Product Data Sheet

Amphenol® HDB³ Series High Density Mother Board & Daughter Board Connectors

No. 201-3

Rectangular Interconnects with .070" X .060" Grid Spacing

This new connector series incorporates a higher density contact pattern and lower mated height than Amphenol's original Low Mating Force rectangular connectors while utilizing the same durable and reliable B³ contact.

The B³ brush (bristle brush bunch) contact is comprised of multiple strands of high tensile wire that intermesh to create an electrical connection.

HDB ³ Mother Board Connector

HDB ³ Daughter Board Connector

- Redundant current paths: 14-70 gas tight points of contact per mated bunch
- Very smooth low friction interface
- Low mating forces: 1.5 oz. typical per contact, 70-90% lower than conventional contacts
- Long contact life: 100,000 cycles of mating and unmating without performance degradation
- Documented intermittency free performance: No 10 nano-second discontinuities during 50,000,000 cycles of 0.010" displacement
- Impervious to fretting
- Contact interface meets M55302/166 thru /171

HDB³ FEATURES

Polarization:	"D" shaped design
Keying:	Optional keys offer 36 unique keying combinations
Guide Pins	Optional guide pins provide additional alignment
Radial Misalignment:	Capable of correcting up to a .020" initial radial misalignment
Angular Misalignment:	Capable of mating with up to a 2° initial angular misalignment

HDB³ CONNECTOR PERFORMANCE

Durability:	100,000 mating cycles
Insertion/Extraction Force:	1.5 ounce typical per contact
Operating Temperature:	-65° to 150°C
Current Rating:	2 amperes Hot swap 1 ampere maximum (load dependent)
Insulation Resistance:	5 gigaohms minimum
Dielectric Withstanding Voltage:	750 volts, 60 hertz, rms @ Sea Level 250 volts, 60 hertz, rms @ 70,000 feet Elevation
Solderability:	MIL-STD-202, Method 208
Salt Fog:	48 Hours IAW MIL-STD-1344, method 1001, test condition B
Humidity:	IAW MIL-STD-1344, method 1002, type II
Vibration:	4 hours in each of 3 mutually perpendicular axes IAW MIL-ST 1344, method 2005, test condition V, letter H
Shock:	1 shock along each of three mutually perpendicular axes IAW MIL-STD-1344, method 2004, test condition G
Data Rate:	Capable of 3.125 Gbps (consult Amphenol for arrangement)

Amphenol

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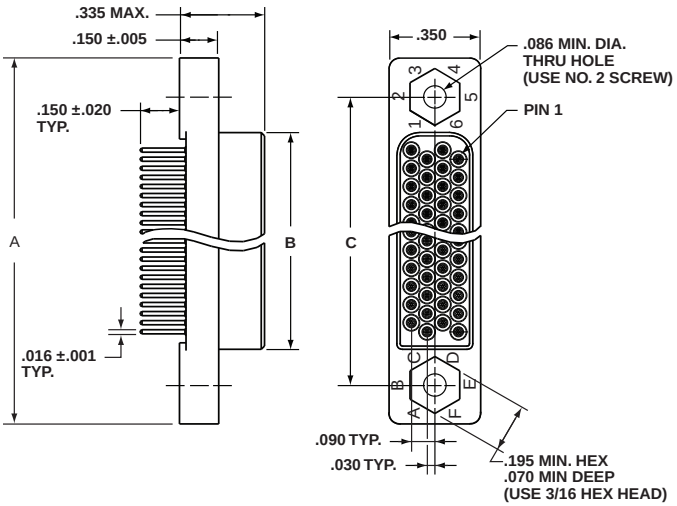
HDB³ MATERIALS

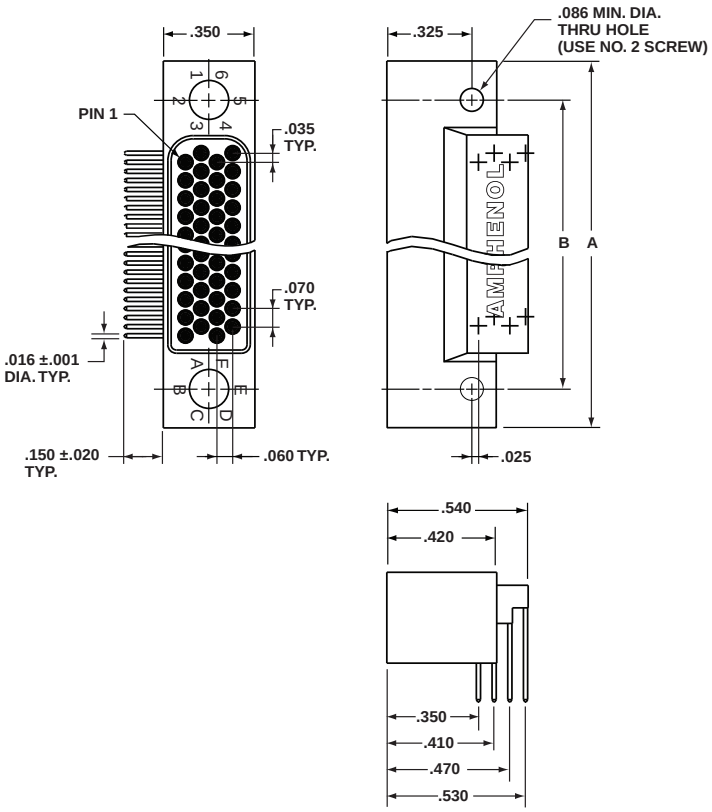
Insulator:	Liquid crystal polymer, 30% glass filled	
Contact:	Wire:	Beryllium copper per ASTM B197; finish is gold per ASTM B488 over nickel per AMS-QQ-N-290.
	Holder:	Brass similar to UNS C33500; finish is gold per MIL-G-45204 or tin-lead per MIL-P-81728 or tin per MIL-T-10727 (RoHS Compliant).
	Sleeve:	Stainless Steel per AMS-5514, passivated IAW QQ-P-35 (Daughter Board connector only)
Keys/Guide Pins:	Stainless Steel	

MOTHER BOARD



	Number of Contacts	Dimension A	Dimension B	Dimension C
040	40	1.375	0.800	1.075
080	80	2.075	1.500	1.775
120	120	1.775	2.200	2.475
160	160	3.475	2.900	3.175

DAUGHTER BOARD

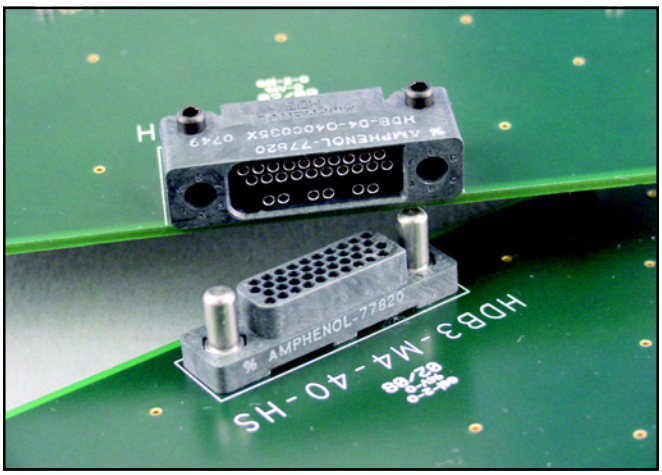


All dimensions for reference only.

CUSTOM CONFIGURATIONS

- Hybrid configurations are available with any combination of brush and power, coax, and/or fiber optic contacts
- Partially populated arrangements for high voltage or high speed data transfer up to 3.125 Gbps. (shown at right)

Consult Amphenol Aerospace with your design requirements.



HDB³ MOTHER BOARD CONNECTOR HOW TO ORDER

Example part number: **HDB-M4 - 040 M 20 2 X**

HDB-M4 Designates HDB³ Mother Board Connectors

Number of Contacts

	Number of Contacts	Dimension A	Dimension B	Dimension C
040	40	1.375	0.800	1.075
080	80	2.075	1.500	1.775
120	120	1.775	2.200	2.475
160	160	3.475	2.900	3.175

Brush Wire Plating

M	0.000050 Au Min. thick over Nickel
C	0.000020 Au Min. thick over Nickel

Termination

	Type	Stickout (Dim. E)
20	PCB, Straight, .016 Dia.	0.060
21	PCB, Straight, .016 Dia	0.090
22	PCB, Straight, .016 Dia	0.120
23	PCB, Straight, .016 Dia	0.150
24	PCB, Straight, .016 Dia	0.180
25	PCB, Straight, .016 Dia	0.210

	Type	Stickout (Dim. E)
26	PCB, Straight, .016 Dia	0.240
27	PCB, Straight, .016 Dia	0.270
28	PCB, Straight, .016 Dia	0.300
29	PCB, Straight, .016 Dia	0.360
30	PCB, Straight, .016 Dia	0.420

Hardware

	Type	Stickout (Dim. K)
X	No Hardware	N/A
G	Polarization Key Qty. 2	0.250
H	Polarization Key Qty. 2	0.500
J	Polarization Key Qty. 2	0.750
T	Guide Pin Qty. 2	0.250
U	Guide Pin Qty. 2	0.500
V	Guide Pin Qty. 2	0.750

Contact Termination Finish

2	Gold plated in accordance with MIL-G-45204, Type II, .00030 Min. thick Gold over .000050 Min. thick Nickel
5	Tin plated in accordance with ASTM B545, .00010 Min. thick Matte Tin over .00010 Min. thick Nickel
6	Tin-Lead plated in accordance with SAE-AMS-P-81728, .00010 Min. thick Tin-Lead over .00010 Min. thick Copper

HDB-M4-XXXXXXXX drawing is available on-line at www.amphenol-aerospace.com. Then go to board level, then go to HDB3.

HDB³ DAUGHTER BOARD CONNECTOR HOW TO ORDER

Example part number: **HDB-D4 - 040 M 02 2 X**

HDB-D4 Designates HDB³ Daughter Board Connectors

Number of Contacts

	Number of Contacts	Dimension A	Dimension B	Dimension C
040	40	1.375	0.800	1.075
080	80	2.075	1.500	1.775
120	120	1.775	2.200	2.475
160	160	3.475	2.900	3.175

Brush Wire Plating

M	0.000050 Au Min. thick over Nickel
C	0.000020 Au Min. thick over Nickel

Termination

	Type	Stickout (Dim. E)
00	PCB, Right Angle, .016 Dia.	0.060
01	PCB, Right Angle, .016 Dia.	0.090
02	PCB, Right Angle, .016 Dia.	0.120
03	PCB, Right Angle, .016 Dia.	0.150
04	PCB, Right Angle, .016 Dia.	0.180
05	PCB, Right Angle, .016 Dia.	0.210
06	PCB, Right Angle, .016 Dia.	0.300

Hardware

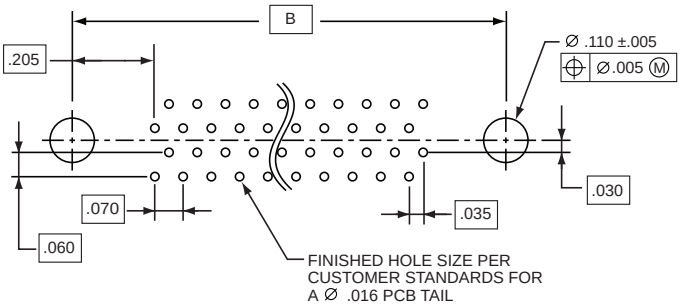
	Type
X	No Hardware
P	Polarization Key Qty. 2
L	Polarization Key Qty. 2

Contact Termination Finish

2	Gold plated in accordance with MIL-G-45204, Type II, .00030 Min. thick Gold over .000050 Min. thick Nickel
5	Tin plated in accordance with ASTM B545, .00010 Min. thick Matte Tin over .00010 Min. thick Nickel
6	Tin-Lead plated in accordance with SAE-AMS-P-81728, .00010 Min. thick Tin-Lead over .00010 Min. thick Copper

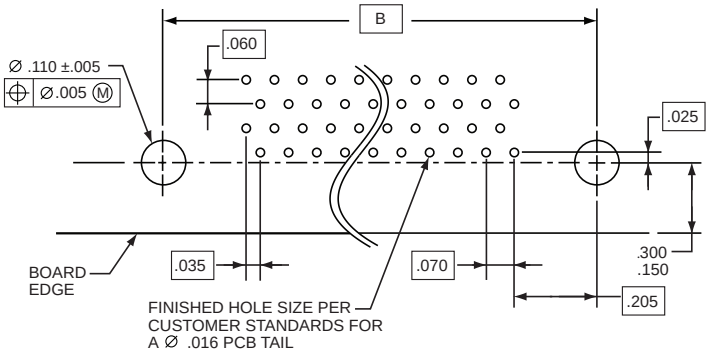
HDB-D4-XXXXXXXX drawing is available on-line at www.amphenol-aerospace.com. Then go to board level, then go to HDB3.

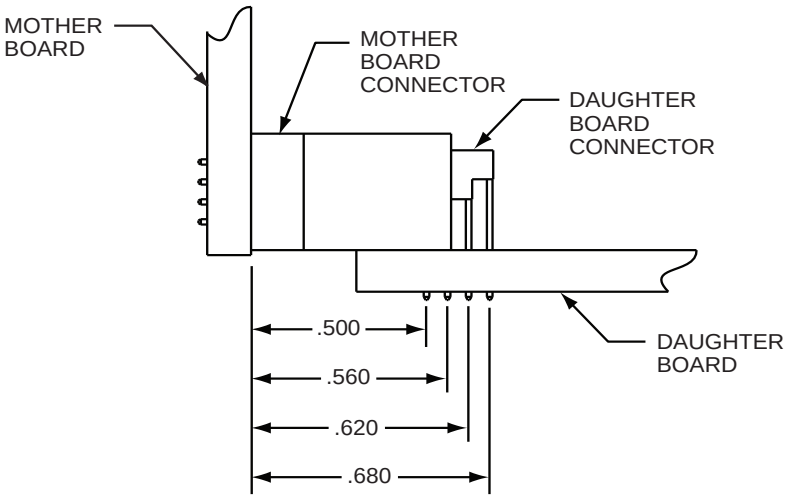
Recommended Mother Board Layout



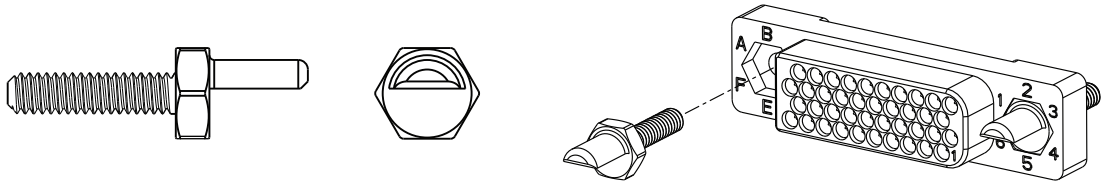
Dimensions	
No. of Contacts	B
40	1.075
80	1.775
120	2.475
160	3.175

Recommended Daughter Board Layout

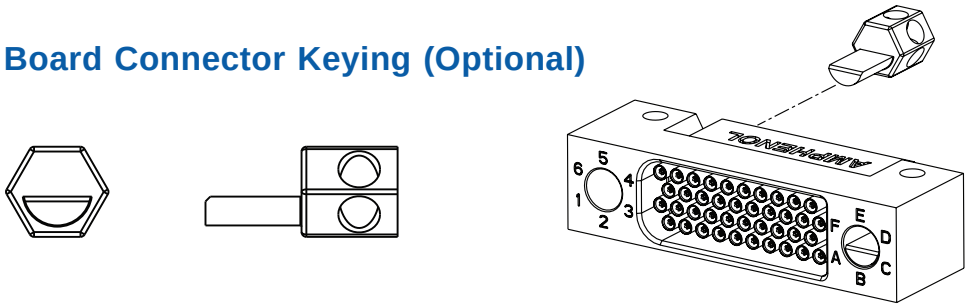




Mother Board Connector Keying (Optional)



Daughter Board Connector Keying (Optional)



CONNECTOR COMPARISON

The Amphenol HDB³ Connector offers advantages over competitive connectors:

- Higher density contact pattern
- Uses less board space
- Allows for shorter mated height
- Provides the durability and performance of the Brush contact
- Low cost

		Amphenol HDB ³	Hypertronics HPH	Airborn RM4
Contact System		Brush	Hyperboloid	Pin & Socket
Durability, Mating Cycles		100,000	2,000	500
Contact Mating Forces, Ounces		1.5	1.5	2.5
	Mother Board	.070 X .060	.075 X .075	.075 X .070
Contact Arrangement	Daughter Board	.070 X .060	.075 X .100	.075 X .100
Connector Width		.350	.443	.400
Mated Height, MB to 4th row of DB .		680	.986	.915
Contacts per Linear Inch (Contacts/ Connector Length)	Contacts			
	40	29		
	80	38		
	86			37
	102		37	
	120	43		
	110			40
	160	46		
	164			40

For additional information on this product or other Amphenol products contact:

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See Amphenol Low Mating Force Rectangular Connectors Catalog, 12-035.