

Subject to Export Control Procedure

2mm Connectors

Interchangeable with cPCI COTS Systems

- Hypertac® contacts provide high reliability
- Standard 2mm footprint
- Immune to shock & vibration
- High-temp LCP insulator meets NASA outgassing requirements
- Compatible with IEC 1076-4 101
- Press-in/compliant termination is also available for receptacle assembly, consult factory

Qualification Testing

The 2mm cPCI family of connectors has been flight qualification tested per Mil-DTL-55302, EEE-INST – 002 (NASA Goddard Space Flight Center Document), GEVS-SE, Rev. A, General Environmental Verification Standard for STS & ELV Payloads, Subsystems and Components. Testing included, but was not limited to:

LLCR: Low Level Contact Resistance	IR: Insulation Resistance
DWV: Dielectric Withstanding Voltage	MFG: Mixed Flowing Gas
CRD: Contact Resistance	

Should you require more information, please contact Technical Support.

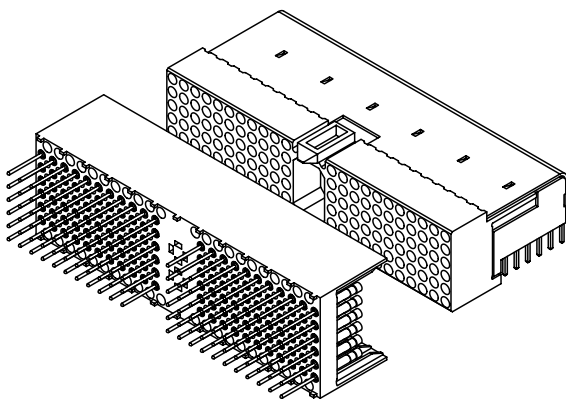
General Specifications

3U / 6U form factor	P1 / P4	P2 / P5	P3		J1 / J4	J2 / J5	J3	
Part number reference	K2A110FMD	K2B110FMD	K2B95FMD	K2B125FMD	K2A110FFD	K2B110FFD	K2B95FFD	K2B125FFD
Design criteria	IEC 1076-4 101							
Contact gender	Male Pin				Hypertac 0.4 mm socket			
Contact termination	Solder tail tin lead (60-40) per Mil-P-81728							
Contact spacing	2 mm							
Number of contacts	110 signal 22 ground	95 signal 19 ground	125 signal 25 ground		110 signal 22 ground (top shield)	95 signal 19 ground (top shield)	125 signal 25 ground (top shield)	
Contact current rating	1 AMP							
Temperature range	minus -55C to plus + 125C							
Insulator material	30% Glass Filled LCP (meets NASA outgassing specification)							
Flammability rating	94 V-0							
Insulation resistance	>5000 megohm							
Contact material	BeCu pin contacts				BeCu Hypertac socket wires / brass body			
Mating contact plating	50 micro inch gold / 50 micro inch nickel							
Suggested PCB hole diameter	0.7 mm after plating				0.6 mm after plating			
Weight	15.7 g	15.0 g	12.9 g	12.2 g	10.9 g	10.8 g	8.9 g	12.3 g

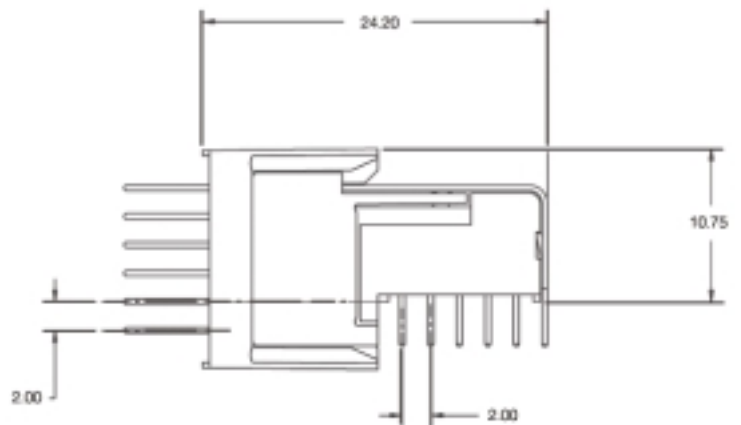
PERFORMANCE SPECIFICATIONS								
3U / 6U form factor	P1 / P4	P2 / P5	P3		J1 / J4	J2 / J5	J3	
Part number reference	K2A110FMD	K2B110FMD	K2B95FMD	K2B125FMD	K2A110FFD	K2B110FFD	K2B95FFD	K2B125FFD
CRD (resistance @ rated current)	4.85 milliohms average							
LLCR (low level contact resistance)	7.20 milliohms average							
DWV (dielectric withstanding voltage)	1000 VRMS							
Contact life (mate / demate)	> 4000 Cycles (mated connector pair)							
Mating force	16.38 LBF average (per mated connector pair)							
Demating force	13.2 LBF average (per mated connector pair)							
Vibration (Sinusoidal)*	Frequency 10 to 2000 HZ at 15 G (MIL-DTL-55302)							
Vibration (Random)**	Flight chassis unit level vibration (NASA Goddard GEVS SE Rev A)							
Mechanical shock*	100 G peak value (MIL-DTL-55302)							

- * Testing was performed to determine if fretting occurs due to mechanical motion and to evaluate the integrity of the Hypertac contact system relative to severe shock. To validate the test, low nanosecond event detection was performed at 10 nanoseconds. **There were no events recorded.**
- ** Testing was performed using a 6U Flight Chassis to determine if fretting occurs due to mechanical motion and to evaluate the integrity of the test samples relative to severe mechanical environment. To validate the test, low nanosecond event detection was performed at 50 nanoseconds. **There were no events recorded.**

2mm Connector

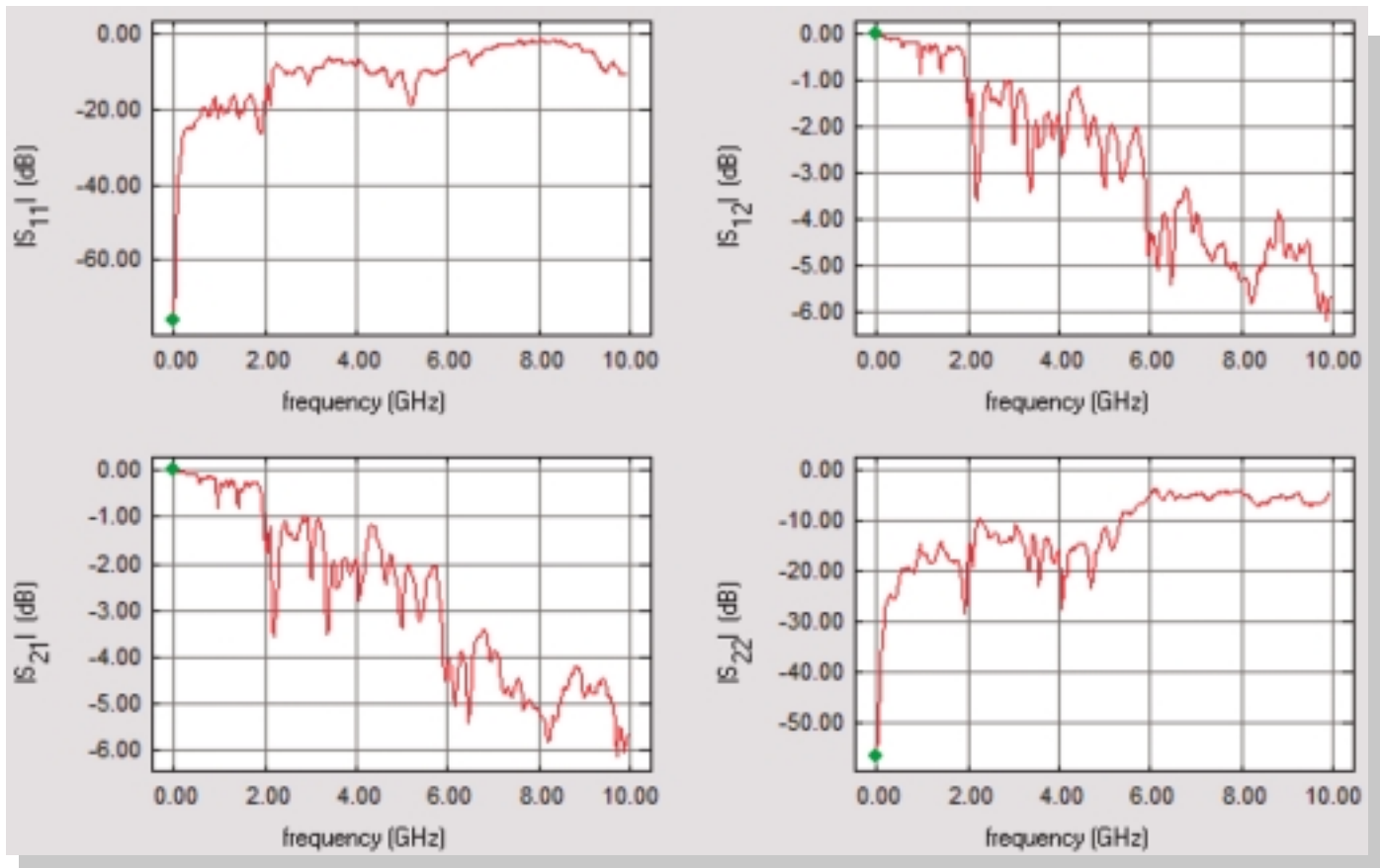


2mm Connector Mated Pair



J0/P0 High Speed Electrical Performance

1. Differential S-parameter ^{1,2}



2. Propagation Delay and Skew

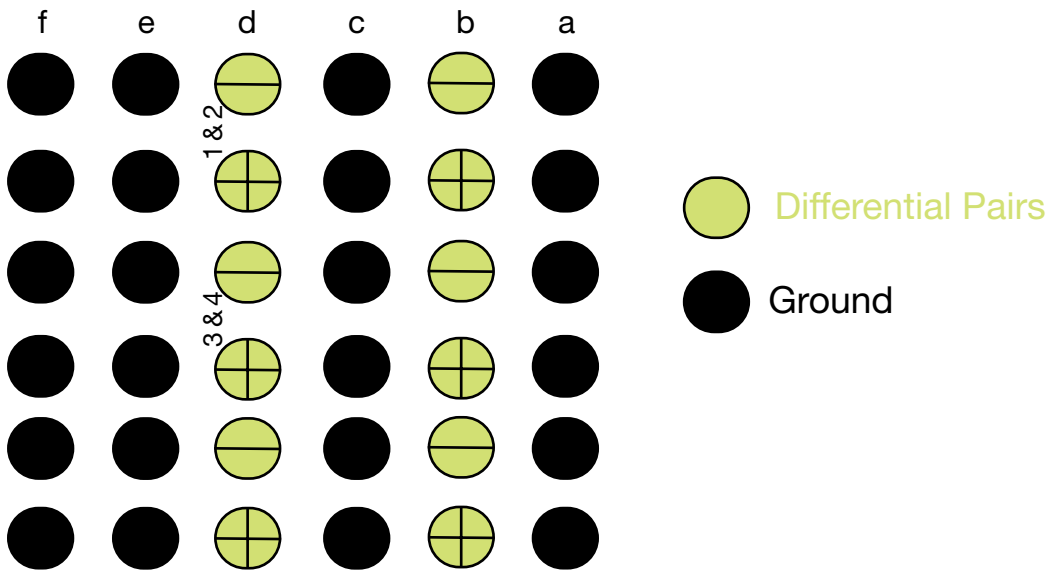
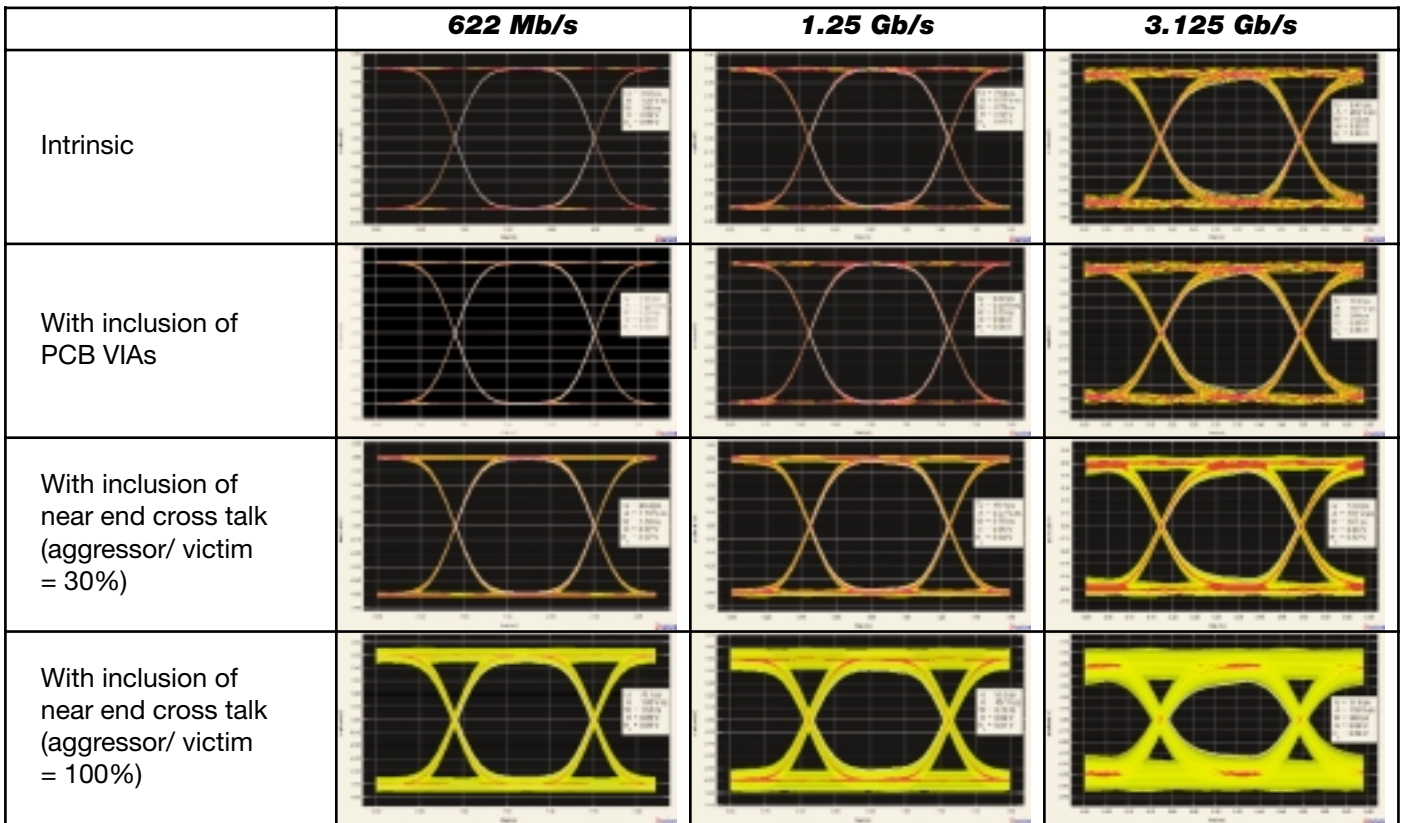
Propagation delay through the intrinsic connector assembly is estimated by making a measurement on the reflected signal received on the same broadband fixture that is used to obtain the full vector scattering parameters. In these measurements, there is no inclusion of any other pin lengths other than what is within the intrinsic connector.

Parameters	Connector Row				
	a	b	c	d	e
Propagation Delay (ps)	68	90	112	134	156
Skew (ps)	22	22	22	22	22
Maximum Data Rate 2	3.125 Gb/s				

Notes:

- 1) Pattern illustrated in the figure on next page was used in the S-parameter and cross talk measurements.
- 2) Please refer to the full characterization test report for details

3. Connector Eye-Pattern-Diagram ^{1, 2}



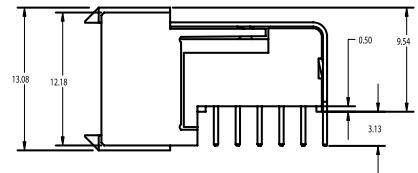
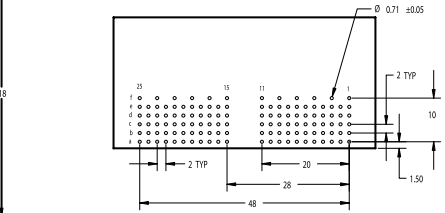
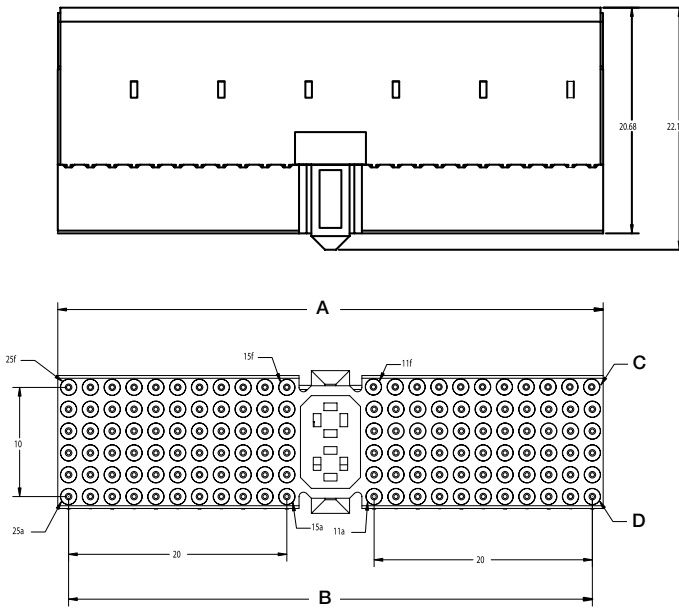
Notes:

- 1) Pattern illustrated in the figure above was used in the S-parameter and cross talk measurements.
- 2) Please refer to the full characterization test report for details

K2A Male - K2A110FMDTBH

PCB Layout

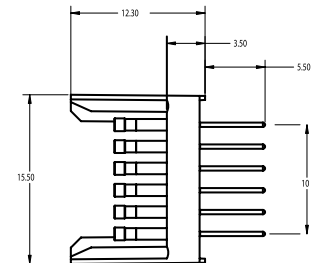
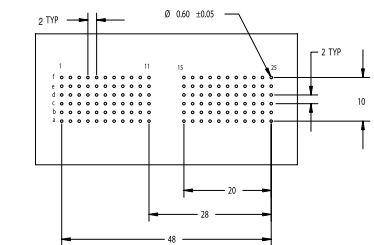
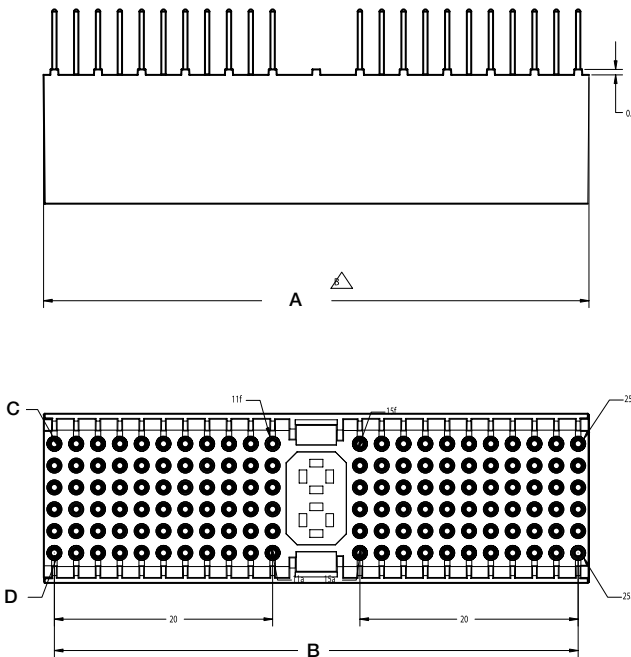
Connector Dimensions	
A	49.98
B	48
C	1f
D	1a



K2A Female - K2A110FFDTABH

PCB Layout

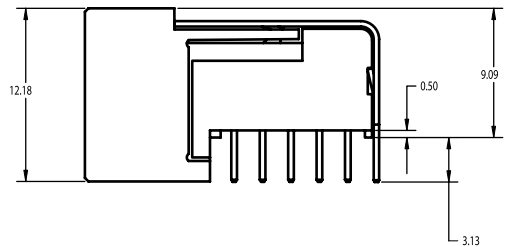
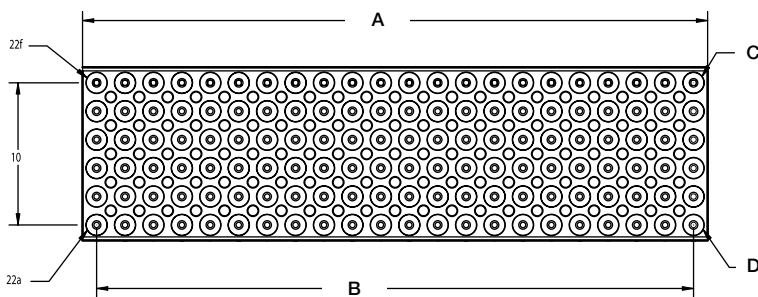
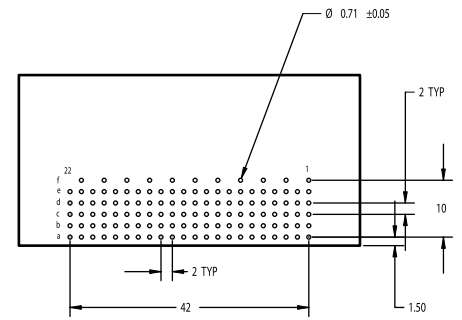
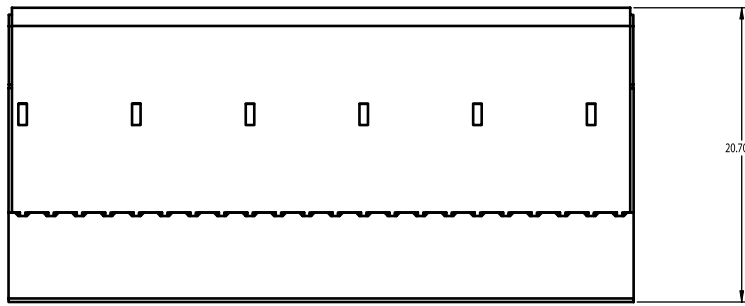
Connector Dimensions	
A	49.98
B	48
C	1f
D	1a



Dimensions are in mm

K2B Male

PCB Layout

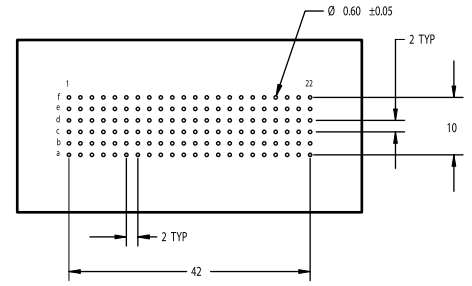
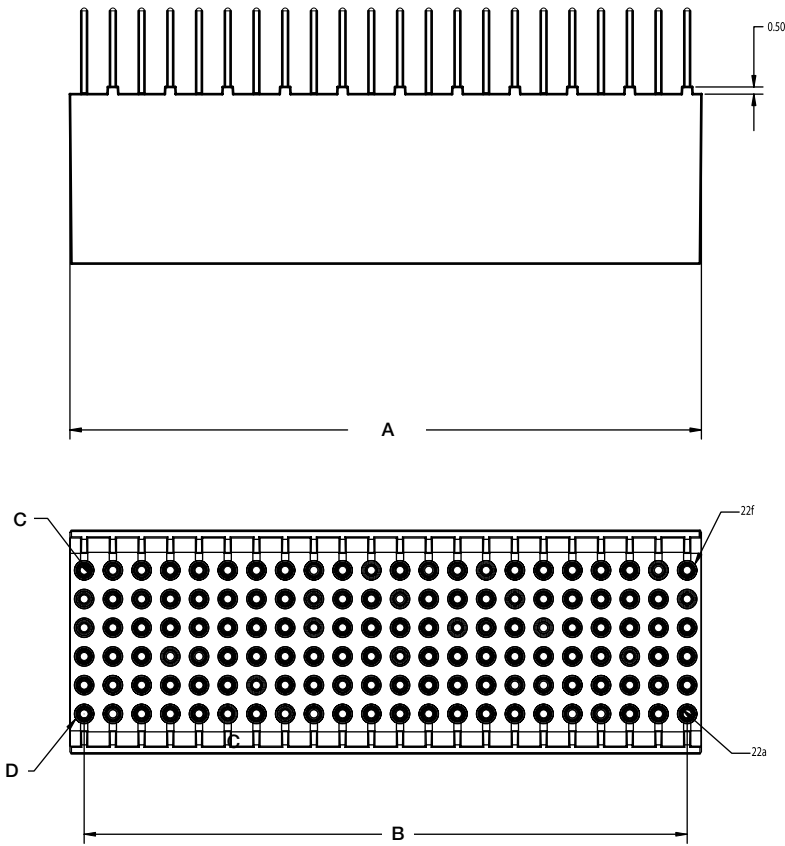


Connector Dimensions for K2B Male

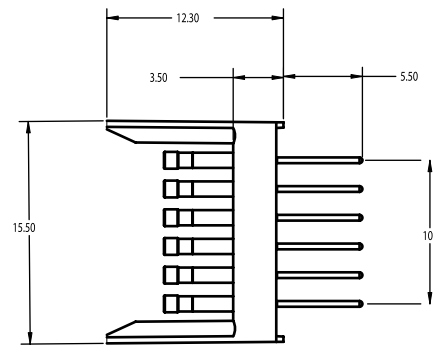
	K2B95FMD	K2B110FMD	K2B125FMD
A	37.98	43.98	49.98
B	36	42	48
C	1f	1f	1f
D	1a	1a	1a

K2B Female

PCB Layout



PCB LAYOUT



Connector Dimensions for K2B Female

	K2B95FFD	K2B110FFD	K2B125FFD
A	37.98	43.98	49.77
B	36	42	48
C	1f	1f	1f
D	1a	1a	1a

Dimensions are in mm

Ordering Information

K2 A 110 F M D 4 TBH

Connector Family:
K2

Connector Style*:
(per IEC 1076-4-101)
A = with MPC
B = without MPC
C = Extension module

Number of Signal Pins:
(multiples of 5)

Number of Rows:
E = No shields (5 row)
F = Top shield (6 row)

Contact gender:
F = Female
M = Male

Plating:

TAH = 50 Micro-inches

Gold over Nickel

(mating surface only)

Other surfaces Gold Flash over Nickel

(female contacts only)

TABH = Same as TAH with Tin / Lead (60 - 40)

over Nickel on contact terminations

(female contacts only)

TH = 50 Micro-inches Gold over Nickel

(male contacts only)

TBH = same as TH with Tin/Lead (60-40)

over Nickel on contact terminations

(male contacts only)

Contact Terminal Length

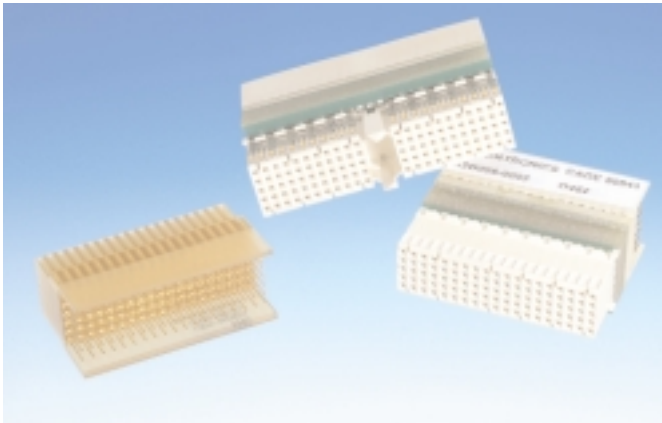
Designation	Backplane Connector Tail Length	Daughter Board Connector Tail Length
D	5.50mm	3.12mm
D1	TBD	TBD
D2	16.0mm	TBD
D3	TBD	TBD
D4	4.22mm	4.22mm
D5	6.73mm	TBD

Terminal Style:

D = Straight dip solder

C = Compliant (backplane only)

* Pin one location per IEC 1076-4-101



Subject to Export Control Procedure

2mm Adapters and Solder Fixtures*

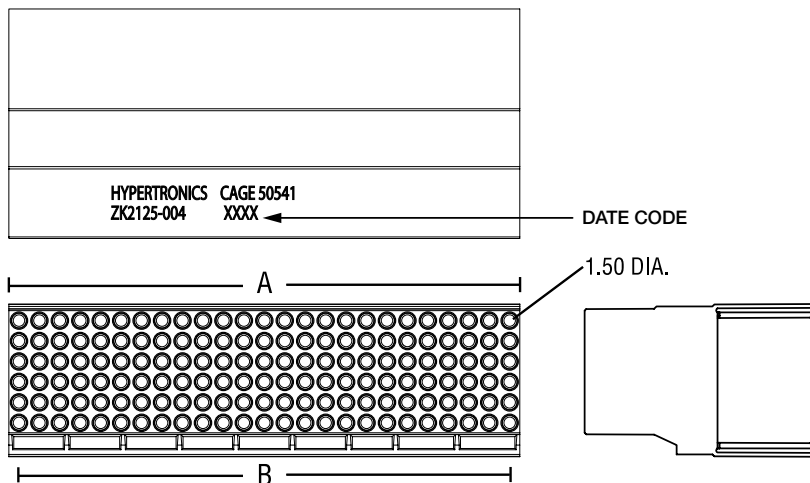
Designed to provide interface between commercial cPCI connectors and Hypertronics 2mm connector series

- Hypertac adapters provide a simple way to interface with commercial testing equipment
- K2A110-0001, K2B110-0001 and K2B095-0001 adapt commercial cPCI daughter card connectors to Hypertac backplane connectors
- K2A110-0002, K2B110-0002 and K2B095-0002 adapt commercial cPCI backplane connectors to Hypertac daughter card connectors

General Specifications

- Hi-temp LCP insulator material
- Hypertac contact technology
- 50 micro inches gold plating on all contact surfaces
- Mechanical PCB layout conforms to IEC 61076-101 standard

2mm Solder Fixtures - ZK2 Series



ZK2 series solder fixtures provide an economical method for stabilizing the socket contact during the hand soldering and reflow solder process.

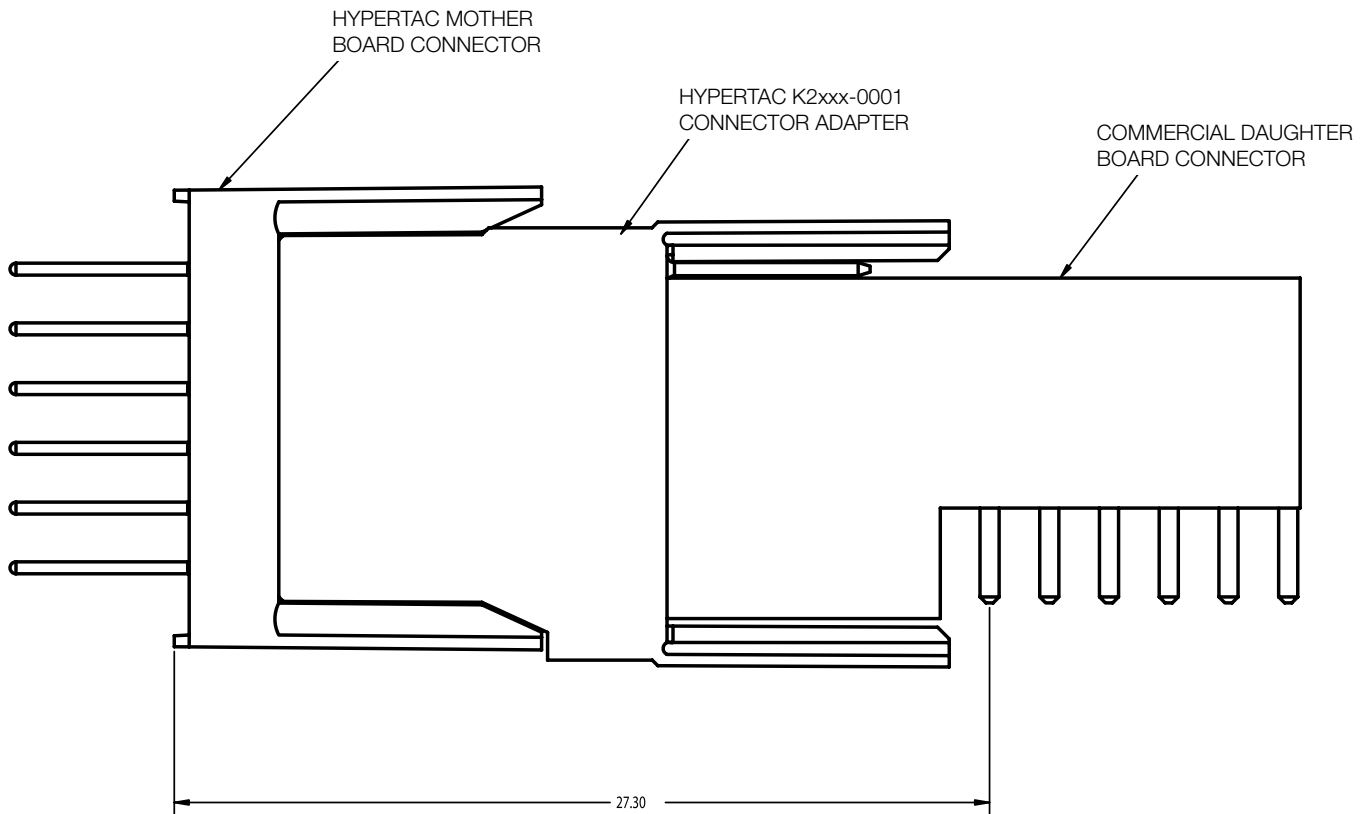
Marking to include fixture part number, Hypertac' cage code and date code

Fixture Number	Used with K2A	A	B
ZK2095-005	K2B95FFDTABH	37.98	36.00
ZK2110-008	K2B110FFDTABH	43.98	42.00
ZK2125-004	K2B125FFDTABH	49.98	48.00
ZK2110-007	K2A110FFDTABH	49.98	48.00

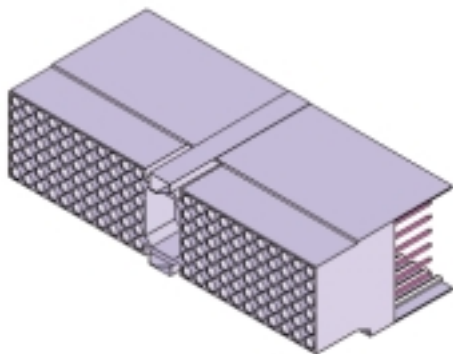
*Adapters are not flight qualified

2mm Mated Adapter - K2xxx-0001

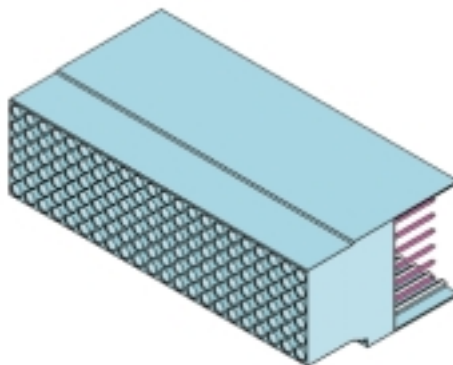
To mate a commercial daughter board connector to a Hypertac mother board connector



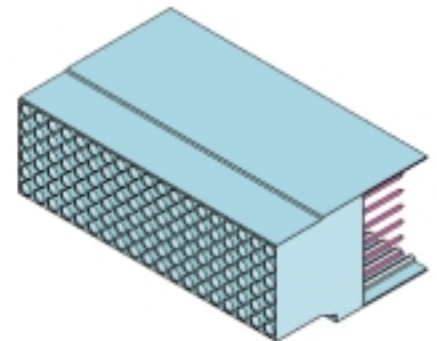
K2A110-0001



K2B110-0001

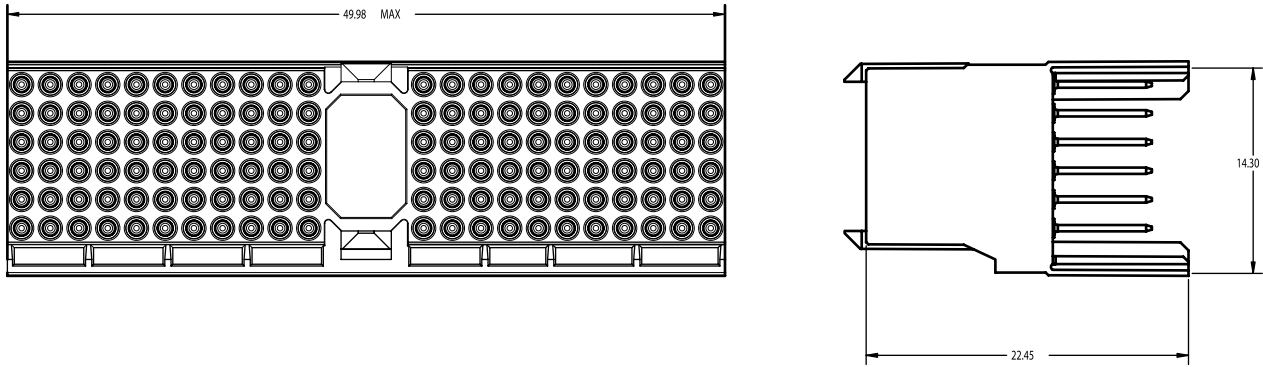


K2B095-0001

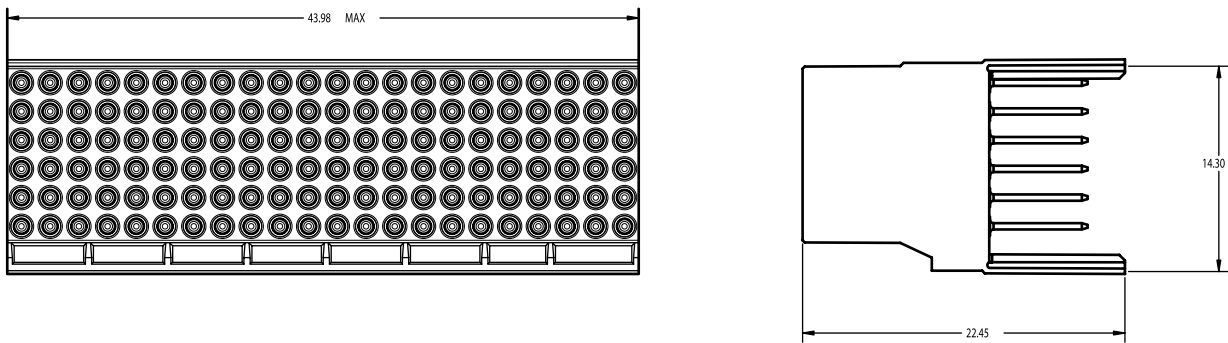


K2A110-0001, K2B110-0001 and K2B095-0001 adapt commercial cPCI daughter card connectors to Hypertac backplane connectors

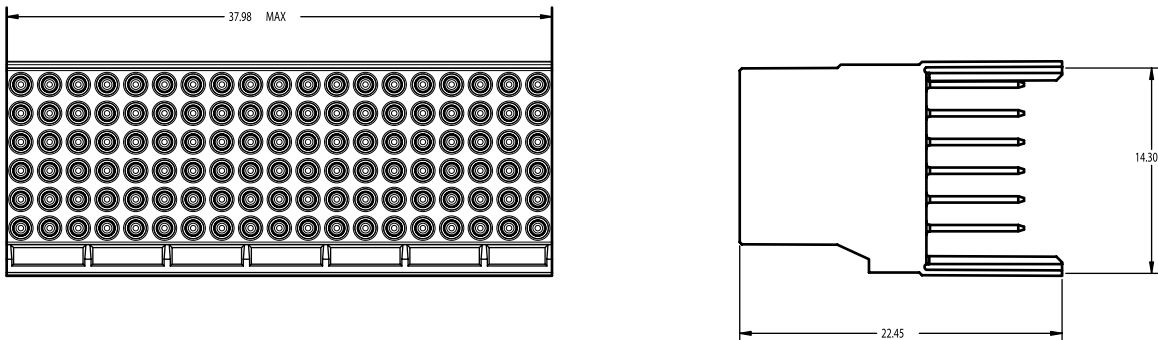
K2A110-0001



K2B110-0001



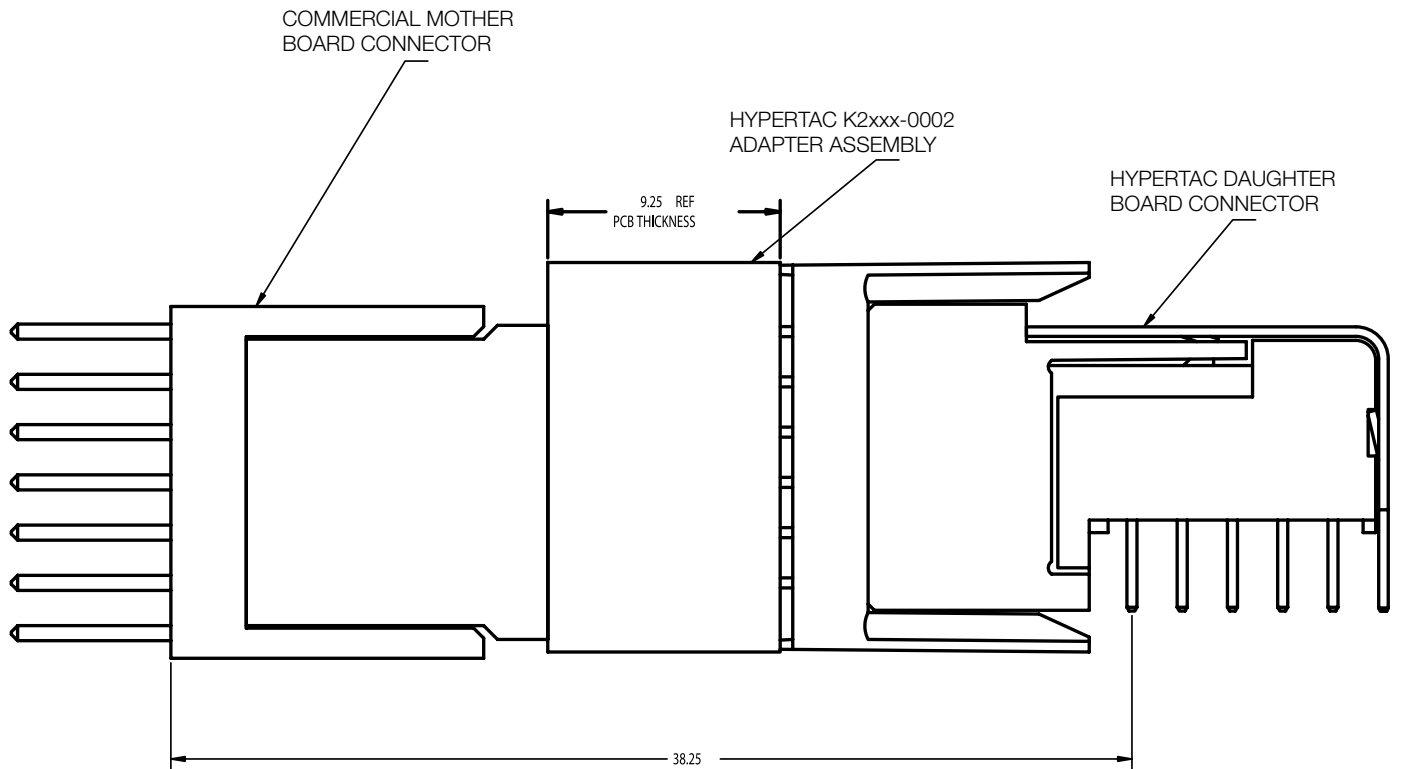
K2B095-0001



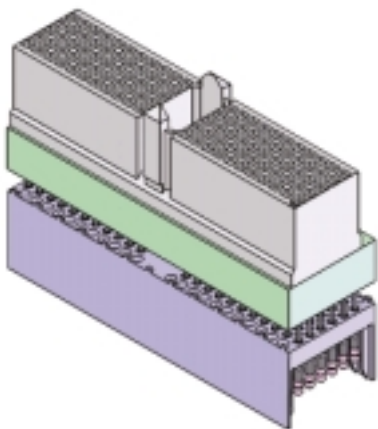
Dimensions are in mm

2mm Mated Adapter- K2xxx-0002

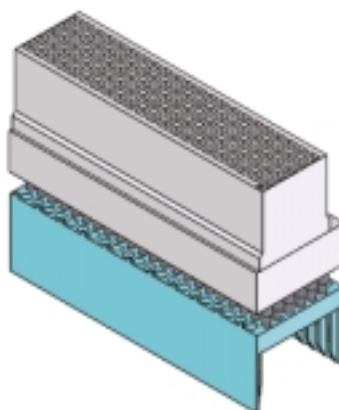
To mate a commercial mother board connector to a Hypertac daughter board connector



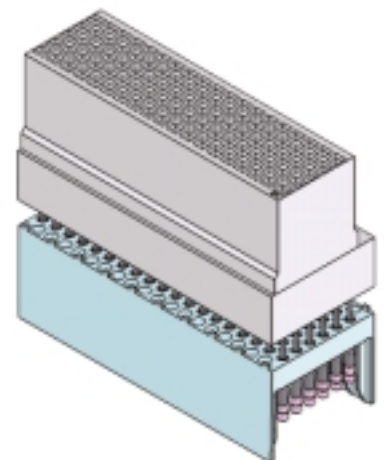
K2A110-0002



K2B110-0002



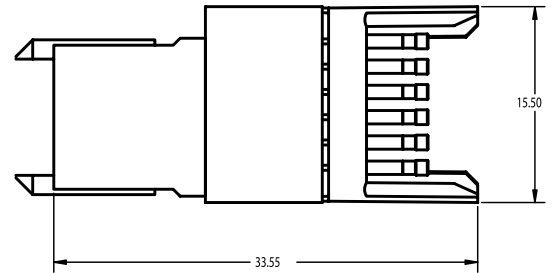
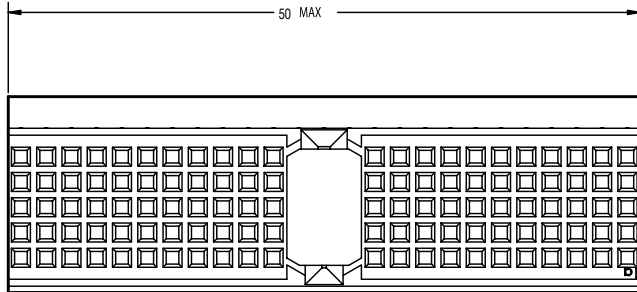
K2B095-0002



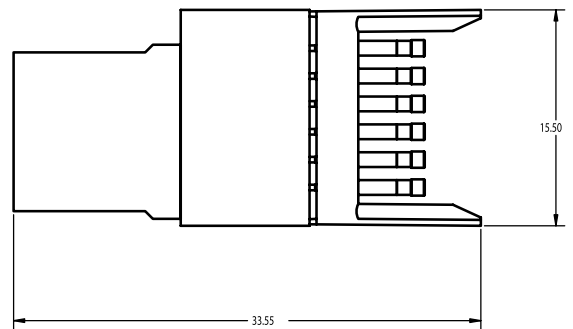
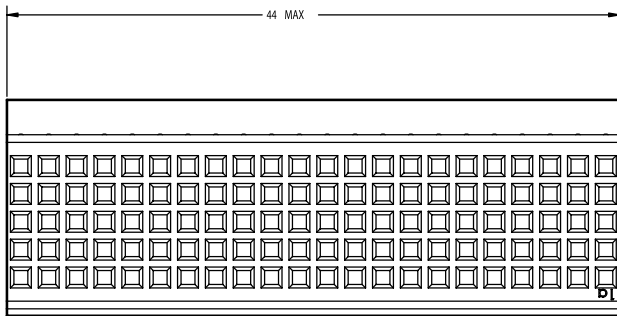
Dimensions are in mm

K2A110-0002, K2B110-0002 and K2B095-0002 adapt commercial cPCI backplane connectors to Hypertac daughter card connectors

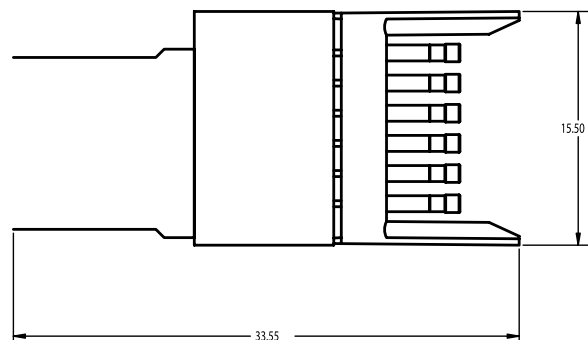
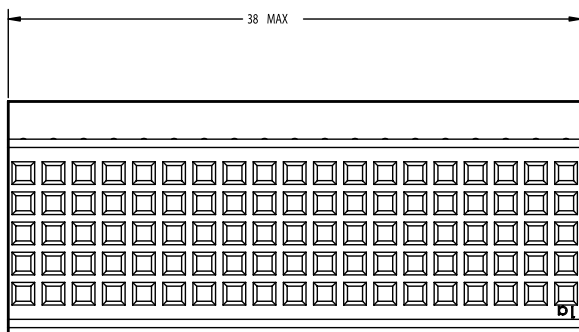
K2A110-0002



K2B110-0002



K2B095-0002



Dimensions are in mm

Recommended Alignment Fixturing and Tooling

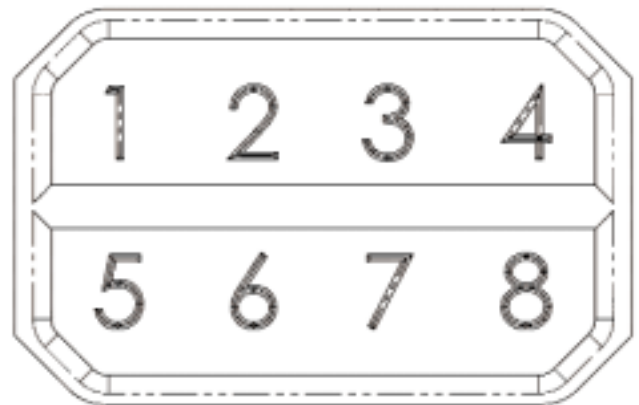
Alignment Tool	Description	Work Instructions
T2066	Std cPCI 6U Backplane	S50475
T2081	Std cPCI 6U Daughtercard w/mating pin alignment	S50476
T2082	Std cPCI 6U Daughtercard w/out mating pin alignment	S50476

Consult factory for alignment tool and work instructions information

Keying options available per IEC specification



Male Keying, Typical Part No. - ZK2000-002



Female Keying, Typical, Part No. - ZK2000-001