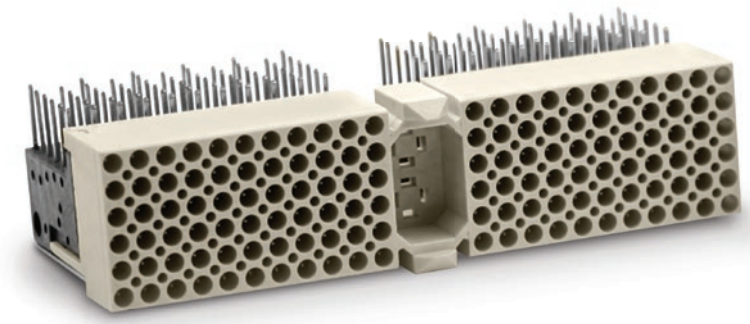
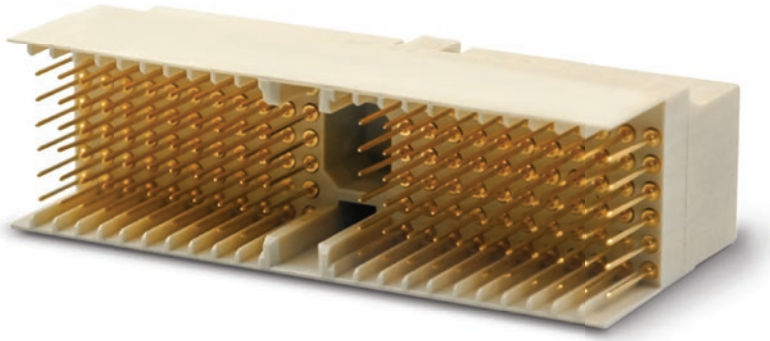
smiths connectors

cPCI SERIES

Ruggedized cPCI (2 mm) Connectors





HYPERTAC

IDI INTERCONNECT DEVICES

SABRITEC

FEATURES

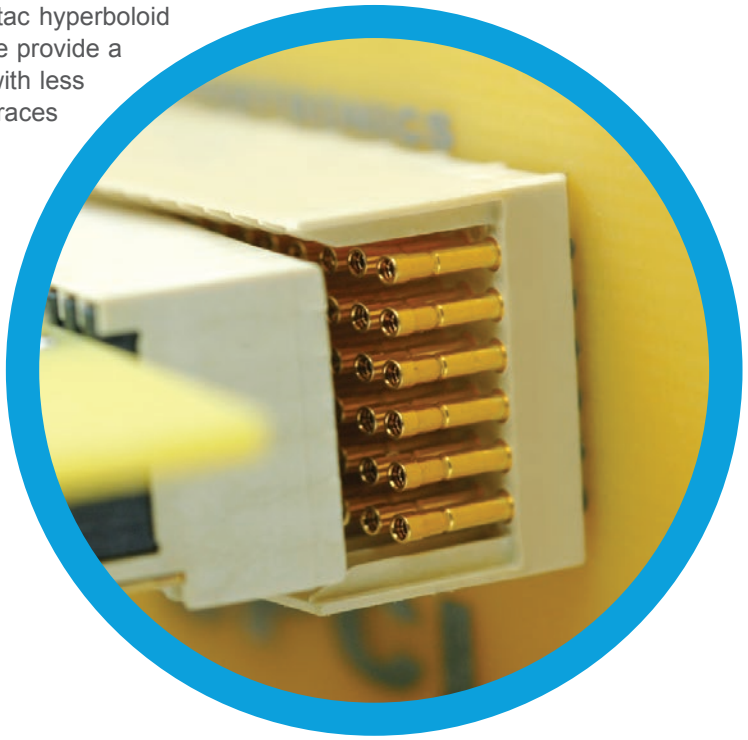
- **Rugged implementation of the Compact PCI Standard**
  - Fully interchangeable with COTS systems
  - Reverse gender of commercial 2 mm products
  - Physical hole pattern in accordance with cPCI PICMG 2.0
  - Contact identification in accordance with IEC 1076-4 101
- **Reliable Hypertac® contact technology**
- **Hi-Rel and NASA GSFC qualified versions**
  - Only cPCI approved by NASA
  - LCP insulator meets NASA outgassing requirements
  - Press-Fit available for receptacle assembly (consult factory)
- **Available keying feature**
- **Qualification testing**
  - cPCI Series meets applicable performance requirements of MIL-DTL-55302, EEE-INST-002, GEVS-SE Rev. A and NASA GSFC S-311-P822 specifications

BENEFITS

- **Meets cPCI mechanical footprint and electrical performance specifications**
- **Modular design for standard 3U/6U configurations**
- **Highly optimized connector design for high speed data rates, impedance matching and minimal losses**
- **Durability**
  - Field proven immunity to shock and vibration
  - Hyperboloid contact enables 360° self-wiping action
  - Resistant to fretting corrosion
  - EMI/RFI shielding
- **Superior lead traces provide excellent performance in high speed signal applications**
- **Compatible with standard reflow soldering processes**
- **Delivers the high reliability essential in military/ aerospace applications**

cPCI CONNECTOR SERIES

Smiths Connectors' ruggedized 2 mm cPCI Series addresses the market need for a high reliability connector solution which meets the mechanical footprint and electrical performance of the Compact PCI specification. Highly optimized for durability and high speed performance, the cPCI connectors utilize the superior Hypertac hyperboloid contact technology. The 0.4 mm Hypertac contacts in the backplane provide a current rating of 1 A and data rate performance up to 3.125 Gbps with less than 8 mΩ contact resistance. This combined with optimized lead traces provides exception performance in high speed signal applications.



Our connectors have completed and exceeded rigorous testing from NASA for extreme environmental conditions, including thermal excursions, corrosive atmospheres, excessive shock and vibration and contact engagement/separation cycling. As a result, NASA released specification S-311-P-822 naming Smiths Connectors | Hypertac's 2 mm cPCI as the mandated Compact PCI connector in all NASA space flights.

The 2 mm cPCI Series are the high reliability connectors essential in any mission critical applications that are fully interchangeable with Compact PCI COTS systems and IEC 1076-4-101 compliant.

TECHNICAL CHARACTERISTICS

3U/6U Form Factor	P1/P4	P2/P5	P3	J1/J4	J2/J5	J3
Part Number	K2A110FMD	K2B110FMD	K2B095FMD	K2A110FFD	K2B110FFD	K2B095FFD
Design Criteria	IEC 1076-4 101					
Quality Conformance Inspections	K2 Series: MIL-DTL-55302 311P Series: NASA GSFC S-311-P-822(1)					
Contact Gender	Male Pin			Female Socket		
Contact Spacing	0.079 [2.00]					
Number of Contacts	110 signal, 22 ground		95 signal, 19 ground	110 signal, 22 ground		95 signal, 19 ground
Max. Allowable Gap *(Between Mating Connectors)*	0.039 [1.00]					
Suggested PCB Hole Diameter	0.28 [0.71] ± 0.002 [0.05] after plating			0.0023 [0.60] mm after plating		

MATERIALS

Contact Termination	Sold tail: 63/37 tin lead plated	Gold or 63/37 tin lead dipped
Insulation	30% glass filled LCP *(meets NASA outgassing specification)*	
Contact	Beryllium copper	Beryllium copper socket wires, brass body
Mating Contact	50 µin gold/50 µin nickel min.	

MECHANICAL & ENVIRONMENTAL

Temperature Range	-55 to 125° C					
Flammability Range	94 V-O					
Weight	0.55 oz.	0.53 oz.	0.38 oz.	0.38 oz.	0.45 oz.	0.31 oz.
Mating Force	16.38/13.20 LBF average per mating connect pair					
Contact Life Cycle	> 4,000 per mated connector pair					
Vibration *(Sinusoidal)*	Frequency 10 to 2,000 HZ at 15 G (MIL-DTL-55302)(NASA GSFC S311-P-822)					
Vibration *(Random)*	Fight chassis unit level vibration (NASA Goddard SE Rev 1)					
Mechanical Shock	100 G peak value (NASA GSFC S311-8220)					

ELECTRICAL

Insulation Resistance	> 5,000 megohms
CRD *(Resistance at Rated Current)*	4.85 milliohms average
LLCR *(Low Level Contact Resistance)*	7.20 milliohms average
DWV *(Dielectric Withstanding Voltage)*	1,000 V RMS

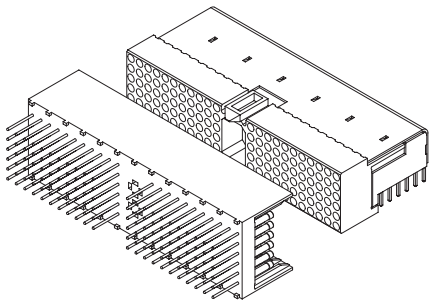
Notes:
1) K2 Series: Standard cPCI; 311P Series: NASA Goddard cPCI
Dimensions are in inches [mm]

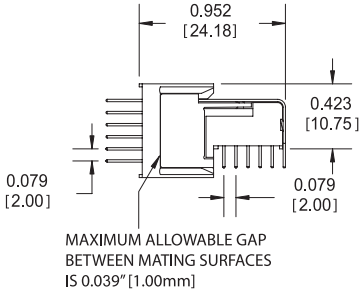
DIMENSIONS

2 mm cPCI Series Connectors

2 MM CONNECTOR

Mated Pair



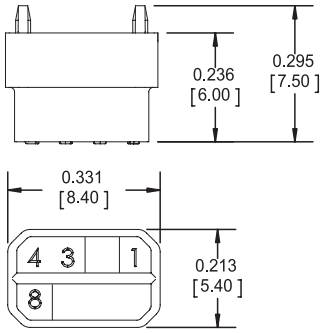


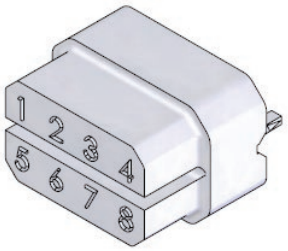
MULTI-PURPOSE CENTER KEYING

Options Available

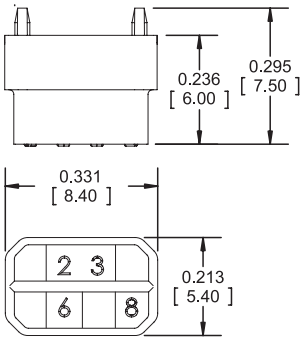
Material: 30% glass filled LCP *(meets NASA outgassing requirements)* Color: Natural

EXAMPLE FOR CODE 1348





EXAMPLE FOR CODE 2368



MALE PCB CODE	MPC KEY P/N
1234	ZK2000-002-01
1236	ZK2000-002-03
1237	ZK2000-002-04
1238	ZK2000-002-05
1246	ZK2000-002-07
1247	ZK2000-002-08
1268	ZK2000-002-14
1345	ZK2000-002-16
1348	ZK2000-002-19
1357	ZK2000-002-21
1358	ZK2000-002-22
1378	ZK2000-002-25
1457	ZK2000-002-27
1467	ZK2000-002-29
1478	ZK2000-002-31
1568	ZK2000-002-33
1678	ZK2000-002-35
2346	ZK2000-002-37
3467	ZK2000-002-59
3478	ZK2000-002-61
4678	ZK2000-002-69

Intermates with

FEMALE BACKPLANE CODE	MPC KEY P/N
5678	ZK2000-001-01
4578	ZK2000-001-03
4568	ZK2000-001-04
4567	ZK2000-001-05
3578	ZK2000-001-07
3568	ZK2000-001-08
3457	ZK2000-001-14
2678	ZK2000-001-16
2567	ZK2000-001-19
2468	ZK2000-001-21
2467	ZK2000-001-22
2456	ZK2000-001-25
2368	ZK2000-001-27
2358	ZK2000-001-29
2356	ZK2000-001-31
2347	ZK2000-001-33
2345	ZK2000-001-35
1578	ZK2000-001-37
1258	ZK2000-001-59
1256	ZK2000-001-61
1235	ZK2000-001-69

HYPERTAC IDI INTERCONNECT DEVICES SABRITEC

Dimensions are in inches [mm]

HOW TO ORDER

K2			F			
1	2	3	4	5	6	7

1 CONNECTOR FAMILY(1) *[Fixed]*

K2 2 mm cPCI SERIES

2 CONNECTOR STYLE(2) *(Per IEC 1076-4-101)*

A WITH MULTI-PURPOSE CENTER *(MPC; polarization feature)*

B WITHOUT MPC

3 NUMBER OF SIGNAL PINS

110 110 CONTACTS

095 95 CONTACTS

4 NUMBER OF ROWS *[Fixed]*

F TOP SHIELD *(6 row)*

5 CONTACT GENDER

M MALE DAUGHTERCARD

F FEMALE BACKPLANE

6 STRAIGHT DIP SOLDER

	BACKPLANE CONNECTOR TAIL LENGTH	DAUGHTER BOARD CONNECTOR TAIL LENGTH
D	0.216 [5.50]	0.123 [3.12]
D1	0.380 [9.65]	
D2	0.630 [16.00]	
D4	0.166 [4.22]	0.166 [4.22]
D5	0.265 [6.73]	TBD

7 PLATING

TAH 50 µin GOLD OVER NICKEL *(mating surface only)*
OTHER SURFACES GOLD FLASH OVER NICKEL *(female contacts only)*

TABH SAME AS TAH WITH TIN/LEAD *(63/67)* OVER NICKEL ON CONTACT TERMINATIONS *(female contacts only)*

TBH SAME AS TH WITH TIN/LEAD *(63/67)* OVER NICKEL ON CONTACT TERMINATIONS *(male contacts only)*

Notes:
1) Quality Conformance Inspection: MIL-DTL 55302 Group A & B
2) Pin one locations per IEC 1076-4-101
Dimensions are in inches [mm]

HOW TO ORDER | NASA GODDARD

3 1 1 P 8 2 2				
1	2	3	4	5

1 GODDARD DESIGNATOR(1) *[Fixed]*

2 CONNECTOR GENDER

- MC MALE CONNECTOR
- FC FEMALE CONNECTOR
- MA MALE ADAPTER
- FA FEMALE ADAPTER
- FFA FEMALE-TO-FEMALE ADAPTER

3 NUMBER OF CONTACTS

- 110 110 CONTACTS
- 095 95 CONTACTS

4 CONNECTOR STYLE

- A WITH MULTI-PURPOSE CENTER *(MPC; polarization feature)*
- B WITHOUT MPC

SOLDER TAIL FINISH

- G GOLD FLASH OVER NICKEL
- S 63/37 TINE/LEAD SOLDER OVER NICKEL

5 SOLDER TAIL LENGTH

	BACKPLANE CONNECTOR TAIL LENGTH	DAUGHTER BOARD CONNECTOR TAIL LENGTH
D	0.216 [5.50]	0.123 [3.12]
D1	0.380 [9.65]	
D2	0.630 [16.00]	
D4	0.166 [4.22]	0.166 [4.22]
D5	0.265 [6.73]	TBD

Notes:

1) Quality Conformance Inspection: NASA GSFC S-311-P-822 Table II

Dimensions are in inches [mm]