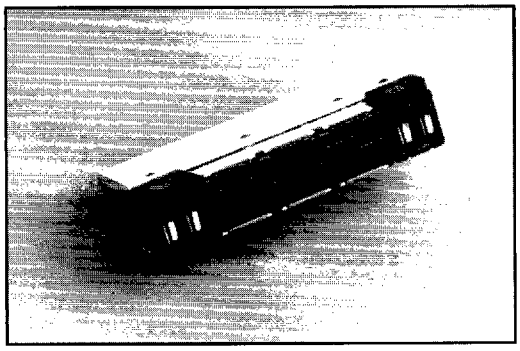
Daughtercard Socket Connector



Daughtercard Modules

Socket modules are pre-assembled into precisely located holes in an extruded aluminum stiffener. End-stackability offers the same flexibility to the daughtercard assembly as the backpanel modules. Both are available in 3 and 4 row versions, with each offering 15 or 20 positions per row to mate with the corresponding pin modules.

The **HD+1™** and **HD+2™** contacts of the socket module are located on the bottom and top surfaces of the insulator. These wide conductors mate with Plus row cantilever contacts positioned in the backpanel modules. An extended socket module wipe option is available — refer to sequence of mating chart on page 15.

Guide Modules

As connectors become longer, the mechanics of alignment, insertion forces, and length become more important.

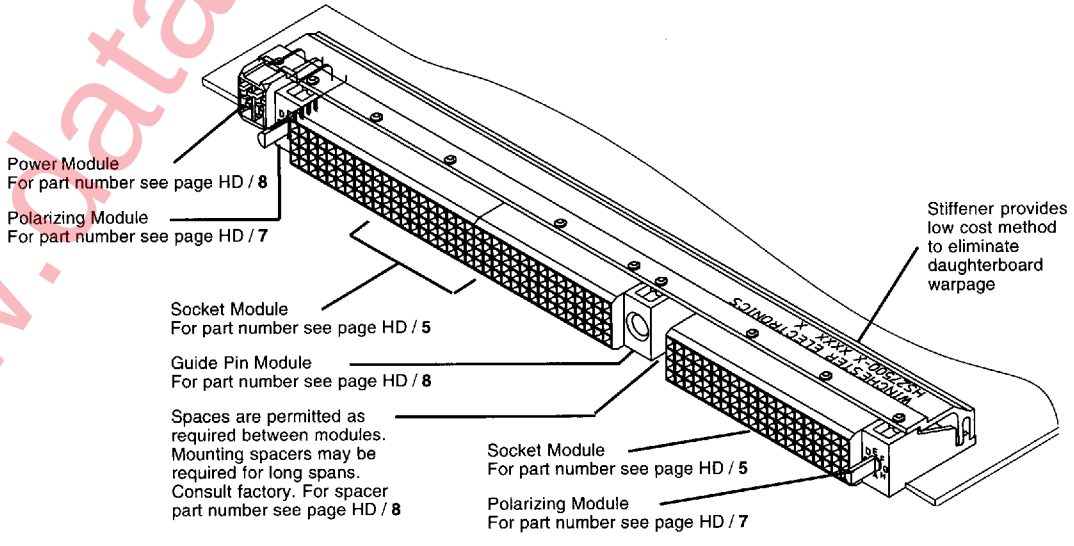
To insure proper alignment, the **HIGH DENSITY PLUS®** system offers a daughtercard module and a mating backpanel guide pin.

Polarization Modules

HIGH DENSITY PLUS® offers polarization modules for unique identity. Stainless steel polarizing keys and bushings used in the modules conform to MIL-C-55302. The configurations are octagonal to provide up to sixty-four polarization options when two modules are used per daughtercard. When polarization modules are used, a guide pin must also be used.

Power and Ground Modules

The **HIGH DENSITY PLUS®** connector system provides daughtercard modules that interconnect to discrete backpanel power modules or an external busing system. Power modules contain two contacts, each rated 20 amperes. This power busing system is designed to distribute power and ground across the backpanel and to the individual daughtercards.



Catalog No. HS27500-X Shown

The final socket connector assembly will be assigned a dash number by the factory

The socket modules and accessories shown on the following pages afford a wide degree of design flexibility. The example shown illustrates how to combine various modules on a stiffener to produce a complete connector assembly.

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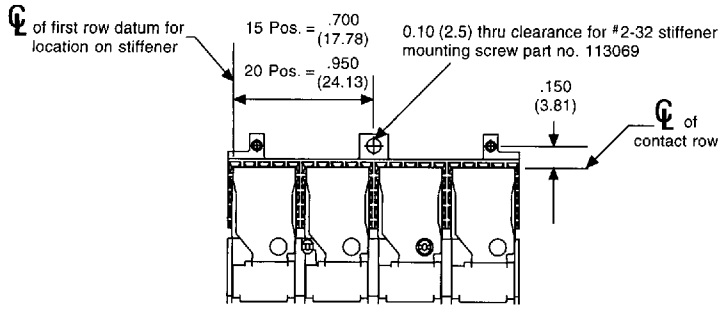
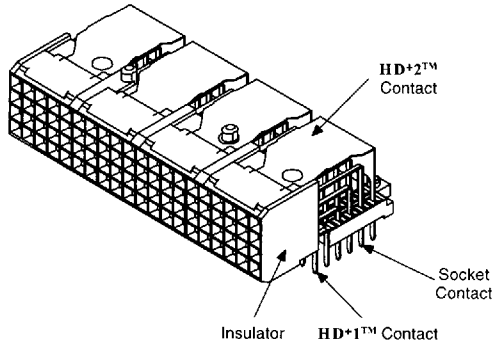
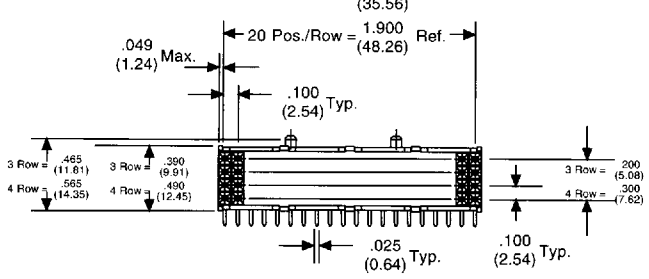
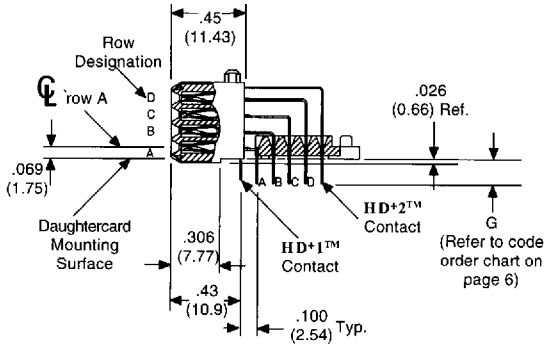
Daughtercard Socket Connector





Tail Alignment Guide





Key Attributes of the High Density Plus System

- Complete system design enhances product performance and reduces time-to-market
- C-Press® meets 40-year life telecommunications standards
- Modular backplane and daughterboard connectors offer unlimited design flexibility
- Integral daughterboard stiffener
- Higher interconnect density. Up to six row of contacts on continuous 0.100" grid. Up to 50% greater contact density
- Industry keying/polarization standard
- Integral power management for high current, multi-voltage applications
- C-Press® — the most reliable compliant pin in the industry
- Two options for modular power distribution:
  - — External Bus Bars
  - — Internal heavy Copper Multilayer Technology
- Meets performance requirements of MIL-C-28859 and MIL-STD-2166
- Contact Sequencing Options

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HS Series — Daughtercard Socket Module

ORDERING INFORMATION

Note: The following information is used to help the user select individual modules. However, HD+® socket connectors are supplied assembled from individual socket modules. Consult factory for final assembly part number

HS	2	A	4	020	AC	3	AC

■ Step 1
Series Code:
High Density Socket

■ Step 2
Connector Style:
0 = HD+® without HD+1™ and HD+2™ contacts
1 = HD+1™ contacts
2 = HD+2™ with both HD+1™ and HD+2™ contacts
3 = HD+2™ configuration with HD+1™ contacts omitted
See next page

■ Step 3
Insulator Style:
A = End Stackable

■ Step 4
Number of Rows:
3 = 3 row
4 = 4 row
See next page

■ Step 5
Insulator Positions / Row:
015 = 15 positions
020 = 20 positions
See next page

■ Step 6
Selective Plating HD+1™ & HD+2™ Contacts:
00 = Without HD+1™ and HD+2™ ground contacts see selective plating chart below for sockets with HD+1™ and HD+2™ ground contacts
See selective plating chart below

■ Step 7
Contact Type & Tail Length:
When using connector style code 0 (without ground contacts) use contact type code 0, 1 or 2 only
See contact type chart below

■ Step 8
Selective Plating Socket Contact (Signal):
See selective plating chart below

Selective Plating Chart — Step 6 and 8

Code	Mating Area	Solder Tail
AC	.000030 min. Gold	.000100 min. Tin - Lead
GC	.000050 min. Gold	.000100 min. Tin - Lead
BC	Gold Flash over .000025 min. Palladium Nickel	.000100 min. Tin - Lead
BK	Gold Flash over .000040 min. Palladium Nickel	.000100 min. Tin - Lead

Note: Contact underplate is .000050 minimum Nickel

Contact Type Chart — Step 7

P.C.B. Thickness	Code	Socket Contact Description	HD+1™ & HD+2™ Contact Description	G +.015 (0.38) -.010 (0.25)
.062 (1.57)	0	Standard Wipe	Standard Wipe	.125 (3.18)
	1	* Extended Wipe	Standard Wipe	
.093 (2.36)	2	Standard Wipe	Standard Wipe	.150 (3.81)
.062 (1.57)	3	Standard Wipe	* Extended Wipe	.125 (3.18)
	4	* Extended Wipe	* Extended Wipe	
.093 (2.36)	5	Standard Wipe	* Extended Wipe	.150 (3.81)

* The Extended Wipe option produces a .025 (0.64 ref.) increase in wipe over the standard socket assembly.

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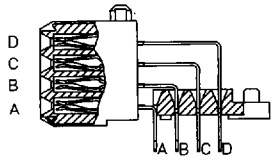
Daughtercard Socket Modules

COMPONENTS

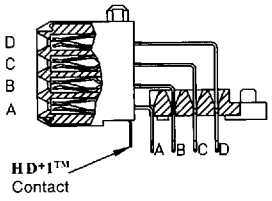
Socket Connector Style — Step 2 (4 Row Socket Modules Shown)

Code 0



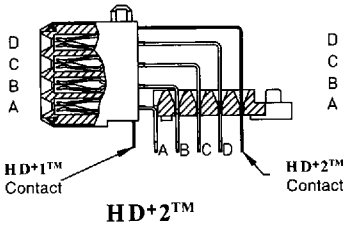
HD+®

Code 1



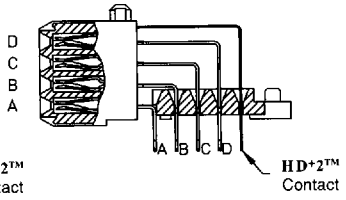
HD+1™

Code 2



HD+2™

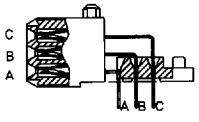
Code 3



HD+3™

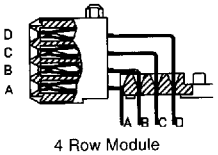
Number Of Rows — Step 4

Code 3



3 Row Module

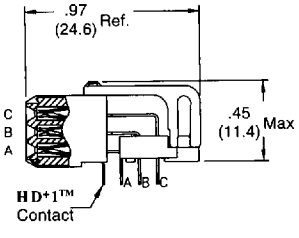
Code 4



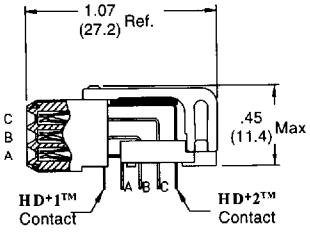
4 Row Module

Typical Socket Connector Profile — Step 5

3 Row

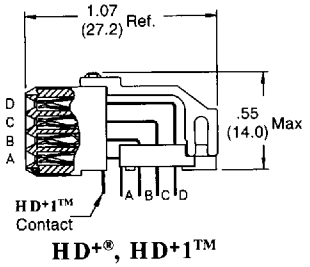


HD+®, HD+1™

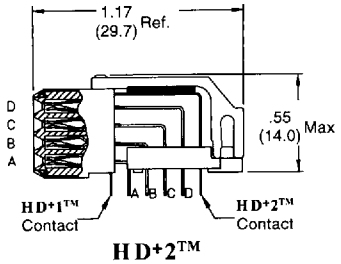


HD+2™

4 Row

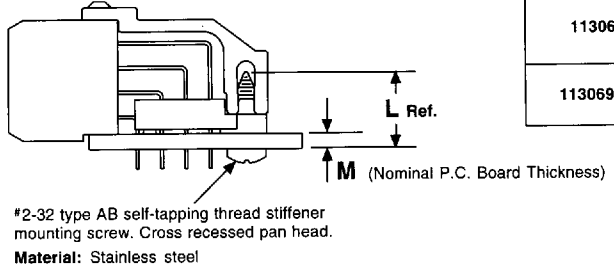


HD+®, HD+1™



HD+2™

Typical Final Socket Connector Assembled To P.C. Board

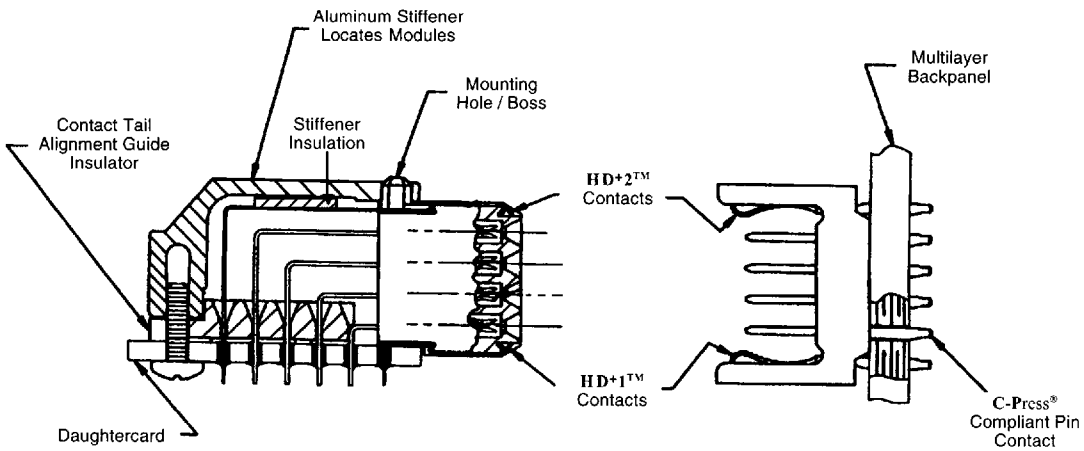


Part Number	L	M
113069	.312 / 7.92	.031 / 0.79 to .093 / 2.36
113069 - 1	.375 / 9.53	.094 / 2.38 to .166 / 4.22

One mounting screw is typically supplied for each module or mounting spacer. When using multiple combinations of power, polarizing and guide pin modules, each designated mounting hole position need not be drilled in the P.C. Board, providing the distance between mounting holes is not greater than two inches.

Overview

A Modular High Density Pin and Socket Interconnection System



Socket Connector **Pin Module**

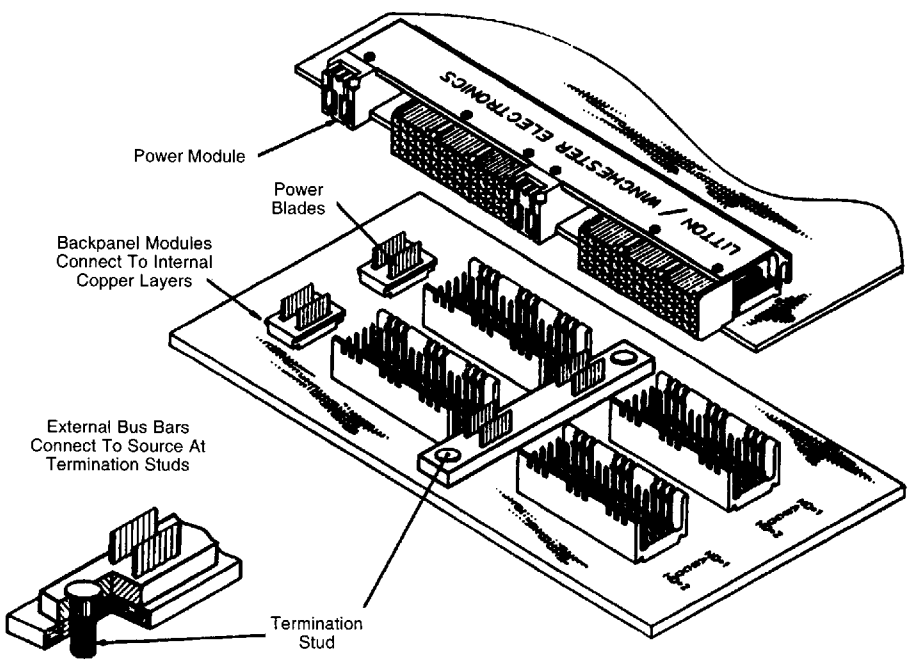
Density

To demonstrate the density achievable with **HIGH DENSITY PLUS®**, a good comparison can be made using the Double Eurocard Format, a standard for VME Bus and Multibus II designs. 192 I/O's are provided using Din 41612 connectors.

Without addressing power, grounding and impedance matching requirements, conventional 4 row, high density connectors can increase this number up to 344 I/O's. With the addition of the **HD+1™** and **HD+2™** contacts, grounding and impedance matching requirements can be addressed without sacrificing signal contact density.

Power and Ground Capability

Today's designs often require the ability to install and remove daughtercards while the system is operating. To facilitate this, **HIGH DENSITY PLUS®** provides 3 distinct levels of contact sequencing for ground, power and signal.



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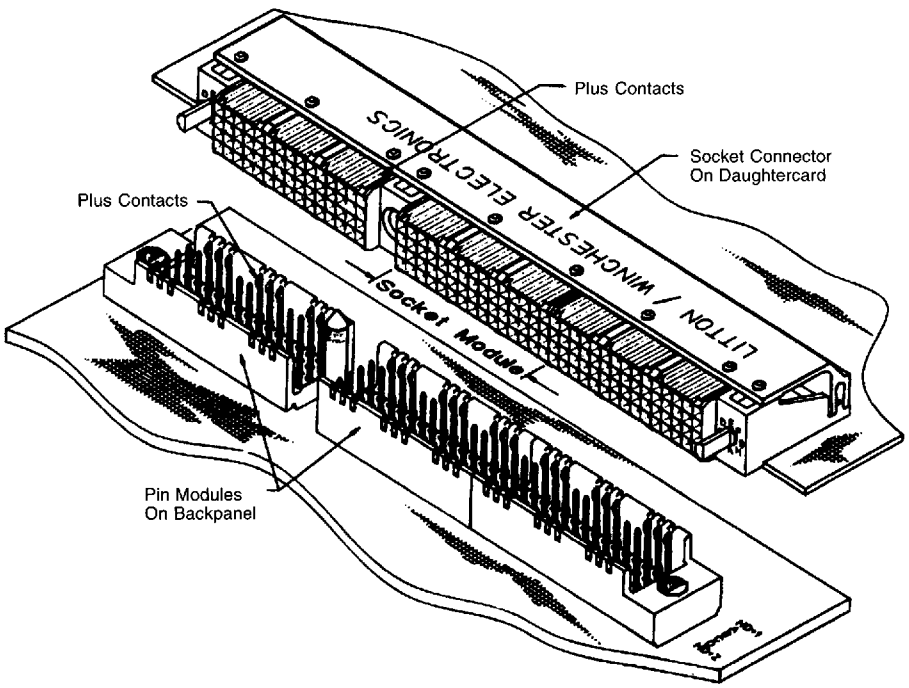
HIGH DENSITY PLUS®

Overview

A Modular High Density Pin and Socket Interconnection System

- Complete system design enhances product performance and reduces time-to market
- Modular backplane and daughter-board connectors offer unlimited design flexibility
- Integral daughterboard stiffener
- Optional **HD+1™** and **HD+2™** rows of contacts provide additional grounding and shielding without sacrificing signal contact density
- Higher interconnect density. Up to six rows of contacts on continuous 0.100" grid. Up to 50% greater contact density
- Industry keying / polarization standard
- Integral power management for high current, multi-voltage applications
- **C-Press®** — the most reliable compliant pin in the industry meets 40 year life telecommunications standards
- Two options for the modular power distribution:
  - — External Bus Bars
  - — Internal Heavy Copper Multilayer Technology
- Meets performance requirements of MIL-C-28859 and MIL-STD-2166
- Contact Sequencing Options



Evolution and Revolution

Using higher speed and higher power semiconductors, today's electronic systems combine many functions into one totally integrated package. These systems must operate faster, more efficiently and be more cost-effective to produce.

Meeting these performance parameters demands that designers must:

1. Minimize reflections due to impedance mismatch.
2. Reduce crosstalk between adjacent signal contacts.
3. Minimize inductance of contacts used for power and ground.
4. Integrate power distribution into the backpanel design.

Don't Conform . . . Create!

HIGH DENSITY PLUS® — a fully integrated interconnection system, is specifically designed to meet existing and anticipated semiconductor technology needs.

Modularity

HD+® combines a modular design concept with the density and electro-mechanical performance vital to VLSI designs.

Both pin and socket modules are end stackable providing a virtually continuous .100 x .100, (2.54 x 2.54) contact grid.

Pin modules are available with both ends open for continuous stacking, with one end wall and with one end polarized to ensure a unique identity.

HD+® incorporates a product family of off-the-shelf back plane and daughtercard connectors including:

3 row modules and 4 row modules, including the **HD+1™** and **HD+2™** contacts illustrated on the next page, address grounding and power requirements, without increasing the size of the connector envelope.

CSA Certified File No. LR34182

Recognized under the Component Program of Underwriters Laboratories Inc. File No. E31650

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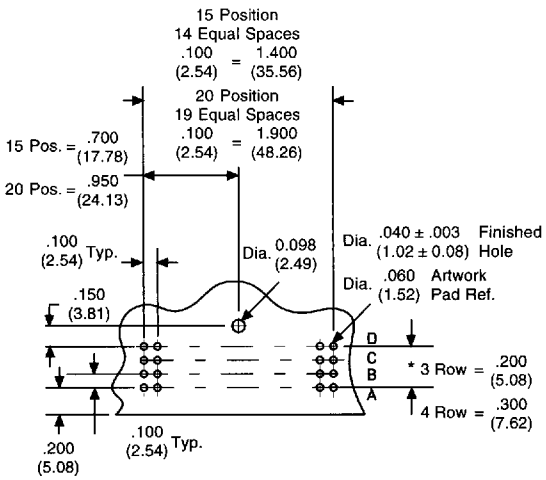
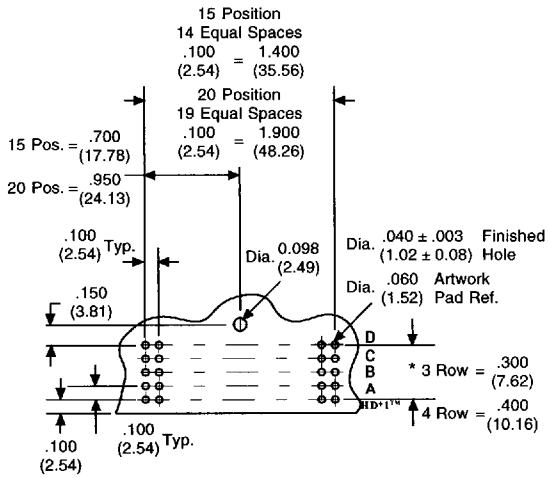
Daughtercard Hole Patterns

Socket Module 3 and 4 Row 15 and 20 Positions

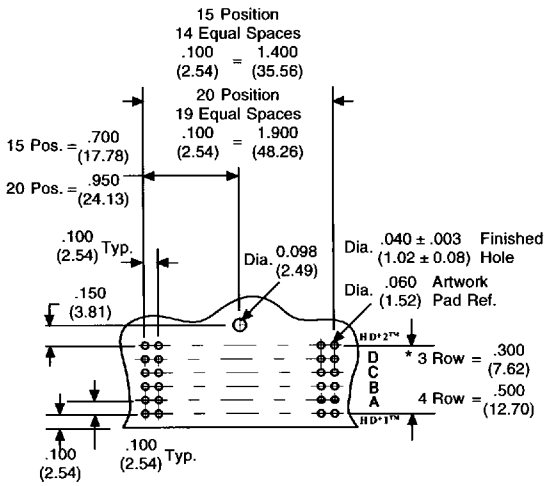
HD+®



HD+1™

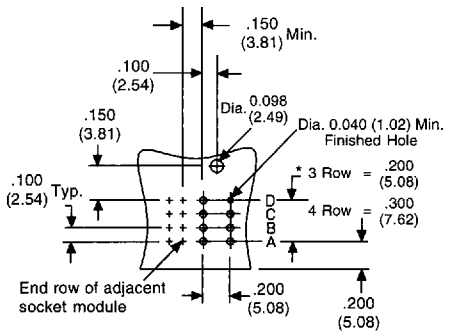


HD+2™



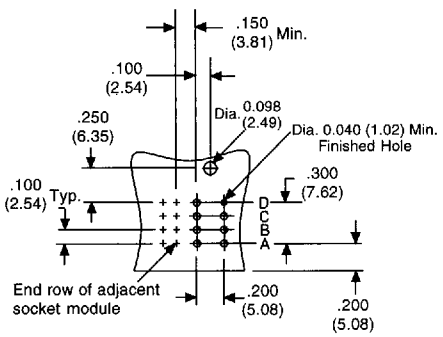
Accessory 3 and 4 Row Hole Patterns

HD+®, HD+1™

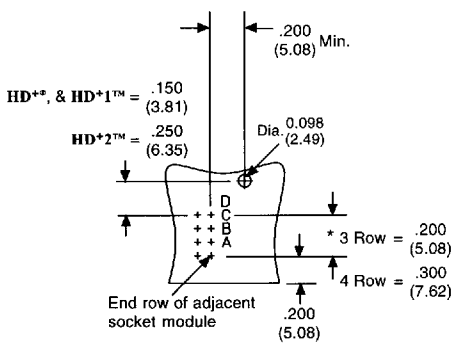


Power Module

HD+2™



Guide Pin Receptacle/Polarizing Module



** Delete row D for 3 row hole patterns*

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High Density Plus Specifications and Operating Characteristics

SPECIFICATIONS

MATERIALS AND FINISHES

The following materials and finishes apply to all High Density Plus series daughtercard and backpanel connector modules.

Insulators: Thermoplastic polyester, glass filled, color black, UL rated 94 V-O.

BACKPANEL CONTACTS

Signal Contacts:

Material: Copper alloy

Finish: See Selective Plating Chart on page HD / **12**

HD+1™ & HD+2™ Contacts:

Material: Copper alloy

Finish: See Selective Plating Chart on page HD / **12**

Dual Power Blade Contacts:

Material: Copper alloy

Finish: See Selective Plating Chart on page HD / **15**

DAUGHTERCARD CONTACTS

Signal Contacts:

Materials: Copper alloy

Finish: See Selective Plating Chart on page HD / **15**

HD+1™ & HD+2™ Contacts:

Material: Copper alloy

Finish: See Selective Plating Chart on page HD / **5**

Power Module Contacts:

Material: Copper alloy

Finish: See Selective Plating Code Chart on page HD / **8**

Daughtercard Stiffener: Extruded aluminum alloy 6061-T6 per QQ-200/8. Clear anodize finish per MIL-A-8625.

Stiffener Mounting Screws: CRES Type 302, passivated

Polarizing Bushings: Sintered metal CRES Type 316

Polarizing & Guide Pins: CRES Type 303, passivated

Guide Pin Screws: CRES Type 303, passivated

Guide Pins: CRES Type 203, passivated

HD+® ACCESSORY TOOLING — Repair Tools

DESCRIPTION	CATALOG NUMBER
Polarization Key (Socket Connector)	
Polarization Key Removal Tool	107-43248
Polarization Key Insertion Tool	107-43247
Polarization Bushing (Pin Header)	
Polarization Bushing Removal Tool	107-43241
Polarization Busing Insertion Tool	107-43240
Dual Power Blade Module Insertion Tool	
3 Row	107-43313
4 Row	107-43312

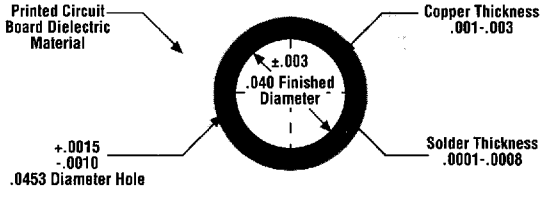
High Density Plus Specifications and Operating Characteristics

SPECIFICATIONS

OPERATING CHARACTERISTICS

Signal Contact Resistance:	20 milliohms maximum initial
C-Press® Contact to Plated Through Hole Resistance:	2 milliohms (max)
HD+1™ Contact Resistance:	4 milliohms maximum
HD+2™ Contact Resistance:	7 milliohms maximum
Power Blade Contact Resistance:	1.5 milliohms maximum
Signal Contact Normal Force:	75 g minimum
Power Contact Normal Force:	100 g minimum
HD+1™ & HD+2™ Contact Normal Force:	100 g minimum
Individual Signal Contact Engagement Force:	2.5 oz max average
Individual Signal Contact Separation Force:	0.5 oz minimum
Contact Life (Durability):	200 cycles, with 30 microinches plating on mating contacts, and 500 cycles, with 50 microinches plating on mating contacts
C-Press® Signal Contact to Backpanel Retention:	10 lb minimum
C-Press® Signal Contact torque:	3.0 in.-oz minimum
Insulation Resistance:	5000 megohms minimum
Voltage Rating @ Sea Level (@ 60 Hz):	1000 Vrms
Signal Contact Current Rating:	1 A @ 70° C, 3 A Maximum
HD+1™ & HD+2™ Contact Current Rating:	4 A @ 70° C, 8 A Maximum
Power Contact Current Rating:	20 A @ 70° C, 25 A Maximum
Temperature Range:	-55° C to +105° C

HOLE SIZE REQUIREMENTS



Standard Diameter P.T.H.

1. Hole drilled to .0453 +.0015, -.001 diameter.
2. Plating thickness must be .001 to .003 copper and .0001 to .0008 solder.
3. Final hole dimension must be gauged to .040 ±.003 diameter.
4. See Winchester drawing number 27331

HD+® PIN HEADER TOOLING — Repair Tools

DESCRIPTION	CATALOG NUMBER	DESCRIPTION	CATALOG NUMBER
Pin Contact Repair		**Shroud & Insulator Repair**	
Single Contact Pullout Tool	107-43238	Removal Tool 4 x 15	107-43234
Single Contact KO Tool Handle	107-42500	Removal Tool 3 x 15	107-43235
Single Contact Seating Tool Tip	107-43230	Removal Tool 4 x 20	107-43236
Single Contact KO Tool Tip	107-42031	Removal Tool 3 x 20	107-43237
Ground Contact Repair		Seating Tool 4 x 15	107-43244
Removal Tool	107-43239	Seating Tool 3 x 15	107-43246
Insertion Arbor Press Tool	107-43232	Seating Tool 4 x 20	107-43243
		Seating Tool 3 x 20	107-43245