

[ Full module socket (middle module) JT2302789-1 ]



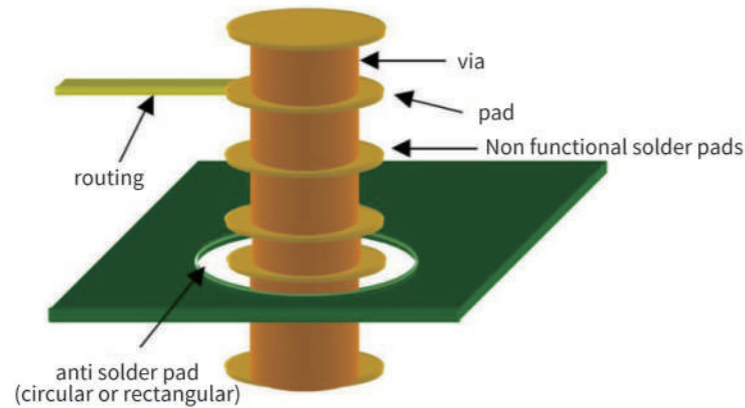
Note:  
1. The tolerance not specified is  $\pm 0.02$ .  
2. The specific opening size is detailed in P36

**RT2-R、RT2-S Suggestions for PCB wiring**

■ The wiring suggestions for RT2-R series and RT2-S series printed boards are the same as those for RT2 series. For detailed information, please refer to the "Wiring Suggestions for Printed Boards in RT2 Series"

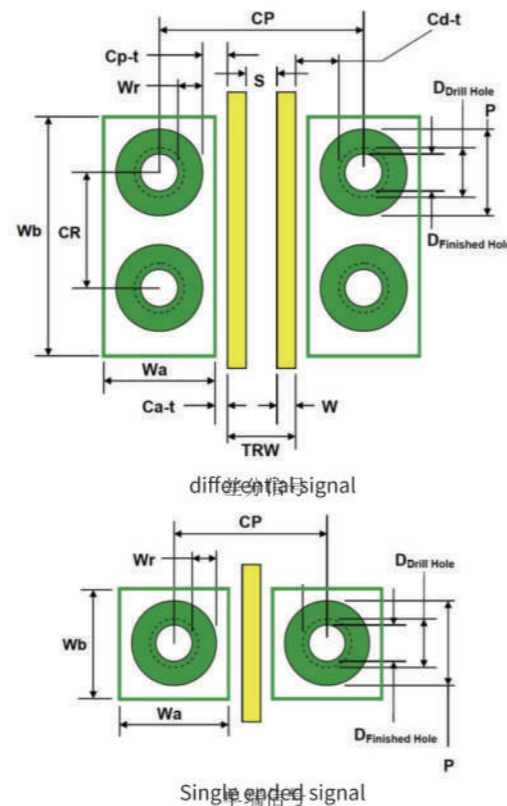
**RT3 Suggestions for PCB wiring**

- The through-hole on the printed circuit board is a serious impedance discontinuity point. By optimizing the diameter of the through-hole, solder pad, and anti solder pad, the impedance discontinuity problem can be significantly improved.
- The solder pad is the support around the hole. While ensuring the reliability of the soldering, the actual process parameters of the printed board solder pad can be referred to as much as possible to minimize the solder pad and reduce the resistance at that location Resist discontinuity.
- For high-speed applications, non wiring layer pads (excluding top and bottom layers) should be removed.
- For high-speed applications, the size of the anti solder pad should be increased as much as possible, provided that the differential routing reference ground is continuous;
- For high-speed applications, to achieve better transmission performance, it is recommended to use sheet materials such as M6, R04350B, or materials with a dielectric loss factor less than 0.0034.



**[ Drilling, finished holes, pad and reverse pad hole sizes(unit mm) ]**

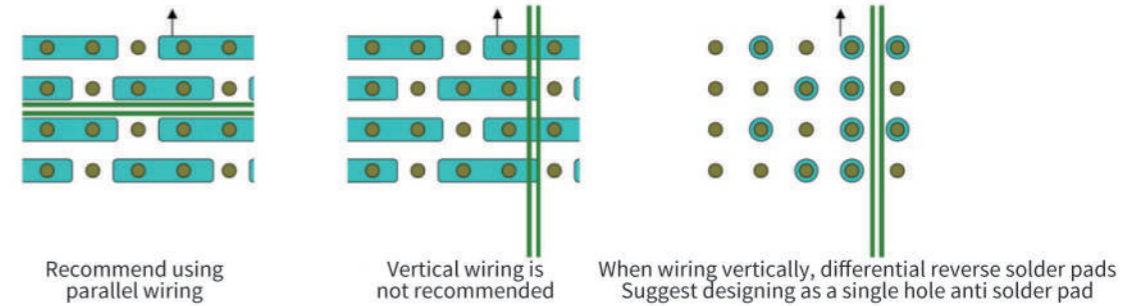
		differential signal		Single ended signal	
		sub-board	master plate	sub-board	master plate
column spacing	CP	1.8	1.8	1.8	1.8
line spacing	CR	1.35	1.8	1.35	1.8
drilling	$D_{\text{Drill Hole}}$	0.4	0.45	0.4	0.45
Finished hole	$D_{\text{Finished Hole}}$	$0.32 \pm 0.02$	$0.37 \pm 0.02$	$0.32 \pm 0.02$	$0.37 \pm 0.02$
Pad ②	P	0.72	0.77	0.72	0.77
anti solder pad	Wa	1.3	1.3	1.3	1.3
anti solder pad	Wb	3.13	4.38	1.78	2.58
Ring width	Wr	0.2	0.2	0.2	0.2
Line width ①	W	0.15	0.15	---	---
Line spacing	S	0.127	0.127	---	---
Bus width	TRW	0.427	0.427	---	---
Gap between drilling and wiring	Cd-t	0.4115	0.3615	---	---
Gap between solder pads and wiring	Cp-t	0.2565	0.2065	---	---
anti solder pad and wiring	Ca-t	0.0365	0.0365	---	---



Note:  
 ① Line width and spacing are only examples.  
 ② To achieve better signal integrity, the diameter of the sub board solder pad can be 0.67, and the back board can be 0.72 or even smaller.

**[ Parallel or vertical routing ]**

It is recommended to use parallel wiring instead of vertical wiring. If vertical wiring is used, it is recommended to design differential solder pads as single hole solder pads.

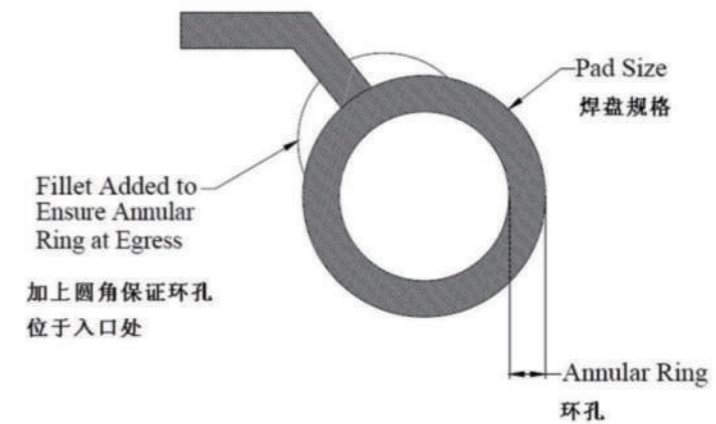


**[ Compensation for wiring length ]**

When designing the connector, length compensation is performed, which means that the internal differential length of the connector is equal. Therefore, in the design of printed circuit boards, it is only necessary to ensure that the wiring inside the board is of equal length

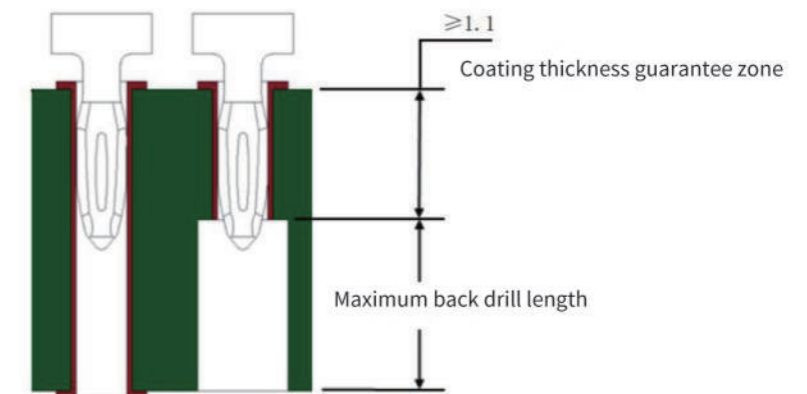
**[ Tear Drop Design ]**

When using small solder pads, it is recommended to add tears at the junction of routing and solder pads to improve the yield of printed circuit boards.



**[ Back drill ]**

In general, the thickness of a printed circuit board is much longer than that of a connector pin. If there is no wiring in the extended part, a "short pile effect" will occur in the longer part, thereby deteriorating signal integrity. Backdrilling technology can be used to drill out the through holes from the wiring layer to the bottom of the backplate, which can eliminate the influence of "short pile effect" and improve signal integrity. Therefore, to achieve good signal quality, it is recommended to use back drilling technology to eliminate excess through-hole length.



## VITA66 Fiber optic series connector

### Product Introduction

- Meets VITA 66.1 and VITA 66.4 standards;
- Provide high-density blind insertion optical interconnects for backplane/daughter board structures;
- The backplane socket connector uses guide pins for easy blind installation;
- The slot design of the daughter board plug housing facilitates cleaning of the MT interface;
- The VITA 66.1 module (full module) can accommodate two MT fiber optic contacts;
- The VITA 66.4 module (half module) can accommodate one MT fiber optic contact;
- The space occupied by two VITA 66.4 modules is the same as that occupied by one VITA66.1 module;
- The template end socket connector can provide a floating amount of  $\pm 0.25\text{mm}$ ;
- Can meet VPX and other high-performance standards.

### Main technical indicators

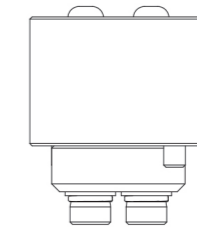
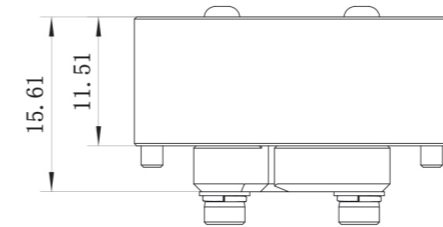
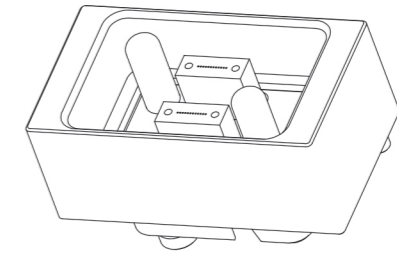
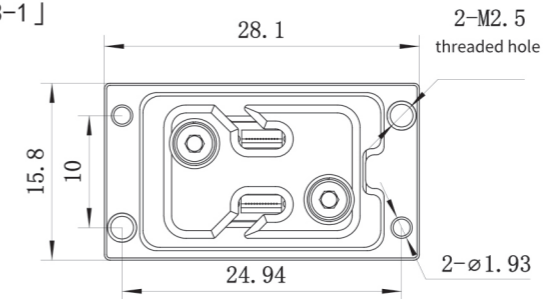
- Insertion loss:  $\leq 0.8\text{dB}$  (multimode),  $\leq 1\text{dB}$  (single-mode)
- Random vibration: 10-2000Hz, power spectral density 0.2g<sup>2</sup>/Hz
- Sinusoidal vibration: 10-2000Hz, 20g
- Shock: Half sine wave, 80g, lasting for 11ms
- Mechanical lifespan: 500 cycles
- Operating temperature: -55 °C-85 °C
- Salt spray: 96 hours

### Product ordering model

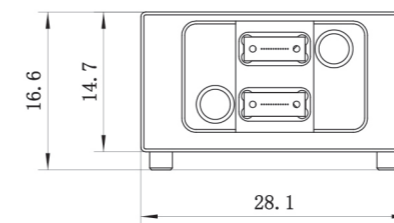
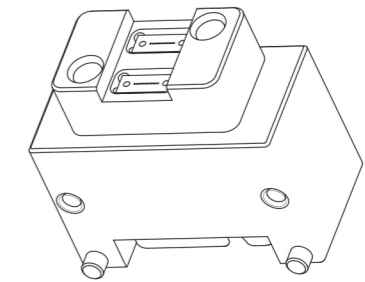
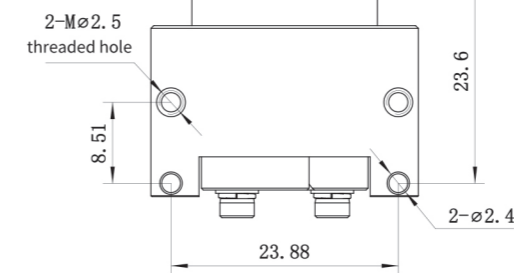
interface type	Connector position	Connector Name	Order model	Adapt to fiber optic contact types
VITA 66.1	master plate	Motherboard connector (socket)	JT2000973-1	MT
	sub-board	Daughter board connector (plug)	JT2000974-1	MT/DS
VITA 66.4	master plate	Motherboard connector (socket)	JT2226880-1	MT
	sub-board	Daughter board connector (plug)	JT2226881-1	MT/DS

### Product dimensions

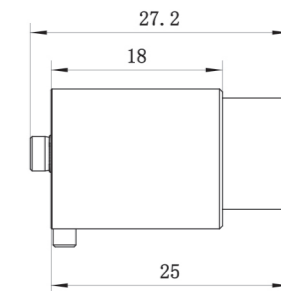
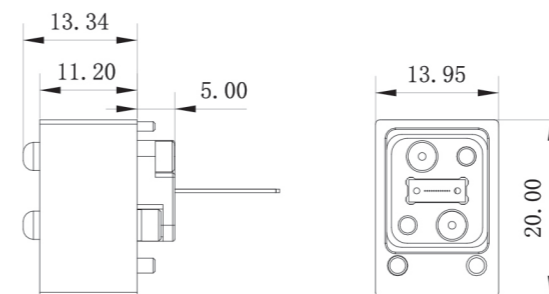
「JT2000973-1」



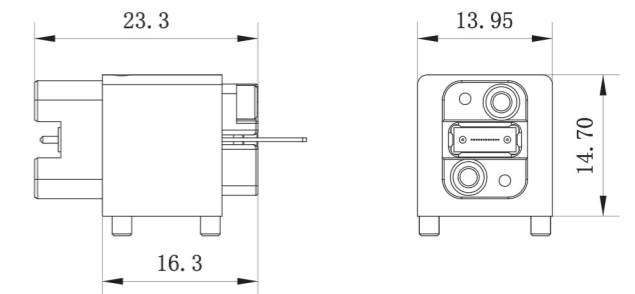
「JT2000974-1」



「JT2226880-1」

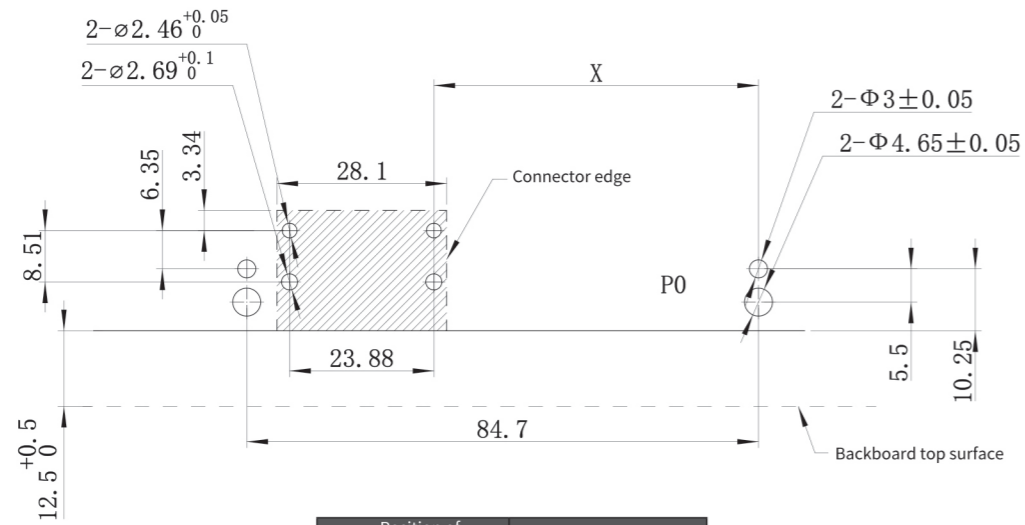


「JT2226881-1」



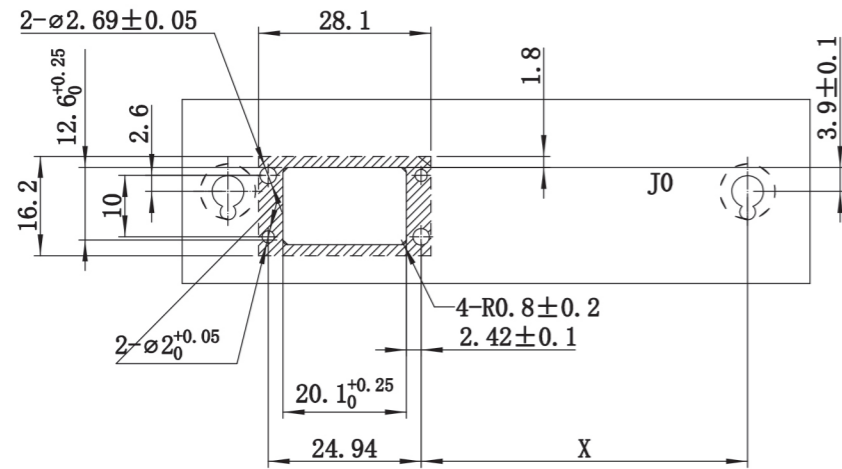
Product packaging size

[ Full module plug packaging size ]



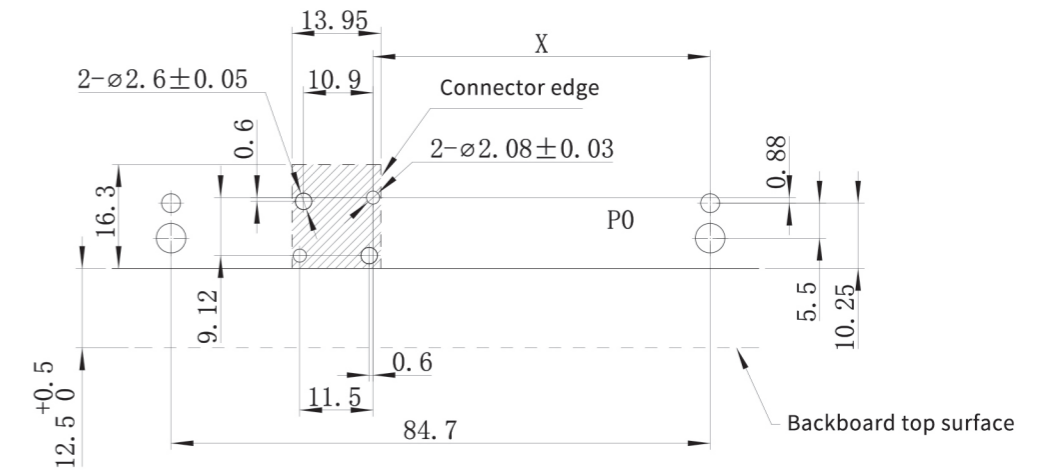
Position of plug connector	X
P2	53.73
P3	96.55
P4	125.35
P5	154.15
P6	182.95

[ Full module socket packaging size ]



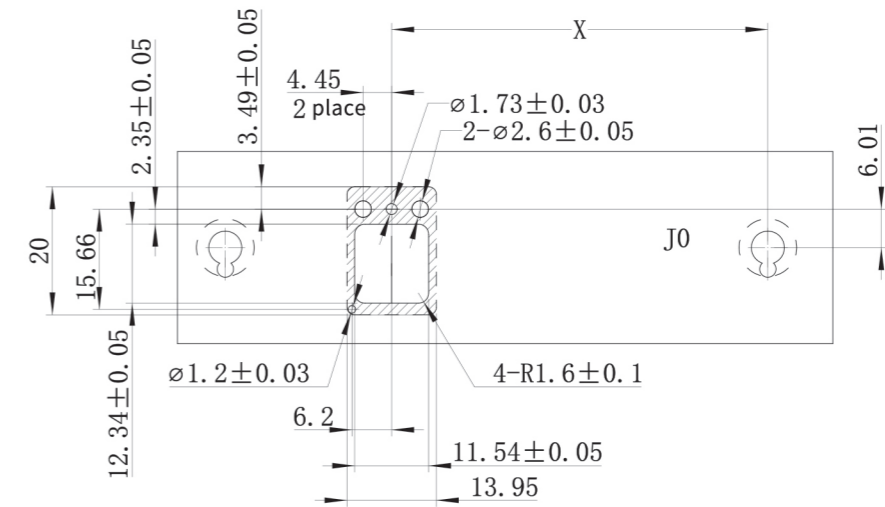
Position of socket connector	Order model
J2	53.20
J3	96.02
J4	124.82
J5	153.62
J6	182.42

[ Half module plug packaging size ]



Position of plug connector	X	Position of plug connector	X
P2A	52.98	P2B	67.10
P3A	95.85	P3B	109.97
P4A	124.65	P4B	138.77
P5A	153.45	P5B	167.57
P6A	182.25	P6B	196.37

[ Half module socket packaging size ]



Position of plug connector	X	Position of plug connector	X
J2A	58.73	J2B	72.85
J3A	101.60	J3B	115.72
J4A	130.40	J4B	144.52
J5A	159.20	J5B	173.32
J6A	188.00	J6B	202.12

Optical module

[ Fiber optic jumper ordering model ]

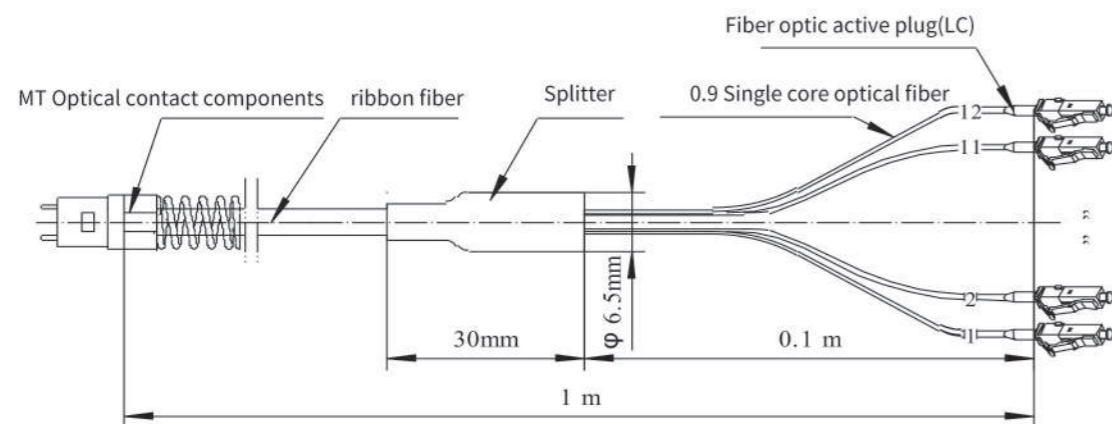
RF-	MT-	12	LC-	0.9	M	0.4	/0.2
1	2	3	4	5	6	7	8

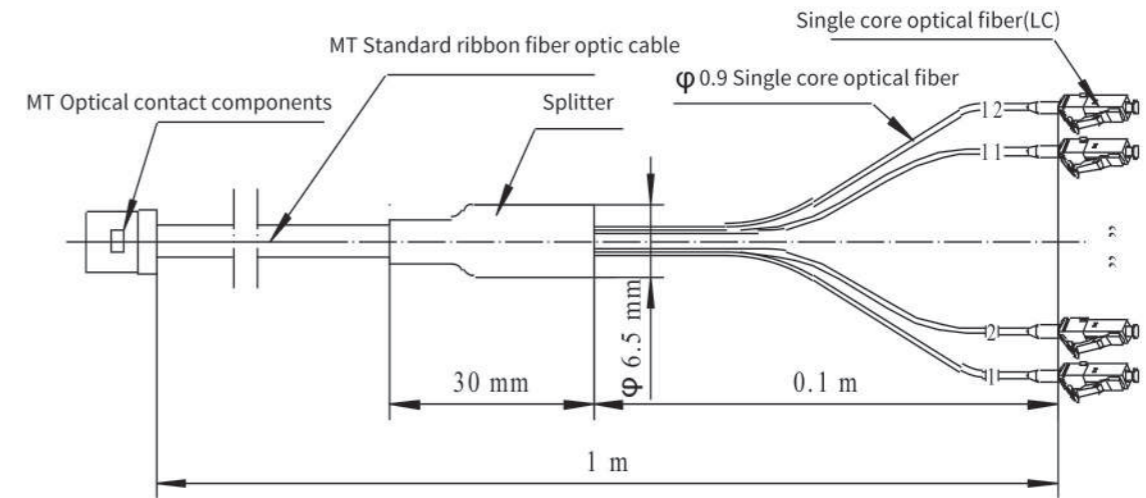
1	Series Title: RF	6	Fiber optic transmission mode M: Multimode fiber with a core diameter of 62.5/125 S: G652 standard single-mode fiber MI: Multimode fiber with a core diameter of 50/125 MI V: Multimode OM3 fiber with a core diameter of 50/125
2	Fiber optic contact type MT - Individual MT MT/D-MT with guide pin MT/S-MT with spring MT/DS-MT with guide pin and spring	7	Total length of optical cable Unit: meter
3	Number of fiber optic active plugs 12	8	Fiber optic active plug end branching length Unit: meter
4	Fiber optic active plug type LC, FC, SC, MPO, MPO/D, MT/S, A8T, JY599/16GP, JY599/12GP, etc		
5	Split fiber diameter 0.9, 2		

[ Example of ordering model ]

Model naming example 1: RF-MT/DS-12LC-0.9M1/0.1, represents an MT type fiber optic jumper with guide pins and springs, with 12 LC movable plugs, a branch line diameter of 0.9mm at the movable plug end, a transmission mode of multi-mode 62.2/125, a total length of 1 meter for the optical cable, and a branch line length of 0.1 meters.



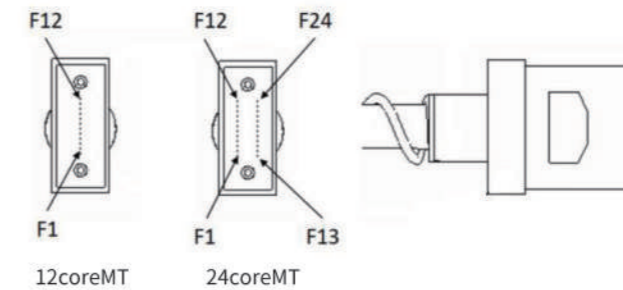
Model naming example 2: RF-IT-12LC-0.9M1/0.1, represents a single MT type fiber optic jumper with 12 LC movable plugs. The movable plug end has a branch line diameter of 0.9mm, and the transmission mode is multimode 62.2/125. The total length of the optical cable is 1 meter, and the branch line length is 0.1 meters.



[ MT Type fiber optic contact optical channel number ]

MT type fiber optic contacts do not have optical channel numbers, and the optical channel numbers need to be defined by the user:

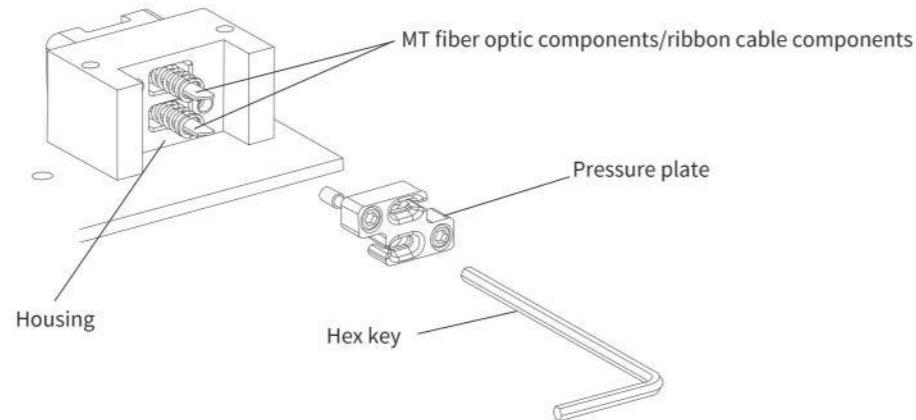
MT type fiber optic contacts are centrally symmetrical and can be installed in both directions structurally, with the difference being that one side has a small window and the other side does not, which can be used as a positive and negative identification.



[ Fiber Optic Patch Cord Assembly Instructions ]

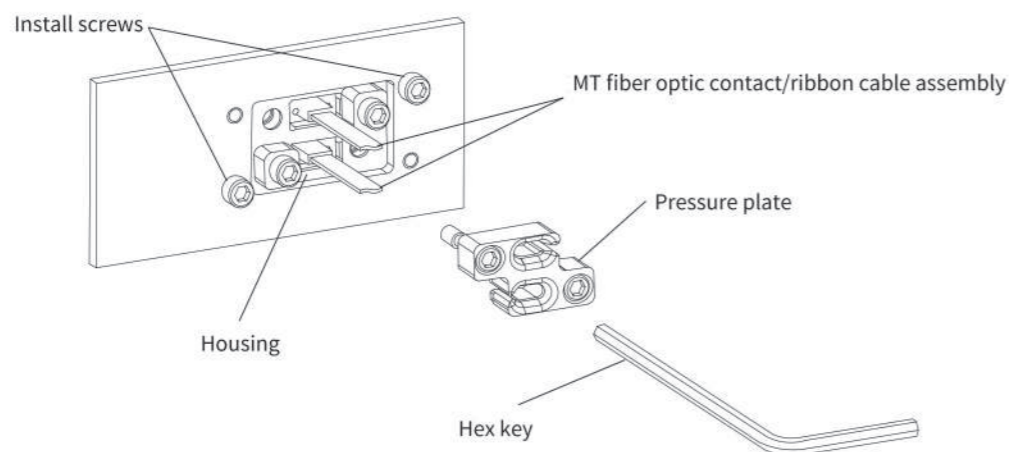
For the plug connector on the daughter board end, first remove the screws to remove the pressure plate, manually install the MT fiber optic component/ribbon cable component into the pressure plate through the inclined groove on the pressure plate, install the pressure plate into the connector, and then tighten the screws to complete the installation. Pay attention to the following points during installation:

- The window orientation of the MT fiber optic contact is set by the user to ensure that the same numbered optical channels of the plug and socket correspond one-to-one;
- Pay attention to the protection of the MT contact mating surface and keep it clean. When not used for a long time or foreign objects are found on the mating surface, it needs to be wiped with a dust-free cloth.



For the motherboard socket connector, first remove the screws to remove the pressure plate, and then install the MT fiber optic component/ribbon cable component together into the pressure plate through the inclined groove on the pressure plate. Then install the pressure plate into the connector and tighten the screws to complete the installation. Pay attention to the following points during installation:

- The window orientation of the IMT fiber optic contact is set by the user to ensure that the same numbered optical channels of the plug and socket correspond one-to-one;
- The screw specification is M2 and can be coated with removable thread glue during installation for better anti loosening effect.



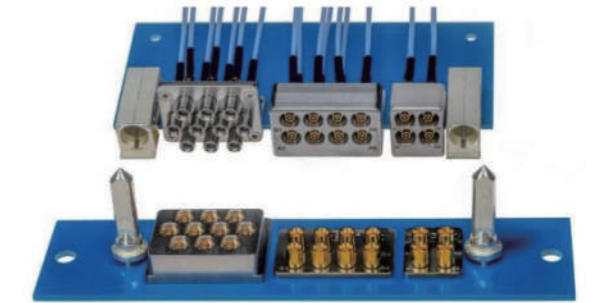
[ Precautions during the use of fiber optic jumpers ]

- Pay attention to the bending of the optical fiber, with a bending radius not less than 12.7mm, and pay attention to the binding method. Do not tie it tightly, which may cause the local bending radius to be too small;
- Pay attention to the protection of the MT contact mating surface and keep it clean. When not used for a long time or foreign objects are found on the mating surface, it needs to be wiped with a dust-free cloth.

VITA67 RF series connector

Product Features

- Fully compatible with VPX packaging;
- Modular design for specific application configurations;
- RF contacts can be adapted to various cables;
- SMPM standard interface, performance reaches 40 GHz;
- Isolation degree 100 dBc@40GHz;
- Floating socket ensures that the RF connector can be properly grounded;
- High fault tolerance of RF contacts ensures blind insertion;
- The module material is stainless steel or aluminum, which is sturdy and durable.



Main technical indicators

[ mechanical properties ]

- Random vibration: 10-2000Hz, power spectral density 0.2g2/Hz
- Sinusoidal vibration: 10-2000Hz, 20g
- Shock: 80g, half sine wave, 11ms
- Mechanical lifespan: 500 cycles

[ Environmental Performance ]

- Operating temperature: -55 °C~125 °C
- Salt spray: 96 hours
- Flame retardant grade: UL94V-0

[ Electrical performance ]

- Characteristic impedance: 50 Ω
- Operating frequency: DC~40GHz
- Voltage standing wave ratio: ≤ 1.3 (1GHz ≤ F ≤ 18GHz); ≤ 1.5 (18GHz < F ≤ 40GHz);
- RF insertion loss: 0.12 √ f (f: GHz) (after insertion)
- Power capacity: capable of withstanding an average power of 30dBm within 3MHz ≤ F ≤ 30MHz  
Capable of withstanding an average power of 20dBm within 30MHz < F ≤ 26.5GHz

Product ordering model

[ VITA 67. 1 and VITA 67. 2 Plug module ]

Order model		Material	Feature
VITA 67. 1 (4 Core half module)	VITA 67. 2 (8 Core half module)		
JT1996883-4	JT1996705-4	Stainless steel	Countersunk hole, compatible with 2-56UNC or M2.5 countersunk screws
JT2157338-4	JT2157350-3	Aluminium	Countersunk hole, compatible with 2-56UNC or M2.5 countersunk screws
JT2101925-4	JT2101924-4	Stainless steel	Threaded hole, compatible with 2-56UNC screws
JT2157339-4	JT2157340-4	Aluminium	Threaded hole, compatible with 2-56UNC screws

「 VITA 67.1 and VITA 67.2 socket modules 」

Order model		Material	Feature
VITA 67.1 (4 Core half module)	VITA 67.2 (8 Core half module)		
JT1996884-1	JT1996706-1	Stainless steel	SMPM full escape hole, compatible with SMPM-K
JT2101510-2	JT1996777-2	Stainless steel	Compatible with OSMM-J
JT1996884-9	JT2157553-1	Aluminium	Direct outgoing line

「 RF contact components 」

	Order model	Adaptation module	Default RF cable configuration
Pin contact	JT1996390-1	Plug	Flexiform405NMFJ (semi flexible cable) and cables of the same specification
	JT2101814-1	Plug	CNX3506 and cables of the same specification
Socket contact	JT2101012-1	Socket	Flexiform405NMF (semi flexible cable) and cables of the same specification
	JT2157022-1	Socket	CNX3506 and cables of the same specification

「 Tool 」

Order model	Suitable for RF contact model	Function
JT2101595-1	JT1996390-1 JT2101814-1	Insert/remove SMPM pin contacts, suitable for plug connectors
JT2161640-1	JT2101012-1 JT2157022-1	Remove SMPM socket contacts, suitable for socket connectors

Product appearance

「 VITA 67.1 4 Core half module plug 」

Model	JT1996883-4	JT2157338-4	JT2101925-3	JT2157339-4
Feature	Stainless steel; Countersunk hole, compatible with 2-56UNC or M2.5 countersunk screws	Aluminium; Countersunk hole, compatible with 2-56UNC or M2.5 countersunk screws	Stainless steel; Threaded hole, compatible with 2-56UNC screw	Aluminium; Threaded hole, compatible with 2-56UNC screws
Appearance				




「 VITA 67.2 8 Core full module plug 」

Model	JT1996705-4	JT2157350-3	JT2101924-3	JT2157340-4
Feature	Stainless steel; Countersunk hole, compatible with 2-56UNC or M2.5 countersunk screws	Aluminium; Countersunk hole, compatible with 2-56UNC or M2.5 countersunk screws	Stainless steel; Threaded hole, compatible with 2-56UNC screw	Aluminium; Threaded hole, compatible with 2-56UNC screws
Appearance				

「 VITA 67.1 4 Core half module socket 」

Model	JT1996884-1	JT2101510-2	JT1996884-9
Feature	stainless steel; SMPM full escape hole, Compatible with SMPM-K	Stainless steel: compatible with OSMM-J	aluminium Direct outgoing line
Appearance			

[ VITA 67.2.8 Core full module socket ]

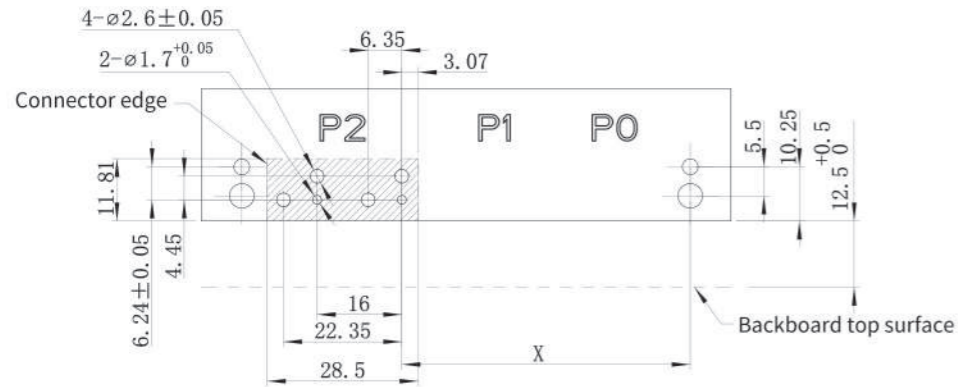
Model	JT1996706-1	JT1996777-2	JT2157553-1
Feature	Stainless steel; SMPM full escape hole, Compatible with SMPM-K	Stainless steel; Compatible with OSMM-J	Aluminium; Direct outgoing line
Appearance			

[ RF contact parts and tools ]

RF contact piece		Tool	
Pin contact	Socket contact	JT2101595-1	JT2161640-1
			

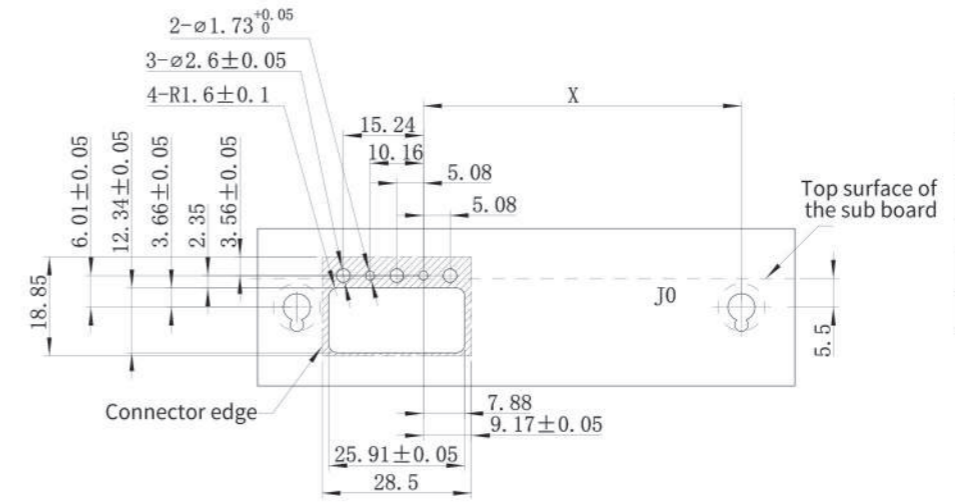
Product packaging size

[ Full module plug packaging size ]



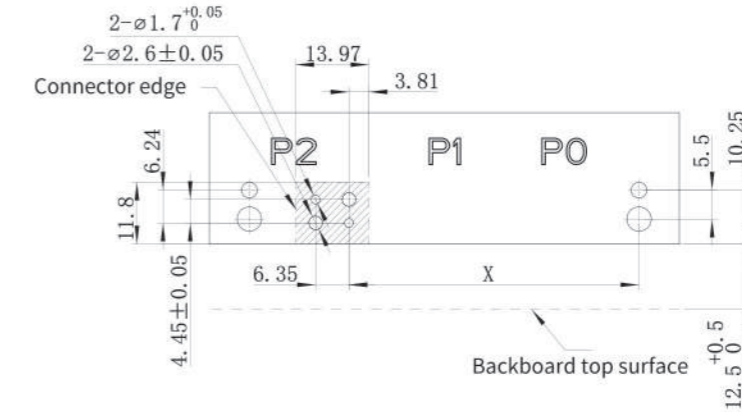
Position of plug connector	X
P2	54.48
P3	97.31
P4	126.11
P5	154.91
P6	183.71

[ Full module socket packaging size ]



Position of socket connector	X
J2	60.59
J3	103.41
J4	132.21
J5	161.01
J6	189.81

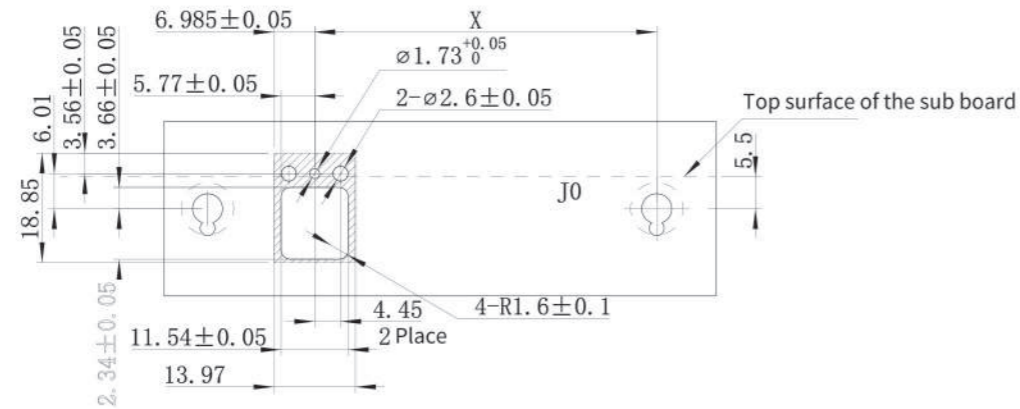
[ Half module plug packaging size ]



Position of plug connector	X
P2A	55.55
P3A	98.42
P4A	127.22
P5A	156.02
P6A	184.82

Position of plug connector	X
P2B	69.67
P3B	112.54
P4B	141.34
P5B	170.14
P6B	198.94

[ Half module socket packaging size ]



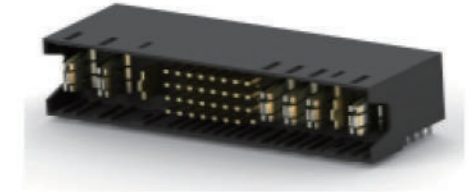
Position of plug connector	X
J2A	58.73
J3A	101.60
J4A	130.40
J5A	159.20
J6A	188.00

Position of plug connector	X
J2B	72.85
J3B	115.72
J4B	144.52
J5B	173.32
J6B	202.12

VITA62 Power series connector

Product Features

- Compliant with VITA62 standard;
- Six power contacts provide reliable contact, low insertion and extraction force, and single core 75A current carrying capacity;
- The connector has a good ventilation structure and excellent heat dissipation capability.



Main technical indicators

[ Electrical performance ]

- Contact resistance: High power contact:  $\leq 0.7m\ \Omega$   
Low power contact:  $\leq 1.5m\ \Omega$   
Signal contact:  $\leq 15m\ \Omega$
- Rated current: High power contact (multi-core): 40A  
Low power contact (multi-core): 20A  
Signal contact (multi-core): 1.5A
- Insulation resistance: Power contact:  $\geq 1000M\ \Omega$   
Signal contact:  $\geq 500M\ \Omega$
- Voltage endurance: Power contact:  $\geq 2500V$   
Signal contact:  $\geq 1000V$

[ Mechanical performance ]

- Random vibration: 10-2000Hz, power spectral density 0.2g2/Hz
- Sinusoidal vibration: 10-2000Hz, 20g
- Impact: 294m/s2, half sine wave, 11ms
- Mechanical life: 500 cycles

[ Environmental Performance ]

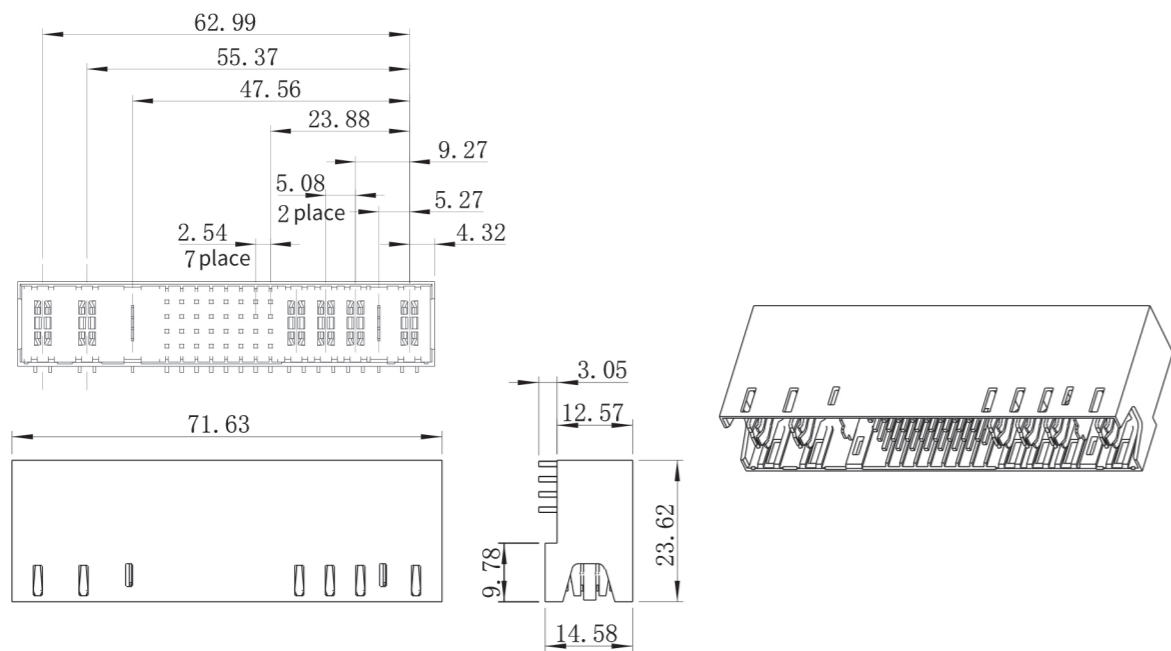
- Operating temperature: -55 °C~125 °C
- Salt spray: 96 hours
- Flame retardant grade: UL94V-0

Product ordering model

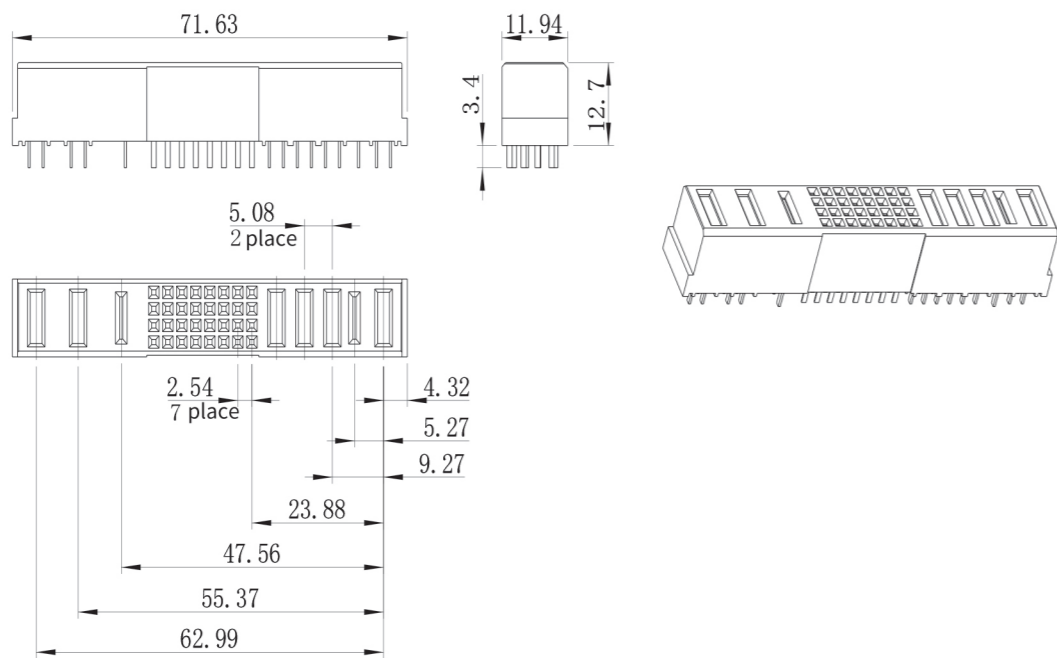
Module Type	Connector position	Connector Name	Order model
3U	J0	Motherboard connector (socket)	JT1-6450869-4
	P0	Daughter board connector (plug)	JT6450849-7
6U	J0	Motherboard connector (socket)	JT6450863-5
	P0	Daughter board connector (plug)	JT6450843-6
	J1	Motherboard connector (socket)	JT1-6450869-0
	P1	Daughter board connector (plug)	JT6450849-6

Product dimensions

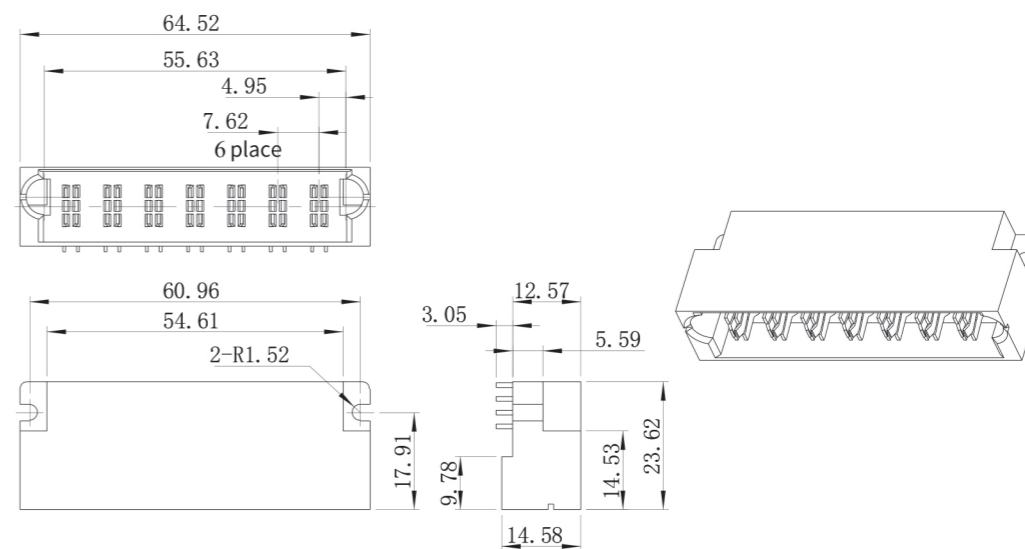
[3U P0 daughterboard connector (plug JT6450849-7) external dimensions]



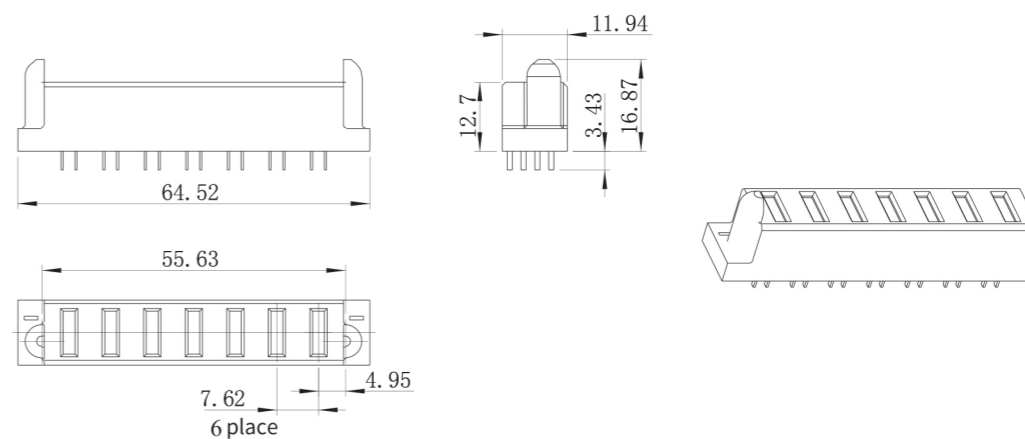
[3U J0 motherboard connector (socket JT1-6450869-4) external dimensions]



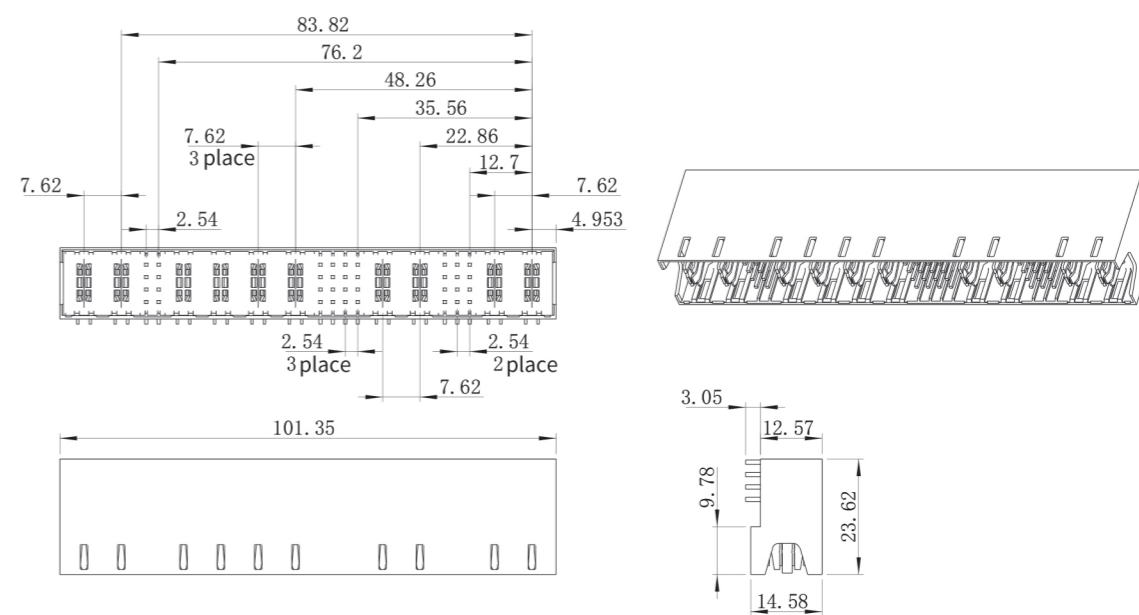
[6U P0 daughterboard connector (plug JT6450843-6) external dimensions]



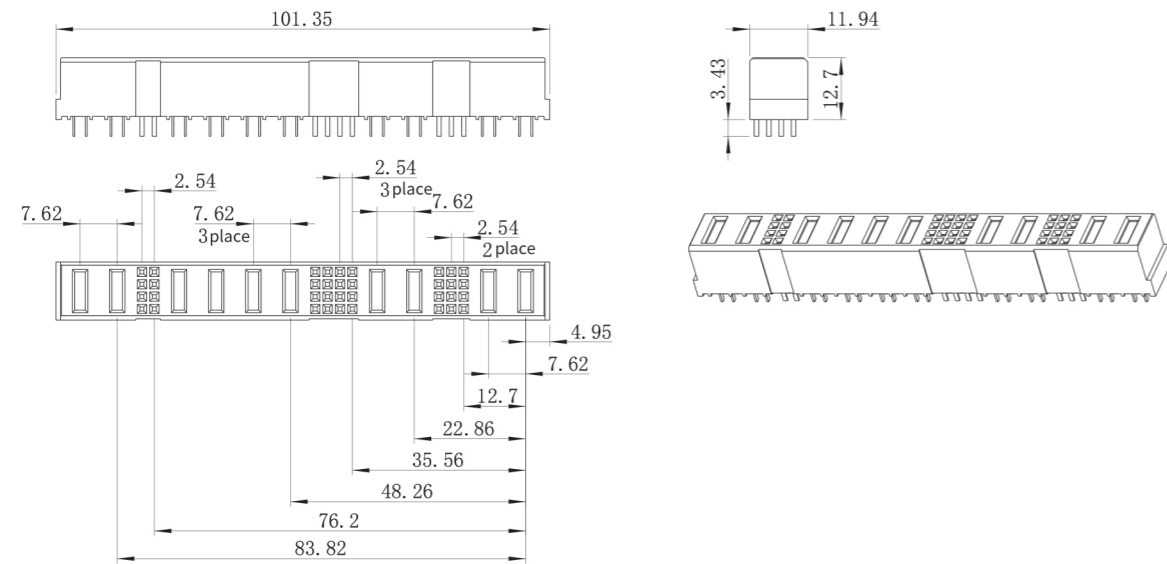
[6U J0 motherboard connector (socket JT6450863-5) external dimensions]



[6U P1 daughter board connector (plug JT6450849-6) external dimensions]

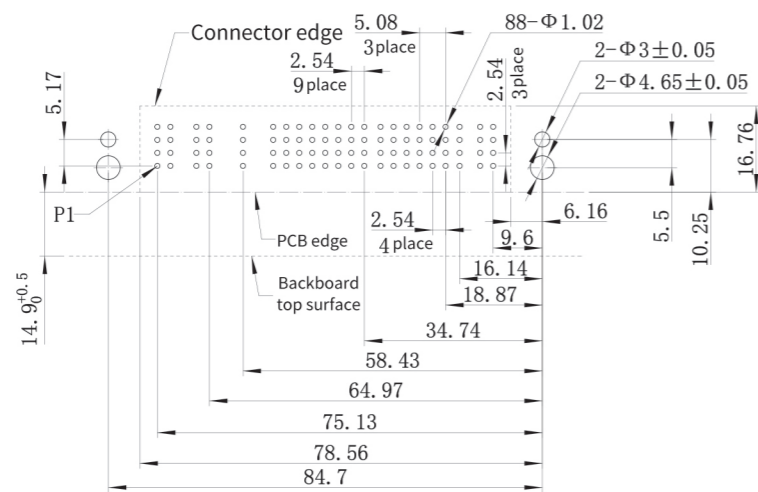


[ 6U J1 motherboard connector (socket JT1-6450869-0) external dimensions ]

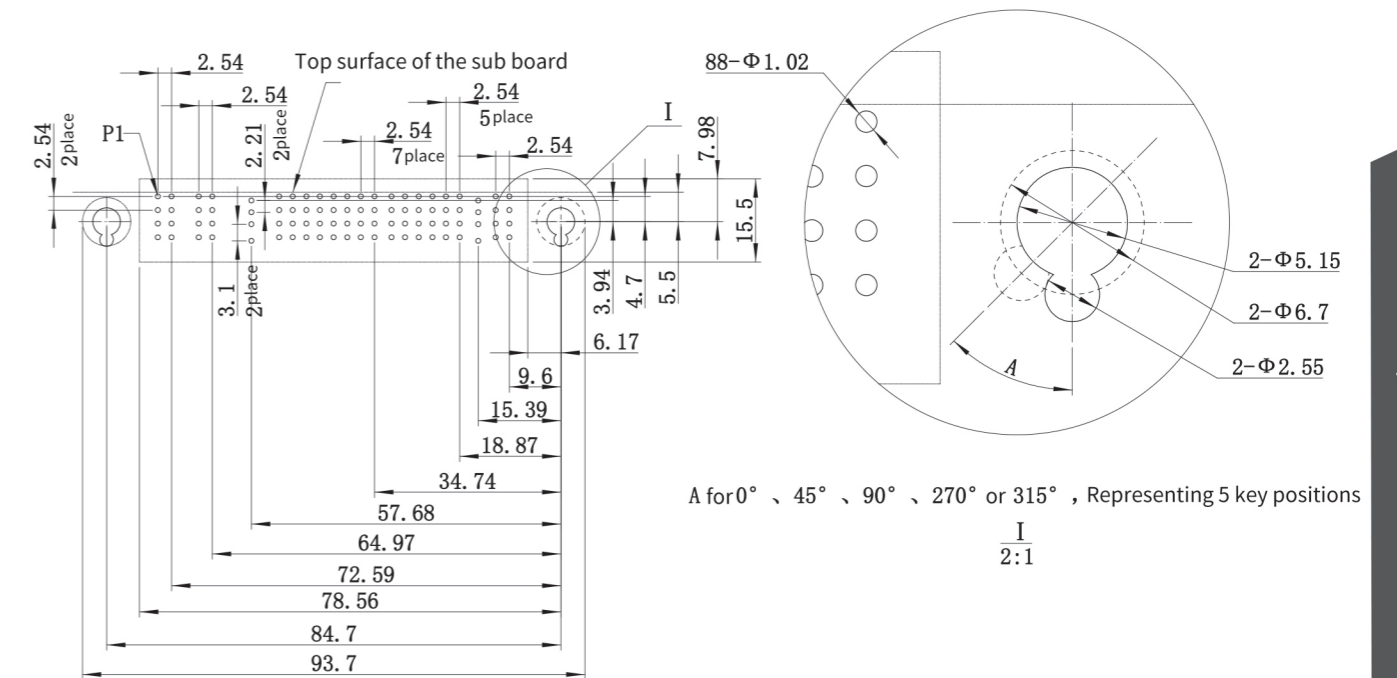


Printed board packaging size

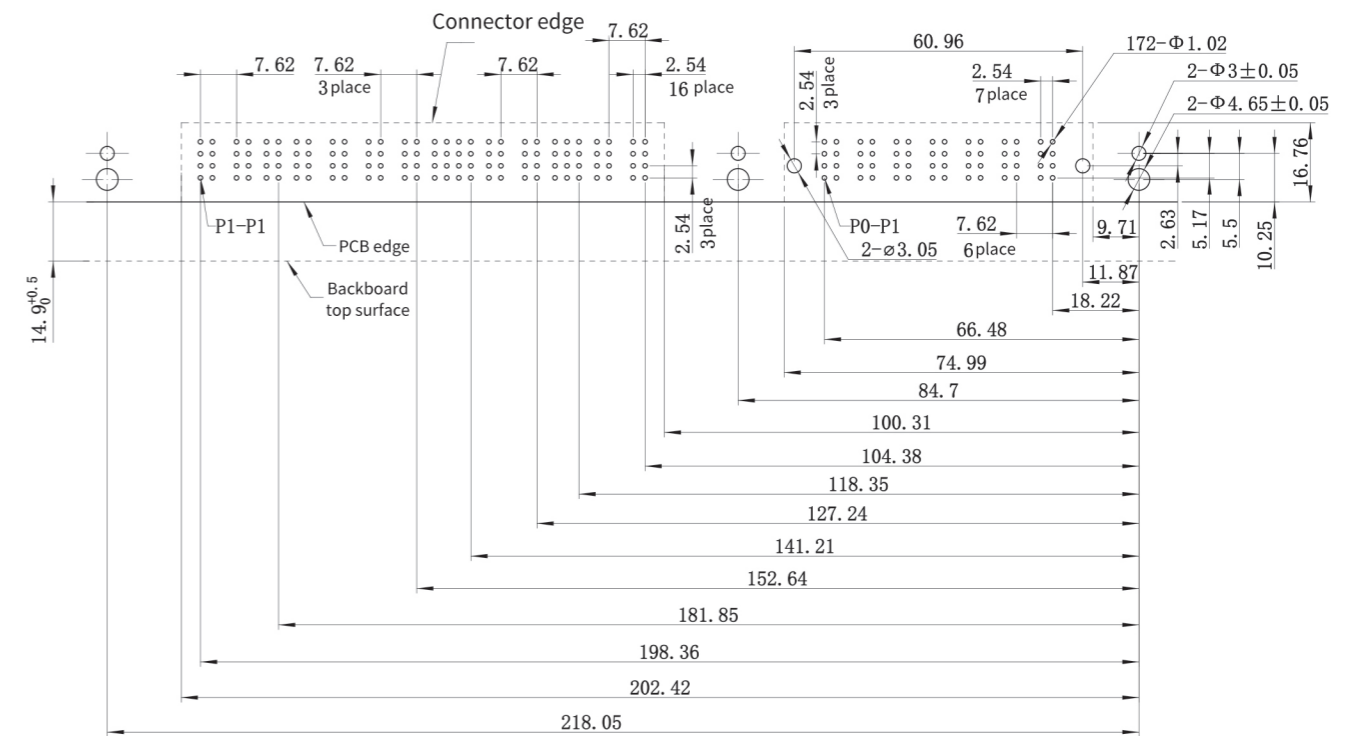
[ 3U Sub board hole size ]



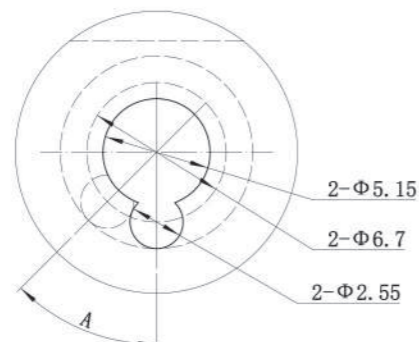
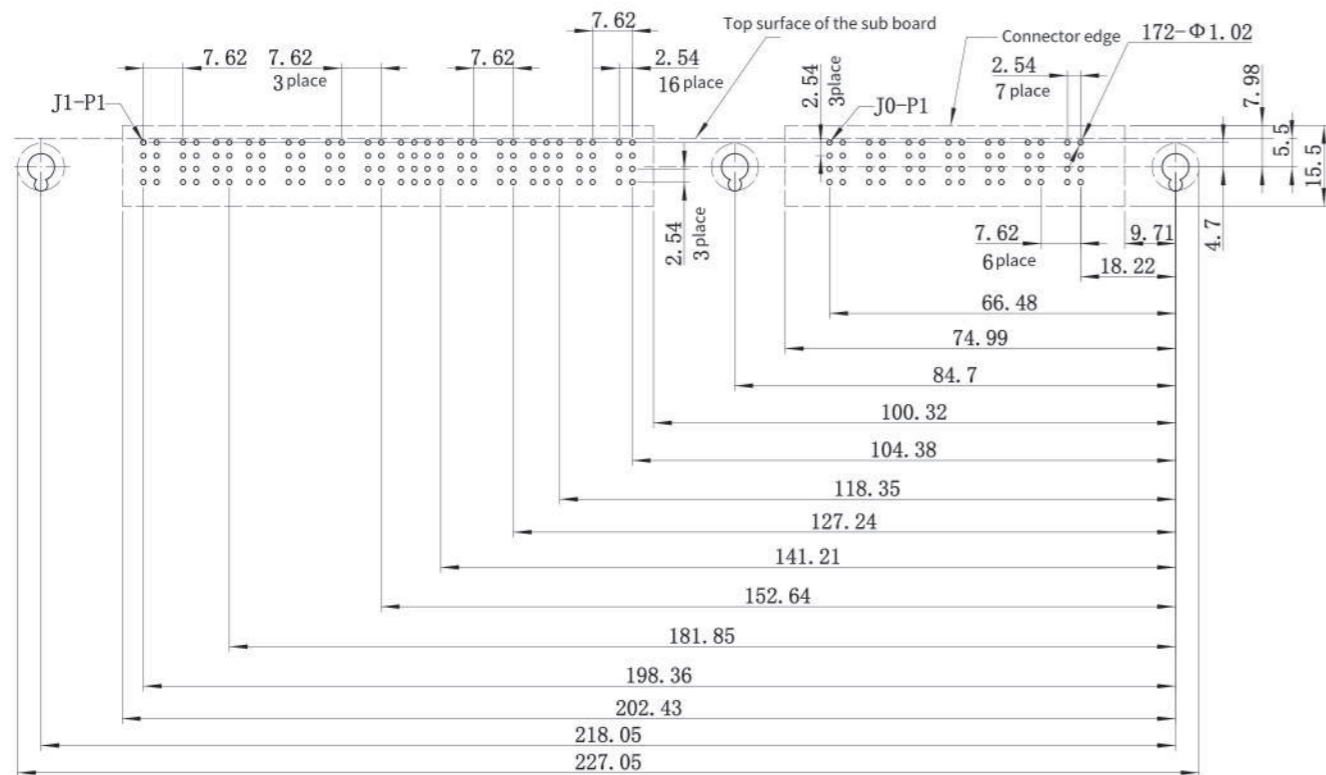
[ 3U Motherboard hole size ]



[ 6U Sub board hole size ]



[ 6U motherboard hole size ]



A is 0°, 45°, 90°, 270° or 315°, representing 5 key positions.

1  
2:1

Identify the guide sleeve and identify the guide pin

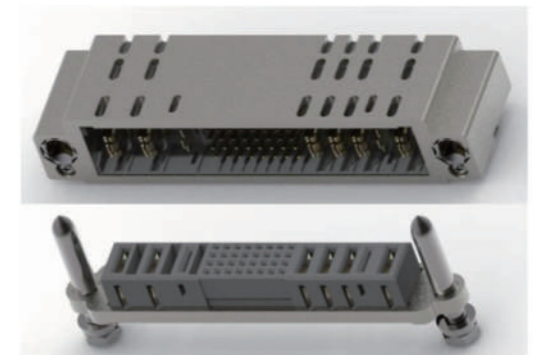
The VITA62 power connector should be used in conjunction with the identification guide JT1-1469492-α and identification guide JT1-1469491-β.

The ordering models for the guide sleeve JT1-1469492-α and the identification guide pin JT1-1469491-β, as well as the meanings of α and β, are detailed in P3 and P14-P16.

VPXD series reinforced power connector

Product Introduction

- Compliant with VITA 62 standard
- Six power contacts provide reliable contact, low insertion and extraction force, and single core 75A current carrying capacity
- The connector has a good ventilation structure and excellent heat dissipation capability
- Non welding press fit structure
- Applicable module spacing: 25.4
- Suitable for power supply of VPX chassis system



Main technical indicators

Electrical performance	
project	High-rate power supply contacts
rated current	50A
rated voltage	300VAC (7.62mm spacing), 60VDC (5.08mm spacing)
contact resistance	≤0.7mΩ
Insulation resistance (at room temperature)	≥10000MΩ
Withstand Voltage	2500VDC (atmospheric pressure)
project	Low-rate power supply contacts
rated current	20A
rated voltage	60 VDC
contact resistance	≤1.5mΩ
Insulation resistance (at room temperature)	≥10000MΩ
Withstand Voltage	1000VDC (atmospheric pressure)
project	Signal contacts
rated current	2.5A
rated voltage	60 VDC
contact resistance	≤20mΩ
Insulation resistance (at room temperature)	≥500MΩ
Withstand Voltage	1000VDC (atmospheric pressure)
Mechanical performance	
project	High-rate power supply contacts
mechanical life	500 times
insertion force	≤ 5N (single core)
Pull out force	≥ 2.2N (single core)
Pressing force into PCB	111.2NMAX. (Single core)
Pull out PCB force	6.7NMN. (Single core)
project	Low-rate power supply contacts
mechanical life	500 times
insertion force	≤ 2N (single core)
Pull out force	≥ 0.5N (single core)
Pressing force into PCB	111.2NMAX. (Single core)
Pull out PCB force	6.7NMN. (Single core)
project	Signal contacts
mechanical life	500 times
insertion force	≤ 1. N (single core)
Pull out force	≥ 0.2N (single core)
Pressing force into PCB	111.2NMAX. (Single core)
Pull out PCB force	6.7NMN. (Single core)
Environmental Performance	
project	indicator
thermal shock	-55-125 °C. 36 cycles

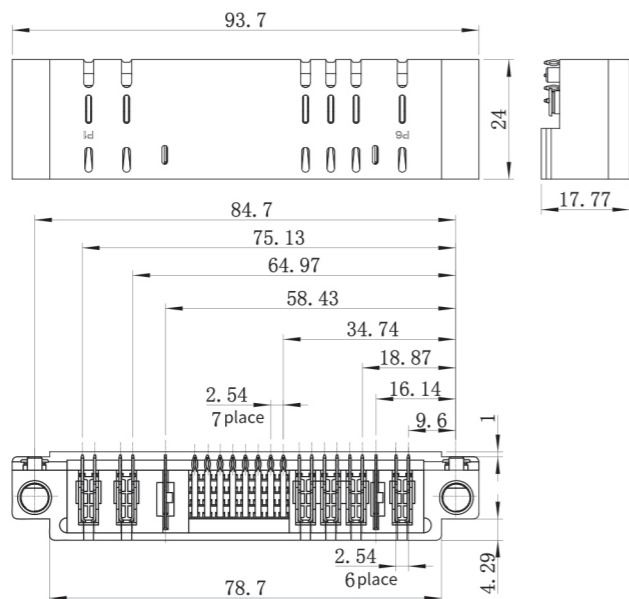
VPXD series reinforced power connector

Product ordering model

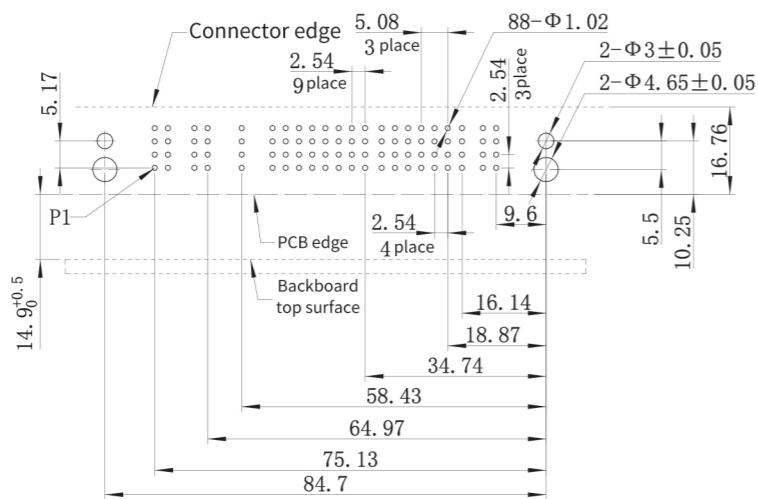
Board type	Product Model	Description
3U daughter board	VPXD-T8A8	2 low power contacts+6 high power contacts+32 signal contacts
3U Backboard	VPXD-Z8A8	2 low power contacts+6 high power contacts+32 signal contacts
3U daughter board	VPXD-T8A8B8	17 high-power power contacts+36 signal contacts
3U Backboard	VPXD-Z8A8B8	17 high-power power contacts+36 signal contacts

External dimensions and recommended PCB hole sizes

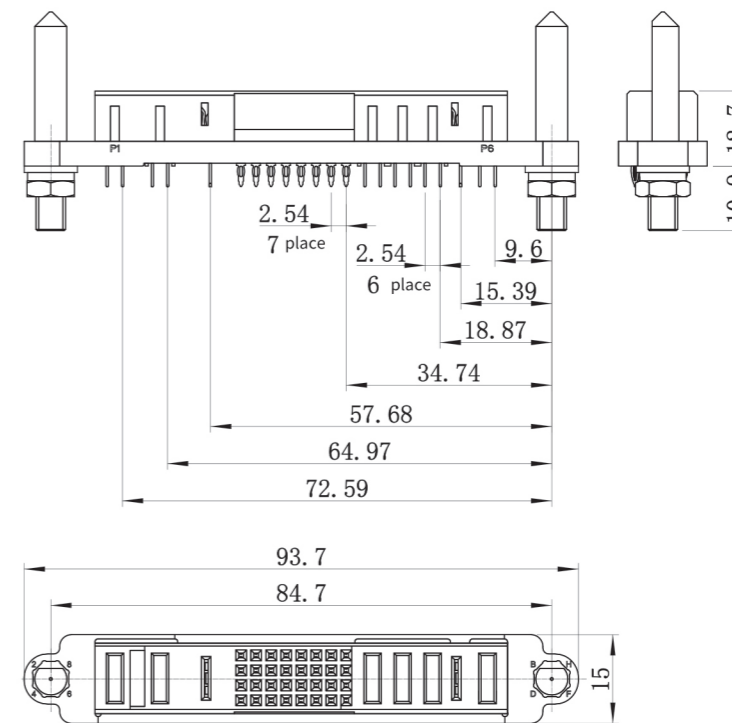
[ External dimensions of VPXD-T8A8 daughter board connector ]



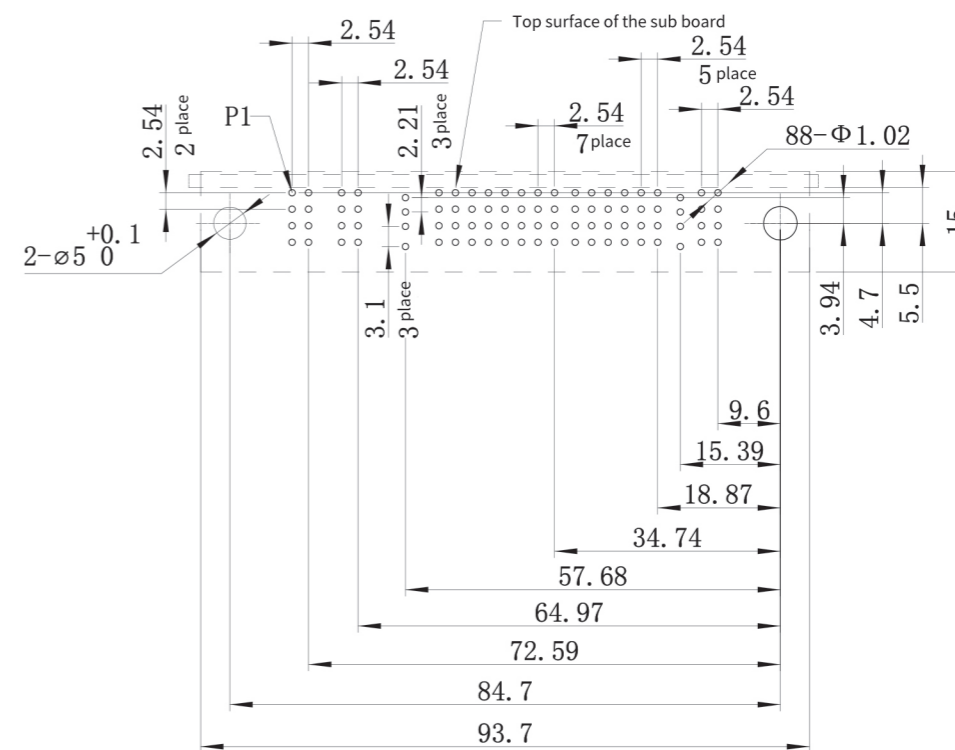
[ Recommended PCB hole size for VPXD-T8A8 daughter board connector ]



[ External dimensions of VPXD-Z8A8 motherboard connector ]

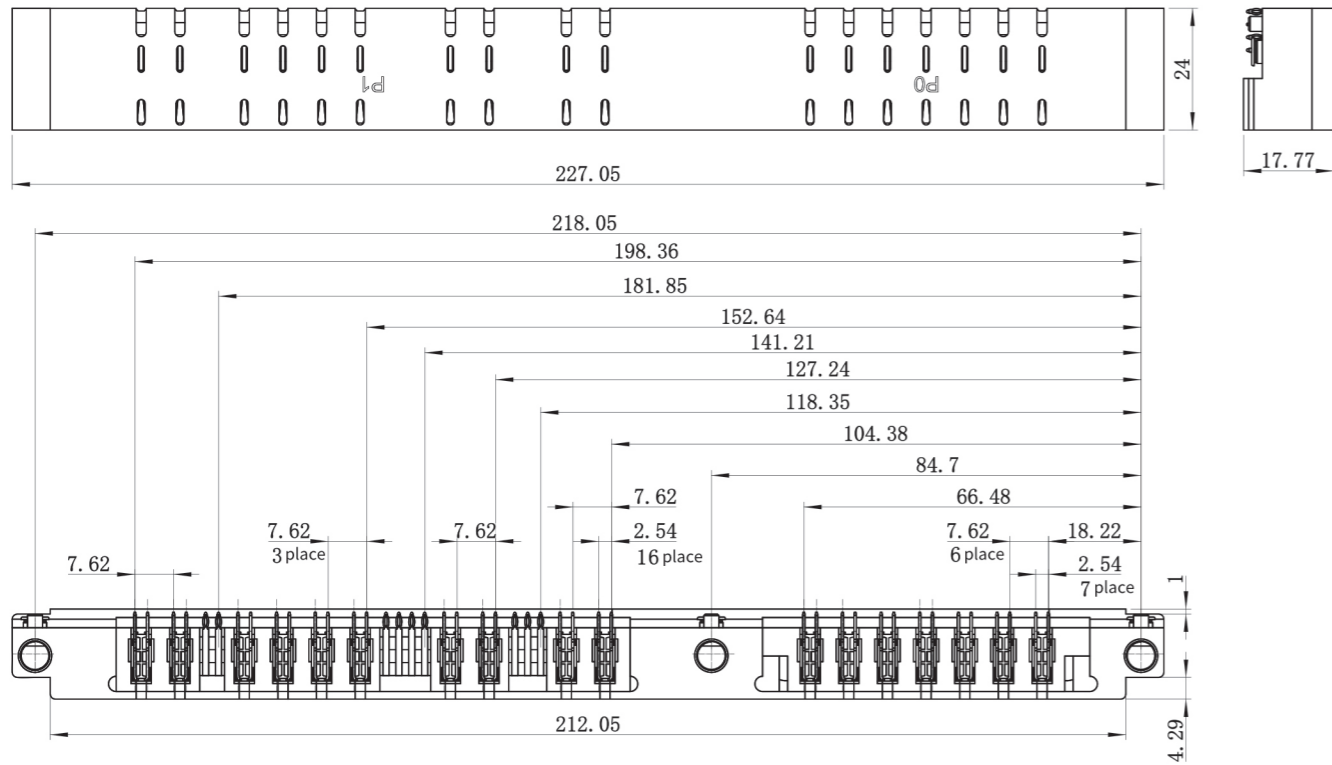


[ Recommended PCB hole size for VPXD-Z8A8 motherboard connector ]

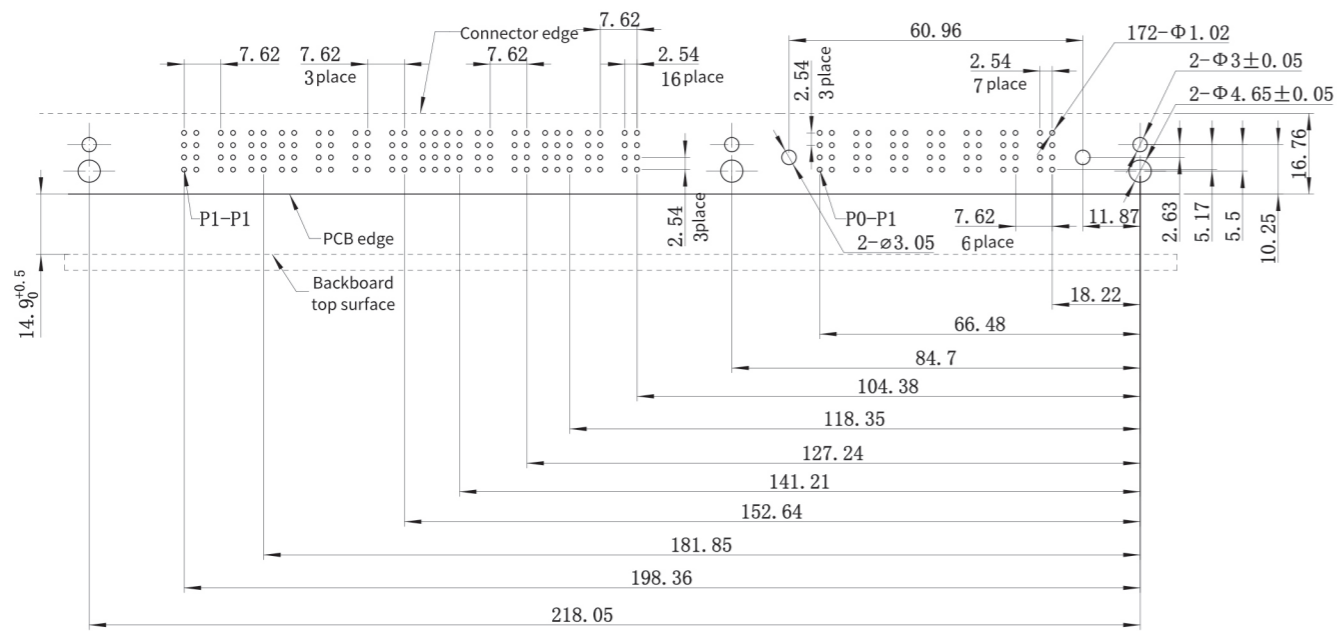


VPXD series reinforced power connector

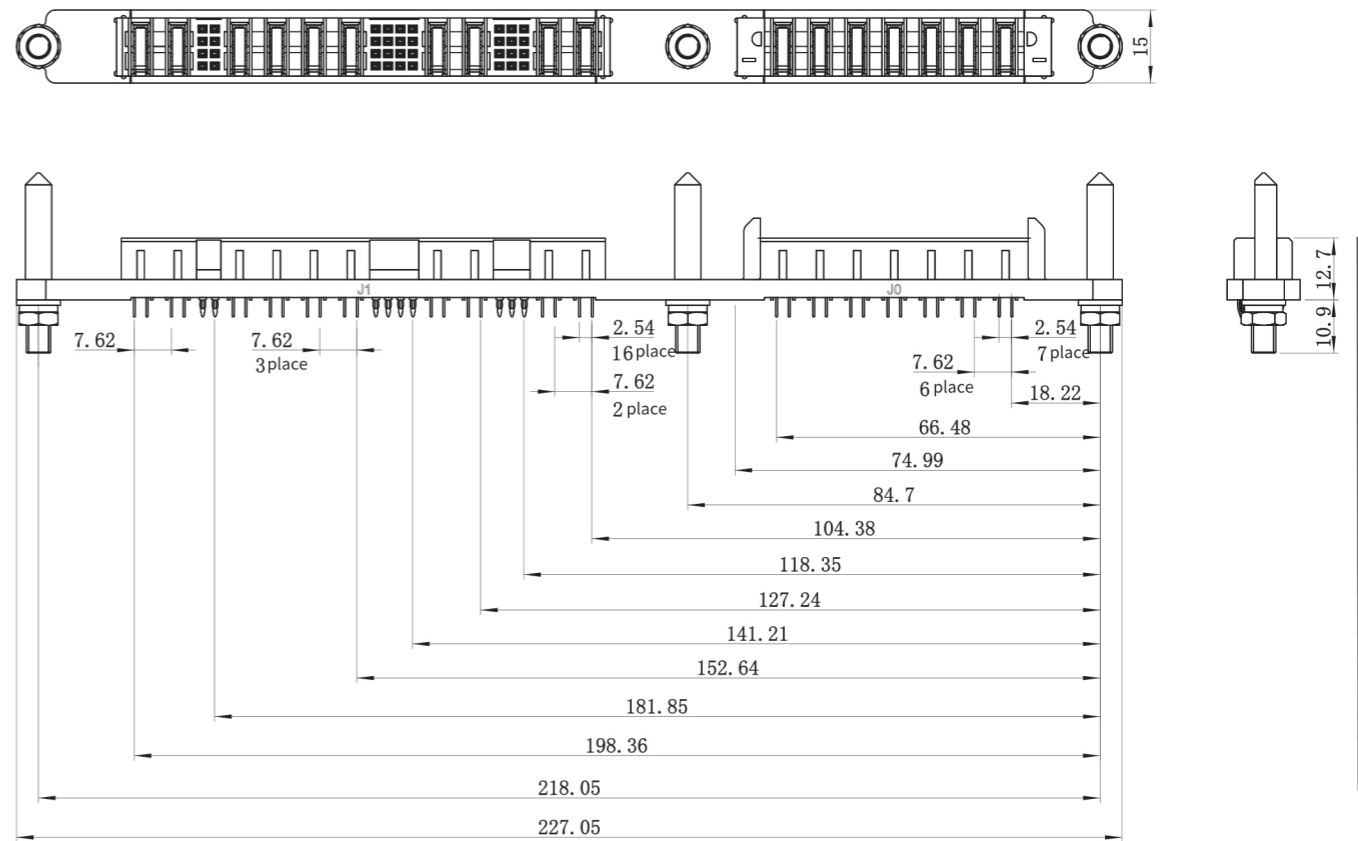
[ External dimensions of VPXD-T8A8B8 daughter board connector ]



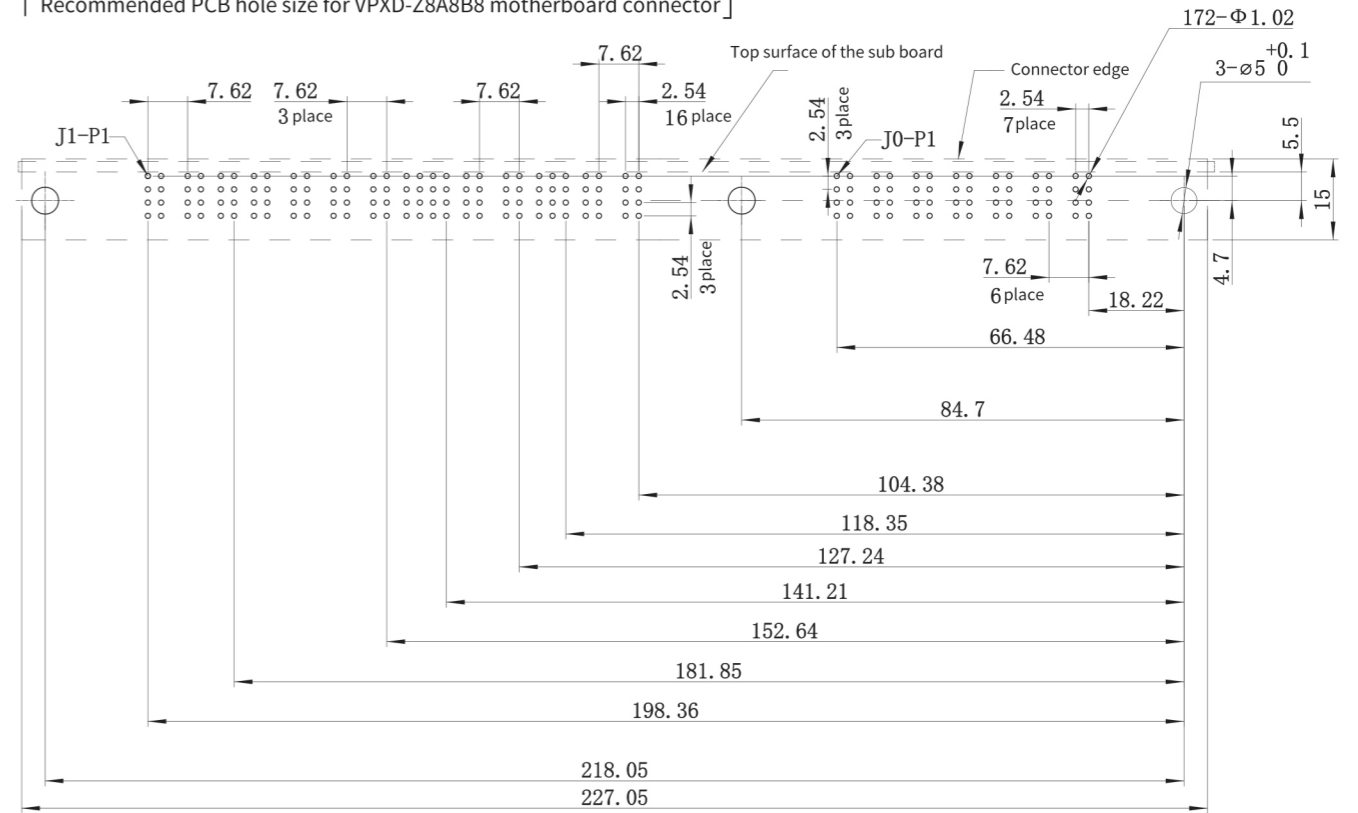
[ Recommended PCB hole size for VPXD-T8A8B8 daughter board connector ]



[ External dimensions of VPXD-Z8A8B8 motherboard connector ]

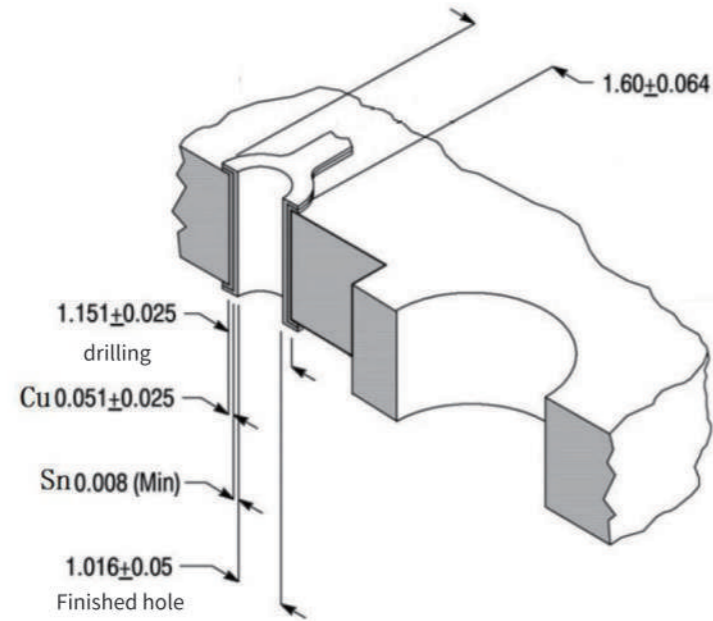


[ Recommended PCB hole size for VPXD-Z8A8B8 motherboard connector ]



VPXD series reinforced power connector

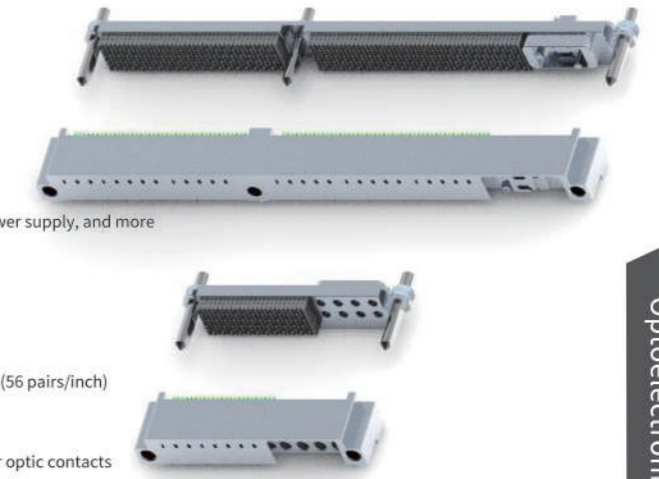
Recommended PCB board opening section coating structure requirements



VPX series reinforced optoelectronic hybrid connector

Product Introduction

- Standard electrical interfaces that comply with VITA standard modules
- Universal, open, user configurable connectors
- Modular combination structure, capable of realizing RF, optical, differential, single ended, power supply, and more integrated transmission of multiple signals
- The high-speed differential module is a welding free press fit structure
- The transmission rate can reach 6.25Gbps and can be expanded to 10Gbps
- The number of differential pairs in a single module is 32 pairs, with a node density of 113/inch (56 pairs/inch)
- The RF module complies with VITA67 standard and operates at a frequency of 18GHz/40GHz
- The fiber optic module complies with the VIAT66 standard and uses high-density MT type fiber optic contacts



Main technical indicators

[ High speed differential transmission performance ]

- Differential characteristic impedance: 100  $\Omega$
- Transmission rate: 6.25Gbps
- Crosstalk: better than -30dB
- Low level contact resistance:  $\leq 40m \Omega$
- Rated current: Single signal 1A
- Insulation resistance:  $\geq 1000M \Omega$
- Voltage endurance: 500V

[ RF performance ]

- Working frequency: 0~40GHz
- Characteristic impedance: 50  $\Omega$
- RF insertion loss:  $\leq 0.06 \sqrt{f}$  (f: GHz)
- Voltage standing wave ratio:  $\leq 1.15 + 0.01f$  (f: GHz)
- Phase stability: DC~18GHz:  $\leq \pm 3^\circ$   
DC~40GHz:  $\leq \pm 6^\circ$
- Isolation: better than -90dB (500MHz~18GHz)  
Better than -70dB (1GHz~40GHz)
- RF leakage: better than -80dB (2-3GHz)

[ Optical transmission performance ]

- Insertion loss:  $\leq 1.5dB$
- Error rate: No more than 10 bit errors

[ Power transmission performance ]

- Rated current of contact: 2 channels per row, 8A per channel
- Voltage endurance: 500V
- Insulation resistance:  $\geq 1000M \Omega$

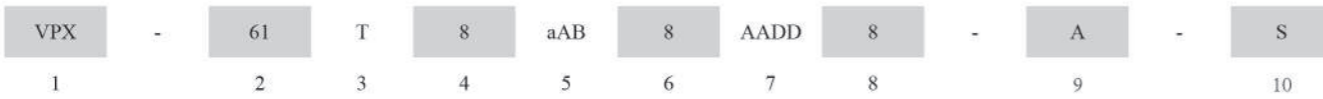
[ Environmental Performance ]

- Operating temperature: -55  $^\circ C$ ~125  $^\circ C$
- Salt spray: 96 hours
- Damp heat: According to GJB1217A, alternating damp heat for 10 days

[ Mechanical performance ]

- Vibration: Sinusoidal 10-2000Hz, 196m/s<sup>2</sup>  
Random 10-2000Hz, 0.2g<sup>2</sup>/Hz
- Shock: 80g, half sine wave, lasting for 11ms
- Mechanical lifespan: 500 cycles

Product Model Naming



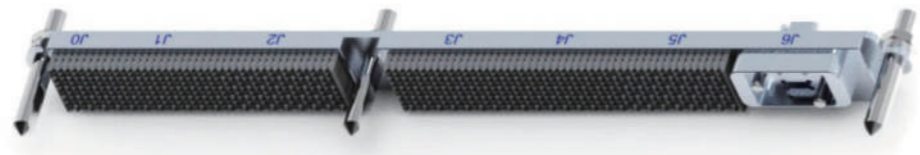
- 1 Series Title: VPX**
- 2 Number of modules:**  
The first digit represents the total number of modules, 6, 2, 4, 3  
The second digit represents the number of half modules, 1 and 0  
Examples: 6 full modules and 1 half module
- 3 Head Seat Type:**  
T: Plug in                      Z: Socket  
RT: Rear board plug        RZ: Rear socket  
LT: Liquid cooled plug    LZ: Liquid cooled socket
- 4 Guiding key position:**  
The directional keys are represented by the number 8, indicating that there are 8 types of keys.
- 5 Type spectrum code:**  
Define P0/J0, P1J1, P2/J2 position module types in sequence: lowercase letters represent half modules; Capital letters represent the entire module
- 6 Guiding key position:**  
The directional keys are represented by the number 8, indicating that there are 8 types of keys.
- 7 Type spectrum code:**  
Define P3/J3, P4/J4, P5/J5, P6/J6  
position module types in sequence: all module types are full modules
- 8 Guiding key position:**  
The directional keys are represented by the number 8, indicating that there are 8 types of keys.
- 9 Same type spectrum identification number:**  
A. When all modules in the spectrum are assembled with default contacts, such as B, C, etc, The identification number of the same type spectrum is A, otherwise every change of contact in the same type spectrum. Corresponding to a 'same type spectrum identification number' to indicate differentiation.
- 10 Shell material and coating:**  
Unmarked: Nickel plated aluminum alloy  
S: Passivation of stainless steel

**Note:**  
1. For 3U and 4U applications, there are no fields for "7" and "8".  
2. The rear socket includes double-sided guide pins, which do not need to be ordered separately.  
3. The plug (daughter board end connector) is compatible with printed boards with a thickness of 1.6mm-3mm,  
When the thickness of the printed circuit board is greater than 3mm, it is recommended to open countersunk holes on the printed circuit board.

Example: VPX-6IT8MB8AAAG8-A represents a 6U plug with 6 full modules and 1 half module. The full module includes 4 A (differential module), 1 B (single ended module), and 1 G (fiber optic module); Half modules are represented by 'a', which is also known as the basic module. Among them, P0 is the basic module a: P1, P3, P4, P5 are differential modules A: P2 is a single ended module B: P6 is a fiber optic module G. The non fiber optic part is terminated in a welding free press fit form, and the default termination method for the fiber optic module is to connect to the optical cable. The signal type transmitted is: 6 power supplies+128 core single end+132 pairs of differential pairs+203 core grounding+2 core MT fiber optic contacts, as shown in the figure.



Example: VPX-61Z8eJ8IJD8-A represents a 6U socket with 6 full modules and 1 half module. The full module includes 3 I (middle full module of the socket), 2 I (right full module of the socket), and 1 G (fiber optic module). The half module is represented by e, which is the VITA standard socket half module. Among them, J0 is the VITA standard socket half module e; J1, J3, J4 are the middle full module of the socket; JJ2, J5 is the right end full module J of the socket. P6 is the fiber optic module G. The non fiber optic part is terminated by welding free pressing, and the fiber optic module is terminated by connecting to the optical cable, as shown in the figure.



Type spectrum code description

Plug type spectrum code				Corresponding socket type spectrum code		
code name	Signal arrangement (viewed from the top of the plug printed board)	position	Instructions	code name	position	Instructions
a		P0	Half module, basic module, a total of 6 power supplies/16 single ended signals/4 pairs of differential signals	e	J0	When adjacent modules are full modules, select
				f	J0	When adjacent to RF fiber or empty modules, choose
A		P1-P6 any position	Differential full module, 32 pairs of differential pairs/8-core single ended	I	J1/3/4/5	Intermediate full module Cannot be used as a tail module
				J	J2/6	Full module, As a tail module selection
B		P1-P6 any position	Single ended full module, 80 core single ended	I	J1/3/4/5	The entire middle module, Cannot be used as a tail module
				J	J2/6	Full module, As a tail module selection
C		P1-P6 any position	Default combination, full module, total 6-core power supply/20 core single ended/20 pairs of differential can be used for other signal combinations, which need to be identified in the product model name "same type spectrum identification number"	I	J1/3/4/5	The entire middle module, Cannot be used as a tail module
				J	J2/6	Full module, As a tail module selection
				I	J1/3/4/5	The entire middle module, Cannot be used as a tail module
D		P2 ~ P6	8-core 12 # RF or fiber optic contact parts are ordered separately. Suggest P2 or P6 positions	D	J2 ~ J6	Plug socket consistency
				G		Plug socket consistency
G		P2 ~ P6	2 MT fiber optic contacts, recommended at P2 or P6 positions	G	J2 ~ J6	Plug socket consistency
G4		P2 ~ P6	4 MT fiber optic contacts, recommended at P2 or P6 positions	G4		Plug socket consistency
N	16 Column empty module	P2 ~ P6	16 column empty module, filling function to achieve standard 3U or 6U size	N	J2 ~ J6	Plug socket consistency

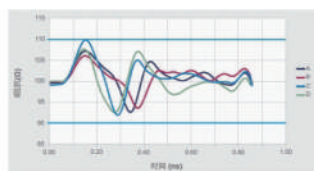
VPX series reinforced type Optoelectronic hybrid connector

Plug type spectrum code				Corresponding socket type spectrum code		
Code name	Signal arrangement	Position	Instructions	Code name	Position	Instructions
b		RP2	Differential half module with rear plug, 16 pairs of differential signals/4 single ended signals	e	RJ2	When adjacent modules are full modules, select
c		RP2	Rear plug single ended half module, 40 single ended signals	e	RJ2	When adjacent modules are full modules, select
E		RP0	All modules behind the board, with a total of 20 pairs of differential signals/20 single ended signals/4 power supplies	K	RJ0	All modules behind the board, 15 columns (the first column is empty)
				L	RJ0	Full module behind the board, 7 columns (columns 1, 9-16 are empty)
F		RP3 RP4 RP5 RP6	Differential full module with rear plug, 32 pairs of differential signals/8 single ended signals	I	RJ4 RJ5 RJ6	Intermediate full module
				J	RJ3	Full module, selected as edge module
H		RP1	Full module rear plug, 16 pairs of differential/44 single ended signals	M	RJ1	Full module behind the board, 8 columns (columns 1-8 are empty)
				I	RJ1	Intermediate full module

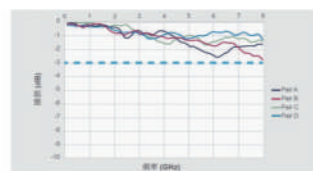
High speed differential module

- Meets VITA series standards such as VITA41/VITA46/48
- Can mix multiple signals such as differential, single ended, power supply, etc
- The transmission rate can reach 6.25Gbps and can be expanded to 12.5Gbps to 20Gbps
- The number of differential pairs in a single module is 32 pairs, with a node density of 113/inch (56 pairs/inch)
- The termination method is press fit without welding
- Contact spacing: plug 1.35mm (row) \* 1.8mm (column); Socket 1.8mm \* 1.8mm

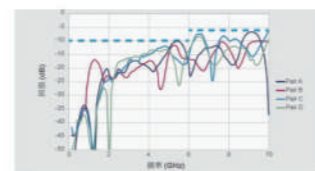
[Characteristic impedance]



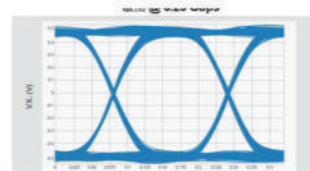
[Insertion loss]



[Return Loss]



[Eye pattern]



RF module

Product Introduction



- The RF contact is a floating structure, Install from the rear, remove from the rear
- Has phase and insertion loss stability;
- RF contacts need to be ordered separately and are not provided with the product.

[ Order model ]

12 # RF socket (for daughter board plug):

- RF(F)-12JB2(V48) (DC~18GHz)
- RF(F)-12J2(V48) (DC~18GHz)
- RF(F)-12JB2C(V48) (DC~40GHz)
- RF(F)-12J2C(VPX) (DC~40GHz)

12 # RF pin (for motherboard socket):

- RF(F)-12KB2(V48) (DC~18GHz)
- RF(F)-12K2(V48) (DC~18GHz)
- RF(F)-12KB2C(V48) (DC~40GHz)
- RF(F)-12K2C(VPX) (DC~40GHz)

[ Adaptive cable ]

RF contacts	Compatible cable	Cable type description
RF (F)-12JB2 (V48) RF (F)-12KB2 (V48)	Flexiform 405 NMF etc.	Suitable for cables with an inner conductor diameter of 0.54mm and a shielding layer outer diameter of 2.2mm
RF (F)-12J2 (V48) RF (F)-12K2 (V48)	Gore CXN 3506 etc.	Suitable for cables with an inner conductor diameter of 0.5mm and a shielding layer outer diameter of 2mm
RF (F)-12JB2C (V48) RF (F)-12KB2C (V48)	HFE100D, IW1251 etc.	Suitable for cables with an inner conductor diameter of 0.51mm and a shielding layer outer diameter of 2.2mm
RF (F)-12J2C (VPX) RF (F)-12K2C (VPX)	Gore CXN 3506 etc.	Suitable for cables with an inner conductor diameter of 0.5mm and a shielding layer outer diameter of 2mm

[Installation and removal]

- RF contacts can be easily inserted into the connector by hand without the need for tools during installation.
- Special tools are required for disassembly and removal, and the tools need to be ordered separately and not provided with the product. The tool ordering model is QX-RF-12.

Optical module

- High density MT type fiber optic contact, one MT can transmit 12 or 24 optical signals;
- Multiple transmission modes are available, including single-mode (G.652D), single-mode (G.657A2), multi-mode 62.5/125, multi-mode 50/125, and multi-mode 50/125 (OM3 high-speed);
- Elastic contact ensures reliable contact in vibration and impact environments;
- MT type contacts can be easily removed and ordered separately, not provided with the product.

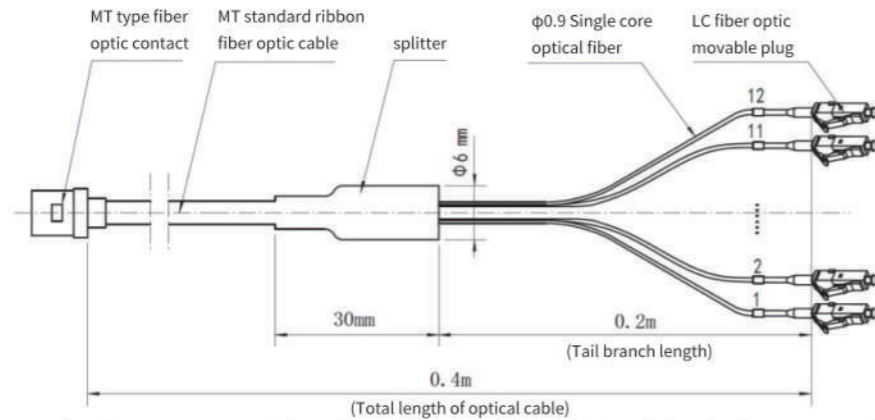
[ Fiber optic jumper ordering model ]



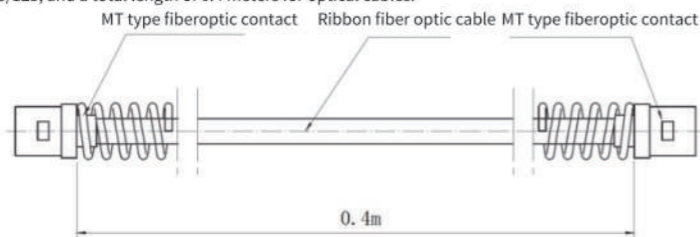
1	Series Title: RF	5	Split fiber diameter: 0.9mm, 2mm If the active plug MT/S has no branch line, this item will be omitted
2	Contact type: MT/D - with guide pin, 12 way, suitable for daughter board plug MT24/D - with guide pin, 24 channels, suitable for daughter board plug MT/S - with spring, 12 channels, suitable for motherboard sockets MT24/S - with spring, 24 channels, suitable for motherboard sockets	6	Transmission module: M: Multimode 62.5/125MI: Multimode 50/125 MIV: Multimode 50/125 (OM3 high-speed) S: Single mode G.652D SI: Single mode G.657A2
3	Number of tail active plugs: Numbers 1-24 If there is only one movable plug, there is no need to specify the quantity	7	Total length of optical cable: Unit: Meter
4	Tail end active plug type: LC, FC, SC, MT/S, JY599/16GP, JY599/12GP, etc	8	Tail branch length: Unit: meter If the active plug MT/S has no branch line, this item will be omitted

[ Example of ordering model ]

Model naming example 1: RF-NT-12LC-0.9M0.4/0.2, represents a 12 channel MT type fiber optic jumper used for daughter board plug connectors. It has 12 LC movable plugs, with a branch line diameter of 0.9mm at the movable plug end and a transmission mode of multimode 62.5/125. The total length of the optical cable is 0.4 meters, and the branch line length is 0.2 meters.



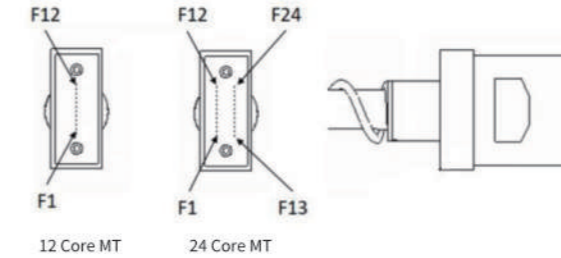
Model Naming Example 2: RF-MT/S-MT/S-M0.4, represents a 12 channel MT type fiber optic jumper used for motherboard socket connectors, with a movable plug type of MT/S, transmission mode of multimode 62.5/125, and a total length of 0.4 meters for optical cables.



[ MT type fiber optic contact optical channel number ]

MT type fiber optic contacts do not have optical channel numbers, and the optical channel numbers need to be defined by the user themselves:

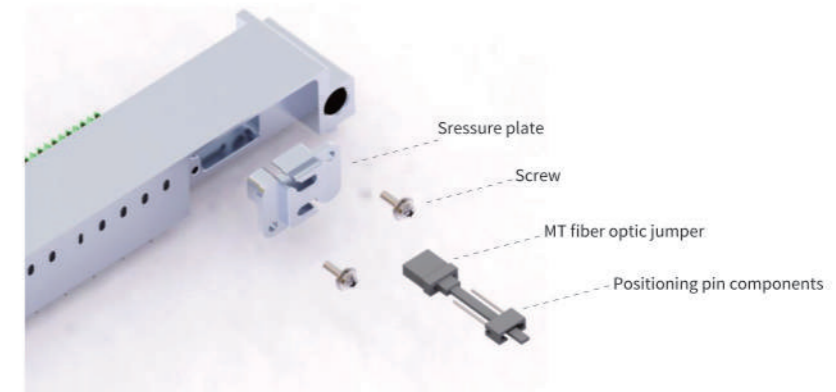
The MT type fiber optic contact is centrally symmetrical and can be installed in both directions structurally. The difference is that one side has a small window while the other side does not, which can be used as a positive and negative identification.



[ Assembly instructions for fiber optic cable ]

For the plug connector on the daughter board end, first remove the screws to remove the pressure plate, install the positioning pin component into the MT fiber optic cable, and then install it into the pressure plate together with the MT fiber optic cable through the inclined groove on the pressure plate. Install the pressure plate into the connector, then tighten the screws to complete the installation. Pay attention to the following points during installation:

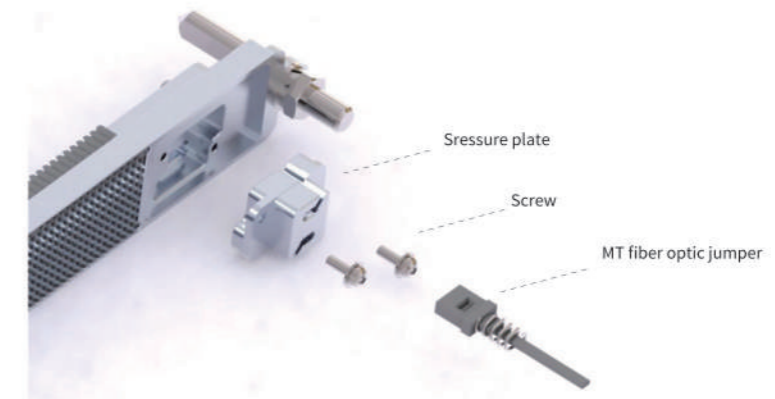
- The positioning pin component is provided with the connector and not with the fiber optic cable; And the positioning pin components are not divided into positive and negative directions, and can be installed in both directions;
- The window orientation of the MT fiber optic contact is set by the user to ensure that the same numbered optical channels of the plug and socket correspond one-to-one;
- The screw specification is M2 and can be coated with removable thread glue during installation for better anti loosening effect.



[ Assembly instructions for fiber optic cable ]

For the motherboard socket connector, first remove the screws to remove the pressure plate, then insert the T-fiber jumper into the pressure plate through the inclined groove on the pressure plate, then insert the pressure plate into the connector, and tighten the screws, Complete installation. Pay attention to the following points during installation:

- The window of the IMT optical fiber contact is user-configurable to ensure one-to-one correspondence between the numbered optical channels of the plug and socket;
- The screw specification is M2. Anti-loosening thread adhesive can be applied during installation for better performance.

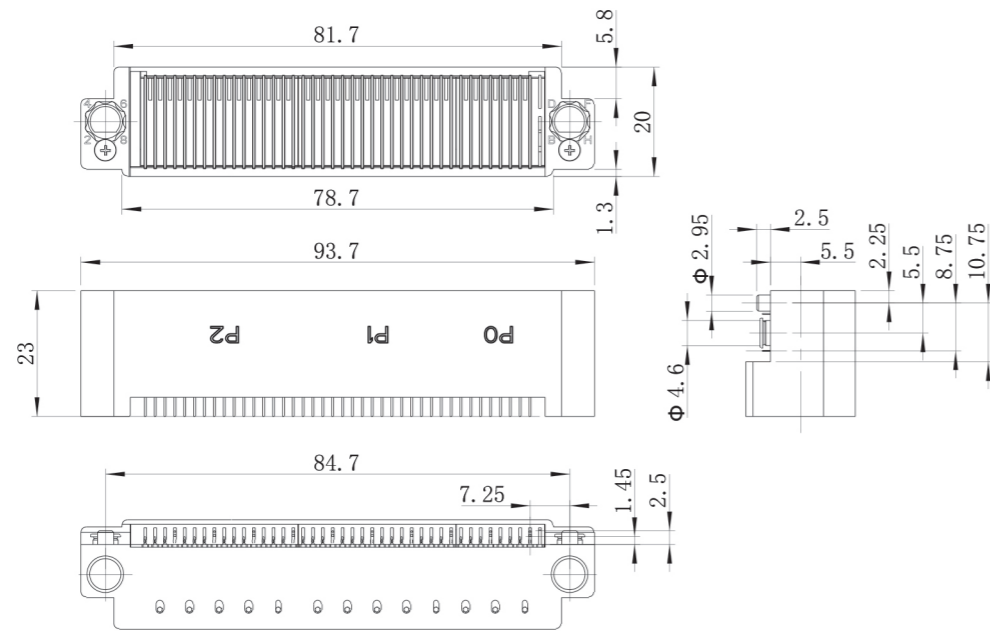


Precautions During the Use of Fiber Optic Cables

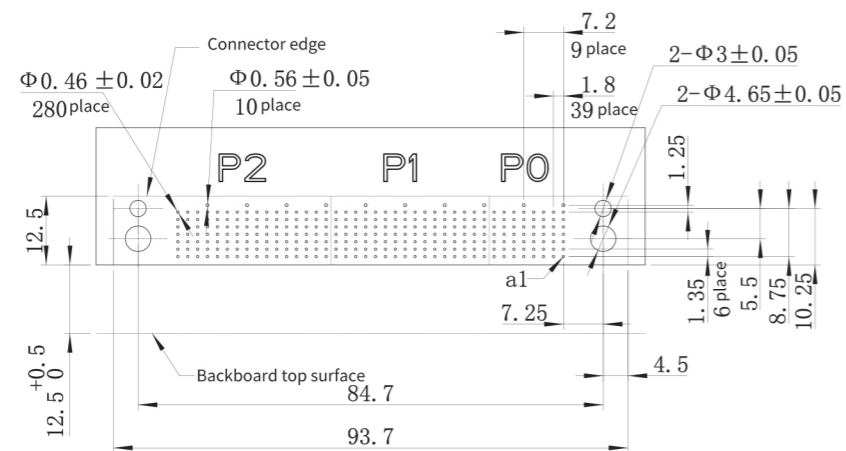
- Please note the fiber optic cable bending requirements: the bending radius must not be less than 12.7mm. Additionally, pay attention to the bundling method to avoid tight binding that could cause localized bending radii to become excessively small.
- Pay attention to the protection of the MT contact insert surface and keep it clean. When not in use for an extended period or when foreign objects are found on the insert surface, wipe it with a lint-free cloth.

Product external dimensions and printed circuit board packaging dimensions

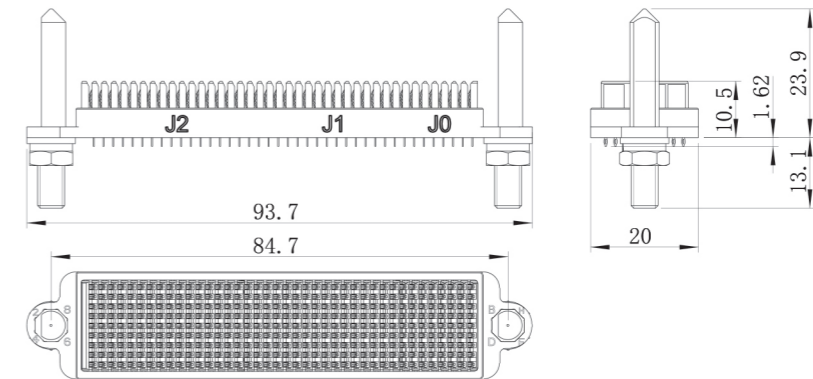
VPX-21T8aAA8-A external dimensions



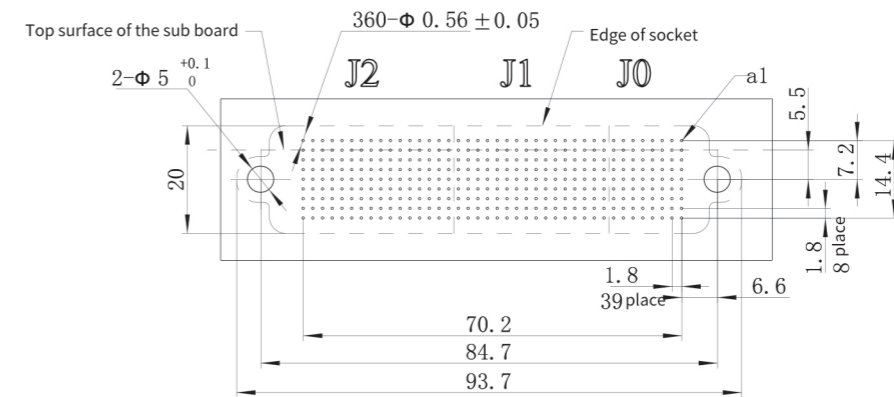
Recommended PCB packaging size for VPX-21Z8eIJ8-A



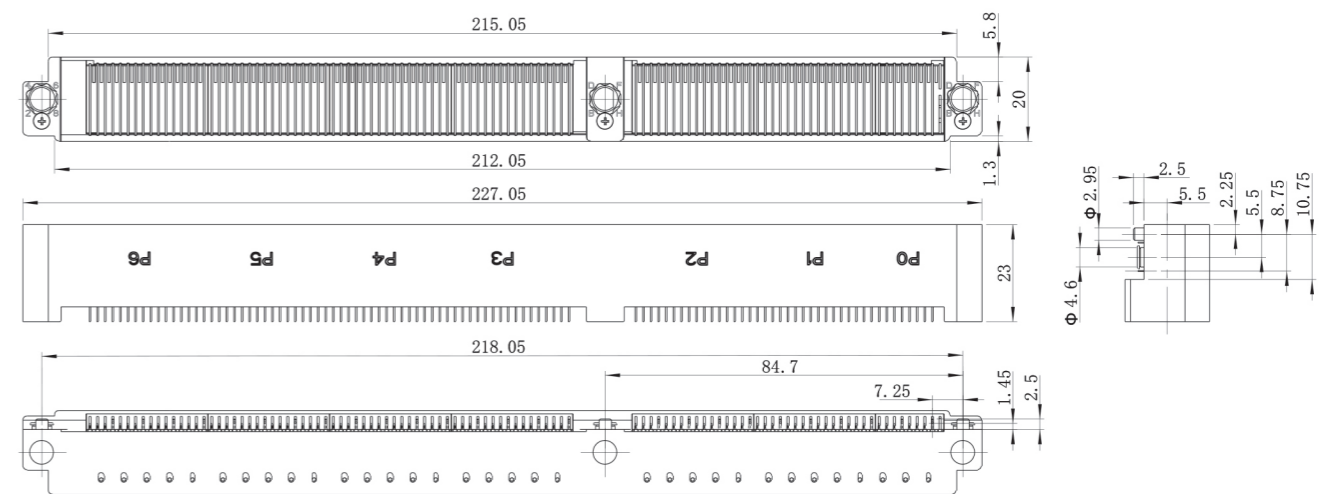
External dimensions of VPX-21Z8eIJ8-A



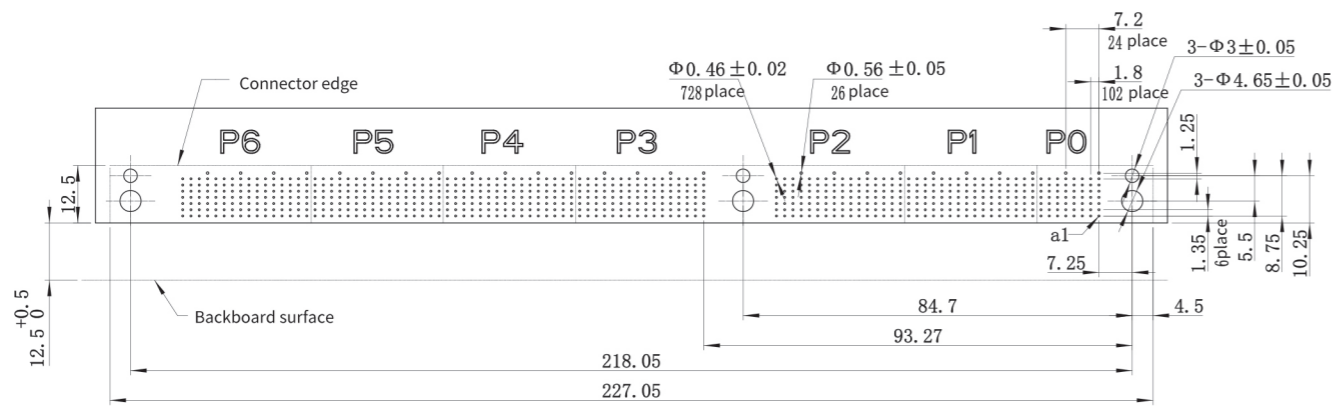
Recommended PCB packaging size for VPX-21Z8eIJ8-A



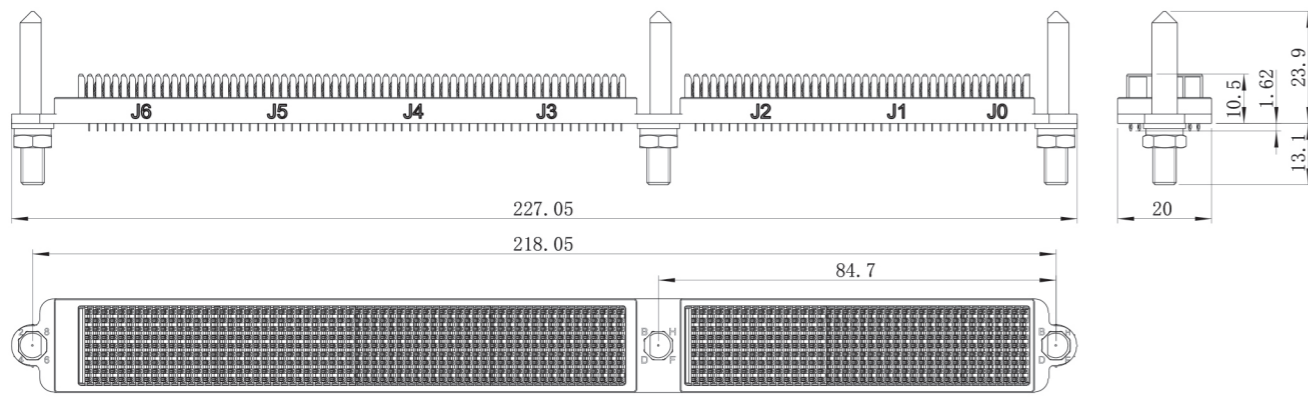
VPX-61T8aAA8AAAA8-A Dimensions



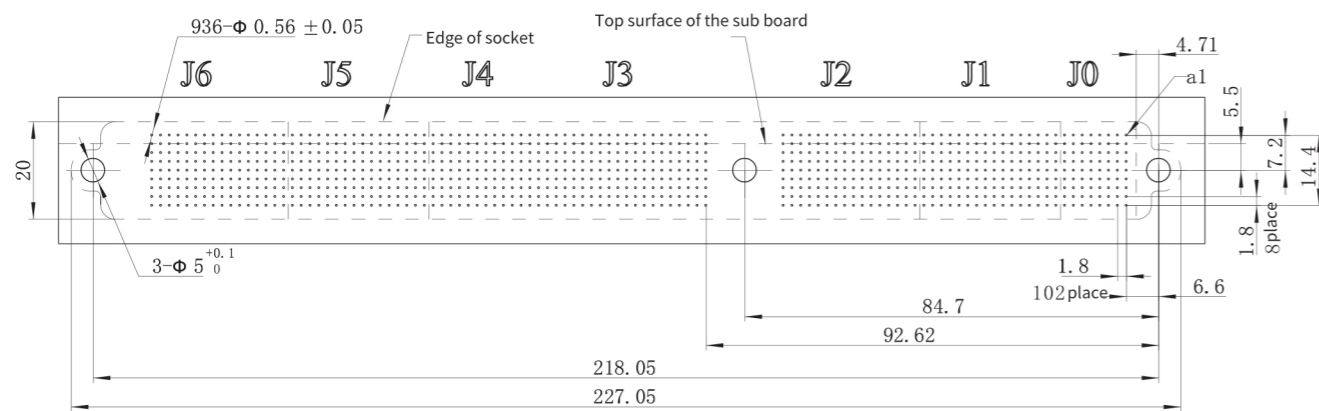
[ Recommended PCB packaging size for VPX-61T8aAA8AAA8-A ]



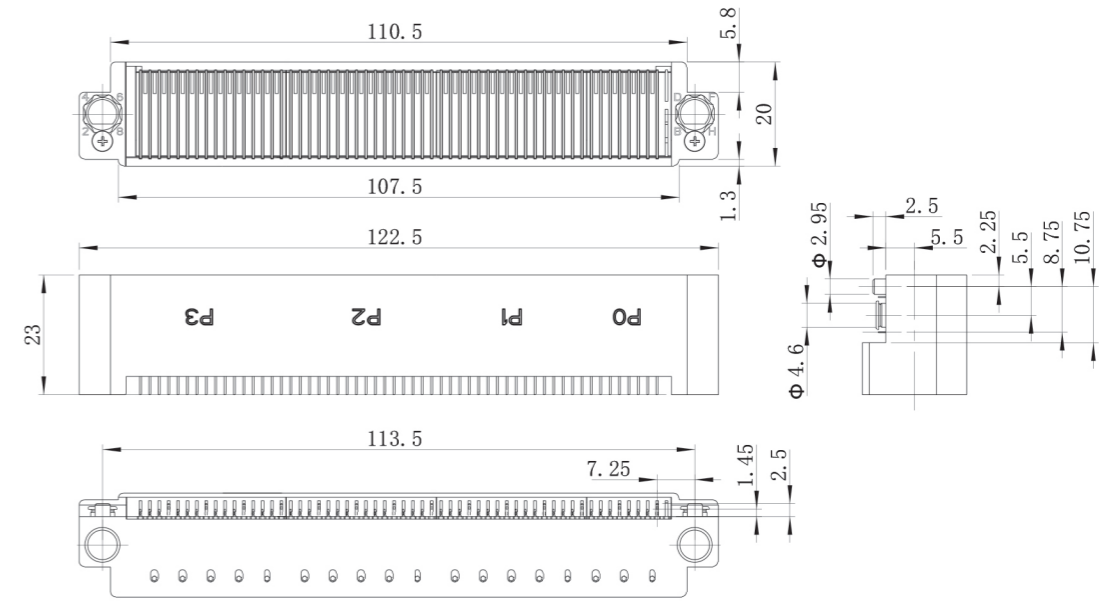
[ VPX-61Z8eIJ8IIIJ8-A Dimensions ]



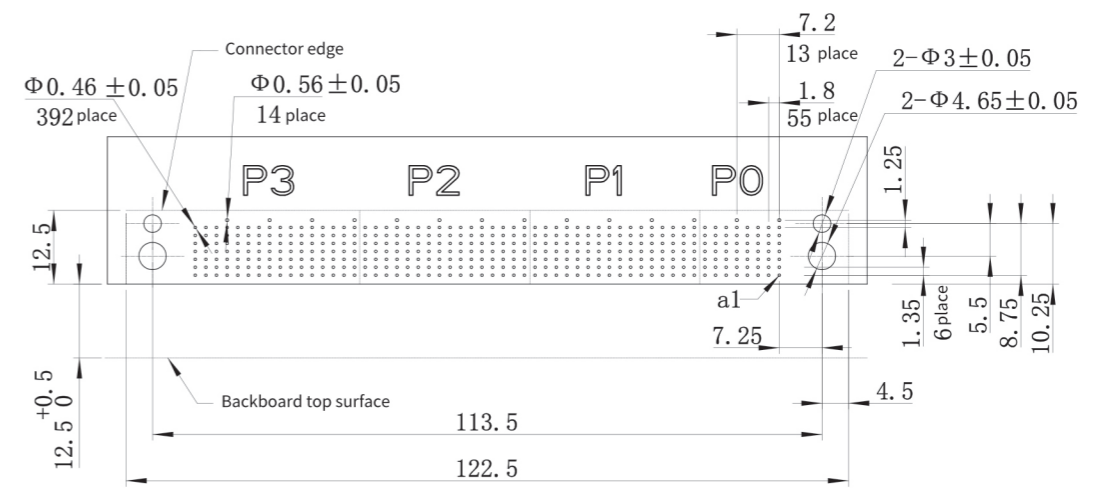
[ Recommended PCB package size for VPX-61Z8eIJ8IIIJ8-A ]



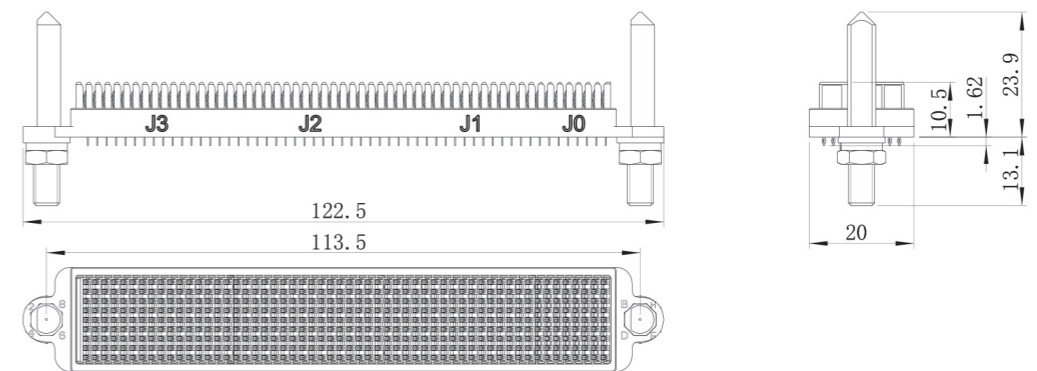
[ VPX-31T8aAA8-A Dimensions ]



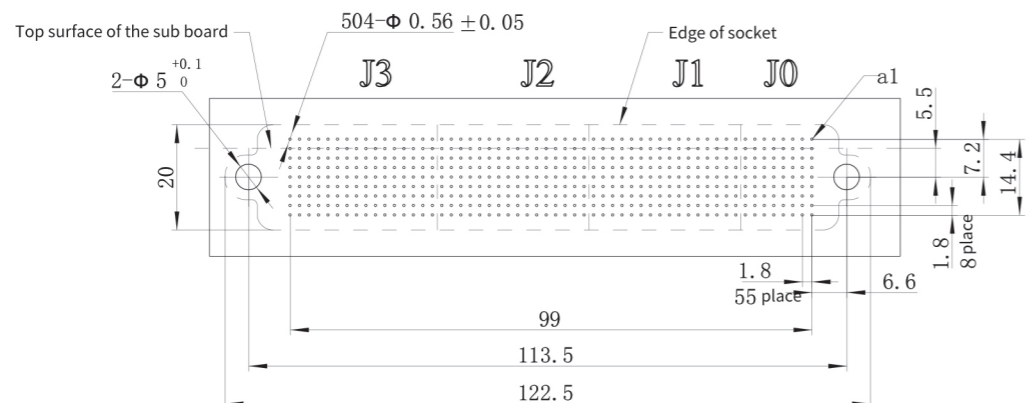
[ Recommended PCB packaging size for VPX-31T8aAA8-A ]



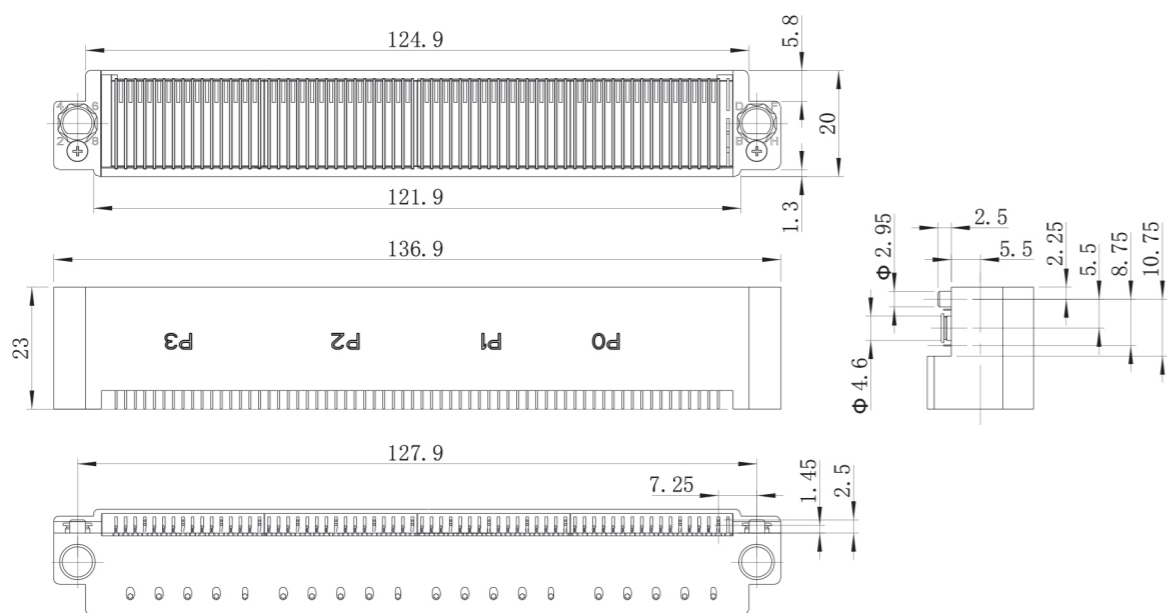
[ VPX-31Z8eIJ8-A Dimensions ]



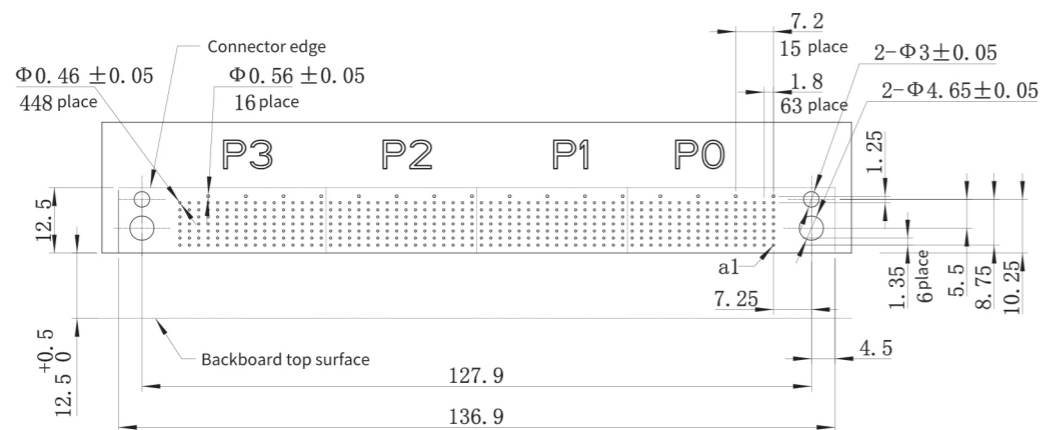
[ Recommended PCB packaging size for VPX-31Z8eIIJ8-A ]



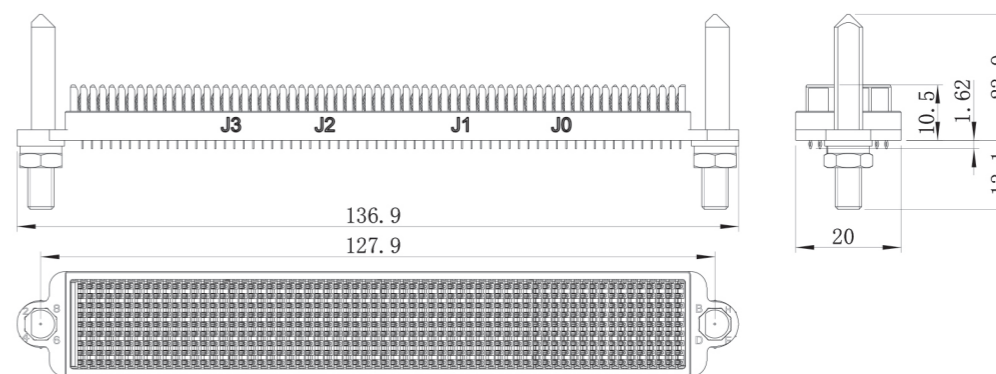
[ VPX-40T8CAA8-A Dimensions ]



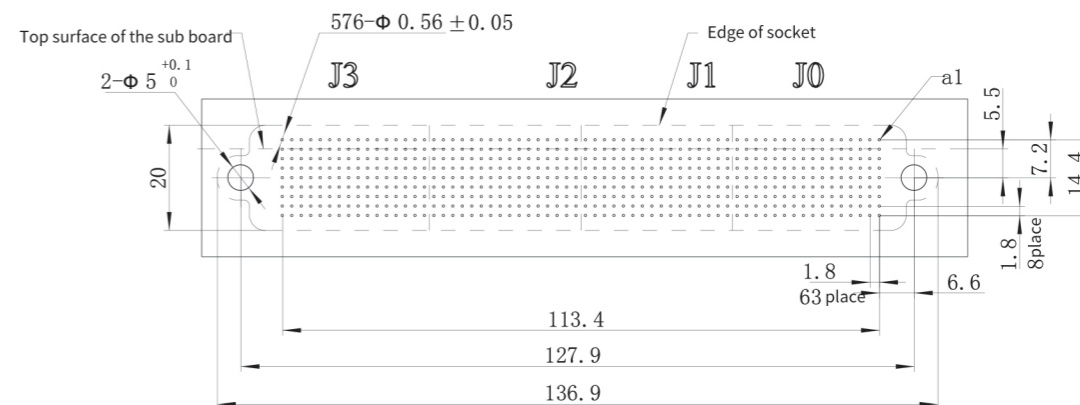
[ VPX-40T8CAA8-A Recommended PCB Packaging Size ]



[ External dimensions of VPX-40Z8IIIJ8-A ]



[ Recommended PCB package size for VPX-40Z8IIIJ8-A ]



Identify key positions

- For the 6U connector, there are eight key positions of ABCDEFGH on the P0/J0 side, eight key positions of ABCDEFGH between P2/J2 and P3/J3, and eight key positions of 12345678 on the P6/J6 side. For 3U connectors, on the P0/J0 side, there are eight key positions: ABCDEFGH, and on the P2/J2 side, there are eight key positions: 12345678.
- When supplying connectors, guide pins and guide sleeves are supplied as loose parts, and the key positions are set as needed during use.

Suggestions for PCB wiring

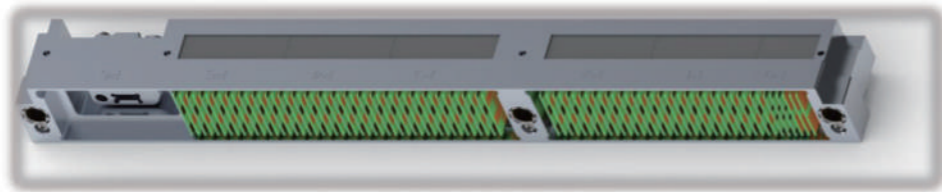
Refer to the PCB wiring recommendations for RT2 series high-speed backplane connectors (P22-P23)

VPX series reinforced type Optoelectronic hybrid connector

VPXP Series Reinforced Optical-Electrical Hybrid Connectors

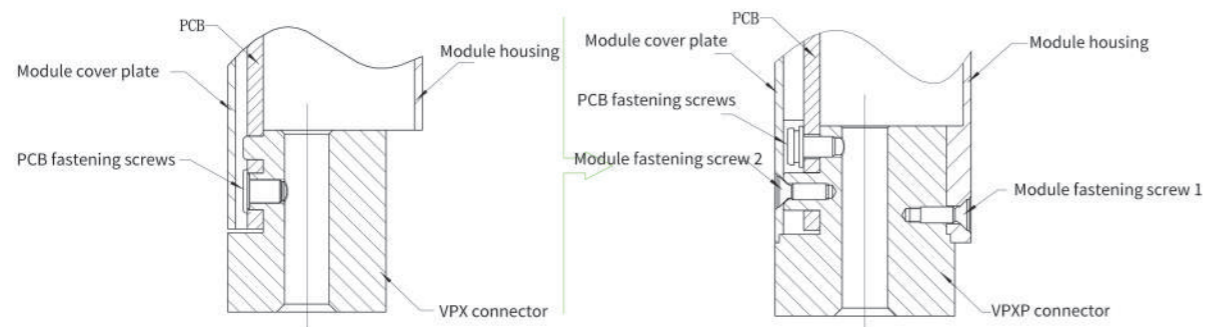
Product Introduction

- Optimized based on the VPX series connectors, this series features a fixed structure for the module housing and the connector, while an additional protective structure for the connector against gold fingers is added.
- It complies with the standard electrical interface of VITA standard modules.
- It is a generalized, open, and user-configurable connector.
- With a modular combined structure, it enables integrated transmission of multiple signals such as RF (Radio Frequency), optical, differential, single-ended, and power signals.
- The high-speed differential module adopts a solder-free press-fit structure.
- The transmission rate can reach 6.25Gbps and can be expanded to 12.5Gbps to 20Gbps
- A single module has 32 differential pairs, with a node density of 113 / inch (56 pairs / inch).
- The RF module complies with VITA67 standard and operates at a frequency of 18GHz/40GHZ
- The optical fiber module complies with the VITA 66 standard and uses high-density MT-type optical fiber contacts.

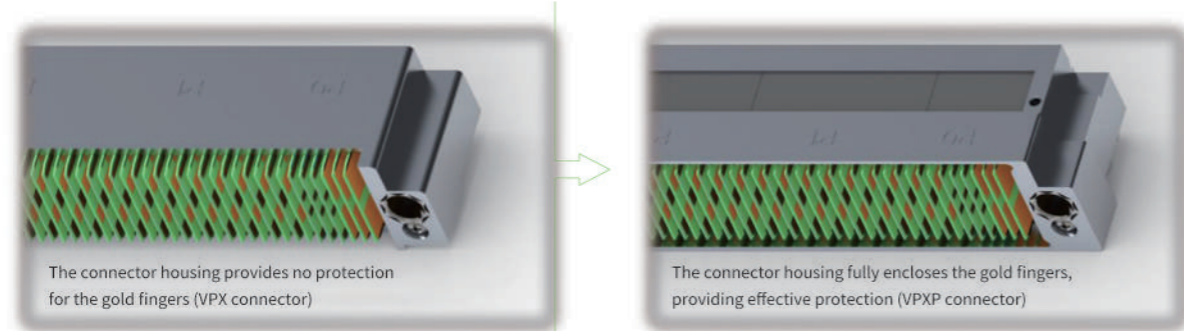


Comparison with VPX series connectors

[Comparison with module housing fixation]



[Comparison of Golden Finger Protection]



[Comparison in other aspects]

Compared to VPX connectors, VPXP connectors share identical structural features, performance metrics, and PCB package dimensions, with the exception of the two differences mentioned above.

Product ordering model

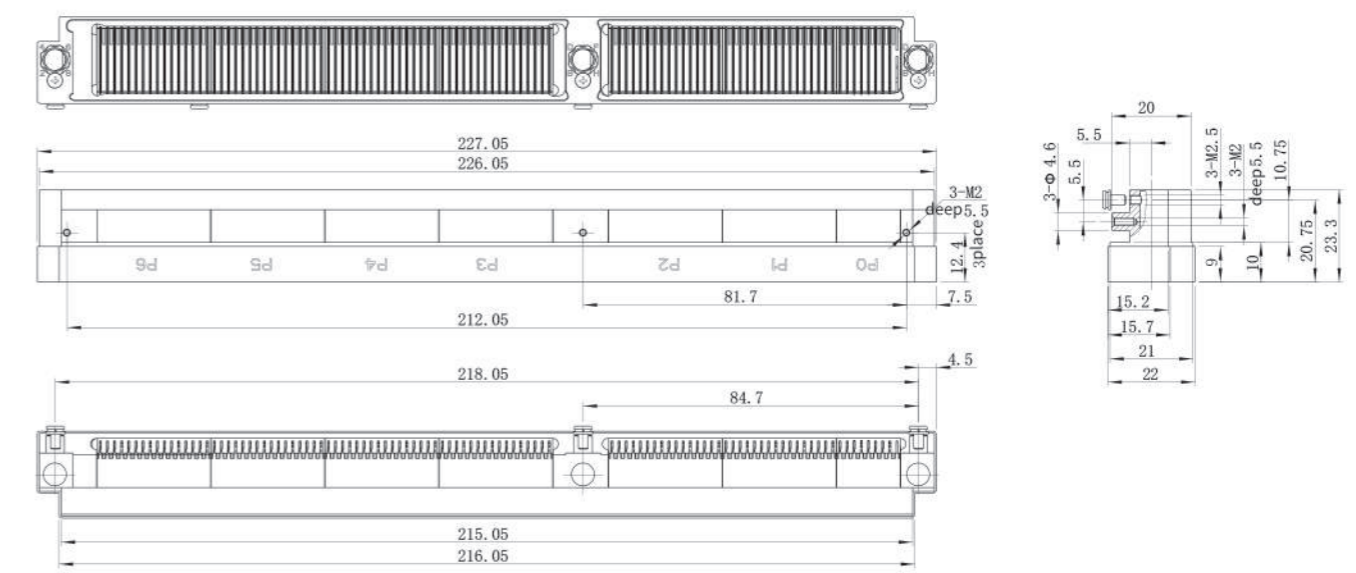
VPXP	-	61	T	8	aAB	8	AADD	8	-	A	-	S
1		2	3	4	5	6	7	8		9		10

- 1 Series Designation: VPXP**  
Module Quantity:  
First digit indicates full module count: 6, 2, 4, 3  
Second digit indicates half module count: 1, 0  
Example: 6 full modules and 1 half module
- 2 Connector Type:**  
T: Plug LT: Liquid-cooled plug  
RT: Board-rear plug
- 3 Guide Key Position:**  
Guide key position is denoted by the number 8, indicating 8 key positions.
- 4 Model Code:**  
Positions P0/J0, P1/J1, P2/J2 are sequentially defined for module types; lowercase letters denote half modules; uppercase letters denote full modules
- 5 Guide Key Position:**  
Guide key position is denoted by the number 8, indicating 8 key positions.
- 6 Type Spectrum Code:**  
Sequentially defined as P3/J3, P4/J4, P5/J5, P6/J6
- 7 Position Module Type:**  
All modules are full modules
- 8 Guide Key Position:**  
Guide key position is denoted by the number 8, indicating 8 key positions. Same Series Identification Number: A, B, C, etc. When all modules in a series are assembled with default contacts, the identification number is A. Otherwise, each contact modification within the same series corresponds to a distinct "Same Series Identification Number" for differentiation.
- 9 Housing Material and Plating:**  
No Marking: Nickel-plated aluminum alloy  
S: Stainless steel passivated
- 10**

- Notes:
- For 3U and 4U applications, fields "7" and "8" are omitted.
  - Board-mounted sockets include dual-sided guide pins; these do not require separate ordering.
  - Plugs (daughter board connectors) accommodate PCB thicknesses of 1.6mm to 3mm. For PCBs thicker than 3mm, countersunk holes are recommended.
  - This model designation applies only to plug connectors (daughter board connectors). Their mating receptacle connectors (backplane connectors) follow the VPX series connector model naming convention.

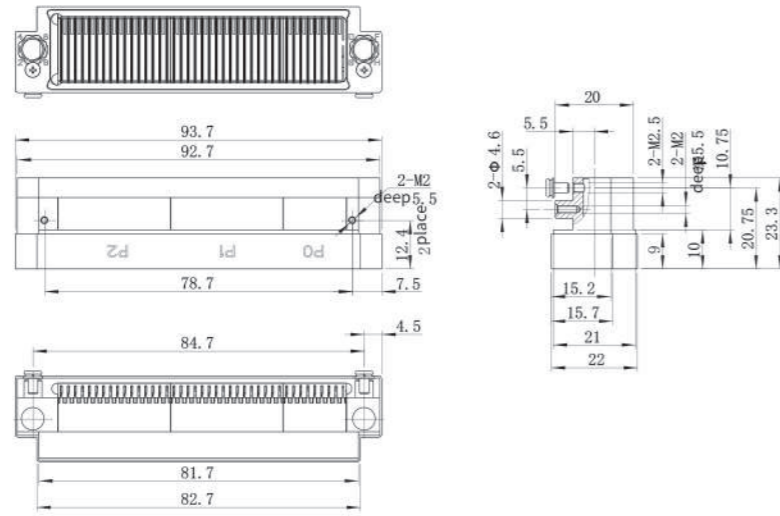
Product dimensions

[ VPXP-61T8aAA8AAA8-A Dimensions ]

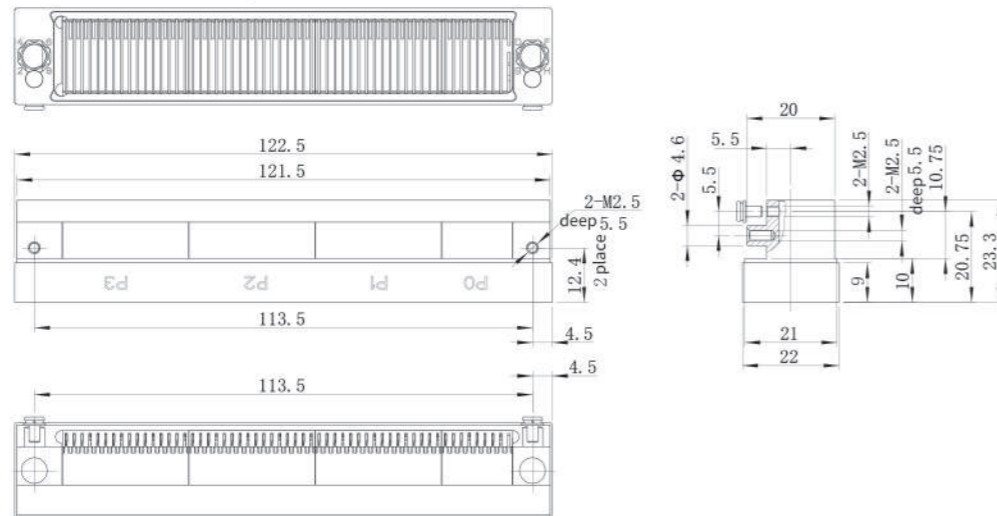


VPX series reinforced type Optoelectronic hybrid connector

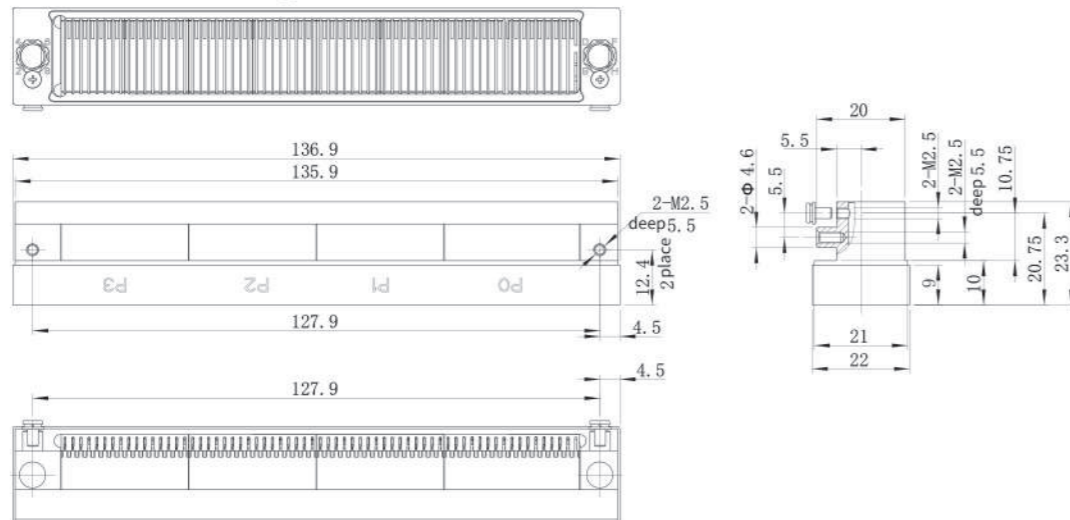
[ VPXP-21T8aAA8-A Overall Dimensions ]



[ VPXP-31T8aAAA8-A Overall Dimensions ]



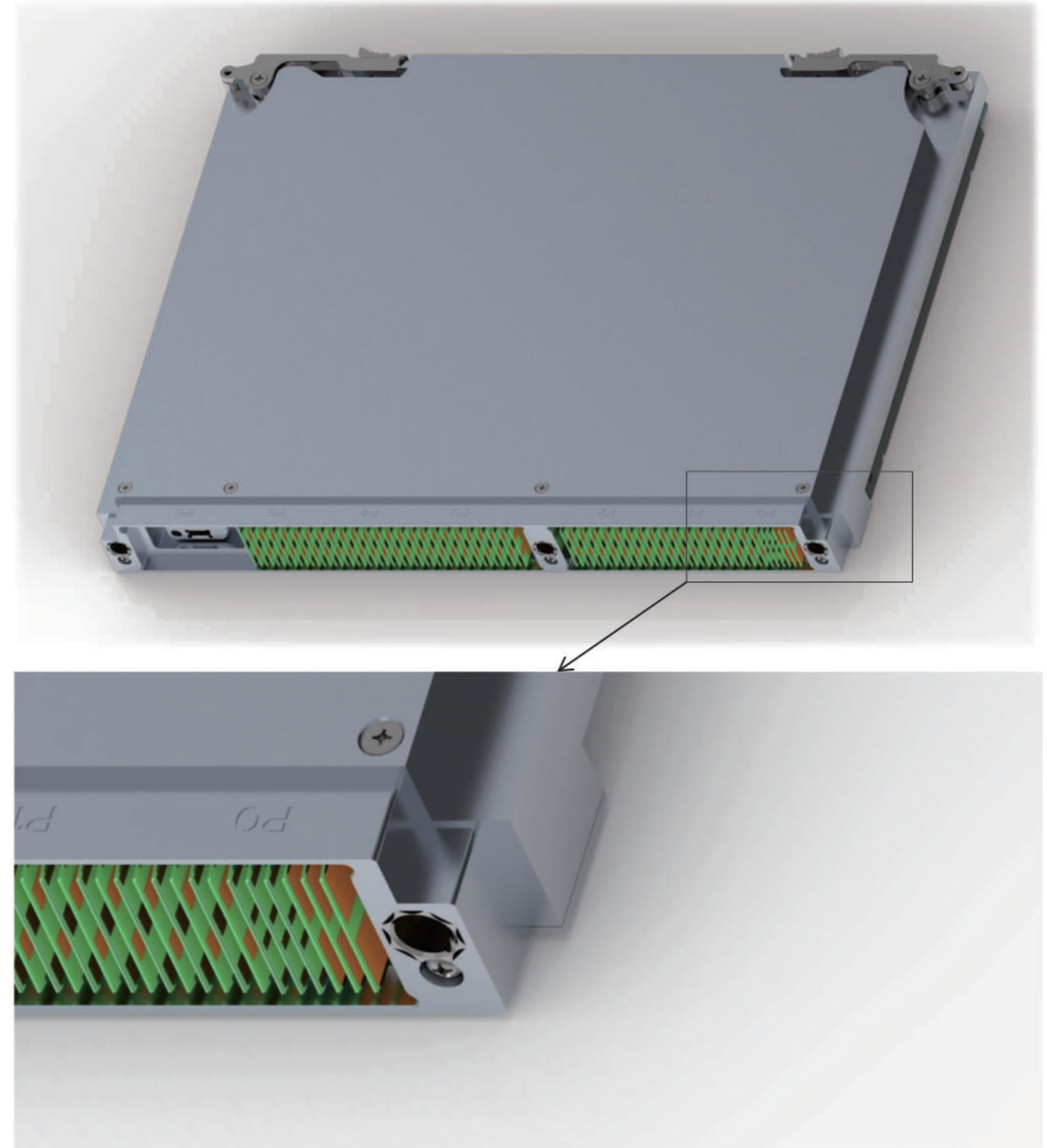
[ VPXP-40T8CAAA8-A Overall Dimensions ]



The printed circuit board package dimensions are identical to those of the VPX series connectors and comply with VITA standards.

Installation diagram of VPXP connector on module

The module is designed according to the VITA48 standard, with the VPXP connector mounted on it. The connector fits well with the module housing, as shown below.



VPX series reinforced type  
Optoelectronic hybrid connector

JVPX Series Ruggedized Hybrid Connectors

Product Overview

The JVPX series ruggedized hybrid connectors are integrated hybrid products developed based on the VITA46 standard connectors. Designed to enhance mechanical and electromagnetic environmental performance while meeting diverse signal and power integration transmission requirements, they combine high reliability, multifunctionality, and modularity.

Universal, Open, User-Configurable Connector

Standard electrical interfaces compliant with VITA 46/48/66/67 modules

Modular combination structure enables integrated transmission of RF, optical, differential, single-ended, power, and other signals

High-speed differential modules feature a solderless press-fit design

Transmission rates up to 6.25 Gbps, expandable to 12.5 Gbps-25 Gbps

Single-module differential pair count: 32 pairs, achieving node density of 113 pairs/inch (56 pairs/cm)

RF modules comply with VITA67 standards, operating at 18GHz/40GHz

Optical modules comply with VITA66 standards, utilizing high-density MT-type fiber contacts and MT multi-fiber connectors



Main performance indicators

[ Key Performance Indicators ]

High-Speed Differential Transmission Performance

Differential Characteristic Impedance:

Transmission Rate: 20Gbps

Crosstalk: Better than -30dB (10GHz)

Low Contact Resistance

Rated Current: 1A per channel

Insulation Resistance:  $\geq 1000M\Omega$

Withstand Voltage: 500V

[ RF performance ]

Working frequency: 0-40GHz

Characteristic impedance: 50  $\Omega$

RF insertion loss:  $\leq 0.12 \sqrt{f}$  (f: GHz)

Voltage standing wave ratio:  $\leq 1.15 + 0.01f$  (f: GHz)

Phase stability: DC-20GHz:  $\leq \pm 3^\circ$

DC-40GHz:  $\leq \pm 6^\circ$

Isolation: better than -90dB (500MHz-18GHz)

Better than -70dB (1GHz-40GHz)

RF leakage: better than -80dB (2-3GHz)

[ Optical transmission performance ]

Insertion loss:  $\leq 1.5dB$

Error rate: No errors greater than  $10^{-12}$

[ Power transmission performance ]

Rated current of contact: 2 channels per row, 8A per channel

Voltage endurance: 500V

Insulation resistance:  $\geq 1000M\Omega$

[ Environmental Performance ]

Operating temperature: -55  $^\circ C$ -125  $^\circ C$

Salt spray: 96 hours

Damp heat: According to GJB1217A, alternating damp heat for 10d

[ Mechanical properties ]

Vibration: Sinusoidal 10-2000Hz, 196m/s<sup>2</sup>

Random 10-2000Hz, 0.2g<sup>2</sup>/Hz

Shock: 80g, half sine wave, lasting for 11ms

Mechanical lifespan: 500 cycles

Product ordering model

JVPX	-	61	T	8	aAB	8	AADD	8	-	A	-	C
1		2	3	4	5	6	7	8		9		10

1 Series Designation: JVPX

2 Module Quantity:  
First digit indicates the number of full modules: 6, 2, 4, 3  
Second digit indicates the number of half modules: 1, 0  
Example: 6 full modules and 1 half module

3 Connector Type:  
T: Plug  
Z: Socket

4 Guide Key Position:  
The guide key position is denoted by the number 8, indicating 8 key positions.

5 Model Code:  
Positions P0/J0, P1/J1, P2/J2 are sequentially defined for module types; lowercase letters denote half modules; uppercase letters denote full modules

6 Guide Key Position:  
The guide key position is denoted by the number 8, indicating 8 key positions.

Type Spectrum Code:

7 Positional module types are sequentially defined as P3/J3, P4/J4, P5/J5, P6/J6; all module types are full modules.

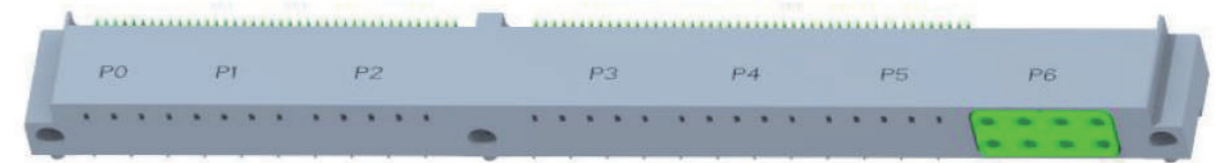
8 Guide Key Position:  
The guide key position is denoted by the number 8, indicating 8 distinct key positions.

9 Same Series Identification Number:  
A, B, C, etc. When all modules in the series are assembled with default contacts, the identification number is A. Otherwise, each contact modification within the same series corresponds to a distinct "Same Series Identification Number" for differentiation.

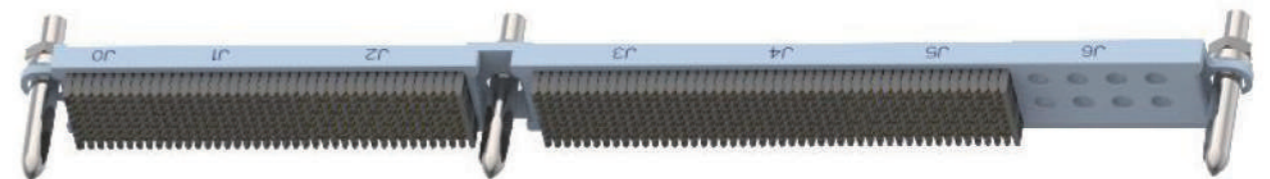
10 Housing Material and Plating:  
No Marking: Nickel-plated aluminum alloy  
S: Passivated stainless steel

Notes:  
1. For 3U and 4U applications, fields "7" and "8" are omitted.  
2. Rear panel sockets include dual-sided guide pins; these do not require separate ordering.  
3. Plugs (daughter board connectors) accommodate PCB thicknesses of 1.6mm-3mm. For PCBs thicker than 3mm, countersunk holes are recommended.

Example: J1VPX-6IT8aAB8AADD8-A denotes: 6U connector with 6 full modules and 1 half module. Full modules comprise 4 A (differential modules), 1 B (single-ended module), and 1 D (RF module); Half modules are denoted by "a," also known as base modules. Specifically: P0 is base module a P1, P3, P4, P5 are differential modules A P2 is single-ended module B P6 is RF module D. Non-RF sections utilize a solderless crimp termination method, while RF modules default to cable termination. The transmitted signal types are: 6 power lines + 128 single-ended cores + 132 differential pairs + 203 ground cores + 8 RF contacts, as illustrated.



Example: JVPX-61Z8aAB8AAMD8-A denotes: 6U socket with 6 full modules and 1 half module, where J0 is a VITA standard socket half module; J1, J3, J4 are middle full modules; J2, J5 are right-end full modules; J6 is RF module D. Non-RF sections utilize solderless crimp termination, while RF modules connect via cables as shown.



Selection Tip: Based on required signal types, first determine the plug model, then replace the third segment "connector type" in the plug model with "Z" to obtain the receptacle model.

Type spectrum code description

Type spectrum code				
Module code	Plug signal arrangement (viewed from the top of the plug printed board)	Position	Instructions	Corresponding socket signal arrangement
A		P1/J 1-P6/J6 any position	Differential full module, 32 pairs of differential pairs /8-core single ended	
B			Single ended full module, 80 core single ended	
C			Default combination, full module, 6 cores in total Power supply/20 core single ended/20 differential pairs; Can be combined with other signals and needs to be in production. Product model name "same type spectrum identification number" Mid recognition	
			Full module power supply, 16 columns of 32 core power supply	
			Full module, 8 columns of single ended, 8 columns of differential, a total of 44 core single ended/16 pairs of differential	
G		P2/J 2-P6/J6 any position	2 MT fiber optic contacts, recommended at P2 or P6 positions	Head seat consistency
K			4 MT fiber optic contacts, recommended at P2 or P6 positions	Head seat consistency
D			8-core 12 # RF or fiber optic contacts, ordered separately. Suggest P2 or P6 positions	Head seat consistency
E			12 core 16 # RF or fiber optic contacts, ordered separately. Suggest P2 or P6 positions	Head seat consistency
F			1-core 8 #/2-core 12 #/4-core 16 # RF or fiber optic contacts, ordered separately. Suggest P2 or P6 positions	Head seat consistency

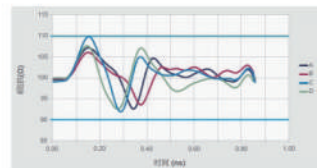
Type spectrum code				
Module code	Plug signal arrangement	Position	Instructions	Corresponding socket signal arrangement
H		P2/J2 ~ P6/J6	2-core 8 #/2-core 12 # RF or fiber optic contacts. It is recommended to order the contacts separately at P or P6 positions	Head seat consistency
N	16 Column empty module		16 column empty module, filling function to achieve standard 3U or 6U size	Head seat consistency
a		P0/J0	Half module, basic module, a total of 6 power supplies/16 single ended signals/4 pairs of differential signals	
b		P2/J2 ~ P6/J6	1 core 8 # or fiber optic contact, contact ordered separately. Suggest P2 or P6 position	Head seat consistency
e			6-core 16 # or fiber optic contact, contact ordered separately. Suggest P2 or P6 positions	Head seat consistency
d			4-core 12 # or fiber optic contact, contact ordered separately. Suggest P2 or P6 positions	Head seat consistency
g			1 MT fiber optic contacts, recommended P2 or P6 bit	Head seat consistency
k			2 MT fiber optic contacts, recommended P2 or P6 bit	Head seat consistency
n	8 Columns of empty modules		8-column empty module, filling function to achieve standard 3U or 6U size	Head seat consistency

JVPX series reinforced type  
Optoelectronic hybrid connector

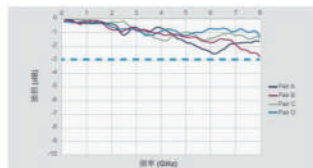
High speed differential module

- Meets VITA series standards such as VITA41/VITA46/48
- Can mix multiple signals such as differential, single ended, power supply, etc
- The transmission rate can reach 6.25Gbps and can be expanded to 12.5Gbps to 20Gbps
- The number of differential pairs in a single module is 32 pairs, with a node density of 113/inch (56 pairs/inch)
- The termination method is press fit without welding
- Contact spacing: plug 1.35mm (row) \* 1.8mm (column); Socket 1.8mm \* 1.8mm

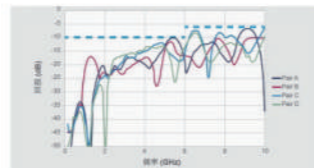
Characteristic impedance



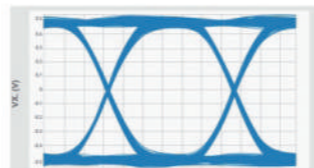
Insertion loss



Return Loss



Eye pattern



RF module

[Order model]

- RF contacts feature a floating structure for post-assembly removal;
- Ensures phase and insertion loss stability;
- RF contacts must be ordered separately and are not included with the product.



12 # RF socket (for daughter board plug):

12 # RF pin (for motherboard socket):

JVPX-12S10	(DC~20GHz)	JVPX-12P10	(DC~20GHz)
JVPX-12S16	(DC~20GHz)	JVPX-12P20	(DC~40GHz)
JVPX-12S20	(DC~40GHz)		

[Adaptive cable]

RF contact components	Compatible cable	Cable Type Specifications
JVPX-12S10 JVPX-12P10	Flexiform 405 NMF or 670-0863SX, etc.	Compatible with cables featuring an inner conductor diameter of 0.56mm and an outer conductor diameter of 2.2mm
JVPX-12S16	CXN3657, Flexiform 151 FJ, etc.	Compatible with cables featuring an inner conductor diameter of 0.31mm and an outer conductor diameter of 1.23mm
JVPX-12S20 JVPX-12P20	Gore CXN 3506, etc.	Compatible with cables featuring an inner conductor diameter of 0.5mm and an outer conductor diameter of 2mm

[Installation and Removal]

- RF contact installation requires no tools and can be easily inserted into the connector by hand.
- Removal requires a specialized tool, which must be ordered separately and is not included with the product. The tool order number is JVPX-12CX01.

Fiber Optic Modules

- High-density MT fiber optic connectors, with each MT supporting 12 or 24 optical channels;
- Multiple transmission modes available: single-mode (G.652D), single-mode (G.657A2), multimode 62.5/125, multimode 50/125, multimode 50/125 (OM3 high-speed);
- Resilient contacts ensure reliable connection in vibration and shock environments;
- MT connectors are easily removable and must be ordered separately—not included with the product.

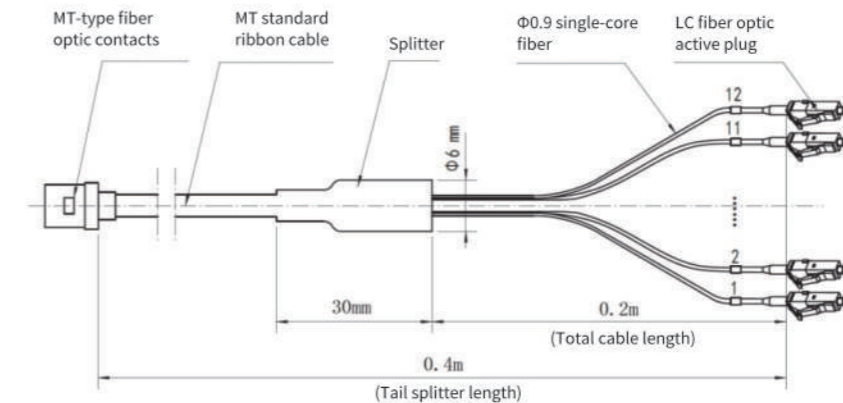
[Fiber Optic Patch Cord Ordering Models]

RF	-	MT	-	12	LC	-	0.9	M	0.4	/	0.2
1		2		3	4		5	6	7		8

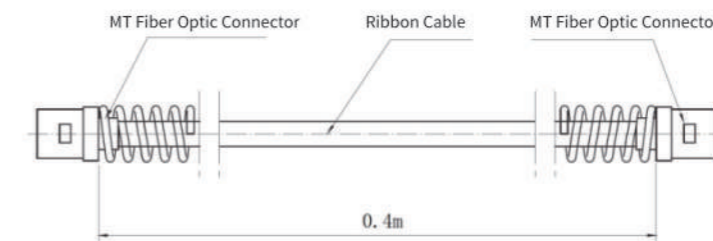
1 Series Designation: RF	5 Branch fiber diameter: 0.9mm, 2mm Omit this field if MT/S movable plugs have no branches
2 Connector Type: MT/D - with guide pins, 12-channel, for sub-board plugs MT24/D - with guide pins, 24-channel, for sub-board plugs MT/S - Spring-loaded, 12-channel, for motherboard receptacles MT24/S - Spring-loaded, 24-channel, for motherboard receptacles	6 Transmission module: M: Multimode 62.5/125 MI: Multimode 50/125 MIV: Multimode 50/125 (OM3 High Speed) S: Singlemode G.652D SI: Singlemode G.657A2
3 Number of End-of-Line Movable Connectors: 1~24 (specify quantity) If only 1 movable connector is required, quantity need not be specified	7 Total cable length: Unit: meters
4 End-of-Line Movable Connector Types: LC, FC, SC, MT/S, JY599/16GP, JY599/12GP, etc.	8 Tail splitter length: Unit: meters Omit this field if MT/S active connector has no splitter.

[Ordering Model Example]

Model Naming Example 1: RF-MT-12LC-0.9M0.4/0.2 indicates a 12-port MT-type fiber optic patch cord for sub-board plug connectors. It features 12 LC active connectors with 0.9mm diameter splitter cables at the active connector ends. Transmission mode is multimode 62.5/125, total cable length is 0.4 meters, and splitter length is 0.2 meters.

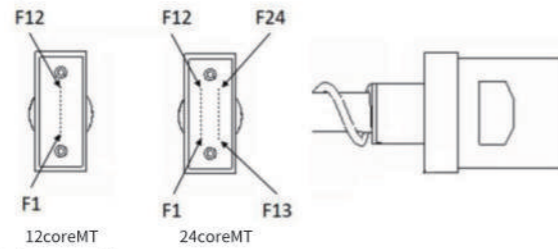


Model Naming Example 2: RF-MT/S-MT/S-M0.4 indicates a 12-channel MT fiber optic patch cord for motherboard socket connectors. The active connector type is MT/S, transmission mode is multimode 62.5/125, and total cable length is 0.4 meters.



[ MT type fiber optic contact optical channel number ]

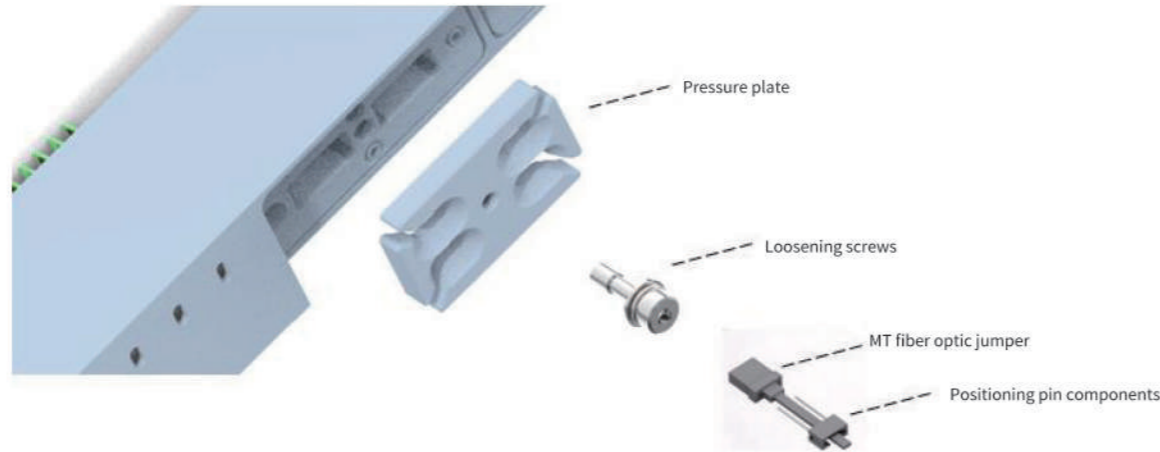
MT type fiber optic contacts do not have optical channel numbers, which need to be defined by the user themselves; The MT type fiber optic contact is centrally symmetrical and can be installed in both directions structurally. The difference is that one side has a small window while the other side does not, which can be used as a positive and negative identification.



[ Assembly instructions for fiber optic jumpers ]

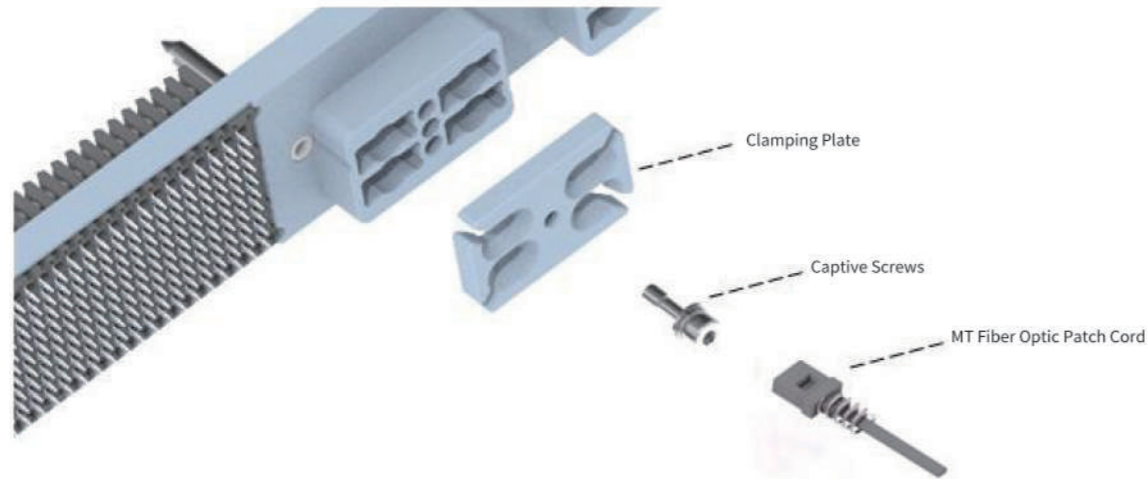
For the plug connector on the daughter board end, first remove the screws to remove the pressure plate, install the positioning pin component into the MT fiber optic cable, and then install it into the pressure plate together with the MT fiber optic cable through the inclined groove on the pressure plate. Insert the board into the connector and tighten the screws to complete the installation. Pay attention to the following points during installation:

- The positioning pin component is provided with the connector and not with the fiber optic cable; And the positioning pin components are not divided into positive and negative directions, and can be installed in both directions;
- The window orientation of the MT fiber optic contact is set by the user to ensure that the same numbered optical channels of the plug and socket correspond one-to-one;
- The specification of the non loosening screw is M2, and it can be coated with removable thread glue during installation for better anti loosening effect.



For the motherboard-side receptacle connector, first remove the screws to detach the clamping plate. Then, insert the MT fiber optic patch cord into the clamping plate through the angled slot on the clamping plate. Reinstall the clamping plate into the connector and tighten the screws to complete the installation. Installation Notes:

- The window orientation of the MT fiber optic contact is defined by the user, ensuring one-to-one correspondence between the optical channels with the same number on the plug and receptacle.
- The captive screws are of M2 specification; applying removable threadlocker during installation can achieve a better anti-loosening effect.

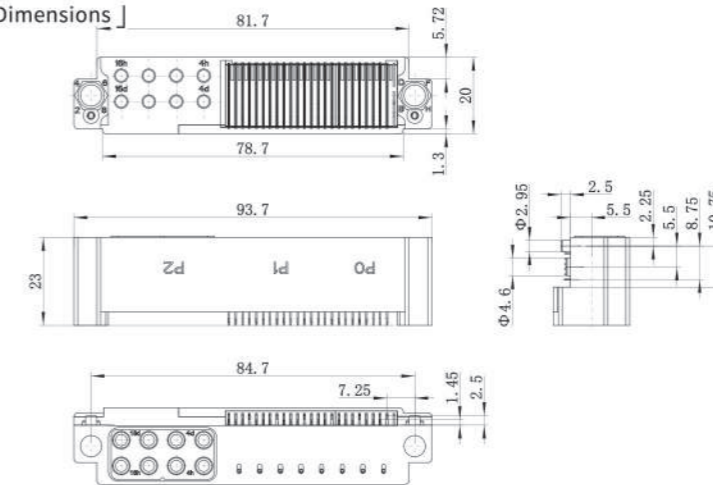


[ Precautions for Using Fiber Optic Patch Cords ]

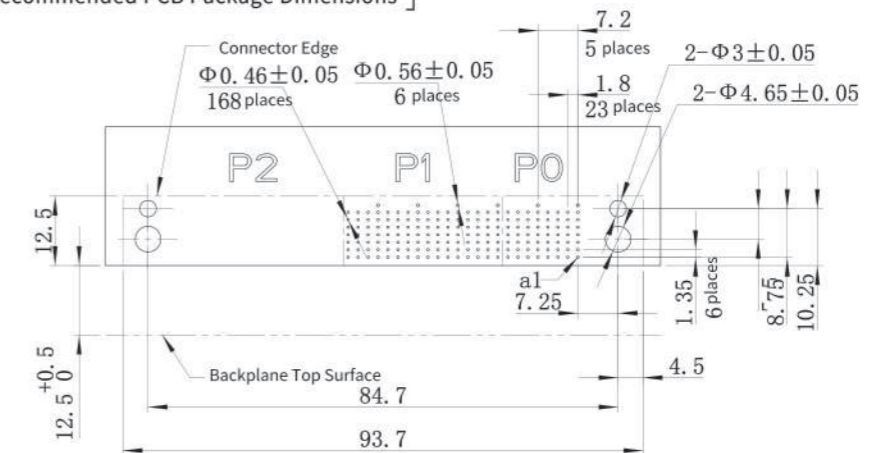
- Pay attention to fiber bending, the minimum bend radius must not be less than 12.7mm; meanwhile, note the bundling method, and do not bind it tightly, as this may cause the local bend radius to become too small.
- Pay attention to protecting the mating surfaces of MT contacts and keep them clean: after long-term non-use or when foreign matter is found on the mating surfaces, wipe them with a lint-free cloth.

Product Dimensions and PCB Package Dimensions

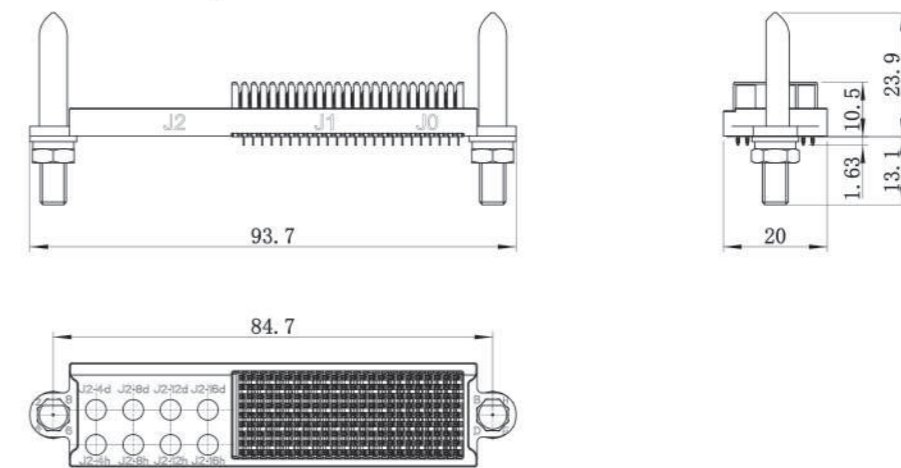
[ JVPX-21T8aAD8-A Overall Dimensions ]



[ JVPX-21T8aAD8-A Recommended PCB Package Dimensions ]

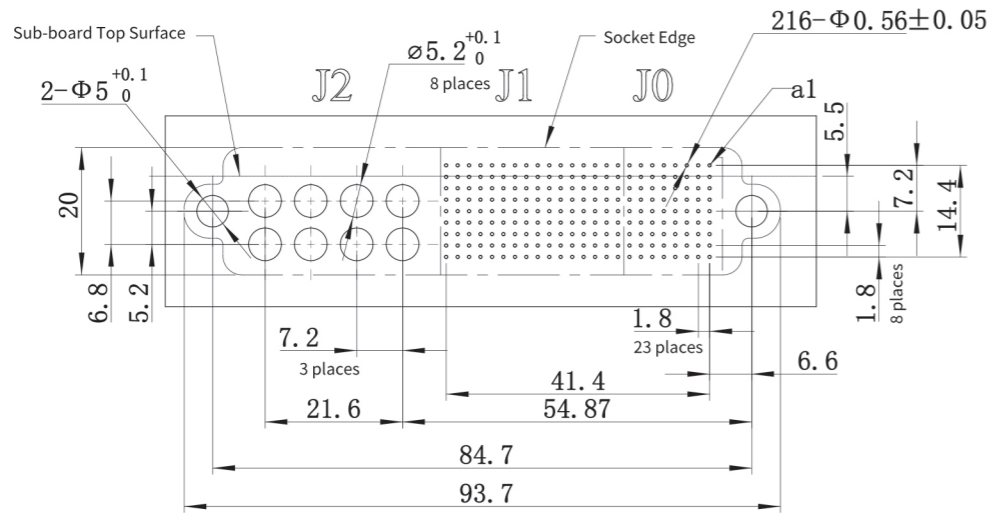


[ JVPX-21Z8aAD8-A Overall Dimensions ]

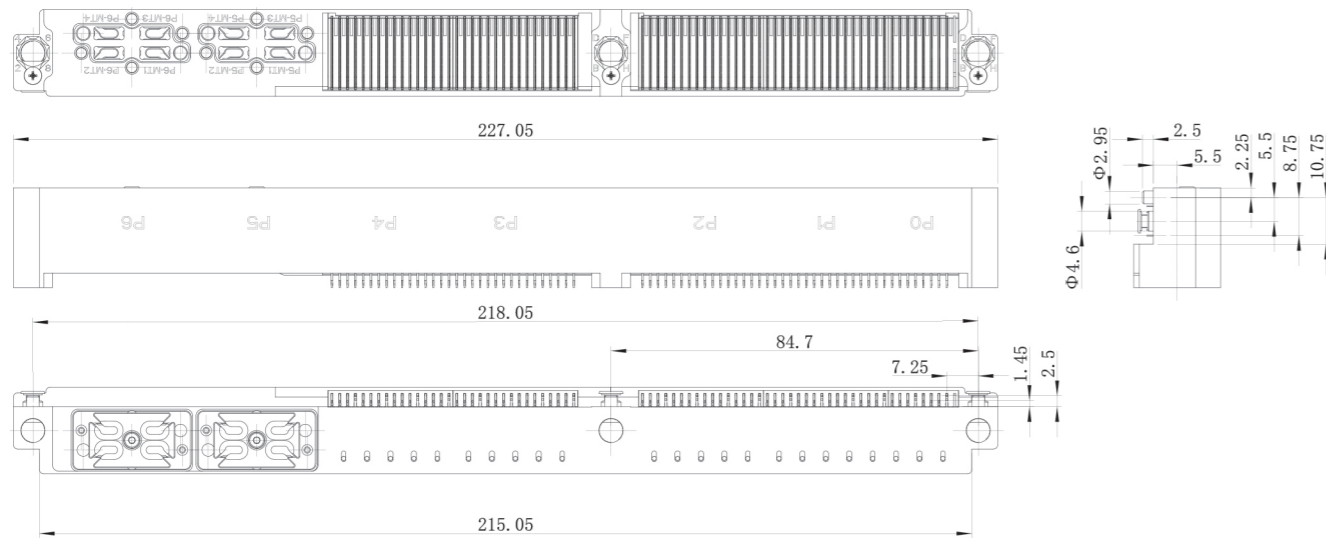


JVPX series reinforced type  
Optoelectronic hybrid connector

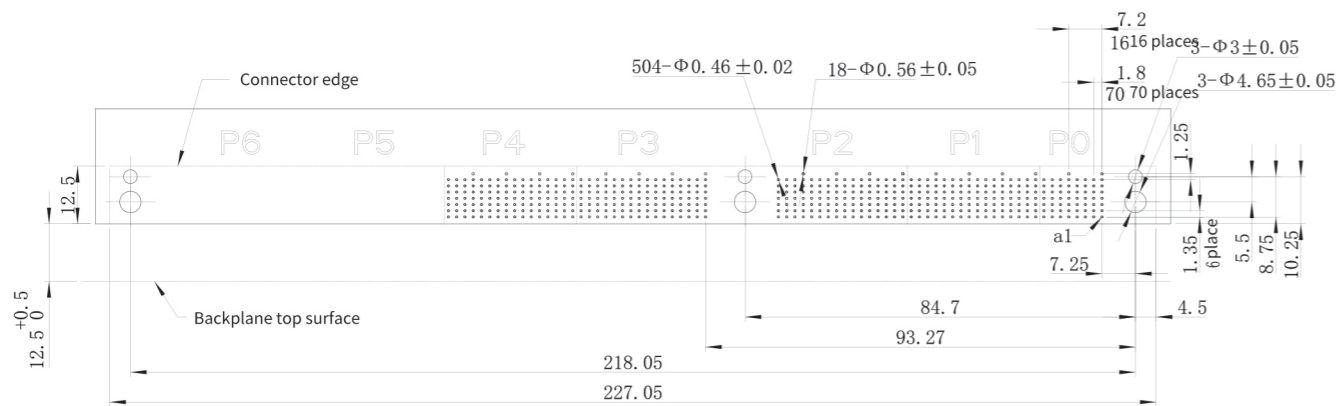
[ JVPX-21Z8aAD8-A Recommended PCB Package Dimensions ]



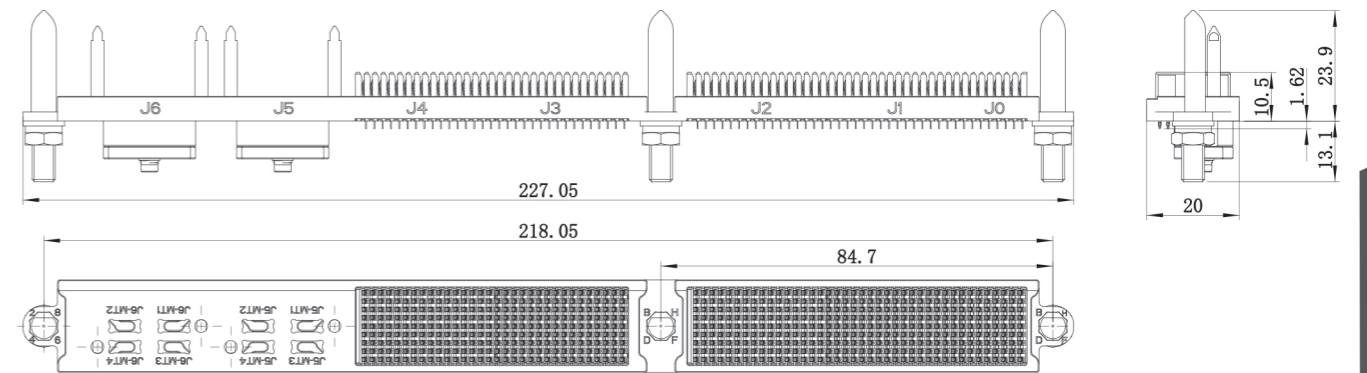
[ JVPX-61T8aAA8AAKK8-A Dimensions ]



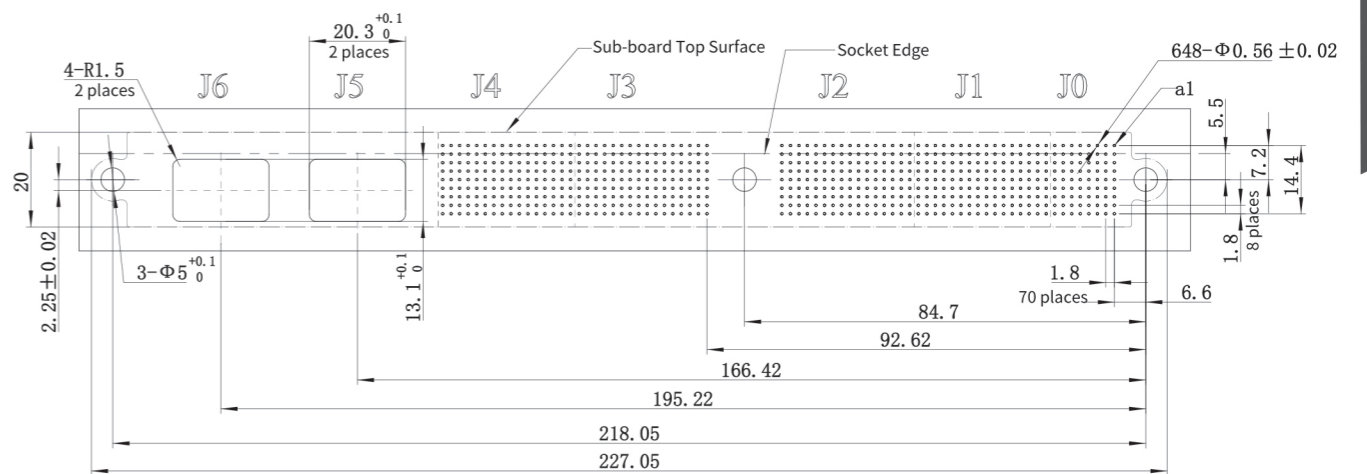
[ JVPX-61T8aAA8AAKK8-A Recommended PCB Package Dimensions ]



[ JVPX-61Z8aAA8AAKK8-A Overall Dimensions ]



[ JVPX-61Z8aAA8AAKK8-A Recommended PCB Package Dimensions ]



Key Position Identification

- For the 6U connector, the P0/J0 side features eight key positions: ABCDEFG. The P2/J2 and P3/J3 sides share eight key positions: ABCDEFG. The P6/J6 side has eight key positions: 12345678. For 3U connectors, the P0/J0 side has eight key positions (ABCDEFGH), while the P2/J2 side has eight key positions (12345678).
- Connectors are supplied with guide pins and guide sleeves as separate components. Key positions should be set as required during use.

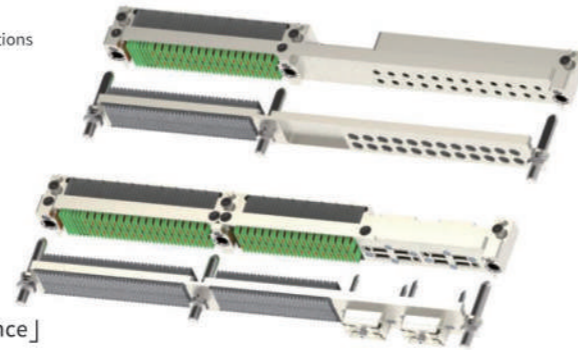
PCB Routing Recommendations

Refer to PCB routing recommendations for the RT2 series high-speed backplane connectors (P22-23).

VPX20 Series Ruggedized Optoelectronic Hybrid Connectors

Product Overview

- Compliant with the standard electrical interfaces of VITA standard modules
- Universal, open, and user-configurable connectors
- Modular combination structure supporting RF, optical, differential, single-ended, power, and other functions
- Transmission rates up to 20 Gbps, scalable to 25 Gbps
- 32 differential pairs per module, with a node density of 113 pairs/inch (56 pairs/inch)
- RF modules compliant with the VITA 67 standard, operating at 18 GHz/40 GHz
- Fiber modules compliant with the VITA 66 standard, utilizing high-density MT-type fiber optic contacts



Main performance indicators

[High speed differential transmission performance] [Environmental Performance]

- Differential characteristic impedance: 100 Ω
- Transmission rate: 20Gbps
- Crosstalk: better than -30dB (10GHz)
- Low level contact resistance: ≤ 40m Ω
- Rated current: Single signal 1A
- Insulation resistance: ≥ 1000MΩ
- Voltage endurance: 500V
- Operating temperature: -55 °C~125 °C
- Salt spray: 96 hours
- Damp heat: According to GJB1217A, alternating damp heat for 10d

[Mechanical properties]

- Vibration: Sinusoidal 10-2000Hz, 196m/s<sup>2</sup>  
Random 10-2000Hz, 0.2g<sup>2</sup>/Hz
- Shock: 80g, half sine wave, lasting for 11ms
- Mechanical lifespan: 500 cycles

[RF performance]

- Working frequency: 0~40GHz
- Characteristic impedance: 50 Ω
- RF insertion loss: ≤ 0.12 √ f (f: GHz)
- Voltage standing wave ratio: ≤ 1.15+0.01f (f: GHz)
- Phase stability: DC~18GHz: ≤ ± 3 °  
DC~40GHz: ≤ ± 6 °
- Isolation: better than -90dB (500MHz~18GHz)  
Better than -70dB (1GHz~40GHz)
- RF leakage: better than -80dB (2-3GHz)

[Optical transmission performance]

- Insertion loss: ≤ 1.5dB
- Error rate: No errors greater than 10<sup>-12</sup>

[Power transmission performance]

- Rated current of contact: 2 channels per row, 8A per channel
- Voltage endurance: 500V
- Insulation resistance: ≥ 1000M Ω

Comparison with VPX connectors

Connector Type	VPX connector	VPX20 connector
Transmission rate	6. 25Gbps	20Gbps
External structural dimensions	Same as the VPX series modular reinforced hybrid connectors	
Match size with printed circuit board	Same, compliant with VITA standards	

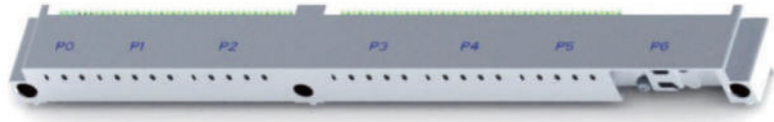
Product Model Naming

VPX20	-	61	T	8	aAA	8	AADD	8	-	A	-	S
1		2	3	4	5	6	7	8		9		10

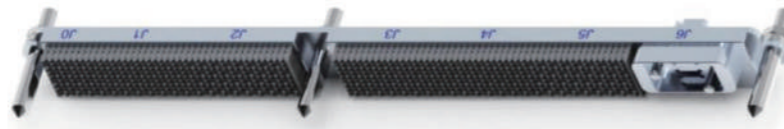
1	Series Title: VPX20	7	Type spectrum code: Define P3/J3, P4/J4, P5/J5, P6/J6 position module types in sequence; All module types are full modules
2	Number of modules: The first digit represents the total number of modules, 6, 2, 4, 3 The second digit represents the number of half modules, 1 and 0 Examples include 6 full modules and 1 half module	8	Guidance key: The guidance key is represented by the number 8, indicating that there are 8 types of keys.
3	Head Seat Type: T: Plug in Z: Socket LT: Liquid cooled plug LZ: Liquid cooled socket	9	Same type spectrum identification number: A. When all modules in the spectrum are assembled with default contacts, such as B, C, etc, The identification number of the same type spectrum is A, otherwise every change of contact in the same type spectrum Corresponding to a 'same type spectrum identification number' to indicate differentiation.
4	Guiding key position: The directional keys are represented by the number 8, indicating that there are 8 types of keys.	10	Shell material and coating: Unmarked: Nickel plated aluminum alloy S: Passivation of stainless steel
5	Type spectrum code: Define PO/J0, P1/J1, P2/J2 position module types in sequence; Lowercase letters represent half modules; Capital letters represent the entire module	Note: For 3U and 4U applications, there are no fields for "7" and "8". 2. The rear socket includes double-sided guide pins, which do not need to be ordered separately. 3. The plug (daughter board end connector) is compatible with printed boards with a thickness of 1.6mm~3mm, When the thickness of the printed circuit board is greater than 3mm, it is recommended to open countersunk holes on the printed circuit board.	
6	Guidance key: The guidance key is represented by the number 8, indicating that there are 8 types of keys.		

VPX20 series reinforced optoelectronic hybrid connector

Example 1: VPX20-6IT8aAB8AAG8-A denotes: 6U plug with 6 full modules and 1 half module: the full modules include 4 units of A (differential modules), 1 unit of B (single-ended module), and 1 unit of G (fiber optic module); the half module is marked with "a" (also called the base module), where P0 is the base module (a), P1, P3, P4, P5 are differential modules (A), P2 is the single-ended module (B), and P6 is the fiber optic module (G). Non-fiber sections use solderless crimp termination, fiber optic modules default to optical cable termination, and the transmitted signal types are 6 power lines + 128 single-ended cores + 132 differential pairs + 203 ground cores + 2 MT fiber contacts, as illustrated.



Example 2: VPX20-6IZ8aAB8AAAG8-A denotes: 6U receptacle with 6 full modules and 1 half module, where J0 is the VITA standard receptacle half module; J1, J3, J4 are full modules at the center of the receptacle; J2, J5 are full modules at the right end of the receptacle, and J6 is the fiber optic module (G). Non-fiber sections use solderless crimp termination, and fiber optic modules adopt optical cable termination, as illustrated.



Selection Tip: Based on required signal types, first determine the plug model, then replace the third segment "connector type" in the plug model with "Z" to obtain the receptacle model.

Model Designation Explanation:

See page P93

Type Code (Plug/Receptacle Module Code Explanation)				
Module Code	Plug Signal Arrangement (Viewed from the Top of the Plug PCB)	Location	Description	Corresponding Receptacle Signal Arrangement
a		P0/ J0	Half Module, Base Module, Total 6 Power Pins/16 Single-Ended Signals/4 Differential Pairs	
A		P1/J1- P6/J6 Any Position	Full Differential Module, 32 Differential Pairs/8 Single-Ended Pins	
B			Full Single-Ended Module, 80 Single-Ended Pins	
C			Default Configuration: Full Module, 6-pin power/20-pin single-ended/20 differential pairs	
		Power Full Module: 16 columns, 32-pin power		
		Full Module: 8 columns single-ended, 8 columns differential, 44-pin single-ended/16 differential pairs		
D			8-pin 12# RF or Fiber Optic Contacts, contacts ordered separately, recommended positions P2 or P6	Head-to-Receptacle Compatibility
G			2 MT Fiber Optic Contacts, recommended positions P2 or P6	Head-to-Receptacle Compatibility
G4			4 MT Fiber Optic Contacts, recommended positions P2 or P6	Head-to-Receptacle Compatibility
N	16-row Blank Module		16-row Blank Module, Filling Function	Head-to-Receptacle Compatibility

VPX20 series reinforced optoelectronic hybrid connector

### High-Speed Differential Module

- Compliant with VITA standards including VITA41/VITA46/VITA48
- Supports mixed configuration of differential, single-ended, and power signals
- Transmission rate up to 20+ Gbps
- 32 differential pairs per module, with a node density of 113 pairs/inch (56 pairs/inch)
- Termination method: crimp-terminated, solderless
- Contact pitch: Plug 1.35mm (row) × 1.8mm (column); Receptacle 1.8mm × 1.8mm

### RF Modules

See VPX Series Modular Ruggedized Mixed-Signal Connectors

### Fiber Optic Modules

See VPX Series Modular Ruggedized Mixed-Signal Connectors

### Product Dimensions

See VPX Series Modular Ruggedized Mixed-Signal Connectors

### Recommended PCB Enclosure Dimensions

See VPX Series Modular Ruggedized Mixed-Signal Connectors

### XS Series Wedge-Shaped Locking Strips

#### Product Features

- Provides a quick assembly and disassembly solution for board-level reinforced modules, such as CPCI, VPX, CPEX and other blade modules.
- Offers standardized product design options to shorten design cycles, simplify design complexity, and reduce costs.
- Features an integrated guide rail design; the sliding wedge block moves without jamming, enabling easy installation and replacement.
- Delivers maximum uniform clamping force for modules, while enhancing heat exchange efficiency during fastening.
- Meets application standards for military vehicle-mounted, shipborne, airborne, telecommunications, and aviation industrial environments.
- Provides small-batch customization services with short lead times.

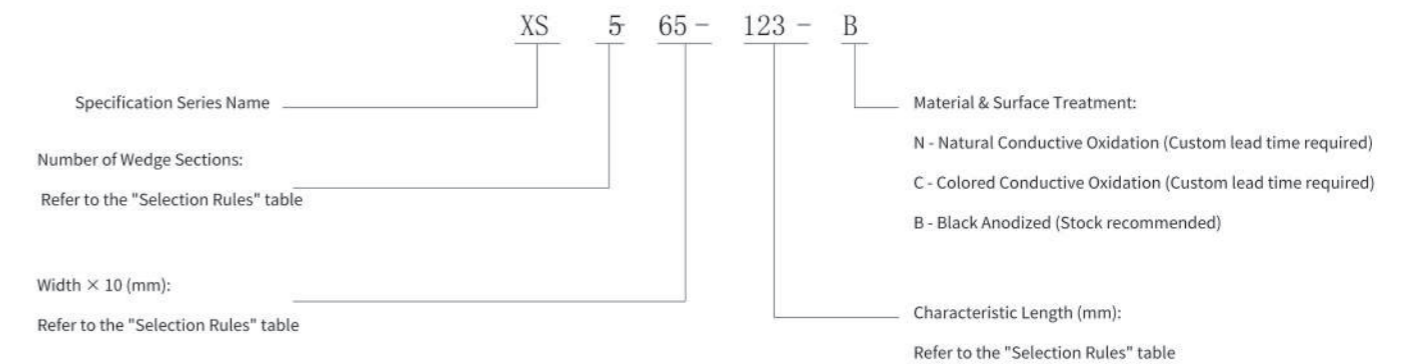
#### Key Performance Specifications

- Application: Blade-style structural modules / board locking
- Locking Torque: Recommended main screw torque: 0.8 Nm
- Mounting Torque: Recommended torque for mounting holes: 0.3 Nm
- Clamping Force: Wedge-driven extrusion slot: > 900 N
- Wrench Specification: Default: M2.5 hex socket wrench
- Service Life: Lock ↔ Release cycles: 2000+ cycles
- Wedge Material: 6061-T6 aluminum alloy, with surface oxidation treatment
- Component Material: SUS316 (passivated), compliant with GB/T848-2002
- Intrinsic Weight: L (Length) × 0.09 g (Weight Coefficient)
- Humid Heat Conditions: Complies with relevant requirements of GJB150.9A-2009
- Vibration and Shock: Meets relevant requirements of GJB150.16A/18A
- Corrosion Resistance: Complies with GJB150.11A, surface intact(96h)

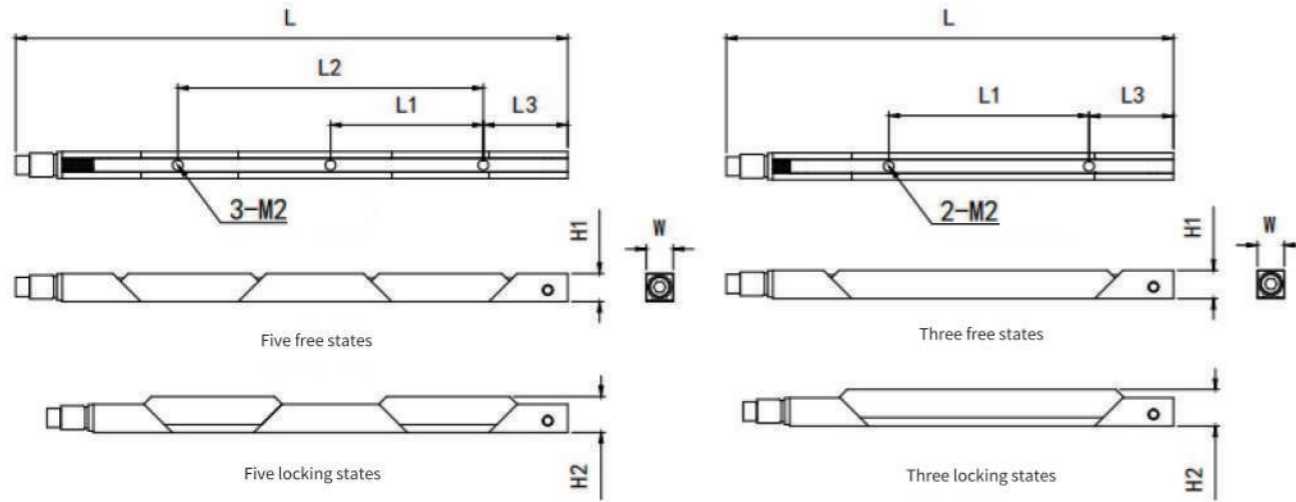


XS Series Wedge-Shaped Locking Strips

#### Product Ordering Model



[ Structural Dimensions ]

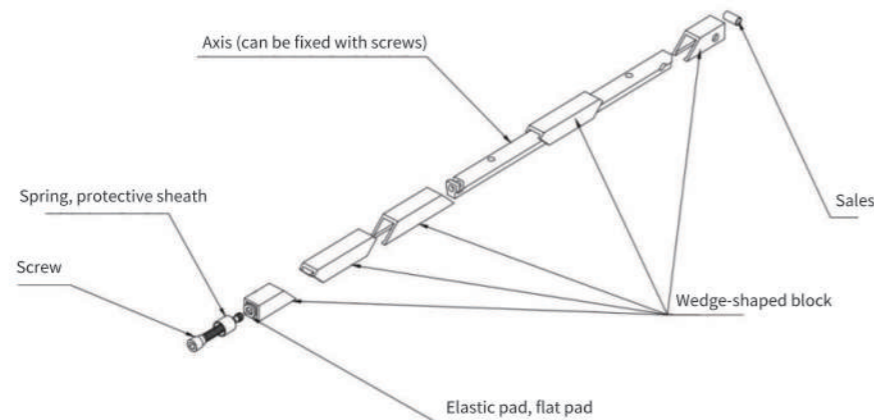


Note: Unit: mm ± 0.1

[ Selection Rules Table ]

Specification	Section number	Width (W)	Length (L: ±1)	Freedom height (H1)	Tighten height (H2)	Hole pitch (L1)	Hole pitch (L2)	Reference distance (L3)	Mounting hole (N-M)	working height Recommended value (Type)
XS3-65-060-B	3	6.5	min :60 max:70	MIN 6.9	MAX 8.8	20.32	—	10.0	2-M2	Type: 7.4 ~ 8.5
XS3-65100-B	3	6.5	min :100 max:110			24.13	48.26	20.32	3-M2	
XS5-65-125-B	5	6.5	min :125 max:135			36.82	73.64	20.32	3-M2	
XS3-75-095-B	3	7.5	min :95 max:105			36.82	—	22.0	2-M2	
XS5-75-185-B	5	7.5	min :185 max:195			65.0	130	22.0	3-M2	
XS5-75-250-B	5	7.5	min :250 max:260			65.0	130	22.0	4-M2 (Hole spacing analogy)	

[ Assembly Reference ]



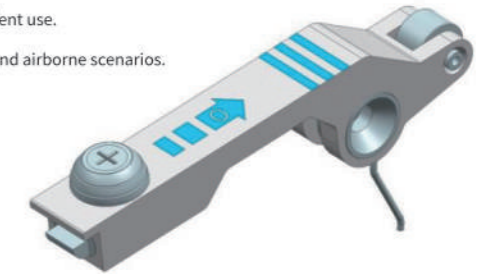
ZBQI Series Universal Shaft-Wheel Extractor

Product Features

- Provides a quick assembly and disassembly solution for board-level reinforced modules, such as VPX, CPEX, and CPCI blade modules.
- Offers standardized and serialized product solutions.
- Features integrated axle-assisted rotational insertion and extraction, which avoids damaging the card slot and enables easy installation and replacement.
- The extractor arm is equipped with a locking latch for automatic ejection, ensuring reliable and convenient use.
- Complies with relevant environmental application standards for military vehicle-mounted, shipborne, and airborne scenarios.
- Small-batch customization is available with short lead times.

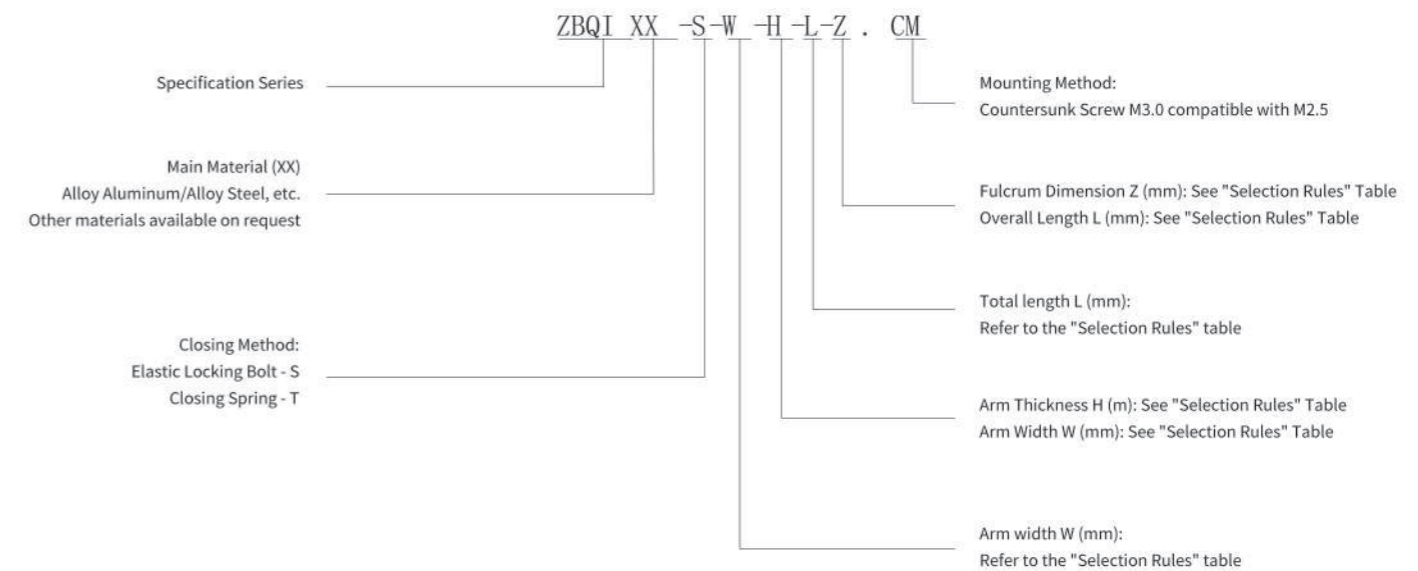
Key Performance Specifications

- Extraction Force: A single extractor can provide an extraction force of over 450N.
- Component Material: Stainless steel, compliant with GT/T 3280-2007 Standard.
- Surface Treatment: Aluminum Alloy (Black Oxide); Stainless Steel (Natural Passivation).
- Intrinsic Weight: Maximum value (Aluminum Alloy < 10g; Stainless Steel < 20g).
- Humid Heat Conditions: Meets the requirements of GJB150.9A-2009.
- Vibration and Shock: Meets the requirements of GJB150.16A/18A.
- Corrosion Resistance: Meets GJB150.11A with the surface remaining intact for over 96 hours (> 96h).
- Service Life: Mechanical lifespan exceeding 10,000 cycles.

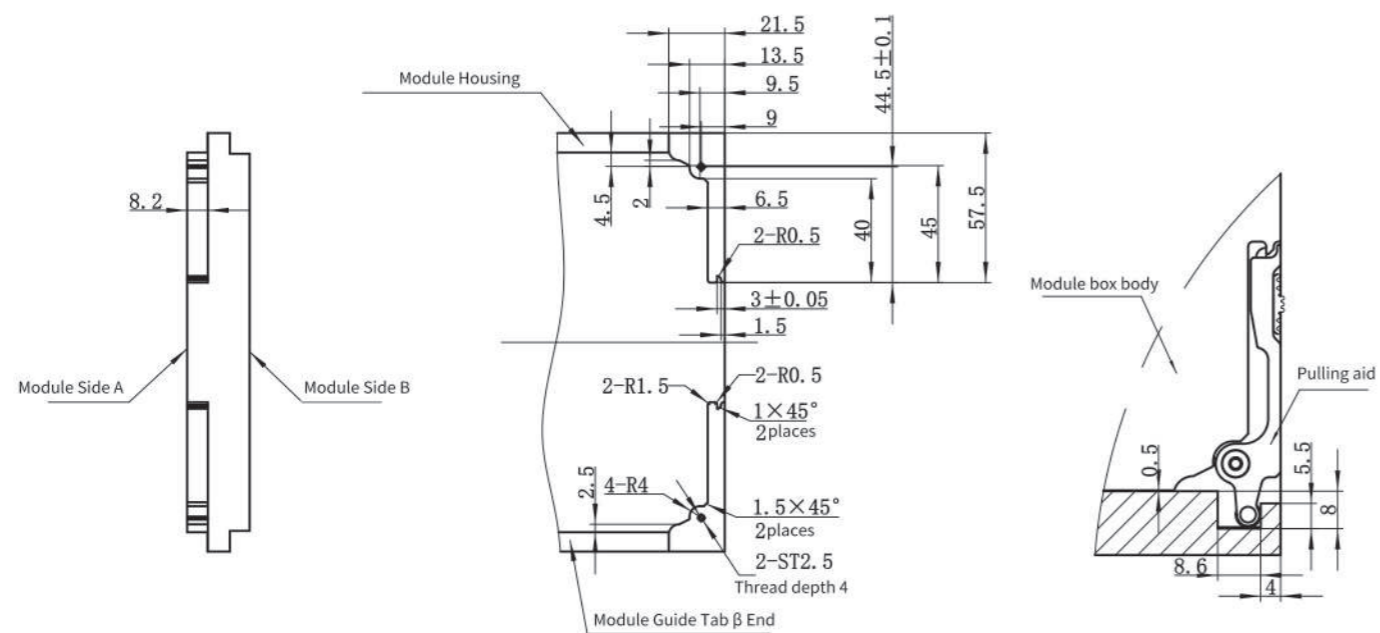
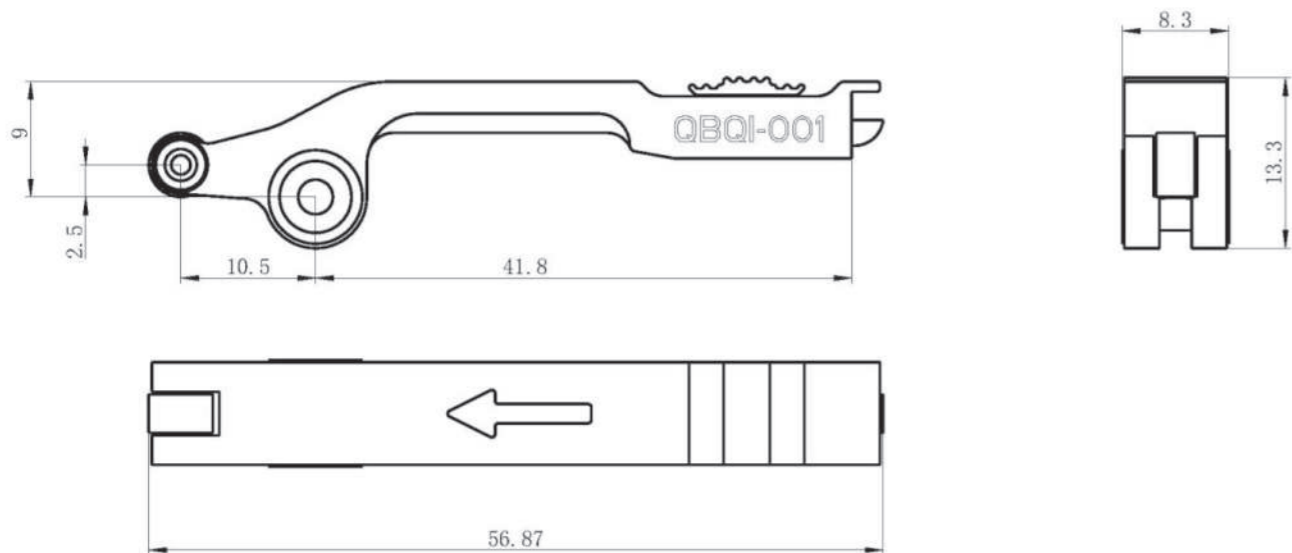


Universal extractor

Product Ordering Model







Model	Overall dimensions (mm)			Weight (g)	Remarks
	Length	Width	Height		
QBQI-001 Universal puller	56.87	8.3	18.31	16.0	We can provide extractor made of titanium alloy.

Universal Narrow Extractor

Product Features

- Provides extraction and insertion functions for electronic functional modules on modular integrated installation racks, and offers a locking function to secure the module in its initial position (customizable sizes and structures available).
- Easy operation, high reliability, and excellent environmental adaptability.
- The slim design makes it suitable for installation in confined spaces.
- Constructed entirely of stainless steel, effectively preventing corrosion and rust.
- Excellent product consistency, making it suitable for mass production with short lead times.



Key Performance Specifications

- Extraction Force: A single extractor provides an extraction force of over 300N.
- Material: 300-series stainless steel (main body material: 316L stainless steel).
- Environmental Adaptability: Suitable for airborne environments; meets the GJB150.11A-2009 neutral and acid salt spray resistance test for at least 240 hours.
- Service Life: Mechanical life exceeding 2000 cycles.

Product Ordering Model

The installed module shall not exceed 3kg in weight, and the extractor shall be mounted on the module with GB819-85 M2.5×14 screws, with thread lock adhesive applied to the threads before tightening.

Please refer to Page 102 for the installation dimension drawings and model table.

Model	Overall dimensions (mm)			Weight (g)	Remarks
	Length	Width	Height		
QBQI-005	46.2	6.3	18.21	10.7	We can provide extractor made of titanium alloy.

Universal extractor

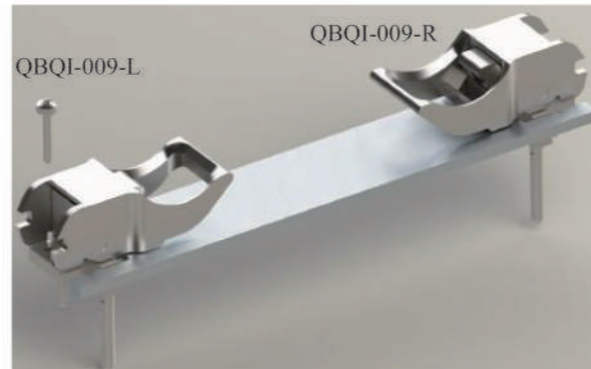
QBQI-009 CPCI Angled Extractor

Product Features

- Provide the function of inserting/unplugging electronic functional modules on modular integrated installation racks, and implement it  
Limit function for locking the initial position of the module (structures of different sizes can be customized)
- Easy to operate, high reliability, and good environmental adaptability
- Thinning design, suitable for installation in narrow spaces
- All products are made of stainless steel, which can effectively prevent corrosion and rusting
- Good consistency, suitable for large-scale production, short delivery cycle

Main performance indicators

- Pulling force: can provide pulling force greater than 700N (in pairs)
- Material: 300 series stainless steel (316L stainless steel is selected as the main material)
- Environmental adaptability: suitable for airborne environmental conditions;  
Meet GJB150.11A-2009 neutral and acid salt spray resistance test for more than 240 hours
- Lifespan: Mechanical lifespan greater than 2000 times



Product ordering model

Please refer to page 104 for the installation dimension diagram and model table

Model	Overall dimensions (mm)			Weight (g)	Remarks
	Length	Width	Height		
QBQI-009-L	46	40	19.8	42.5	We can provide extractor made of titanium alloy.
QBQI-009-R					

Universal extractor