

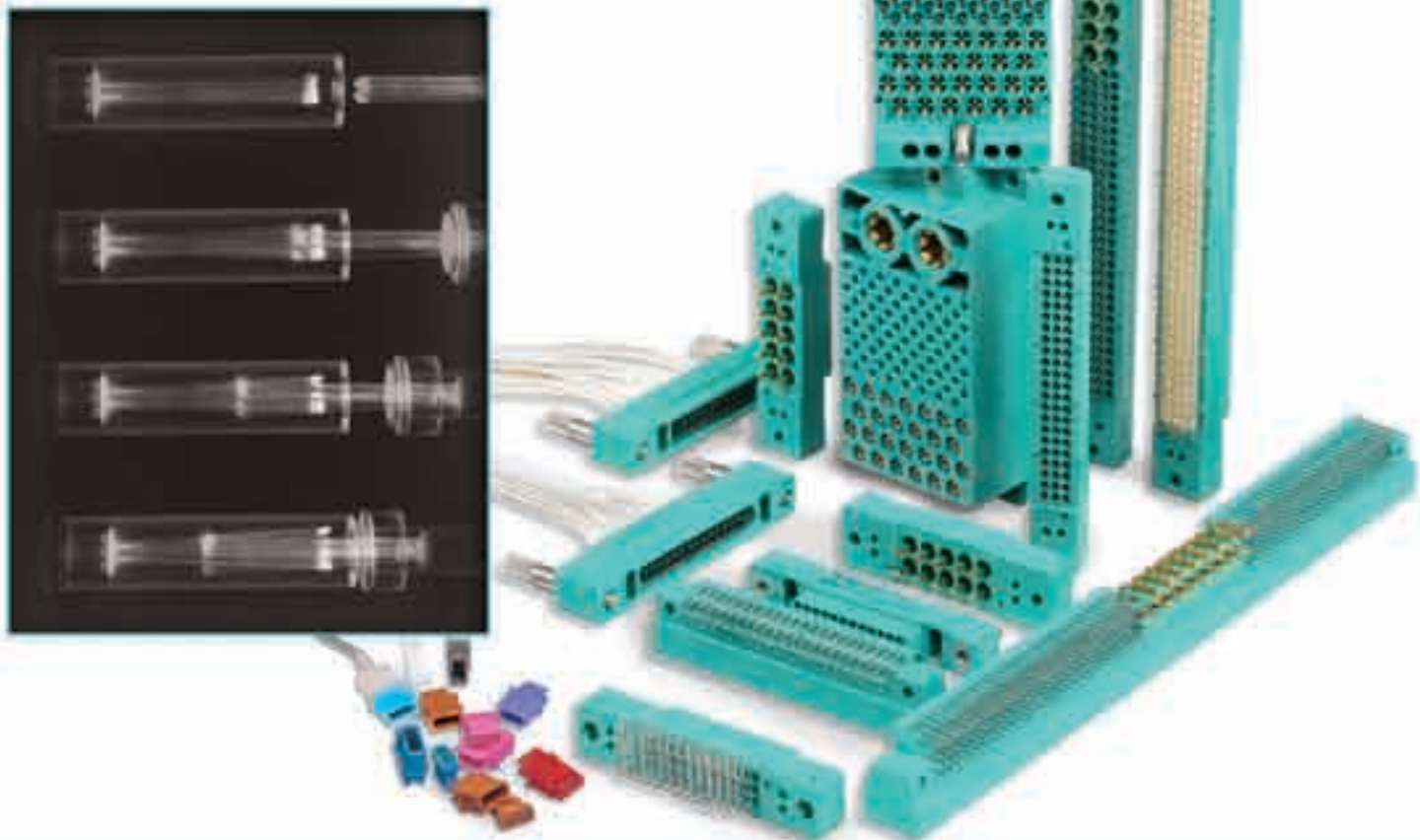
# Amphenol® Low Mating Force Rectangular Connectors

12-035-12

## MIL-DTL-55302 BRUSH CONTACT TECHNOLOGY



Amphenol® Bristle Brush Contact:  
Multiple Strands of High Tensile Strength  
Wires Bundled Together, Providing Superior  
Electrical Connection with Low Mating Force



**Amphenol**  
Aerospace

[www.amphenol-aerospace.com](http://www.amphenol-aerospace.com)

Visit our website and see the very broad range of cylindrical and rectangular interconnection products from Amphenol Aerospace.



### Amphenol's Broad Family of Low Mating Force Interconnect Products with Brush Contacts



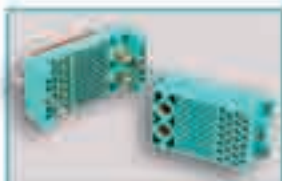
*Design Flexibility - Combination of Brush Contacts and Fiber Optic Termini*



*Combination of Brush Contacts, Coax and Power Contacts*



*Power Strip Connector Series with cavities for size 16 or 12 power contacts (or size 16 or 12 coax contacts).*



*Hybrid Custom Connector with Brush Contacts and Power Contacts*



*Docking Connectors - The Brush Contact offers high performance where frequent docking to charge and transfer data is a necessity.*

The Bristle Brush contact has been proven in military avionics packages and meets the requirements of MIL-DTL-55302. It provides high density in tighter spacing, low mating/unmating forces, proven durability and long contact life. Applications for Amphenol® Connectors with Brush contacts include:

- Medical equipment
- IC chip testers
- Telecommunications
- Military and Commercial Aviation
- Military Ground Vehicles
- GPS systems

### Other Similar Rectangular Connectors from Amphenol

For more information, see additional Amphenol Rectangular Products at the end of this catalog.

*High Density HDB<sup>3</sup> and HSB<sup>3</sup> Series*



*LRM (Line Replaceable Module) Interconnects*



*Ruggedized Brush Rack & Panel Connectors*



*Ruggedized VME64x Interconnects*



*High Speed LRM Gigastak & Digastak Inserts*



## Brush vs. Conventional Contacts

### Brush Contact Innovation

- Multiple contact interfaces - Strands of high tensile wire are bundled together to form brush-like contacts. By inter-meshing two multi-strand wire bundles, an electrical connection is made.
- Provides redundant current paths, 14-70 (points of contact) per mated contact with a gas tight junction
- Very smooth (low friction) interface

### Conventional Pin/Socket

- Machined surface finish on both parts
- Higher friction and wear
- Limited number of contact sites

## Amphenol's High Technology Machining and Computer Driven Centers for Connector and Contact Production

Amphenol Aerospace, located in upstate New York USA, has diverse manufacturing capability including state of the art CNC machining, die-casting, molding, impact and extruding, screw machining and plating. Also within this facility are complete design engineering and environmental test facilities. High technology production centers at the Amphenol home facility and its satellite facilities create volume runs that are cost effective and meet on-time delivery demands.

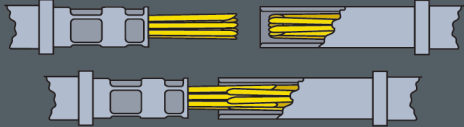
Amphenol operates a Quality System that is third-party certified to ISO-9001:2008 and AS9100.

For more information on Amphenol Aerospace capabilities in Rectangular products, or any other of the wide range of connector products, please contact us:

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Sidney, NY 13838-1395  
Phone: 800-678-0141 or  
607-563-5011

[www.amphenol-aerospace.com](http://www.amphenol-aerospace.com)

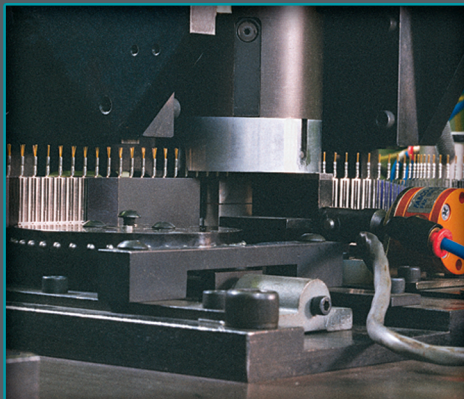
### Brush Contacts



### Conventional Pin and Socket Crimp Contacts



*High Technology Machine Center*



*Brush Contact Machining*

Bristle Brush Contacts

- High density in tighter spacing - a main concern for integrated electronics.
- A superior choice for board level interconnects.

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Please note that, in the future, this catalog will be part of Amphenol's New Combined Rectangular Interconnect Catalog. Call Amphenol Aerospace for more information about this combined catalog, to be available Jan. 2011.

Amphenol® B<sup>3</sup>  
Bristle® Brush® Contact  
Advantages:



Low Mating &  
Unmating Forces

- Smooth, low friction interfaces
- 70% to 90% reduction in mating/unmating forces from conventional pin-socket contacts
- 1.5 oz. maximum forces per contact pair (one ounce typical)
- Easy mating/unmating makes high circuit counts practical (25 lbs. typical for 400 contacts)
- Mechanical mating aids not required
- No need for external board support structures for connectors up to 7 inches long. A center support is recommended for Mother Board Connectors over 7 inches.

Proven Durability and  
Long Contact Life

- 100,000 mating cycles, even when hot swapped
- Documented intermittency free performance – no 10 nano second discontinuities during 50m cycles of 0.010 displacement
- Overall cost effectiveness (reduced life cycle costs)

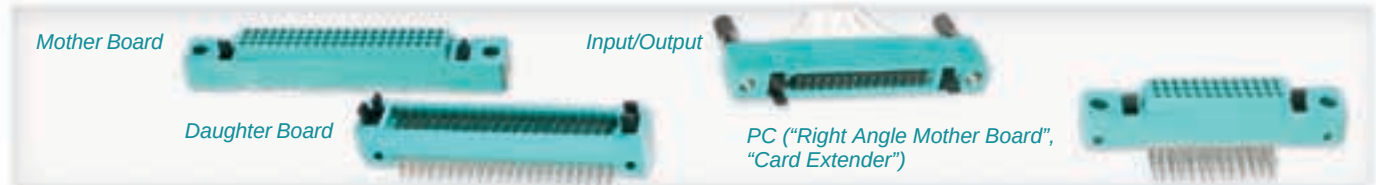
Multiple Points of Contact  
Provide Superior  
Electrical Capability

- 14-70 points of contact per mated contact
- Stable, low resistance – 20 milliohms max.
- Redundant current paths results in lower total resistance
- Proven electrical and gas tight contact sites

# Amphenol Low Mating Force Rectangular Connectors MIL-DTL-55302 (M55302/166 thru /172)

Amphenol's Low Mating Force Connectors are well known in the connector arena – with proven performance on the ground, in the air, and at sea. – In service for over 25 years, with over 50 million brush contacts fielded; and qualified for use on M1A2 Abrams, F-16 Falcon, F/A-22 Raptor, F-35 Lightning II, AIM-132 ASRAAM and many more applications.

## Four Standard Body Styles



## Key Connector Features

- 0.100 inch center to center, square grid contact spacing
- Application flexibility (parallel boards, perpendicular boards, wire to board, end to end boards, card extenders)
- 2, 3 and 4 row contact arrangements with 10 to 100 contacts per row in one contact per row increments
- Military versions meet MIL-DTL-55302/166 through /172
- Termination versatility; straight & 90° PCB stud, wire wrap & crimp
- Options on termination lengths and plating
- Front release/front removable contacts in Mother Board, Daughter Board and PC version; rear release/rear removable crimp contacts (size 22D) or printed circuit board pins provided with Input/Output connectors
- Accessories available for latching and polarization
- Up to 256 keyed, mating polarizations available
- Hybrids available – mix signal with power, RF or fiber optics
- Smaller sized connector designs with as few as 5 contacts per row
- RoHS compliant versions are available, consult Amphenol Aerospace for more information



## Performance

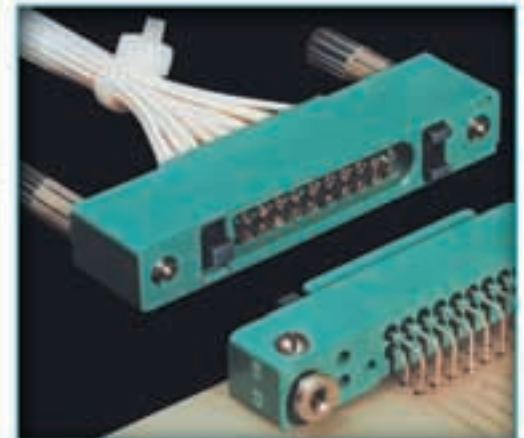
- voltage rating:  $\frac{SL}{1300}$   $\frac{70,000 ft.}{325}$
- one and one-half ounce max. average contact engaging/separating forces
- 7 million average contact resistance for row A contacts
- (Resistance will vary depending on the point of measurement and the length of the contact.)
- 3 ampere – PCB contacts; 5 ampere – wire wrap / crimp contacts
- –65°C to +125°C temperature rating
- 5 gigahms minimum insulation resistance

## Materials

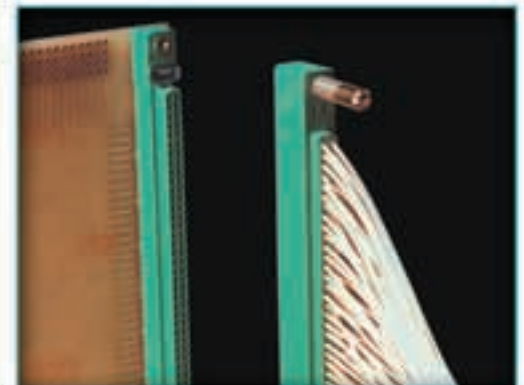
- Connector Body – Glass-filled thermoplastic molding material in accordance with MIL-M-24519 type GPT-15F and/or Grade B,
- Class 15 of MIL-P-46161 (UL94V-O)
- Polarization Keys – Glass-filled acetal plastic molding material in accordance with MIL-P-46137
- Locking Screw/Mounting Bushing – Corrosion resistant steel AISI 300 types passivated in accordance with QQ-P-35

## Contacts

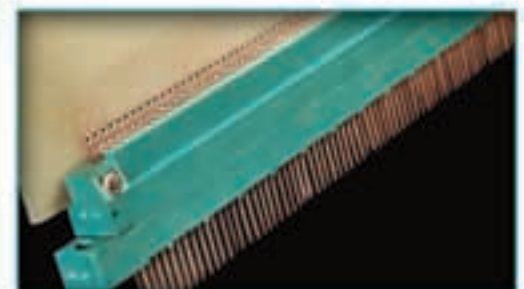
- Holders – Copper alloy in accordance with Federal Specification QQ-B-626 or SAE J463
- Wire – Beryllium copper in accordance with Federal Specification ASTM B197
- Sleeves – If applicable, stainless steel in accordance with AMS-5514 passivated in accordance with ASTM A967



Unmated Input/Output and PC Connector



An Input/Output and Mother Board Connector



Mated Mother Board and Daughter Board Connector

# Low Mating Force Rectangular Connectors

## selecting the correct mated connection

### STANDARD FOUR BODY STYLES

#### Mother Board Connector (MB)

also can be referred to as a "Back-plane" Connector

- Straight PCB stud or Wire wrap termination
- Mates with: Daughter board or I/O connectors

#### Daughter Board Connector (DB)

also can be referred to as a "Module Connector"

- 90° PCB stud
- Mates with: Mother board or PC connectors

#### Printed Circuit Connector (PC)

also can be referred to as a "Right Angle Mother board Connector or a "Card Extender Connector"

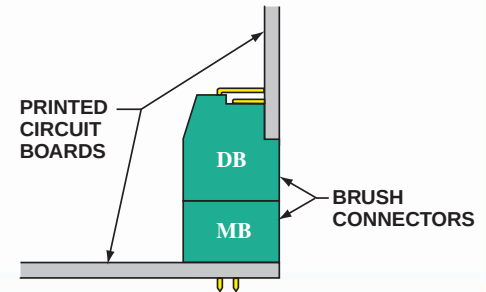
- 90° PCB stud
- Mates with: I/O or Daughter board connectors

#### Input/Output Connector (I/O)

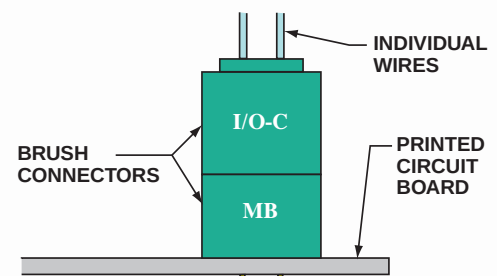
also can be referred to as a "Cable Connector"

- I/O-C has rear removable crimp contacts
- I/O-P has round PCB stud solder contacts
- Mates with: Mother board or PC connectors

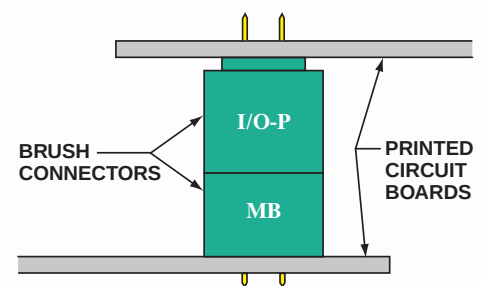
#### DB to MB Mating Boards at Right Angles



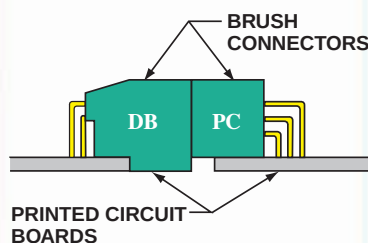
#### MB to I/O-C Discrete Wires to PCB



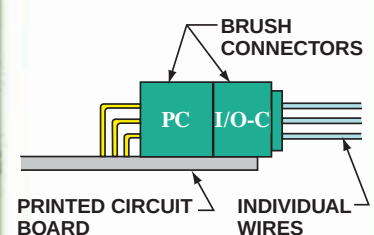
#### MB to I/O-P Mating Parallel Boards



#### PC to DB Mating Boards End to End



#### PC to I/O-C Discrete Wires to PCB

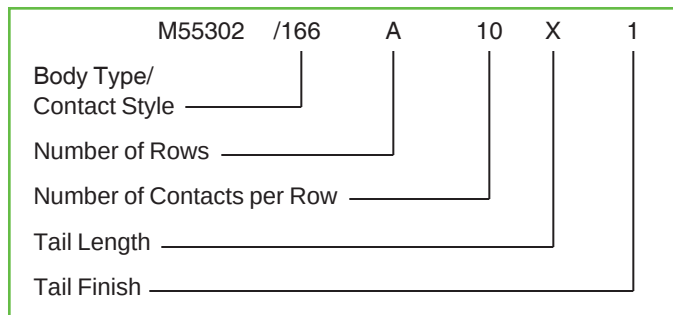


# Low Mating Force Rectangular Connectors

## how to order (military types)

### MB, DB, PC Connectors Military Part Number Ordering Procedure

Example part number M55302/166A10X1 is shown as follows:



#### Body Type/Contact Style

- /166 designates MB-P (Mother Board, Printed Circuit Board Termination)
- /167 designates MB-W (Mother Board, Wire-wrap Contacts)
- /168 designates PC (Printed Circuit, 90° Printed Circuit Board Termination)
- /170 designates DB (Daughter Board, 90° Printed Circuit Board Termination)

#### Number of Rows

- A – 2 Rows
- B – 3 Rows
- C – 4 Rows

#### Number of Contacts per Row

Contact counts per row range from 10 to 100  
(Only 2 digits permitted in this space; for 100 contacts per row, use 00)

#### Tail Length

| MB-P<br>(PCB Termination)* | MB-W**<br>(Wire-wrap) |
|----------------------------|-----------------------|
| W – .222 ±.025             |                       |
| X – .300 ±.025             | Y – .700 ±.025        |
| Y – .145 ±.025             | Z – .542 ±.025        |
| Z – .113 ±.025             |                       |

| DB*            | PC*                     |
|----------------|-------------------------|
| X – .300 ±.025 | Y – .150 +.035<br>–.025 |
| Y – .150 ±.025 | Z – .095 +.035<br>–.025 |
| Z – .120 ±.025 |                         |

\* Reference "J" Dimension on all connector drawings in this catalog.

\*\* For MB-W only: Reference "H" Dimension on connector drawing on page 8.

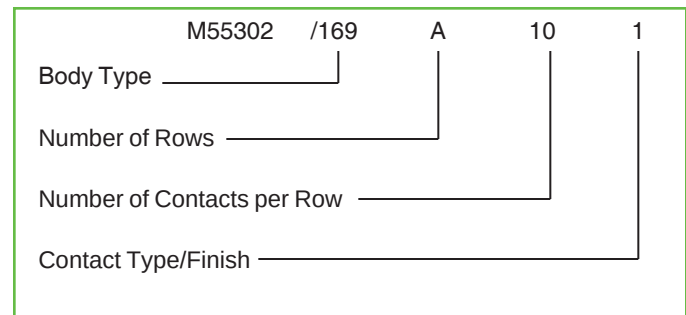
#### Tail Finish

- 1 Tin lead per MIL-P-81728, 50 to 70% tin, .0001 min. thick over copper
- 2 Gold per MIL-G-45204, type II, grade C, class 00 (01 for MB-W) over nickel per QQ-N-290



### IO Connectors Military Part Number Ordering Procedure

Example part number M55302/169A101 is shown as follows:



#### Body Type

- /169 designates IO (Input/Output)  
(Contact type/finish is last digit of IO part number - see list of options below)

#### Number of Rows

- A – 2 Rows
- B – 3 Rows
- C – 4 Rows

#### Number of Contacts per Row

Contact counts per row range from 10 to 100  
(Only 2 digits permitted in this space; for 100 contacts per row, use 00)

#### Contact Type/Finish

- 1 Crimp contact – Tin lead per MIL-P-81728, 50 to 70% tin, .0001 min. thick over copper
- 2 Crimp contact – Gold per MIL-G-45204, type II, grade C, class 1 over copper
- 3 Connectors supplied less contacts
- 4 PCB contacts installed with .145 ±.025 stickout – Tin lead per MIL-P-81728, 50 to 70% tin, .0001 min. thick over copper (Reference "J" Dimension on connector drawing on page 16).

#### To Order IO Contacts

(For use with connectors less contacts)

M55302/171-1

\_\_\_\_\_ suffix designates crimp well finish

#### Crimp well finish

- 1 Crimp contact – Tin lead per MIL-P-81728, 50 to 70% tin, .0001 min. thick over copper
- 2 Crimp contact – Gold per MIL-G-45204, type II, grade C class 1 over copper

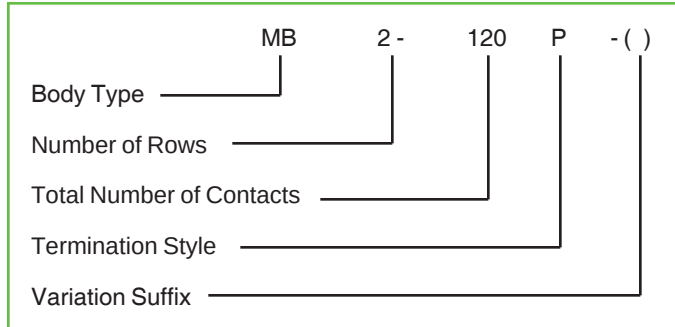
To order Accessories, see page 5.

# Low Mating Force Rectangular Connectors

## how to order (commercial types)

### MB, DB, I/O, PC Connectors Proprietary Part Number Ordering Procedure

Example part number MB2-120P- ( ) is shown as follows:



#### Body Type

MB designates Mother Board  
DB designates Daughter Board  
I/O designates Input/Output  
PC designates Printed Circuit

#### Number of Rows

2, 3 or 4 rows

#### Total Number of Contacts

See Contact Arrangements, pages 8 and 9

#### Standard Termination Style

(Stickout values below apply to "J" dimension referenced on individual connector catalog pages).

|          |                                                                                        |
|----------|----------------------------------------------------------------------------------------|
| MBX-XXXP | Straight PCB stud, .021 dia, .113 ±.025 stickout, Sn/Ni plate                          |
| MBX-XXXW | Solderless wrap, .025 sq., .507 ±.025 stickout, Sn/Ni plate                            |
| DBX-XXXP | 90° PCB stud, .021 dia, .085 ±.025 stickout, Sn/Ni plate                               |
| IOX-XXXC | Crimp, rear removable contact, size 22D wire well, Sn/Ni plate                         |
| IOX-XXXP | PCB stud, .021 dia, .145 ±.025 stickout, Sn/Ni plate                                   |
| PCX-XXXP | 90° PCB stud, .021 dia., .095 <sup>+.035</sup> / <sub>-.025</sub> stickout Sn/Ni plate |

#### LEGEND:

Sn/Ni designates Tin over Nickel  
Au/Ni designates Gold over Nickel  
Au/Cu designates Gold over Copper



SnPb/Cu designates Tin-Lead over Copper

### Variation Suffix

(Stickout values below apply to "J" dimension referenced on individual connector catalog pages.)

- |       |                                                                                                                                                                        |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (700) | Gold plate in accordance with MIL-G-45204, type II, .000030 min. thick gold (.000050 for solderless wrap) over .000050 min. thick nickel (standard termination length) |
| (701) | Gold plate in accordance with MIL-G-45204, type II, .000050 min. thick gold over .00015 min. thick copper (standard termination length)                                |
| (702) | PCB stud stickout of .145, Sn/Ni plate, MB-P                                                                                                                           |
| (703) | Au/Ni [same as (700)], PCB stud stickout of .145, MB-P                                                                                                                 |
| (704) | Au/Cu [same as (701)], PCB stud stickout of .145, MB-P                                                                                                                 |
| (705) | 90° PCB stud, .120 stickout. Sn/Ni plate, DB                                                                                                                           |
| (706) | Au/Ni [same as (700)], 90° PCB stud .120 stickout, DB                                                                                                                  |
| (707) | Au/Cu [same as (701)], 90° PCB .120 stickout, DB                                                                                                                       |
| (709) | PCB stud stickout of .300 DB (90°), .300 MB-P & .335 IO-P, Sn/Ni plate                                                                                                 |
| (710) | Solderless wrap, .025 sq., .665 stickout, Sn/Ni plate, MB-W                                                                                                            |
| (711) | Solderless wrap, .025 sq., .665 stickout, Au/Ni, [same as (700)], MB-W                                                                                                 |
| (713) | PCB stud stickout of .060, Sn/Ni plate, IO-P                                                                                                                           |
| (714) | 90° PCB stud stickout of .150, Sn/Ni plate, PC & DB                                                                                                                    |
| (715) | Solderless wrap, .025 sq., .665 stickout, Au/Cu [same as (701)], MB-W                                                                                                  |
| (716) | 90° PCB stud stickout of .085 matte tin, DB                                                                                                                            |
| (717) | 90° PCB stud stickout of .095 matte tin, PC                                                                                                                            |
| (718) | 90° PCB stud stickout of .120 matte tin, DB                                                                                                                            |
| (719) | PCB stud stickout of .300 MB-P & .335 IO-P, matte tin                                                                                                                  |
| (720) | PCB stud stickout of .060 matte tin, IO-P                                                                                                                              |
| (721) | PCB stud stickout of .500, Sn/Ni plate, IO-P                                                                                                                           |
| (722) | PCB stud stickout of .356 matte tin, MB-P                                                                                                                              |
| (723) | PCB stud stickout of .192, Sn/Ni plate, MB-P                                                                                                                           |
| (724) | 90° PCB stud stickout of .095, RTV potted rear, Sn/Ni plate, PC                                                                                                        |
| (725) | 90° PCB stud stickout of .120, RTV potted rear, Sn/Ni plate, DB                                                                                                        |
| (726) | 90° PCB stud stickout of .150, RTV potted rear, Sn/Ni plate, PC & DB                                                                                                   |
| (727) | PCB stud stickout of .145, RTV potted rear, Sn/Ni plate, MB-P                                                                                                          |
| (728) | PCB stud stickout of .145, Au/Ni, [same as (700)], RTV potted rear, MB-P                                                                                               |
| (729) | 90° PCB stud stickout of .120, Au/Ni, [same as (700)], RTV potted rear, DB                                                                                             |
| (730) | 90° PCB stud stickout of .150, Au/Ni, [same as (700) above], PC and DB                                                                                                 |
| (731) | PCB stud stickout of .145, matte tin, MB-P                                                                                                                             |

Variation Suffixes continued on next page.

# Low Mating Force Rectangular Connectors

## how to order (commercial types)/accessories

### MB, DB, I/O, PC Connectors Proprietary Part Number Ordering Procedure Variation Suffix, cont.

|       |                                                                                                      |
|-------|------------------------------------------------------------------------------------------------------|
| (732) | PCB stud stickout of .300 DB (90°), .300 MB-P and .335 IO-P, Au/Cu [same as (701)],                  |
| (733) | PCB stud stickout of .421, matte tin, MB-P                                                           |
| (734) | Solderless wrap .025 sq.; .665 stickout, Au/Ni, [same as (700)], RTV potted rear, MB-W               |
| (735) | RTV potted rear, standard termination length, Au/Ni, [same as (700)]                                 |
| (736) | RTV potted rear, standard termination length, Sn/Ni [use (724) for PC]                               |
| (737) | PCB stud stickout of .300 DB (90°), .300 MB-P and .335 IO-P, Au/Ni, [same as (700)], RTV potted rear |
| (738) | PCB stud stickout of .192 SnPb/Cu (Mil-Spec), MB-P                                                   |
| (739) | PCB stud stickout of .300 DB (90°), .300 MB-P and .335 IO-P; RTV potted rear, Sn/Ni                  |
| (740) | Solderless wrap .025 sq.; .665 stickout, Sn/Ni, RTV potted rear, MB-W                                |
| (741) | Solderless wrap .025 sq.; .280 stickout, Au/Ni, [same as (700)], MB-W                                |
| (742) | PCB .145, Au/Ni, [same as (700)], epoxy potted rear, MB-P                                            |
| (743) | 90° PCB .120, Au/Ni, [same as (700)], epoxy potted rear, DB                                          |
| (744) | 90° PCB .120, Au/Ni, [same as (700)], (Mil-Spec), epoxy potted rear, DB                              |
| (746) | 90° PCB .120, SnPb/Cu, (Mil-Spec), epoxy potted rear, DB                                             |
| (747) | PCB stud stickout of .200, Sn/Ni, IO-P                                                               |
| (748) | PCB stud stickout of .145, Sn/Ni, epoxy potted rear, MB-P                                            |
| (749) | PCB, epoxy potted rear, standard termination length, Sn/Ni                                           |

|       |                                                                                          |
|-------|------------------------------------------------------------------------------------------|
| (750) | PCB stud stickout of .172 termination, Au/Ni, [same as (700)], RTV potted rear, MB-P     |
| (751) | 90° PCB stud stickout of .150, Sn/Ni, epoxy potted rear, PC                              |
| (752) | Au/Ni, epoxy potted rear, standard termination length                                    |
| (753) | Solderless wrap .025 sq.; .665 stickout, Au/Ni, [same as (700)], epoxy potted rear, MB-W |
| (754) | PCB stud stickout of .172 termination, SnPb/Cu (Mil-Spec), MB-P                          |
| (757) | PCB stud, .391 stickout, matte tin, MB-P                                                 |
| (758) | PCB stud, .172 stickout, Au/Ni, [same as (700)], epoxy potted rear, MB-P                 |
| (760) | PCB stud, .192 stickout, Au/Ni (Mil-Spec), MB-P                                          |
| (761) | 90° PCB stud, .120 stickout, Sn/Ni, epoxy potted rear, DB                                |
| (762) | PCB stud, .145 stickout, Au/Ni (Mil-Spec), epoxy potted rear, MB-P                       |
| (763) | PCB stud, .145 stickout, SnPb/Cu (Mil-Spec), epoxy potted rear, MB-P                     |
| (764) | 90° PCB stud, .150 stickout, SnPb/Cu (Mil-Spec), epoxy potted rear, DB & PC              |
| (765) | PCB stud, stickout of .300 DB (90°), .300 MB-P, SnPb/Cu (Mil-Spec), epoxy potted rear    |
| (766) | 90° PCB stud, .120 stickout, Au/Ni (Mil-Spec), epoxy potted rear, DB                     |
| (767) | PCB stud, .192 stickout, Au/Ni (Mil-Spec), epoxy potted rear, MB-P                       |
| (768) | PCB stud, .172 stickout, Au/Ni (Mil-Spec), MB-P                                          |
| (769) | 90° PCB stud, .200 stickout, Au/Ni (Mil-Spec), DB                                        |
| (770) | 90° PCB stud, .260 stickout, Au/Ni (Mil-Spec), DB                                        |
| (773) | 90° PCB stud, .150 stickout, Au/Ni (Mil-Spec), RTV potted rear, PC & DB                  |

### Accessories

Amphenol® Low Mating Force Connectors are shipped less accessory items.

Accessories may be ordered by either military or proprietary part numbers shown below:

| Accessory Item                       | Series         | Military Part Number | Proprietary Part Number | Qty. Required |
|--------------------------------------|----------------|----------------------|-------------------------|---------------|
| Polarization Keys                    | MB, DB, IO, PC | M55302/78-02         | 10-285422-2             | 4*            |
| Locking/Mounting Bushing             | MB             | M55302/172-01        | 10-411196-3             | 2             |
| Alternate Length Bushing (Longer)    | MB             | M55302/172-02        | 10-411196-5             | 2             |
| Locking Bushing                      | PC             | M55302/172-05        | 10-411196-4             | 2             |
| Locking Screw, Plain                 | IO             | M55302/172-04        | 10-502599               | 2             |
| Locking Screw, Slotted               | IO             | -                    | 10-502599-1             | 2             |
| Locking Screw, Slotted (Low Profile) | IO             | M55302/172-03        | 10-502599-2             | 2             |
| Test Probe Kit                       | MB, DB, IO, PC | -                    | 11-10400-22             | 1**           |

See pages 24-29 for more detailed information on these accessory items and how they are assembled into connectors.

\* 4 Keys required per connector half, if used  
\*\* One kit per connector gender is recommended

# Low Mating Force Rectangular Connectors

## connector row and cavity identification, contact arrangements

### BRUSH CONNECTOR ROW AND CAVITY IDENTIFICATION

Contact rows and cavities are identified with molded-in letters and numbers respectively and, depending on the connector style, are located either on the front, rear or both faces of the connector. See illustration at right.

Note: The brand name of Bendix may appear molded-in on connectors. As manufacturing molds are remade, the correct Amphenol name will replace the former Bendix name.

As shown in the second illustration at right, row identification is always at the radius end and begins with Row “A”. Contact cavity identification always starts at radius end and begins with cavity #6 and then every fifth cavity thereafter, except for arrangements consisting of 10 contacts per row, which lack numerals. Up to every 9 contact locations at the high numeral end of the contact row will not be identified.

### Mother Board and PC Connectors

Contact rows are identified on the front and rear faces. Contact cavities are identified on the rear face.

### Daughter Board Connectors

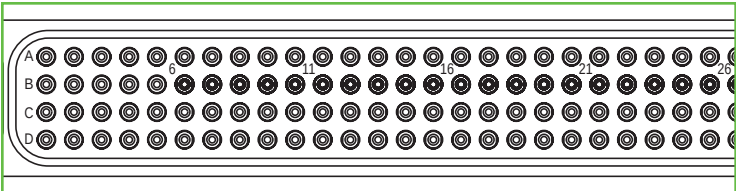
Contact rows and cavities are identified on the front face.

### Input/Output Connectors

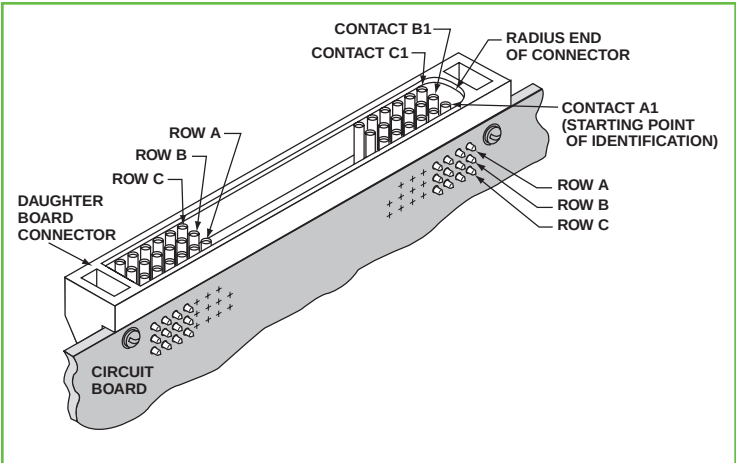
Contact rows and cavities are identified on the rear face.

### Contacts

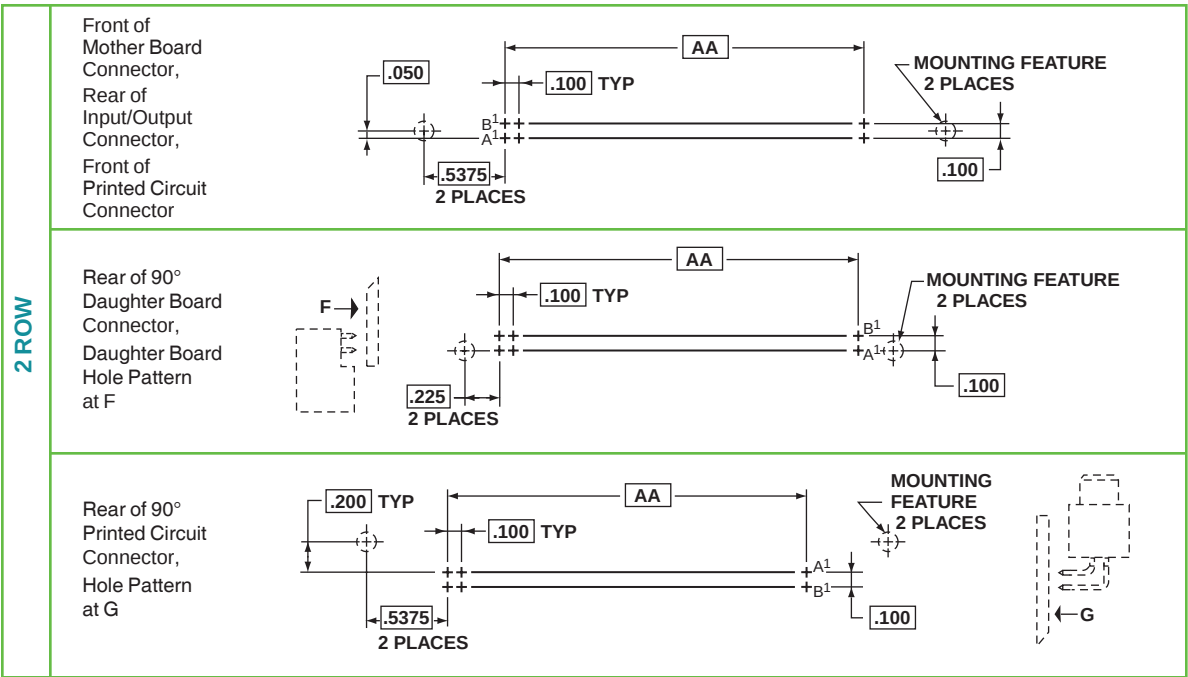
Contacts are supplied with MB, DB, IO and PC Connector Series assemblies as ordered.



CONTACT ROWS AND CAVITIES ARE IDENTIFIED WITH MOLDED-IN LETTERS AND NUMBERS (FRONT FACE OF DAUGHTER BOARD SHOWN)



IDENTIFICATION STARTS AT THE RADIUS END OF THE CONNECTOR

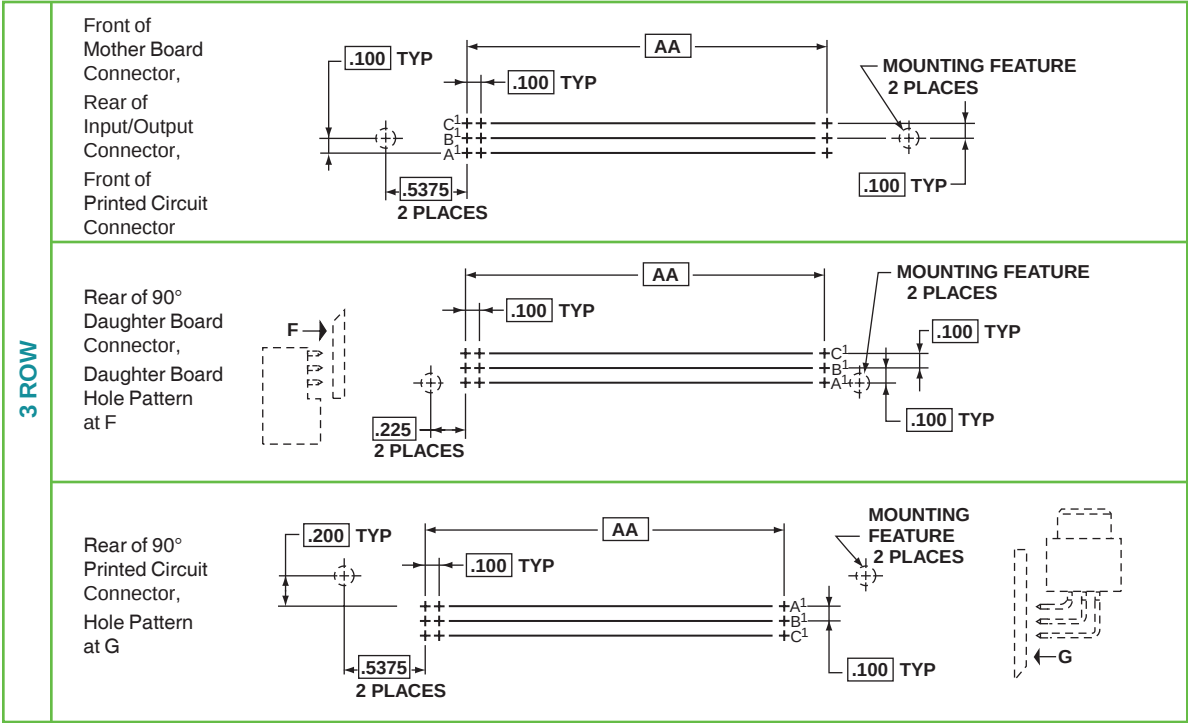


| 2 ROW<br>10 per Row |       |
|---------------------|-------|
| Total Contacts      | AA    |
| 20                  | .900  |
| 30                  | 1.400 |
| 40                  | 1.900 |
| 50                  | 2.400 |
| 60                  | 2.900 |
| 70                  | 3.400 |
| 80                  | 3.900 |
| 90                  | 4.400 |
| 100                 | 4.900 |
| 110                 | 5.400 |
| 120                 | 5.900 |
| 130                 | 6.400 |
| 140                 | 6.900 |
| 150                 | 7.400 |
| 160                 | 7.900 |
| 170                 | 8.400 |
| 180                 | 8.900 |
| 190                 | 9.400 |
| 200                 | 9.900 |

□ Designates Basic Dimension.  
Consult Amphenol drawing for solderless wrap contact fixturing (datum) hole locations to facilitate connector alignment.

# Low Mating Force Rectangular Connectors

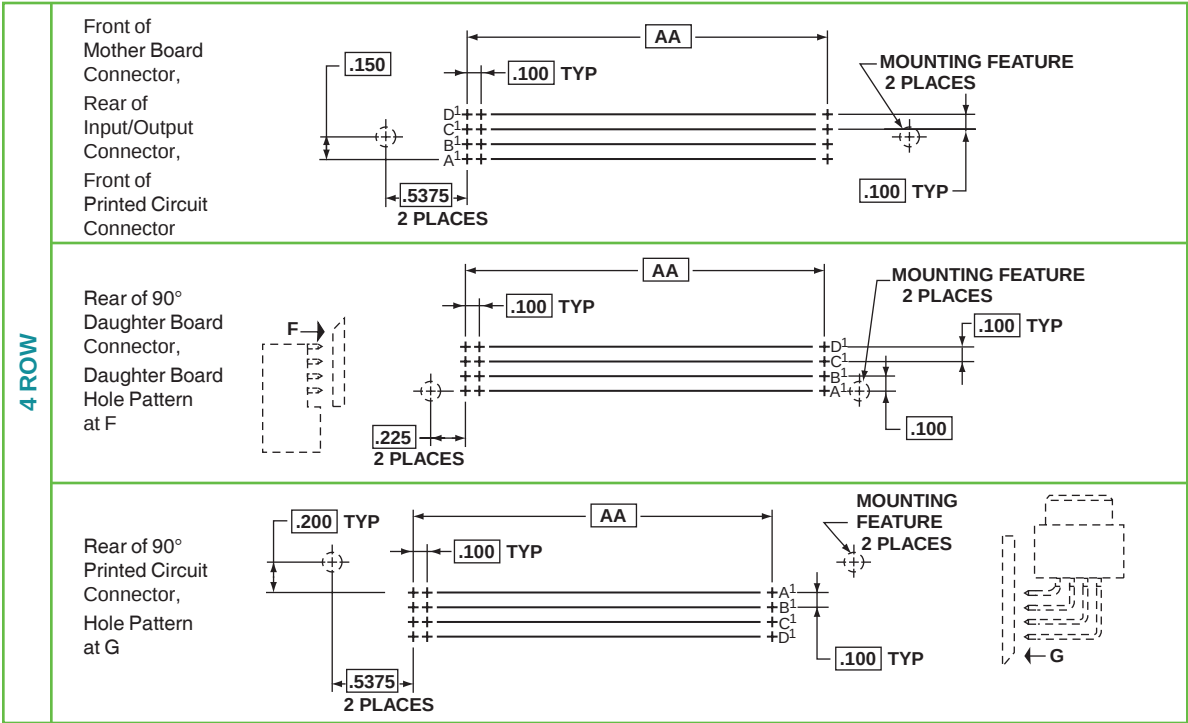
## contact arrangements, cont.



3 ROW

10 per Row

| Total Contacts | AA    |
|----------------|-------|
| 30             | .900  |
| 45             | 1.400 |
| 60             | 1.900 |
| 75             | 2.400 |
| 90             | 2.900 |
| 105            | 3.400 |
| 120            | 3.900 |
| 135            | 4.400 |
| 150            | 4.900 |
| 165            | 5.400 |
| 180            | 5.900 |
| 195            | 6.400 |
| 210            | 6.900 |
| 225            | 7.400 |
| 240            | 7.900 |
| 255            | 8.400 |
| 270            | 8.900 |
| 285            | 9.400 |
| 300            | 9.900 |



4 ROW

10 Per Row

| Total Contacts | AA    |
|----------------|-------|
| 40             | .900  |
| 60             | 1.400 |
| 80             | 1.900 |
| 100            | 2.400 |
| 120            | 2.900 |
| 140            | 3.400 |
| 160            | 3.900 |
| 180            | 4.400 |
| 200            | 4.900 |
| 220            | 5.400 |
| 240            | 5.900 |
| 260            | 6.400 |
| 280            | 6.900 |
| 300            | 7.400 |
| 320            | 7.900 |
| 340            | 8.400 |
| 360            | 8.900 |
| 380            | 9.400 |
| 400            | 9.900 |

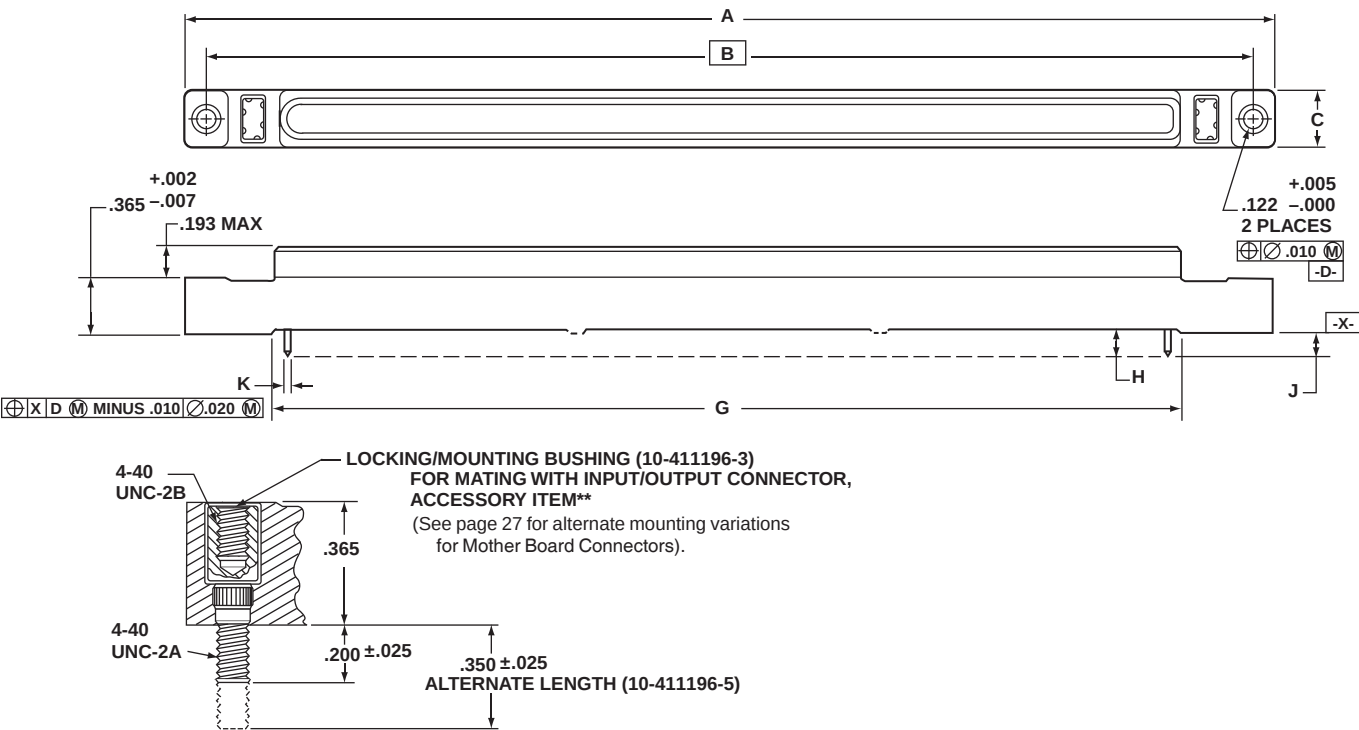
□

Designates Basic Dimension.

Consult Amphenol drawing for solderless wrap contact fixturing (datum)

hole locations to facilitate connector alignment.

# Low Mating Force mother board connector



## MATES WITH DB AND IO SERIES CONNECTORS

### Notes:

When mating with DB connector, a total of .035 inch minimum radial pilot is available for connector body alignment.

All dimensions for reference only.

Polarization keys are not supplied as part of MB Connector Series assemblies. See Accessories How to Order, page 5 and further description, page 24.

\*\* Locking/mounting bushings are not supplied as part of MB Connector Series assemblies. See Accessories How to Order, page 5 and further description on page 27.

□ Designates Basic Dimension

Consult Amphenol drawing for solderless wrap contact fixturing (datum) hole locations to facilitate connector alignment.

| Contact Data                       |                          |         |         |           |
|------------------------------------|--------------------------|---------|---------|-----------|
| Description                        | Termination Style Letter | H ±.020 | J ±.020 | K ±.002   |
| Round PCB Stud Solder Termination  | P                        | .148    | .113    | .021 Dia. |
|                                    | P-(702)                  | .180    | .145    | .021 Dia. |
|                                    | P-(709)                  | .335    | .300    | .021 Dia. |
| Square Solderless Wrap Termination | W                        | .542    | .507    | .025 Sq.  |
|                                    | W-(710)                  | .700    | .665    | .025 Sq.  |

NOTE: Other variations available - see pages 4 and 5, or consult Amphenol Aerospace.

# Low Mating Force

## mother board connector

### 2 row contact arrangements

| Number of Contacts | MB Number* | A Max. | B     | C Max. | G Min. |
|--------------------|------------|--------|-------|--------|--------|
| 020                | MB2-020(*) | 2.295  | 1.975 | .390   | 1.040  |
| 022                | MB2-022(*) | 2.395  | 2.075 | .390   | 1.140  |
| 024                | MB2-024(*) | 2.495  | 2.175 | .390   | 1.240  |
| 026                | MB2-026(*) | 2.595  | 2.275 | .390   | 1.340  |
| 028                | MB2-028(*) | 2.695  | 2.375 | .390   | 1.440  |
| 030                | MB2-030(*) | 2.795  | 2.475 | .390   | 1.540  |
| 032                | MB2-032(*) | 2.895  | 2.575 | .390   | 1.640  |
| 034                | MB2-034(*) | 2.995  | 2.675 | .390   | 1.740  |
| 036                | MB2-036(*) | 3.095  | 2.775 | .390   | 1.840  |
| 038                | MB2-038(*) | 3.195  | 2.875 | .390   | 1.940  |
| 040                | MB2-040(*) | 3.295  | 2.975 | .390   | 2.040  |
| 042                | MB2-042(*) | 3.395  | 3.075 | .390   | 2.140  |
| 044                | MB2-044(*) | 3.495  | 3.175 | .390   | 2.240  |
| 046                | MB2-046(*) | 3.595  | 3.275 | .390   | 2.340  |
| 048                | MB2-048(*) | 3.695  | 3.375 | .390   | 2.440  |
| 050                | MB2-050(*) | 3.795  | 3.475 | .390   | 2.540  |
| 052                | MB2-052(*) | 3.895  | 3.575 | .390   | 2.640  |
| 054                | MB2-054(*) | 3.995  | 3.675 | .390   | 2.740  |
| 056                | MB2-056(*) | 4.095  | 3.775 | .390   | 2.840  |
| 058                | MB2-058(*) | 4.195  | 3.875 | .390   | 2.940  |
| 060                | MB2-060(*) | 4.295  | 3.975 | .390   | 3.040  |
| 062                | MB2-062(*) | 4.395  | 4.075 | .390   | 3.140  |
| 064                | MB2-064(*) | 4.495  | 4.175 | .390   | 3.240  |
| 066                | MB2-066(*) | 4.595  | 4.275 | .390   | 3.340  |
| 068                | MB2-068(*) | 4.695  | 4.375 | .390   | 3.440  |
| 070                | MB2-070(*) | 4.795  | 4.475 | .390   | 3.540  |
| 072                | MB2-072(*) | 4.895  | 4.575 | .390   | 3.640  |
| 074                | MB2-074(*) | 4.995  | 4.675 | .390   | 3.740  |
| 076                | MB2-076(*) | 5.095  | 4.775 | .390   | 3.840  |
| 078                | MB2-078(*) | 5.195  | 4.875 | .390   | 3.940  |
| 080                | MB2-080(*) | 5.295  | 4.975 | .390   | 4.040  |
| 082                | MB2-082(*) | 5.395  | 5.075 | .390   | 4.140  |
| 084                | MB2-084(*) | 5.495  | 5.175 | .390   | 4.240  |
| 086                | MB2-086(*) | 5.595  | 5.275 | .390   | 4.340  |
| 088                | MB2-088(*) | 5.695  | 5.375 | .390   | 4.440  |
| 090                | MB2-090(*) | 5.795  | 5.475 | .390   | 4.540  |
| 092                | MB2-092(*) | 5.895  | 5.575 | .390   | 4.640  |
| 094                | MB2-094(*) | 5.995  | 5.675 | .390   | 4.740  |
| 096                | MB2-096(*) | 6.095  | 5.775 | .390   | 4.840  |
| 098                | MB2-098(*) | 6.195  | 5.875 | .390   | 4.940  |
| 100                | MB2-100(*) | 6.295  | 5.975 | .390   | 5.040  |
| 102                | MB2-102(*) | 6.395  | 6.075 | .390   | 5.140  |
| 104                | MB2-104(*) | 6.495  | 6.175 | .390   | 5.240  |
| 106                | MB2-106(*) | 6.595  | 6.275 | .390   | 5.340  |
| 108                | MB2-108(*) | 6.695  | 6.375 | .390   | 5.440  |
| 110                | MB2-110(*) | 6.795  | 6.475 | .390   | 5.540  |

| Number of Contacts | MB Number* | A Max. | B      | C Max. | G Min. |
|--------------------|------------|--------|--------|--------|--------|
| 112                | MB2-112(*) | 6.895  | 6.575  | .390   | 5.640  |
| 114                | MB2-114(*) | 6.995  | 6.675  | .390   | 5.740  |
| 116                | MB2-116(*) | 7.095  | 6.775  | .390   | 5.840  |
| 118                | MB2-118(*) | 7.195  | 6.875  | .390   | 5.940  |
| 120                | MB2-120(*) | 7.295  | 6.975  | .390   | 6.040  |
| 122                | MB2-122(*) | 7.395  | 7.075  | .390   | 6.140  |
| 124                | MB2-124(*) | 7.495  | 7.175  | .390   | 6.240  |
| 126                | MB2-126(*) | 7.595  | 7.275  | .390   | 6.340  |
| 128                | MB2-128(*) | 7.695  | 7.375  | .390   | 6.440  |
| 130                | MB2-130(*) | 7.795  | 7.475  | .390   | 6.540  |
| 132                | MB2-132(*) | 7.895  | 7.575  | .390   | 6.640  |
| 134                | MB2-134(*) | 7.995  | 7.675  | .390   | 6.740  |
| 136                | MB2-136(*) | 8.095  | 7.775  | .390   | 6.840  |
| 138                | MB2-138(*) | 8.195  | 7.875  | .390   | 6.940  |
| 140                | MB2-140(*) | 8.295  | 7.975  | .390   | 7.040  |
| 142                | MB2-142(*) | 8.395  | 8.075  | .390   | 7.140  |
| 144                | MB2-144(*) | 8.495  | 8.175  | .390   | 7.240  |
| 146                | MB2-146(*) | 8.595  | 8.275  | .390   | 7.340  |
| 148                | MB2-148(*) | 8.695  | 8.375  | .390   | 7.440  |
| 150                | MB2-150(*) | 8.795  | 8.475  | .390   | 7.540  |
| 152                | MB2-152(*) | 8.895  | 8.575  | .390   | 7.640  |
| 154                | MB2-154(*) | 8.995  | 8.675  | .390   | 7.740  |
| 156                | MB2-156(*) | 9.095  | 8.775  | .390   | 7.840  |
| 158                | MB2-158(*) | 9.195  | 8.875  | .390   | 7.940  |
| 160                | MB2-160(*) | 9.295  | 8.975  | .390   | 8.040  |
| 162                | MB2-162(*) | 9.395  | 9.075  | .390   | 8.140  |
| 164                | MB2-164(*) | 9.495  | 9.175  | .390   | 8.240  |
| 166                | MB2-166(*) | 9.595  | 9.275  | .390   | 8.340  |
| 168                | MB2-168(*) | 9.695  | 9.375  | .390   | 8.440  |
| 170                | MB2-170(*) | 9.795  | 9.475  | .390   | 8.540  |
| 172                | MB2-172(*) | 9.895  | 9.575  | .390   | 8.640  |
| 174                | MB2-174(*) | 9.995  | 9.675  | .390   | 8.740  |
| 176                | MB2-176(*) | 10.095 | 9.775  | .390   | 8.840  |
| 178                | MB2-178(*) | 10.195 | 9.875  | .390   | 8.940  |
| 180                | MB2-180(*) | 10.295 | 9.975  | .390   | 9.040  |
| 182                | MB2-182(*) | 10.395 | 10.075 | .390   | 9.140  |
| 184                | MB2-184(*) | 10.495 | 10.175 | .390   | 9.240  |
| 186                | MB2-186(*) | 10.595 | 10.275 | .390   | 9.340  |
| 188                | MB2-188(*) | 10.695 | 10.375 | .390   | 9.440  |
| 190                | MB2-190(*) | 10.795 | 10.475 | .390   | 9.540  |
| 192                | MB2-192(*) | 10.895 | 10.575 | .390   | 9.640  |
| 194                | MB2-194(*) | 10.995 | 10.675 | .390   | 9.740  |
| 196                | MB2-196(*) | 11.095 | 10.775 | .390   | 9.840  |
| 198                | MB2-198(*) | 11.195 | 10.875 | .390   | 9.940  |
| 200                | MB2-200(*) | 11.295 | 10.975 | .390   | 10.040 |

\*See How to Order, pages 3, 4 and 5.

# Low Mating Force

## mother board connector

### 3 row contact arrangements

| Number of Contacts | MB Number* | A Max. | B     | C Max. | G Min. |
|--------------------|------------|--------|-------|--------|--------|
| 030                | MB3-030(*) | 2.295  | 1.975 | .490   | 1.040  |
| 033                | MB3-033(*) | 2.395  | 2.075 | .490   | 1.140  |
| 036                | MB3-036(*) | 2.495  | 2.175 | .490   | 1.240  |
| 039                | MB3-039(*) | 2.595  | 2.275 | .490   | 1.340  |
| 042                | MB3-042(*) | 2.695  | 2.375 | .490   | 1.440  |
| 045                | MB3-045(*) | 2.795  | 2.475 | .490   | 1.540  |
| 048                | MB3-048(*) | 2.895  | 2.575 | .490   | 1.640  |
| 051                | MB3-051(*) | 2.995  | 2.675 | .490   | 1.740  |
| 054                | MB3-054(*) | 3.095  | 2.775 | .490   | 1.840  |
| 057                | MB3-057(*) | 3.195  | 2.875 | .490   | 1.940  |
| 060                | MB3-060(*) | 3.295  | 2.975 | .490   | 2.040  |
| 063                | MB3-063(*) | 3.395  | 3.075 | .490   | 2.140  |
| 066                | MB3-066(*) | 3.495  | 3.175 | .490   | 2.240  |
| 069                | MB3-069(*) | 3.595  | 3.275 | .490   | 2.340  |
| 072                | MB3-072(*) | 3.695  | 3.375 | .490   | 2.440  |
| 075                | MB3-075(*) | 3.795  | 3.475 | .490   | 2.540  |
| 078                | MB3-078(*) | 3.895  | 3.575 | .490   | 2.640  |
| 081                | MB3-081(*) | 3.995  | 3.675 | .490   | 2.740  |
| 084                | MB3-084(*) | 4.095  | 3.775 | .490   | 2.840  |
| 087                | MB3-087(*) | 4.195  | 3.875 | .490   | 2.940  |
| 090                | MB3-090(*) | 4.295  | 3.975 | .490   | 3.040  |
| 093                | MB3-093(*) | 4.395  | 4.075 | .490   | 3.140  |
| 096                | MB3-096(*) | 4.495  | 4.175 | .490   | 3.240  |
| 099                | MB3-099(*) | 4.595  | 4.275 | .490   | 3.340  |
| 102                | MB3-102(*) | 4.695  | 4.375 | .490   | 3.440  |
| 105                | MB3-105(*) | 4.795  | 4.475 | .490   | 3.540  |
| 108                | MB3-108(*) | 4.895  | 4.575 | .490   | 3.640  |
| 111                | MB3-111(*) | 4.995  | 4.675 | .490   | 3.740  |
| 114                | MB3-114(*) | 5.095  | 4.775 | .490   | 3.840  |
| 117                | MB3-117(*) | 5.195  | 4.875 | .490   | 3.940  |
| 120                | MB3-120(*) | 5.295  | 4.975 | .490   | 4.040  |
| 123                | MB3-123(*) | 5.395  | 5.075 | .490   | 4.140  |
| 126                | MB3-126(*) | 5.495  | 5.175 | .490   | 4.240  |
| 129                | MB3-129(*) | 5.595  | 5.275 | .490   | 4.340  |
| 132                | MB3-132(*) | 5.695  | 5.375 | .490   | 4.440  |
| 135                | MB3-135(*) | 5.795  | 5.475 | .490   | 4.540  |
| 138                | MB3-138(*) | 5.895  | 5.575 | .490   | 4.640  |
| 141                | MB3-141(*) | 5.995  | 5.675 | .490   | 4.740  |
| 144                | MB3-144(*) | 6.095  | 5.775 | .490   | 4.840  |
| 147                | MB3-147(*) | 6.195  | 5.875 | .490   | 4.940  |
| 150                | MB3-150(*) | 6.295  | 5.975 | .490   | 5.040  |
| 153                | MB3-153(*) | 6.395  | 6.075 | .490   | 5.140  |
| 156                | MB3-156(*) | 6.495  | 6.175 | .490   | 5.240  |
| 159                | MB3-159(*) | 6.595  | 6.275 | .490   | 5.340  |
| 162                | MB3-162(*) | 6.695  | 6.375 | .490   | 5.440  |
| 165                | MB3-165(*) | 6.795  | 6.475 | .490   | 5.540  |

| Number of Contacts | MB Number* | A Max. | B      | C Max. | G Min. |
|--------------------|------------|--------|--------|--------|--------|
| 168                | MB3-168(*) | 6.895  | 6.575  | .490   | 5.640  |
| 171                | MB3-171(*) | 6.995  | 6.675  | .490   | 5.740  |
| 174                | MB3-174(*) | 7.095  | 6.775  | .490   | 5.840  |
| 177                | MB3-177(*) | 7.195  | 6.875  | .490   | 5.940  |
| 180                | MB3-180(*) | 7.295  | 6.975  | .490   | 6.040  |
| 183                | MB3-183(*) | 7.395  | 7.075  | .490   | 6.140  |
| 186                | MB3-186(*) | 7.495  | 7.175  | .490   | 6.240  |
| 189                | MB3-189(*) | 7.595  | 7.275  | .490   | 6.340  |
| 192                | MB3-192(*) | 7.695  | 7.375  | .490   | 6.440  |
| 195                | MB3-195(*) | 7.795  | 7.475  | .490   | 6.540  |
| 198                | MB3-198(*) | 7.895  | 7.575  | .490   | 6.640  |
| 201                | MB3-201(*) | 7.995  | 7.675  | .490   | 6.740  |
| 204                | MB3-204(*) | 8.095  | 7.775  | .490   | 6.840  |
| 207                | MB3-207(*) | 8.195  | 7.875  | .490   | 6.940  |
| 210                | MB3-210(*) | 8.295  | 7.975  | .490   | 7.040  |
| 213                | MB3-213(*) | 8.395  | 8.075  | .490   | 7.140  |
| 216                | MB3-216(*) | 8.495  | 8.175  | .490   | 7.240  |
| 219                | MB3-219(*) | 8.595  | 8.275  | .490   | 7.340  |
| 222                | MB3-222(*) | 8.695  | 8.375  | .490   | 7.440  |
| 225                | MB3-225(*) | 8.795  | 8.475  | .490   | 7.540  |
| 228                | MB3-228(*) | 8.895  | 8.575  | .490   | 7.640  |
| 231                | MB3-231(*) | 8.995  | 8.675  | .490   | 7.740  |
| 234                | MB3-234(*) | 9.095  | 8.775  | .490   | 7.840  |
| 237                | MB3-237(*) | 9.195  | 8.875  | .490   | 7.940  |
| 240                | MB3-240(*) | 9.295  | 8.975  | .490   | 8.040  |
| 243                | MB3-243(*) | 9.395  | 9.075  | .490   | 8.140  |
| 246                | MB3-246(*) | 9.495  | 9.175  | .490   | 8.240  |
| 249                | MB3-249(*) | 9.595  | 9.275  | .490   | 8.340  |
| 252                | MB3-252(*) | 9.695  | 9.375  | .490   | 8.440  |
| 255                | MB3-255(*) | 9.795  | 9.475  | .490   | 8.540  |
| 258                | MB3-258(*) | 9.895  | 9.575  | .490   | 8.640  |
| 261                | MB3-261(*) | 9.995  | 9.675  | .490   | 8.740  |
| 264                | MB3-264(*) | 10.095 | 9.775  | .490   | 8.840  |
| 267                | MB3-267(*) | 10.195 | 9.875  | .490   | 8.940  |
| 270                | MB3-270(*) | 10.295 | 9.975  | .490   | 9.040  |
| 273                | MB3-273(*) | 10.395 | 10.075 | .490   | 9.140  |
| 276                | MB3-276(*) | 10.495 | 10.175 | .490   | 9.240  |
| 279                | MB3-279(*) | 10.595 | 10.275 | .490   | 9.340  |
| 282                | MB3-282(*) | 10.695 | 10.375 | .490   | 9.440  |
| 285                | MB3-285(*) | 10.795 | 10.475 | .490   | 9.540  |
| 288                | MB3-288(*) | 10.895 | 10.575 | .490   | 9.640  |
| 291                | MB3-291(*) | 10.995 | 10.675 | .490   | 9.740  |
| 294                | MB3-294(*) | 11.095 | 10.775 | .490   | 9.840  |
| 297                | MB3-297(*) | 11.195 | 10.875 | .490   | 9.940  |
| 300                | MB3-300(*) | 11.295 | 10.975 | .490   | 10.040 |

\*See How to Order, pages 3, 4 and 5.

# Low Mating Force

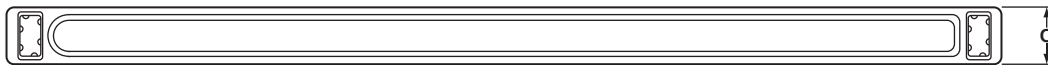
## mother board connector

### 4 row contact arrangements

| Number of Contacts | MB Number* | A Max. | B     | C Max. | G Min. |
|--------------------|------------|--------|-------|--------|--------|
| 040                | MB4-040(*) | 2.295  | 1.975 | .590   | 1.040  |
| 044                | MB4-044(*) | 2.395  | 2.075 | .590   | 1.140  |
| 048                | MB4-048(*) | 2.495  | 2.175 | .590   | 1.240  |
| 052                | MB4-052(*) | 2.595  | 2.275 | .590   | 1.340  |
| 056                | MB4-056(*) | 2.695  | 2.375 | .590   | 1.440  |
| 060                | MB4-060(*) | 2.795  | 2.475 | .590   | 1.540  |
| 064                | MB4-064(*) | 2.895  | 2.575 | .590   | 1.640  |
| 068                | MB4-068(*) | 2.995  | 2.675 | .590   | 1.740  |
| 072                | MB4-072(*) | 3.095  | 2.775 | .590   | 1.840  |
| 076                | MB4-076(*) | 3.195  | 2.875 | .590   | 1.940  |
| 080                | MB4-080(*) | 3.295  | 2.975 | .590   | 2.040  |
| 084                | MB4-084(*) | 3.395  | 3.075 | .590   | 2.140  |
| 088                | MB4-088(*) | 3.495  | 3.175 | .590   | 2.240  |
| 092                | MB4-092(*) | 3.595  | 3.275 | .590   | 2.340  |
| 096                | MB4-096(*) | 3.695  | 3.375 | .590   | 2.440  |
| 100                | MB4-100(*) | 3.795  | 3.475 | .590   | 2.540  |
| 104                | MB4-104(*) | 3.895  | 3.575 | .590   | 2.640  |
| 108                | MB4-108(*) | 3.995  | 3.675 | .590   | 2.740  |
| 112                | MB4-112(*) | 4.095  | 3.775 | .590   | 2.840  |
| 116                | MB4-116(*) | 4.195  | 3.875 | .590   | 2.940  |
| 120                | MB4-120(*) | 4.295  | 3.975 | .590   | 3.040  |
| 124                | MB4-124(*) | 4.395  | 4.075 | .590   | 3.140  |
| 128                | MB4-128(*) | 4.495  | 4.175 | .590   | 3.240  |
| 132                | MB4-132(*) | 4.595  | 4.275 | .590   | 3.340  |
| 136                | MB4-136(*) | 4.695  | 4.375 | .590   | 3.440  |
| 140                | MB4-140(*) | 4.795  | 4.475 | .590   | 3.540  |
| 144                | MB4-144(*) | 4.895  | 4.575 | .590   | 3.640  |
| 148                | MB4-148(*) | 4.995  | 4.675 | .590   | 3.740  |
| 152                | MB4-152(*) | 5.095  | 4.775 | .590   | 3.840  |
| 156                | MB4-156(*) | 5.195  | 4.875 | .590   | 3.940  |
| 160                | MB4-160(*) | 5.295  | 4.975 | .590   | 4.040  |
| 164                | MB4-164(*) | 5.395  | 5.075 | .590   | 4.140  |
| 168                | MB4-168(*) | 5.495  | 5.175 | .590   | 4.240  |
| 172                | MB4-172(*) | 5.595  | 5.275 | .590   | 4.340  |
| 176                | MB4-176(*) | 5.695  | 5.375 | .590   | 4.440  |
| 180                | MB4-180(*) | 5.795  | 5.475 | .590   | 4.540  |
| 184                | MB4-184(*) | 5.895  | 5.575 | .590   | 4.640  |
| 188                | MB4-188(*) | 5.995  | 5.675 | .590   | 4.740  |
| 192                | MB4-192(*) | 6.095  | 5.775 | .590   | 4.840  |
| 196                | MB4-196(*) | 6.195  | 5.875 | .590   | 4.940  |
| 200                | MB4-200(*) | 6.295  | 5.975 | .590   | 5.040  |
| 204                | MB4-204(*) | 6.395  | 6.075 | .590   | 5.140  |
| 208                | MB4-208(*) | 6.495  | 6.175 | .590   | 5.240  |
| 212                | MB4-212(*) | 6.595  | 6.275 | .590   | 5.340  |
| 216                | MB4-216(*) | 6.695  | 6.375 | .590   | 5.440  |
| 220                | MB4-220(*) | 6.795  | 6.475 | .590   | 5.540  |

| Number of Contacts | MB Number* | A Max. | B      | C Max. | G Min. |
|--------------------|------------|--------|--------|--------|--------|
| 224                | MB4-224(*) | 6.895  | 6.575  | .590   | 5.640  |
| 228                | MB4-228(*) | 6.995  | 6.675  | .590   | 5.740  |
| 232                | MB4-232(*) | 7.095  | 6.775  | .590   | 5.840  |
| 236                | MB4-236(*) | 7.195  | 6.875  | .590   | 5.940  |
| 240                | MB4-240(*) | 7.295  | 6.975  | .590   | 6.040  |
| 244                | MB4-244(*) | 7.395  | 7.075  | .590   | 6.140  |
| 248                | MB4-248(*) | 7.495  | 7.175  | .590   | 6.240  |
| 252                | MB4-252(*) | 7.595  | 7.275  | .590   | 6.340  |
| 256                | MB4-256(*) | 7.695  | 7.375  | .590   | 6.440  |
| 260                | MB4-260(*) | 7.795  | 7.475  | .590   | 6.540  |
| 264                | MB4-264(*) | 7.895  | 7.575  | .590   | 6.640  |
| 268                | MB4-268(*) | 7.995  | 7.675  | .590   | 6.740  |
| 272                | MB4-272(*) | 8.095  | 7.775  | .590   | 6.840  |
| 276                | MB4-276(*) | 8.195  | 7.875  | .590   | 6.940  |
| 280                | MB4-280(*) | 8.295  | 7.975  | .590   | 7.040  |
| 284                | MB4-284(*) | 8.395  | 8.075  | .590   | 7.140  |
| 288                | MB4-288(*) | 8.495  | 8.175  | .590   | 7.240  |
| 292                | MB4-292(*) | 8.595  | 8.275  | .590   | 7.340  |
| 296                | MB4-296(*) | 8.695  | 8.375  | .590   | 7.440  |
| 300                | MB4-300(*) | 8.795  | 8.475  | .590   | 7.540  |
| 304                | MB4-304(*) | 8.895  | 8.575  | .590   | 7.640  |
| 308                | MB4-308(*) | 8.995  | 8.675  | .590   | 7.740  |
| 312                | MB4-312(*) | 9.095  | 8.775  | .590   | 7.840  |
| 316                | MB4-316(*) | 9.195  | 8.875  | .590   | 7.940  |
| 320                | MB4-320(*) | 9.295  | 8.975  | .590   | 8.040  |
| 324                | MB4-324(*) | 9.395  | 9.075  | .590   | 8.140  |
| 328                | MB4-328(*) | 9.495  | 9.175  | .590   | 8.240  |
| 332                | MB4-332(*) | 9.595  | 9.275  | .590   | 8.340  |
| 336                | MB4-336(*) | 9.695  | 9.375  | .590   | 8.440  |
| 340                | MB4-340(*) | 9.795  | 9.475  | .590   | 8.540  |
| 344                | MB4-344(*) | 9.895  | 9.575  | .590   | 8.640  |
| 348                | MB4-348(*) | 9.995  | 9.675  | .590   | 8.740  |
| 352                | MB4-352(*) | 10.095 | 9.775  | .590   | 8.840  |
| 356                | MB4-356(*) | 10.195 | 9.875  | .590   | 8.940  |
| 360                | MB4-360(*) | 10.295 | 9.975  | .590   | 9.040  |
| 364                | MB4-364(*) | 10.395 | 10.075 | .590   | 9.140  |
| 368                | MB4-368(*) | 10.495 | 10.175 | .590   | 9.240  |
| 372                | MB4-372(*) | 10.595 | 10.275 | .590   | 9.340  |
| 376                | MB4-376(*) | 10.695 | 10.375 | .590   | 9.440  |
| 380                | MB4-380(*) | 10.795 | 10.475 | .590   | 9.540  |
| 384                | MB4-384(*) | 10.895 | 10.575 | .590   | 9.640  |
| 388                | MB4-388(*) | 10.995 | 10.675 | .590   | 9.740  |
| 392                | MB4-392(*) | 11.095 | 10.775 | .590   | 9.840  |
| 396                | MB4-396(*) | 11.195 | 10.875 | .590   | 9.940  |
| 400                | MB4-400(*) | 11.295 | 10.975 | .590   | 10.040 |

\*See How to Order, pages 3, 4 and 5.



# Low Mating Force

## daughter board connector

### 2 row contact arrangements

| Number of Contacts | DB Number* | A Max. | B     | C Max. | H Max. | AA    |
|--------------------|------------|--------|-------|--------|--------|-------|
| 020                | DB2-020P   | 1.680  | 1.350 | .375   | .545   | .900  |
| 022                | DB2-022P   | 1.780  | 1.450 | .375   | .545   | 1.000 |
| 024                | DB2-024P   | 1.880  | 1.550 | .375   | .545   | 1.100 |
| 026                | DB2-026P   | 1.980  | 1.650 | .375   | .545   | 1.200 |
| 028                | DB2-028P   | 2.080  | 1.750 | .375   | .545   | 1.300 |
| 030                | DB2-030P   | 2.180  | 1.850 | .375   | .545   | 1.400 |
| 032                | DB2-032P   | 2.280  | 1.950 | .375   | .545   | 1.500 |
| 034                | DB2-034P   | 2.380  | 2.050 | .375   | .545   | 1.600 |
| 036                | DB2-036P   | 2.480  | 2.150 | .375   | .545   | 1.700 |
| 038                | DB2-038P   | 2.580  | 2.250 | .375   | .545   | 1.800 |
| 040                | DB2-040P   | 2.680  | 2.350 | .375   | .545   | 1.900 |
| 042                | DB2-042P   | 2.780  | 2.450 | .375   | .545   | 2.000 |
| 044                | DB2-044P   | 2.880  | 2.550 | .375   | .545   | 2.100 |
| 046                | DB2-046P   | 2.980  | 2.650 | .375   | .545   | 2.200 |
| 048                | DB2-048P   | 3.080  | 2.750 | .375   | .545   | 2.300 |
| 050                | DB2-050P   | 3.180  | 2.850 | .375   | .545   | 2.400 |
| 052                | DB2-052P   | 3.280  | 2.950 | .375   | .545   | 2.500 |
| 054                | DB2-054P   | 3.380  | 3.050 | .375   | .545   | 2.600 |
| 056                | DB2-056P   | 3.480  | 3.150 | .375   | .545   | 2.700 |
| 058                | DB2-058P   | 3.580  | 3.250 | .375   | .545   | 2.800 |
| 060                | DB2-060P   | 3.680  | 3.350 | .375   | .545   | 2.900 |
| 062                | DB2-062P   | 3.780  | 3.450 | .375   | .545   | 3.000 |
| 064                | DB2-064P   | 3.880  | 3.550 | .375   | .545   | 3.100 |
| 066                | DB2-066P   | 3.980  | 3.650 | .375   | .545   | 3.200 |
| 068                | DB2-068P   | 4.080  | 3.750 | .375   | .545   | 3.300 |
| 070                | DB2-070P   | 4.180  | 3.850 | .375   | .545   | 3.400 |
| 072                | DB2-072P   | 4.280  | 3.950 | .375   | .545   | 3.500 |
| 074                | DB2-074P   | 4.380  | 4.050 | .375   | .545   | 3.600 |
| 076                | DB2-076P   | 4.480  | 4.150 | .375   | .545   | 3.700 |
| 078                | DB2-078P   | 4.580  | 4.250 | .375   | .545   | 3.800 |
| 080                | DB2-080P   | 4.680  | 4.350 | .375   | .545   | 3.900 |
| 082                | DB2-082P   | 4.780  | 4.450 | .375   | .545   | 4.000 |
| 084                | DB2-084P   | 4.880  | 4.550 | .375   | .545   | 4.100 |
| 086                | DB2-086P   | 4.980  | 4.650 | .375   | .545   | 4.200 |
| 088                | DB2-088P   | 5.080  | 4.750 | .375   | .545   | 4.300 |
| 090                | DB2-090P   | 5.180  | 4.850 | .375   | .545   | 4.400 |
| 092                | DB2-092P   | 5.280  | 4.950 | .375   | .545   | 4.500 |
| 094                | DB2-094P   | 5.380  | 5.050 | .375   | .545   | 4.600 |
| 096                | DB2-096P   | 5.480  | 5.150 | .375   | .545   | 4.700 |
| 098                | DB2-098P   | 5.580  | 5.250 | .375   | .545   | 4.800 |
| 100                | DB2-100P   | 5.680  | 5.350 | .375   | .545   | 4.900 |
| 102                | DB2-102P   | 5.780  | 5.450 | .375   | .545   | 5.000 |
| 104                | DB2-104P   | 5.880  | 5.550 | .375   | .545   | 5.100 |
| 106                | DB2-106P   | 5.980  | 5.650 | .375   | .545   | 5.200 |
| 108                | DB2-108P   | 6.080  | 5.750 | .375   | .545   | 5.300 |
| 110                | DB2-110P   | 6.180  | 5.850 | .375   | .545   | 5.400 |

| Number of Contacts | DB Number* | A Max. | B      | C Max. | H Max. | AA    |
|--------------------|------------|--------|--------|--------|--------|-------|
| 112                | DB2-112P   | 6.280  | 5.950  | .375   | .545   | 5.500 |
| 114                | DB2-114P   | 6.380  | 6.050  | .375   | .545   | 5.600 |
| 116                | DB2-116P   | 6.480  | 6.150  | .375   | .545   | 5.700 |
| 118                | DB2-118P   | 6.580  | 6.250  | .375   | .545   | 5.800 |
| 120                | DB2-120P   | 6.680  | 6.350  | .375   | .545   | 5.900 |
| 122                | DB2-122P   | 6.780  | 6.450  | .375   | .545   | 6.000 |
| 124                | DB2-124P   | 6.880  | 6.550  | .375   | .545   | 6.100 |
| 126                | DB2-126P   | 6.980  | 6.650  | .375   | .545   | 6.200 |
| 128                | DB2-128P   | 7.080  | 6.750  | .375   | .545   | 6.300 |
| 130                | DB2-130P   | 7.180  | 6.850  | .375   | .545   | 6.400 |
| 132                | DB2-132P   | 7.280  | 6.950  | .375   | .545   | 6.500 |
| 134                | DB2-134P   | 7.380  | 7.050  | .375   | .545   | 6.600 |
| 136                | DB2-136P   | 7.480  | 7.150  | .375   | .545   | 6.700 |
| 138                | DB2-138P   | 7.580  | 7.250  | .375   | .545   | 6.800 |
| 140                | DB2-140P   | 7.680  | 7.350  | .375   | .545   | 6.900 |
| 142                | DB2-142P   | 7.780  | 7.450  | .375   | .545   | 7.000 |
| 144                | DB2-144P   | 7.880  | 7.550  | .375   | .545   | 7.100 |
| 146                | DB2-146P   | 7.980  | 7.650  | .375   | .545   | 7.200 |
| 148                | DB2-148P   | 8.080  | 7.750  | .375   | .545   | 7.300 |
| 150                | DB2-150P   | 8.180  | 7.850  | .375   | .545   | 7.400 |
| 152                | DB2-152P   | 8.280  | 7.950  | .375   | .545   | 7.500 |
| 154                | DB2-154P   | 8.380  | 8.050  | .375   | .545   | 7.600 |
| 156                | DB2-156P   | 8.480  | 8.150  | .375   | .545   | 7.700 |
| 158                | DB2-158P   | 8.580  | 8.250  | .375   | .545   | 7.800 |
| 160                | DB2-160P   | 8.680  | 8.350  | .375   | .545   | 7.900 |
| 162                | DB2-162P   | 8.780  | 8.450  | .375   | .545   | 8.000 |
| 164                | DB2-164P   | 8.880  | 8.550  | .375   | .545   | 8.100 |
| 166                | DB2-166P   | 8.980  | 8.650  | .375   | .545   | 8.200 |
| 168                | DB2-168P   | 9.080  | 8.750  | .375   | .545   | 8.300 |
| 170                | DB2-170P   | 9.180  | 8.850  | .375   | .545   | 8.400 |
| 172                | DB2-172P   | 9.280  | 8.950  | .375   | .545   | 8.500 |
| 174                | DB2-174P   | 9.380  | 9.050  | .375   | .545   | 8.600 |
| 176                | DB2-176P   | 9.480  | 9.150  | .375   | .545   | 8.700 |
| 178                | DB2-178P   | 9.580  | 9.250  | .375   | .545   | 8.800 |
| 180                | DB2-180P   | 9.680  | 9.350  | .375   | .545   | 8.900 |
| 182                | DB2-182P   | 9.780  | 9.450  | .375   | .545   | 9.000 |
| 184                | DB2-184P   | 9.880  | 9.550  | .375   | .545   | 9.100 |
| 186                | DB2-186P   | 9.980  | 9.650  | .375   | .545   | 9.200 |
| 188                | DB2-188P   | 10.080 | 9.750  | .375   | .545   | 9.300 |
| 190                | DB2-190P   | 10.180 | 9.850  | .375   | .545   | 9.400 |
| 192                | DB2-192P   | 10.280 | 9.950  | .375   | .545   | 9.500 |
| 194                | DB2-194P   | 10.380 | 10.050 | .375   | .545   | 9.600 |
| 196                | DB2-196P   | 10.480 | 10.150 | .375   | .545   | 9.700 |
| 198                | DB2-198P   | 10.580 | 10.250 | .375   | .545   | 9.800 |
| 200                | DB2-200P   | 10.680 | 10.350 | .375   | .545   | 9.900 |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force

## daughter board connector

### 3 row contact arrangements

| Number of Contacts | DB Number* | A Max. | B     | C Max. | H Max. | AA    |
|--------------------|------------|--------|-------|--------|--------|-------|
| 030                | DB3-030P   | 1.680  | 1.350 | .475   | .645   | .900  |
| 033                | DB3-033P   | 1.780  | 1.450 | .475   | .645   | 1.000 |
| 036                | DB3-036P   | 1.880  | 1.550 | .475   | .645   | 1.100 |
| 039                | DB3-039P   | 1.980  | 1.650 | .475   | .645   | 1.200 |
| 042                | DB3-042P   | 2.080  | 1.750 | .475   | .645   | 1.300 |
| 045                | DB3-045P   | 2.180  | 1.850 | .475   | .645   | 1.400 |
| 048                | DB3-048P   | 2.280  | 1.950 | .475   | .645   | 1.500 |
| 051                | DB3-051P   | 2.380  | 2.050 | .475   | .645   | 1.600 |
| 054                | DB3-054P   | 2.480  | 2.150 | .475   | .645   | 1.700 |
| 057                | DB3-057P   | 2.580  | 2.250 | .475   | .645   | 1.800 |
| 060                | DB3-060P   | 2.680  | 2.350 | .475   | .645   | 1.900 |
| 063                | DB3-063P   | 2.780  | 2.450 | .475   | .645   | 2.000 |
| 066                | DB3-066P   | 2.880  | 2.550 | .475   | .645   | 2.100 |
| 069                | DB3-069P   | 2.980  | 2.650 | .475   | .645   | 2.200 |
| 072                | DB3-072P   | 3.080  | 2.750 | .475   | .645   | 2.300 |
| 075                | DB3-075P   | 3.180  | 2.850 | .475   | .645   | 2.400 |
| 078                | DB3-078P   | 3.280  | 2.950 | .475   | .645   | 2.500 |
| 081                | DB3-081P   | 3.380  | 3.050 | .475   | .645   | 2.600 |
| 084                | DB3-084P   | 3.480  | 3.150 | .475   | .645   | 2.700 |
| 087                | DB3-087P   | 3.580  | 3.250 | .475   | .645   | 2.800 |
| 090                | DB3-090P   | 3.680  | 3.350 | .475   | .645   | 2.900 |
| 093                | DB3-093P   | 3.780  | 3.450 | .475   | .645   | 3.000 |
| 096                | DB3-096P   | 3.880  | 3.550 | .475   | .645   | 3.100 |
| 099                | DB3-099P   | 3.980  | 3.650 | .475   | .645   | 3.200 |
| 102                | DB3-102P   | 4.080  | 3.750 | .475   | .645   | 3.300 |
| 105                | DB3-105P   | 4.180  | 3.850 | .475   | .645   | 3.400 |
| 108                | DB3-108P   | 4.280  | 3.950 | .475   | .645   | 3.500 |
| 111                | DB3-111P   | 4.380  | 4.050 | .475   | .645   | 3.600 |
| 114                | DB3-114P   | 4.480  | 4.150 | .475   | .645   | 3.700 |
| 117                | DB3-117P   | 4.580  | 4.250 | .475   | .645   | 3.800 |
| 120                | DB3-120P   | 4.680  | 4.350 | .475   | .645   | 3.900 |
| 123                | DB3-123P   | 4.780  | 4.450 | .475   | .645   | 4.000 |
| 126                | DB3-126P   | 4.880  | 4.550 | .475   | .645   | 4.100 |
| 129                | DB3-129P   | 4.980  | 4.650 | .475   | .645   | 4.200 |
| 132                | DB3-132P   | 5.080  | 4.750 | .475   | .645   | 4.300 |
| 135                | DB3-135P   | 5.180  | 4.850 | .475   | .645   | 4.400 |
| 138                | DB3-138P   | 5.280  | 4.950 | .475   | .645   | 4.500 |
| 141                | DB3-141P   | 5.380  | 5.050 | .475   | .645   | 4.600 |
| 144                | DB3-144P   | 5.480  | 5.150 | .475   | .645   | 4.700 |
| 147                | DB3-147P   | 5.580  | 5.250 | .475   | .645   | 4.800 |
| 150                | DB3-150P   | 5.680  | 5.350 | .475   | .645   | 4.900 |
| 153                | DB3-153P   | 5.780  | 5.450 | .475   | .645   | 5.000 |
| 156                | DB3-156P   | 5.880  | 5.550 | .475   | .645   | 5.100 |
| 159                | DB3-159P   | 5.980  | 5.650 | .475   | .645   | 5.200 |
| 162                | DB3-162P   | 6.080  | 5.750 | .475   | .645   | 5.300 |
| 165                | DB3-165P   | 6.180  | 5.850 | .475   | .645   | 5.400 |

| Number of Contacts | DB Number* | A Max. | B      | C Max. | H Max. | AA    |
|--------------------|------------|--------|--------|--------|--------|-------|
| 168                | DB3-168P   | 6.280  | 5.950  | .475   | .645   | 5.500 |
| 171                | DB3-171P   | 6.380  | 6.050  | .475   | .645   | 5.600 |
| 174                | DB3-174P   | 6.480  | 6.150  | .475   | .645   | 5.700 |
| 177                | DB3-177P   | 6.580  | 6.250  | .475   | .645   | 5.800 |
| 180                | DB3-180P   | 6.680  | 6.350  | .475   | .645   | 5.900 |
| 183                | DB3-183P   | 6.780  | 6.450  | .475   | .645   | 6.000 |
| 186                | DB3-186P   | 6.880  | 6.550  | .475   | .645   | 6.100 |
| 189                | DB3-189P   | 6.980  | 6.650  | .475   | .645   | 6.200 |
| 192                | DB3-192P   | 7.080  | 6.750  | .475   | .645   | 6.300 |
| 195                | DB3-195P   | 7.180  | 6.850  | .475   | .645   | 6.400 |
| 198                | DB3-198P   | 7.280  | 6.950  | .475   | .645   | 6.500 |
| 201                | DB3-201P   | 7.380  | 7.050  | .475   | .645   | 6.600 |
| 204                | DB3-204P   | 7.480  | 7.150  | .475   | .645   | 6.700 |
| 207                | DB3-207P   | 7.580  | 7.250  | .475   | .645   | 6.800 |
| 210                | DB3-210P   | 7.680  | 7.350  | .475   | .645   | 6.900 |
| 213                | DB3-213P   | 7.780  | 7.450  | .475   | .645   | 7.000 |
| 216                | DB3-216P   | 7.880  | 7.550  | .475   | .645   | 7.100 |
| 219                | DB3-219P   | 7.980  | 7.650  | .475   | .645   | 7.200 |
| 222                | DB3-222P   | 8.080  | 7.750  | .475   | .645   | 7.300 |
| 225                | DB3-225P   | 8.180  | 7.850  | .475   | .645   | 7.400 |
| 228                | DB3-228P   | 8.280  | 7.950  | .475   | .645   | 7.500 |
| 231                | DB3-231P   | 8.380  | 8.050  | .475   | .645   | 7.600 |
| 234                | DB3-234P   | 8.480  | 8.150  | .475   | .645   | 7.700 |
| 237                | DB3-237P   | 8.580  | 8.250  | .475   | .645   | 7.800 |
| 240                | DB3-240P   | 8.680  | 8.350  | .475   | .645   | 7.900 |
| 243                | DB3-243P   | 8.780  | 8.450  | .475   | .645   | 8.000 |
| 246                | DB3-246P   | 8.880  | 8.550  | .475   | .645   | 8.100 |
| 249                | DB3-249P   | 8.980  | 8.650  | .475   | .645   | 8.200 |
| 252                | DB3-252P   | 9.080  | 8.750  | .475   | .645   | 8.300 |
| 255                | DB3-255P   | 9.180  | 8.850  | .475   | .645   | 8.400 |
| 258                | DB3-258P   | 9.280  | 8.950  | .475   | .645   | 8.500 |
| 261                | DB3-261P   | 9.380  | 9.050  | .475   | .645   | 8.600 |
| 264                | DB3-264P   | 9.480  | 9.150  | .475   | .645   | 8.700 |
| 267                | DB3-267P   | 9.580  | 9.250  | .475   | .645   | 8.800 |
| 270                | DB3-270P   | 9.680  | 9.350  | .475   | .645   | 8.900 |
| 273                | DB3-273P   | 9.780  | 9.450  | .475   | .645   | 9.000 |
| 276                | DB3-276P   | 9.880  | 9.550  | .475   | .645   | 9.100 |
| 279                | DB3-279P   | 9.980  | 9.650  | .475   | .645   | 9.200 |
| 282                | DB3-282P   | 10.080 | 9.750  | .475   | .645   | 9.300 |
| 285                | DB3-285P   | 10.180 | 9.850  | .475   | .645   | 9.400 |
| 288                | DB3-288P   | 10.280 | 9.950  | .475   | .645   | 9.500 |
| 291                | DB3-291P   | 10.380 | 10.050 | .475   | .645   | 9.600 |
| 294                | DB3-294P   | 10.480 | 10.150 | .475   | .645   | 9.700 |
| 297                | DB3-397P   | 10.580 | 10.250 | .475   | .645   | 9.800 |
| 300                | DB3-300P   | 10.680 | 10.350 | .475   | .645   | 9.900 |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force

## daughter board connector

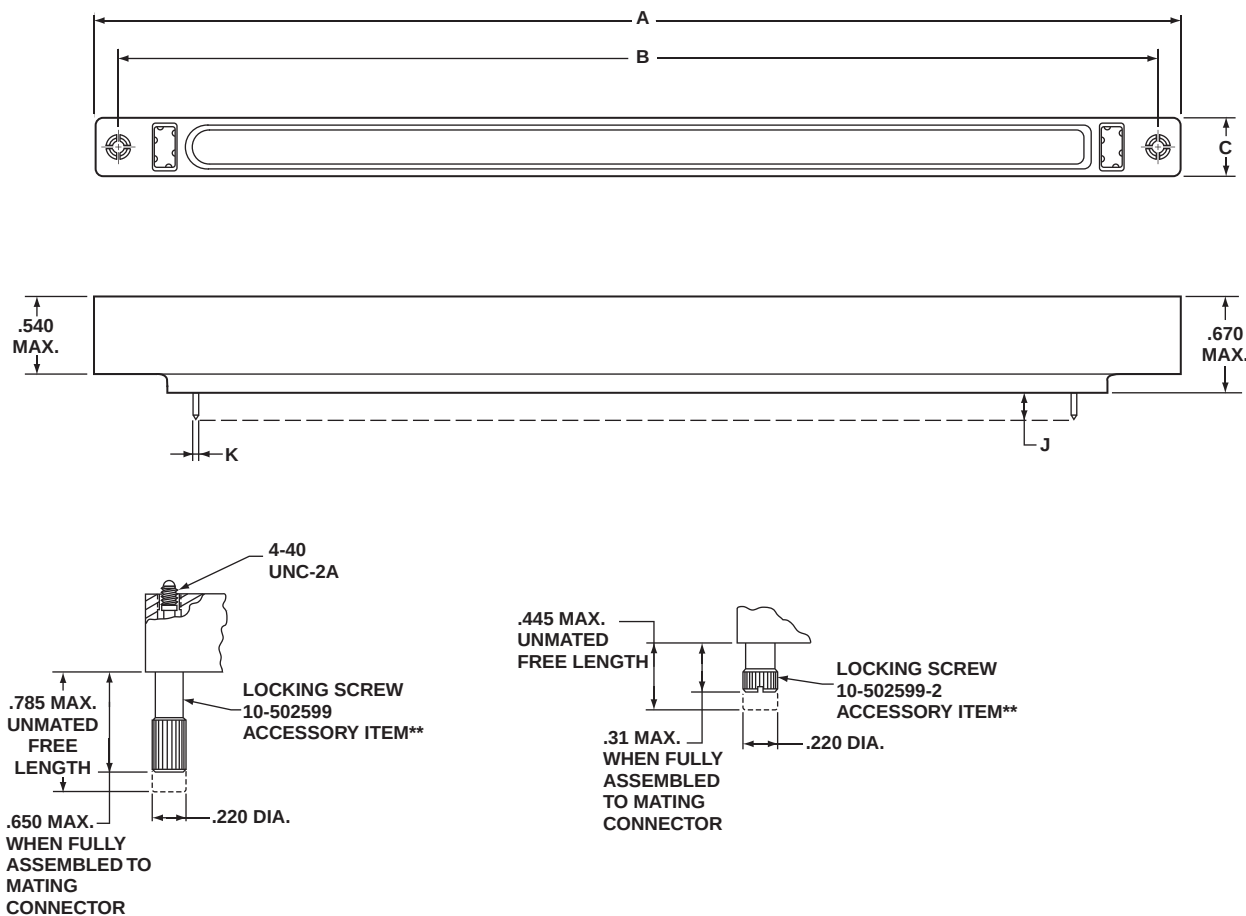
### 4 row contact arrangements

| Number of Contacts | DB Number* | A Max. | B     | C Max. | H Max. | AA    |
|--------------------|------------|--------|-------|--------|--------|-------|
| 040                | DB4-040P   | 1.680  | 1.350 | .575   | .745   | .900  |
| 044                | DB4-044P   | 1.780  | 1.450 | .575   | .745   | 1.000 |
| 048                | DB4-048P   | 1.880  | 1.550 | .575   | .745   | 1.100 |
| 052                | DB4-052P   | 1.980  | 1.650 | .575   | .745   | 1.200 |
| 056                | DB4-056P   | 2.080  | 1.750 | .575   | .745   | 1.300 |
| 060                | DB4-060P   | 2.180  | 1.850 | .575   | .745   | 1.400 |
| 064                | DB4-064P   | 2.280  | 1.950 | .575   | .745   | 1.500 |
| 068                | DB4-068P   | 2.380  | 2.050 | .575   | .745   | 1.600 |
| 072                | DB4-072P   | 2.480  | 2.150 | .575   | .745   | 1.700 |
| 076                | DB4-076P   | 2.580  | 2.250 | .575   | .745   | 1.800 |
| 080                | DB4-080P   | 2.680  | 2.350 | .575   | .745   | 1.900 |
| 084                | DB4-084P   | 2.780  | 2.450 | .575   | .745   | 2.000 |
| 088                | DB4-088P   | 2.880  | 2.550 | .575   | .745   | 2.100 |
| 092                | DB4-092P   | 2.980  | 2.650 | .575   | .745   | 2.200 |
| 096                | DB4-096P   | 3.080  | 2.750 | .575   | .745   | 2.300 |
| 100                | DB4-100P   | 3.180  | 2.850 | .575   | .745   | 2.400 |
| 104                | DB4-104P   | 3.280  | 2.950 | .575   | .745   | 2.500 |
| 108                | DB4-108P   | 3.380  | 3.050 | .575   | .745   | 2.600 |
| 112                | DB4-112P   | 3.480  | 3.150 | .575   | .745   | 2.700 |
| 116                | DB4-116P   | 3.580  | 3.250 | .575   | .745   | 2.800 |
| 120                | DB4-120P   | 3.680  | 3.350 | .575   | .745   | 2.900 |
| 124                | DB4-124P   | 3.780  | 3.450 | .575   | .745   | 3.000 |
| 128                | DB4-128P   | 3.880  | 3.550 | .575   | .745   | 3.100 |
| 132                | DB4-132P   | 3.980  | 3.650 | .575   | .745   | 3.200 |
| 136                | DB4-136P   | 4.080  | 3.750 | .575   | .745   | 3.300 |
| 140                | DB4-140P   | 4.180  | 3.850 | .575   | .745   | 3.400 |
| 144                | DB4-144P   | 4.280  | 3.950 | .575   | .745   | 3.500 |
| 148                | DB4-148P   | 4.380  | 4.050 | .575   | .745   | 3.600 |
| 152                | DB4-152P   | 4.480  | 4.150 | .575   | .745   | 3.700 |
| 156                | DB4-156P   | 4.580  | 4.250 | .575   | .745   | 3.800 |
| 160                | DB4-160P   | 4.680  | 4.350 | .575   | .745   | 3.900 |
| 164                | DB4-164P   | 4.780  | 4.450 | .575   | .745   | 4.000 |
| 168                | DB4-168P   | 4.880  | 4.550 | .575   | .745   | 4.100 |
| 172                | DB4-172P   | 4.980  | 4.650 | .575   | .745   | 4.200 |
| 176                | DB4-176P   | 5.080  | 4.750 | .575   | .745   | 4.300 |
| 180                | DB4-180P   | 5.180  | 4.850 | .575   | .745   | 4.400 |
| 184                | DB4-184P   | 5.280  | 4.950 | .575   | .745   | 4.500 |
| 188                | DB4-188P   | 5.380  | 5.050 | .575   | .745   | 4.600 |
| 192                | DB4-192P   | 5.480  | 5.150 | .575   | .745   | 4.700 |
| 196                | DB4-196P   | 5.580  | 5.250 | .575   | .745   | 4.800 |
| 200                | DB4-200P   | 5.680  | 5.350 | .575   | .745   | 4.900 |
| 204                | DB4-204P   | 5.780  | 5.450 | .575   | .745   | 5.000 |
| 208                | DB4-208P   | 5.880  | 5.550 | .575   | .745   | 5.100 |
| 212                | DB4-212P   | 5.980  | 5.650 | .575   | .745   | 5.200 |
| 216                | DB4-216P   | 6.080  | 5.750 | .575   | .745   | 5.300 |
| 220                | DB4-220P   | 6.180  | 5.850 | .575   | .745   | 5.400 |

| Number of Contacts | DB Number* | A Max. | B      | C Max. | H Max. | AA    |
|--------------------|------------|--------|--------|--------|--------|-------|
| 224                | DB4-224P   | 6.280  | 5.950  | .575   | .745   | 5.500 |
| 228                | DB4-228P   | 6.380  | 6.050  | .575   | .745   | 5.600 |
| 232                | DB4-232P   | 6.480  | 6.150  | .575   | .745   | 5.700 |
| 236                | DB4-236P   | 6.580  | 6.250  | .575   | .745   | 5.800 |
| 240                | DB4-240P   | 6.680  | 6.350  | .575   | .745   | 5.900 |
| 244                | DB4-244P   | 6.780  | 6.450  | .575   | .745   | 6.000 |
| 248                | DB4-248P   | 6.880  | 6.550  | .575   | .745   | 6.100 |
| 252                | DB4-252P   | 6.980  | 6.650  | .575   | .745   | 6.200 |
| 256                | DB4-256P   | 7.080  | 6.750  | .575   | .745   | 6.300 |
| 260                | DB4-260P   | 7.180  | 6.850  | .575   | .745   | 6.400 |
| 264                | DB4-264P   | 7.280  | 6.950  | .575   | .745   | 6.500 |
| 268                | DB4-268P   | 7.380  | 7.050  | .575   | .745   | 6.600 |
| 272                | DB4-272P   | 7.480  | 7.150  | .575   | .745   | 6.700 |
| 276                | DB4-276P   | 7.580  | 7.250  | .575   | .745   | 6.800 |
| 280                | DB4-280P   | 7.680  | 7.350  | .575   | .745   | 6.900 |
| 284                | DB4-284P   | 7.780  | 7.450  | .575   | .745   | 7.000 |
| 288                | DB4-288P   | 7.880  | 7.550  | .575   | .745   | 7.100 |
| 292                | DB4-292P   | 7.980  | 7.650  | .575   | .745   | 7.200 |
| 296                | DB4-296P   | 8.080  | 7.750  | .575   | .745   | 7.300 |
| 300                | DB4-300P   | 8.180  | 7.850  | .575   | .745   | 7.400 |
| 304                | DB4-304P   | 8.280  | 7.950  | .575   | .745   | 7.500 |
| 308                | DB4-308P   | 8.380  | 8.050  | .575   | .745   | 7.600 |
| 312                | DB4-312P   | 8.480  | 8.150  | .575   | .745   | 7.700 |
| 316                | DB4-316P   | 8.580  | 8.250  | .575   | .745   | 7.800 |
| 320                | DB4-320P   | 8.680  | 8.350  | .575   | .745   | 7.900 |
| 324                | DB4-324P   | 8.780  | 8.450  | .575   | .745   | 8.000 |
| 328                | DB4-328P   | 8.880  | 8.550  | .575   | .745   | 8.100 |
| 332                | DB4-332P   | 8.980  | 8.650  | .575   | .745   | 8.200 |
| 336                | DB4-336P   | 9.080  | 8.750  | .575   | .745   | 8.300 |
| 340                | DB4-340P   | 9.180  | 8.850  | .575   | .745   | 8.400 |
| 344                | DB4-344P   | 9.280  | 8.950  | .575   | .745   | 8.500 |
| 348                | DB4-348P   | 9.380  | 9.050  | .575   | .745   | 8.600 |
| 352                | DB4-352P   | 9.480  | 9.150  | .575   | .745   | 8.700 |
| 356                | DB4-356P   | 9.580  | 9.250  | .575   | .745   | 8.800 |
| 360                | DB4-360P   | 9.680  | 9.350  | .575   | .745   | 8.900 |
| 364                | DB4-364P   | 9.780  | 9.450  | .575   | .745   | 9.000 |
| 368                | DB4-368P   | 9.880  | 9.550  | .575   | .745   | 9.100 |
| 372                | DB4-372P   | 9.980  | 9.650  | .575   | .745   | 9.200 |
| 376                | DB4-376P   | 10.080 | 9.750  | .575   | .745   | 9.300 |
| 380                | DB4-380P   | 10.180 | 9.850  | .575   | .745   | 9.400 |
| 384                | DB4-384P   | 10.280 | 9.950  | .575   | .745   | 9.500 |
| 388                | DB4-388P   | 10.380 | 10.050 | .575   | .745   | 9.600 |
| 392                | DB4-392P   | 10.480 | 10.150 | .575   | .745   | 9.700 |
| 396                | DB4-396P   | 10.580 | 10.250 | .575   | .745   | 9.800 |
| 400                | DB4-400P   | 10.680 | 10.350 | .575   | .745   | 9.900 |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force input/output connector



## MATES WITH MB AND PC SERIES CONNECTORS

Notes:

When mating with MB or PC connector, a total of .022 inch minimum radial pilot is available for connector body alignment.

All dimensions for reference only.

Crimp contact, wire well size 22D, supplied with IO Connector Series assemblies. Optional noble metal termination plating available. See How to Order, page 5.

Polarization keys are not supplied as part of IO Connector Series assemblies. See Accessories How to Order, page 5 and further description, page 24.

\*\* Locking Screws are not supplied as part of IO Connector Series assemblies. See Accessories How to Order, page 5 and further description, page 29.

| Contact Data                      |                          |            |            |
|-----------------------------------|--------------------------|------------|------------|
| Description                       | Termination Style Letter | J<br>±.020 | K<br>±.002 |
| Rear Removable Crimp Contact      | C                        | N/A        | N/A        |
| Round PCB Stud Solder Termination | P                        | .145       | .021       |
|                                   | P-(713)                  | .060       | .021       |
|                                   | P-(709)                  | .335       | .021       |

NOTE: Other variations available - see pages 4 and 5, or consult Amphenol Aerospace.

# Low Mating Force

## input/output connector

### 2 row contact arrangements

| Number of Contacts | IO Number* | A Max. | B     | C Max. |
|--------------------|------------|--------|-------|--------|
| 020                | IO2-020(*) | 2.295  | 1.975 | .390   |
| 022                | IO2-022(*) | 2.395  | 2.075 | .390   |
| 024                | IO2-024(*) | 2.495  | 2.175 | .390   |
| 026                | IO2-026(*) | 2.595  | 2.275 | .390   |
| 028                | IO2-028(*) | 2.695  | 2.375 | .390   |
| 030                | IO2-030(*) | 2.795  | 2.475 | .390   |
| 032                | IO2-032(*) | 2.895  | 2.575 | .390   |
| 034                | IO2-034(*) | 2.995  | 2.675 | .390   |
| 036                | IO2-036(*) | 3.095  | 2.775 | .390   |
| 038                | IO2-038(*) | 3.195  | 2.875 | .390   |
| 040                | IO2-040(*) | 3.295  | 2.975 | .390   |
| 042                | IO2-042(*) | 3.395  | 3.075 | .390   |
| 044                | IO2-044(*) | 3.495  | 3.175 | .390   |
| 046                | IO2-046(*) | 3.595  | 3.275 | .390   |
| 048                | IO2-048(*) | 3.695  | 3.375 | .390   |
| 050                | IO2-050(*) | 3.795  | 3.475 | .390   |
| 052                | IO2-052(*) | 3.895  | 3.575 | .390   |
| 054                | IO2-054(*) | 3.995  | 3.675 | .390   |
| 056                | IO2-056(*) | 4.095  | 3.775 | .390   |
| 058                | IO2-058(*) | 4.195  | 3.875 | .390   |
| 060                | IO2-060(*) | 4.295  | 3.975 | .390   |
| 062                | IO2-062(*) | 4.395  | 4.075 | .390   |
| 064                | IO2-064(*) | 4.495  | 4.175 | .390   |
| 066                | IO2-066(*) | 4.595  | 4.275 | .390   |
| 068                | IO2-068(*) | 4.695  | 4.375 | .390   |
| 070                | IO2-070(*) | 4.795  | 4.475 | .390   |
| 072                | IO2-072(*) | 4.895  | 4.575 | .390   |
| 074                | IO2-074(*) | 4.995  | 4.675 | .390   |
| 076                | IO2-076(*) | 5.095  | 4.775 | .390   |
| 078                | IO2-078(*) | 5.195  | 4.875 | .390   |
| 080                | IO2-080(*) | 5.295  | 4.975 | .390   |
| 082                | IO2-082(*) | 5.395  | 5.075 | .390   |
| 084                | IO2-084(*) | 5.495  | 5.175 | .390   |
| 086                | IO2-086(*) | 5.595  | 5.275 | .390   |
| 088                | IO2-088(*) | 5.695  | 5.375 | .390   |
| 090                | IO2-090(*) | 5.795  | 5.475 | .390   |
| 092                | IO2-092(*) | 5.895  | 5.575 | .390   |
| 094                | IO2-094(*) | 5.995  | 5.675 | .390   |
| 096                | IO2-096(*) | 6.095  | 5.775 | .390   |
| 098                | IO2-098(*) | 6.195  | 5.875 | .390   |
| 100                | IO2-100(*) | 6.295  | 5.975 | .390   |
| 102                | IO2-102(*) | 6.395  | 6.075 | .390   |
| 104                | IO2-104(*) | 6.495  | 6.175 | .390   |
| 106                | IO2-106(*) | 6.595  | 6.275 | .390   |
| 108                | IO2-108(*) | 6.695  | 6.375 | .390   |
| 110                | IO2-110(*) | 6.795  | 6.475 | .390   |

| Number of Contacts | IO Number* | A Max. | B      | C Max. |
|--------------------|------------|--------|--------|--------|
| 112                | IO2-112(*) | 6.895  | 6.575  | .390   |
| 114                | IO2-114(*) | 6.995  | 6.675  | .390   |
| 116                | IO2-116(*) | 7.095  | 6.775  | .390   |
| 118                | IO2-118(*) | 7.195  | 6.875  | .390   |
| 120                | IO2-120(*) | 7.295  | 6.975  | .390   |
| 122                | IO2-122(*) | 7.395  | 7.075  | .390   |
| 124                | IO2-124(*) | 7.495  | 7.175  | .390   |
| 126                | IO2-126(*) | 7.595  | 7.275  | .390   |
| 128                | IO2-128(*) | 7.695  | 7.375  | .390   |
| 130                | IO2-130(*) | 7.795  | 7.475  | .390   |
| 132                | IO2-132(*) | 7.895  | 7.575  | .390   |
| 134                | IO2-134(*) | 7.995  | 7.675  | .390   |
| 136                | IO2-136(*) | 8.095  | 7.775  | .390   |
| 138                | IO2-138(*) | 8.195  | 7.875  | .390   |
| 140                | IO2-140(*) | 8.295  | 7.975  | .390   |
| 142                | IO2-142(*) | 8.395  | 8.075  | .390   |
| 144                | IO2-144(*) | 8.495  | 8.175  | .390   |
| 146                | IO2-146(*) | 8.595  | 8.275  | .390   |
| 148                | IO2-148(*) | 8.695  | 8.375  | .390   |
| 150                | IO2-150(*) | 8.795  | 8.475  | .390   |
| 152                | IO2-152(*) | 8.895  | 8.575  | .390   |
| 154                | IO2-154(*) | 8.995  | 8.675  | .390   |
| 156                | IO2-156(*) | 9.095  | 8.775  | .390   |
| 158                | IO2-158(*) | 9.195  | 8.875  | .390   |
| 160                | IO2-160(*) | 9.295  | 8.975  | .390   |
| 162                | IO2-162(*) | 9.395  | 9.075  | .390   |
| 164                | IO2-164(*) | 9.495  | 9.175  | .390   |
| 166                | IO2-166(*) | 9.595  | 9.275  | .390   |
| 168                | IO2-168(*) | 9.695  | 9.375  | .390   |
| 170                | IO2-170(*) | 9.795  | 9.475  | .390   |
| 172                | IO2-172(*) | 9.895  | 9.575  | .390   |
| 174                | IO2-174(*) | 9.995  | 9.675  | .390   |
| 176                | IO2-176(*) | 10.095 | 9.775  | .390   |
| 178                | IO2-178(*) | 10.195 | 9.875  | .390   |
| 180                | IO2-180(*) | 10.295 | 9.975  | .390   |
| 182                | IO2-182(*) | 10.395 | 10.075 | .390   |
| 184                | IO2-184(*) | 10.495 | 10.175 | .390   |
| 186                | IO2-186(*) | 10.595 | 10.275 | .390   |
| 188                | IO2-188(*) | 10.695 | 10.375 | .390   |
| 190                | IO2-190(*) | 10.795 | 10.475 | .390   |
| 192                | IO2-192(*) | 10.895 | 10.575 | .390   |
| 194                | IO2-194(*) | 10.995 | 10.675 | .390   |
| 196                | IO2-196(*) | 11.095 | 10.775 | .390   |
| 198                | IO2-198(*) | 11.195 | 10.875 | .390   |
| 200                | IO2-200(*) | 11.295 | 10.975 | .390   |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force

## input/output connector

### 3 row contact arrangements

| Number of Contacts | IO Number* | A Max. | B     | C Max. |
|--------------------|------------|--------|-------|--------|
| 030                | IO3-030(*) | 2.295  | 1.975 | .490   |
| 033                | IO3-033(*) | 2.395  | 2.075 | .490   |
| 036                | IO3-036(*) | 2.495  | 2.175 | .490   |
| 039                | IO3-039(*) | 2.595  | 2.275 | .490   |
| 042                | IO3-042(*) | 2.695  | 2.375 | .490   |
| 045                | IO3-045(*) | 2.795  | 2.475 | .490   |
| 048                | IO3-048(*) | 2.894  | 2.575 | .490   |
| 051                | IO3-051(*) | 2.995  | 2.675 | .490   |
| 054                | IO3-054(*) | 3.095  | 2.775 | .490   |
| 057                | IO3-057(*) | 3.195  | 2.875 | .490   |
| 060                | IO3-060(*) | 3.295  | 2.975 | .490   |
| 063                | IO3-063(*) | 3.395  | 3.075 | .490   |
| 066                | IO3-066(*) | 3.495  | 3.175 | .490   |
| 069                | IO3-069(*) | 3.595  | 3.275 | .490   |
| 072                | IO3-072(*) | 3.695  | 3.375 | .490   |
| 075                | IO3-075(*) | 3.795  | 3.475 | .490   |
| 078                | IO3-078(*) | 3.895  | 3.575 | .490   |
| 081                | IO3-081(*) | 3.995  | 3.675 | .490   |
| 084                | IO3-084(*) | 4.095  | 3.775 | .490   |
| 087                | IO3-087(*) | 4.195  | 3.875 | .490   |
| 090                | IO3-090(*) | 4.295  | 3.975 | .490   |
| 093                | IO3-093(*) | 4.395  | 4.075 | .490   |
| 096                | IO3-096(*) | 4.495  | 4.175 | .490   |
| 099                | IO3-099(*) | 4.595  | 4.275 | .490   |
| 102                | IO3-102(*) | 4.695  | 4.375 | .490   |
| 105                | IO3-105(*) | 4.795  | 4.475 | .490   |
| 108                | IO3-108(*) | 4.895  | 4.575 | .490   |
| 111                | IO3-111(*) | 4.995  | 4.675 | .490   |
| 114                | IO3-114(*) | 5.095  | 4.775 | .490   |
| 117                | IO3-117(*) | 5.195  | 4.875 | .490   |
| 120                | IO3-120(*) | 5.295  | 4.975 | .490   |
| 123                | IO3-123(*) | 5.395  | 5.075 | .490   |
| 126                | IO3-126(*) | 5.495  | 5.175 | .490   |
| 129                | IO3-129(*) | 5.595  | 5.275 | .490   |
| 132                | IO3-132(*) | 5.695  | 5.375 | .490   |
| 135                | IO3-135(*) | 5.795  | 5.475 | .490   |
| 138                | IO3-138(*) | 5.895  | 5.575 | .490   |
| 141                | IO3-141(*) | 5.995  | 5.675 | .490   |
| 144                | IO3-144(*) | 6.095  | 5.775 | .490   |
| 147                | IO3-147(*) | 6.195  | 5.875 | .490   |
| 150                | IO3-150(*) | 6.295  | 5.975 | .490   |
| 153                | IO3-153(*) | 6.395  | 6.075 | .490   |
| 156                | IO3-156(*) | 6.495  | 6.175 | .490   |
| 159                | IO3-159(*) | 6.595  | 6.275 | .490   |
| 162                | IO3-162(*) | 6.695  | 6.375 | .490   |
| 165                | IO3-165(*) | 6.795  | 6.475 | .490   |

| Number of Contacts | IO Number* | A Max. | B      | C Max. |
|--------------------|------------|--------|--------|--------|
| 168                | IO3-168(*) | 6.895  | 6.575  | .490   |
| 171                | IO3-171(*) | 6.995  | 6.675  | .490   |
| 174                | IO3-174(*) | 7.095  | 6.775  | .490   |
| 177                | IO3-177(*) | 7.195  | 6.875  | .490   |
| 180                | IO3-180(*) | 7.295  | 6.975  | .490   |
| 183                | IO3-183(*) | 7.395  | 7.075  | .490   |
| 186                | IO3-186(*) | 7.495  | 7.175  | .490   |
| 189                | IO3-189(*) | 7.595  | 7.275  | .490   |
| 192                | IO3-192(*) | 7.695  | 7.375  | .490   |
| 195                | IO3-195(*) | 7.795  | 7.475  | .490   |
| 198                | IO3-198(*) | 7.895  | 7.575  | .490   |
| 201                | IO3-201(*) | 7.995  | 7.675  | .490   |
| 204                | IO3-204(*) | 8.095  | 7.775  | .490   |
| 207                | IO3-207(*) | 8.195  | 7.875  | .490   |
| 210                | IO3-210(*) | 8.295  | 7.975  | .490   |
| 213                | IO3-213(*) | 8.395  | 8.075  | .490   |
| 216                | IO3-216(*) | 8.495  | 8.175  | .490   |
| 219                | IO3-219(*) | 8.595  | 8.275  | .490   |
| 222                | IO3-222(*) | 8.695  | 8.375  | .490   |
| 225                | IO3-225(*) | 8.795  | 8.475  | .490   |
| 228                | IO3-228(*) | 8.895  | 8.575  | .490   |
| 231                | IO3-231(*) | 8.995  | 8.675  | .490   |
| 234                | IO3-234(*) | 9.095  | 8.775  | .490   |
| 237                | IO3-237(*) | 9.195  | 8.875  | .490   |
| 240                | IO3-240(*) | 9.295  | 8.975  | .490   |
| 243                | IO3-243(*) | 9.395  | 9.075  | .490   |
| 246                | IO3-246(*) | 9.495  | 9.175  | .490   |
| 249                | IO3-249(*) | 9.595  | 9.275  | .490   |
| 252                | IO3-252(*) | 9.695  | 9.375  | .490   |
| 255                | IO3-255(*) | 9.795  | 9.475  | .490   |
| 258                | IO3-258(*) | 9.895  | 9.575  | .490   |
| 261                | IO3-261(*) | 9.995  | 9.675  | .490   |
| 264                | IO3-264(*) | 10.095 | 9.775  | .490   |
| 267                | IO3-267(*) | 10.195 | 9.875  | .490   |
| 270                | IO3-270(*) | 10.295 | 9.975  | .490   |
| 273                | IO3-273(*) | 10.395 | 10.075 | .490   |
| 276                | IO3-276(*) | 10.495 | 10.175 | .490   |
| 279                | IO3-279(*) | 10.595 | 10.275 | .490   |
| 282                | IO3-282(*) | 10.695 | 10.375 | .490   |
| 285                | IO3-285(*) | 10.795 | 10.475 | .490   |
| 288                | IO3-288(*) | 10.895 | 10.575 | .490   |
| 291                | IO3-291(*) | 10.995 | 10.675 | .490   |
| 294                | IO3-294(*) | 11.095 | 10.775 | .490   |
| 297                | IO3-297(*) | 11.195 | 10.875 | .490   |
| 300                | IO3-300(*) | 11.295 | 10.975 | .490   |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force

## input/output connector

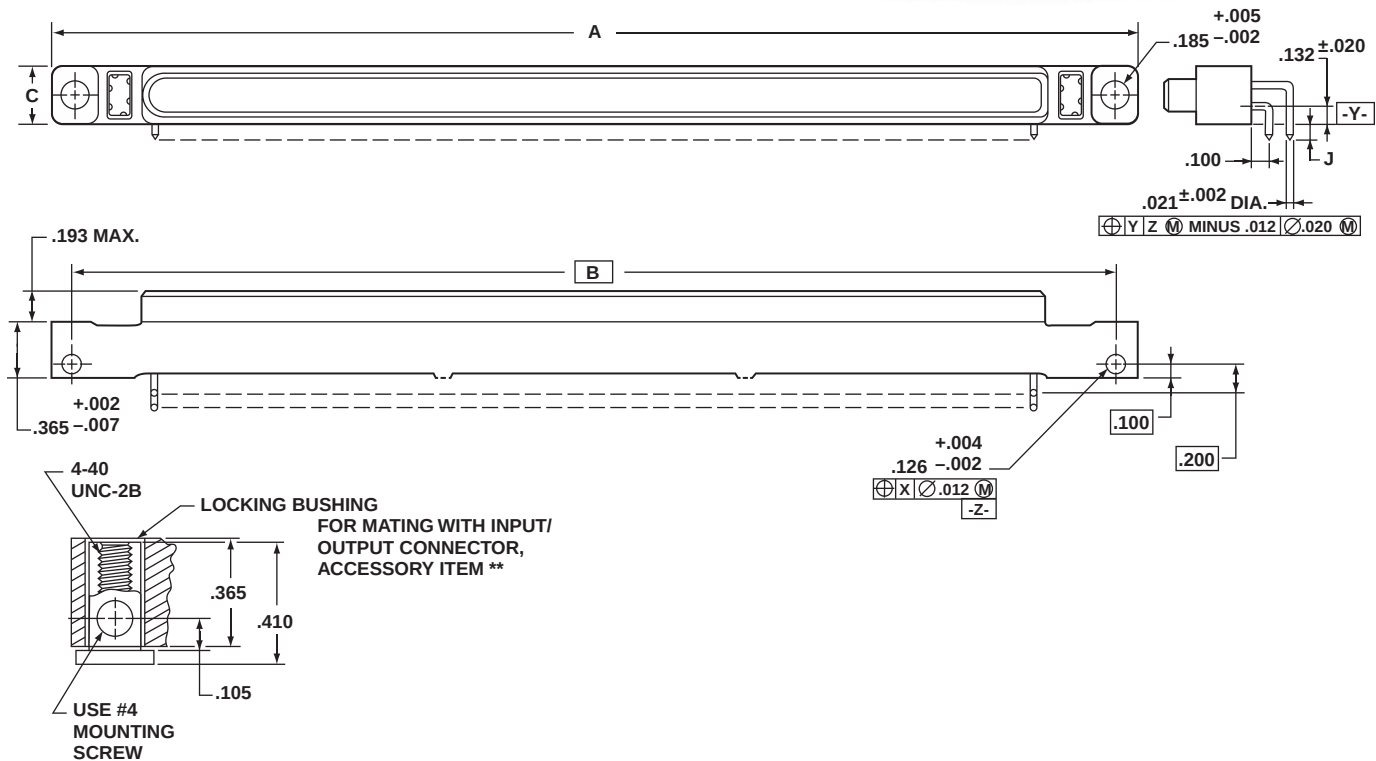
### 4 row contact arrangements

| Number of Contacts | IO Number* | A Max. | B     | C Max. |
|--------------------|------------|--------|-------|--------|
| 040                | IO4-040(*) | 2.295  | 1.975 | .590   |
| 044                | IO4-044(*) | 2.395  | 2.075 | .590   |
| 048                | IO4-048(*) | 2.495  | 2.175 | .590   |
| 052                | IO4-052(*) | 2.595  | 2.275 | .590   |
| 056                | IO4-056(*) | 2.695  | 2.375 | .590   |
| 060                | IO4-060(*) | 2.795  | 2.475 | .590   |
| 064                | IO4-064(*) | 2.895  | 2.575 | .590   |
| 068                | IO4-068(*) | 2.995  | 2.675 | .590   |
| 072                | IO4-072(*) | 3.095  | 2.775 | .590   |
| 076                | IO4-076(*) | 3.195  | 2.875 | .590   |
| 080                | IO4-080(*) | 3.295  | 2.975 | .590   |
| 084                | IO4-084(*) | 3.395  | 3.075 | .590   |
| 088                | IO4-088(*) | 3.495  | 3.175 | .590   |
| 092                | IO4-092(*) | 3.595  | 3.275 | .590   |
| 096                | IO4-096(*) | 3.695  | 3.375 | .590   |
| 100                | IO4-100(*) | 3.795  | 3.475 | .590   |
| 104                | IO4-104(*) | 3.895  | 3.575 | .590   |
| 108                | IO4-108(*) | 3.995  | 3.675 | .590   |
| 112                | IO4-112(*) | 4.095  | 3.775 | .590   |
| 116                | IO4-116(*) | 4.195  | 3.875 | .590   |
| 120                | IO4-120(*) | 4.295  | 3.975 | .590   |
| 124                | IO4-124(*) | 4.395  | 4.075 | .590   |
| 128                | IO4-128(*) | 4.495  | 4.175 | .590   |
| 132                | IO4-132(*) | 4.595  | 4.275 | .590   |
| 136                | IO4-136(*) | 4.695  | 4.375 | .590   |
| 140                | IO4-140(*) | 4.795  | 4.475 | .590   |
| 144                | IO4-144(*) | 4.895  | 4.575 | .590   |
| 148                | IO4-148(*) | 4.995  | 4.675 | .590   |
| 152                | IO4-152(*) | 5.095  | 4.775 | .590   |
| 156                | IO4-156(*) | 5.195  | 4.875 | .590   |
| 160                | IO4-160(*) | 5.295  | 4.975 | .590   |
| 164                | IO4-164(*) | 5.395  | 5.075 | .590   |
| 168                | IO4-168(*) | 5.495  | 5.175 | .590   |
| 172                | IO4-172(*) | 5.595  | 5.275 | .590   |
| 176                | IO4-176(*) | 5.695  | 5.375 | .590   |
| 180                | IO4-180(*) | 5.795  | 5.475 | .590   |
| 184                | IO4-184(*) | 5.895  | 5.575 | .590   |
| 188                | IO4-188(*) | 5.995  | 5.675 | .590   |
| 192                | IO4-192(*) | 6.095  | 5.775 | .590   |
| 196                | IO4-196(*) | 6.195  | 5.875 | .590   |
| 200                | IO4-200(*) | 6.295  | 5.975 | .590   |
| 204                | IO4-204(*) | 6.395  | 6.075 | .590   |
| 208                | IO4-208(*) | 6.495  | 6.175 | .590   |
| 212                | IO4-212(*) | 6.595  | 6.275 | .590   |
| 216                | IO4-216(*) | 6.695  | 6.375 | .590   |
| 220                | IO4-220(*) | 6.795  | 6.475 | .590   |

| Number of Contacts | IO Number* | A Max. | B      | C Max. |
|--------------------|------------|--------|--------|--------|
| 224                | IO4-224(*) | 6.895  | 6.575  | .590   |
| 228                | IO4-228(*) | 6.995  | 6.675  | .590   |
| 232                | IO4-232(*) | 7.095  | 6.775  | .590   |
| 236                | IO4-236(*) | 7.195  | 6.875  | .590   |
| 240                | IO4-240(*) | 7.295  | 6.975  | .590   |
| 244                | IO4-244(*) | 7.395  | 7.075  | .590   |
| 248                | IO4-248(*) | 7.495  | 7.175  | .590   |
| 252                | IO4-252(*) | 7.595  | 7.275  | .590   |
| 256                | IO4-256(*) | 7.695  | 7.375  | .590   |
| 260                | IO4-260(*) | 7.795  | 7.475  | .590   |
| 264                | IO4-264(*) | 7.895  | 7.575  | .590   |
| 268                | IO4-268(*) | 7.995  | 7.675  | .590   |
| 272                | IO4-272(*) | 8.095  | 7.775  | .590   |
| 276                | IO4-276(*) | 8.195  | 7.875  | .590   |
| 280                | IO4-280(*) | 8.295  | 7.975  | .590   |
| 284                | IO4-284(*) | 8.395  | 8.075  | .590   |
| 288                | IO4-288(*) | 8.495  | 8.175  | .590   |
| 292                | IO4-292(*) | 8.595  | 8.275  | .590   |
| 296                | IO4-296(*) | 8.695  | 8.375  | .590   |
| 300                | IO4-300(*) | 8.795  | 8.475  | .590   |
| 304                | IO4-304(*) | 8.895  | 8.575  | .590   |
| 308                | IO4-308(*) | 8.995  | 8.675  | .590   |
| 312                | IO4-312(*) | 9.095  | 8.775  | .590   |
| 316                | IO4-316(*) | 9.195  | 8.875  | .590   |
| 320                | IO4-320(*) | 9.295  | 8.975  | .590   |
| 324                | IO4-324(*) | 9.395  | 9.075  | .590   |
| 328                | IO4-328(*) | 9.496  | 9.175  | .590   |
| 332                | IO4-332(*) | 9.595  | 9.275  | .590   |
| 336                | IO4-336(*) | 9.695  | 9.375  | .590   |
| 340                | IO4-340(*) | 9.795  | 9.475  | .590   |
| 344                | IO4-344(*) | 9.895  | 9.575  | .590   |
| 348                | IO4-348(*) | 9.995  | 9.675  | .590   |
| 352                | IO4-352(*) | 10.095 | 9.775  | .590   |
| 356                | IO4-356(*) | 10.195 | 9.875  | .590   |
| 360                | IO4-360(*) | 10.295 | 9.975  | .590   |
| 364                | IO4-364(*) | 10.395 | 10.075 | .590   |
| 368                | IO4-368(*) | 10.495 | 10.175 | .590   |
| 372                | IO4-372(*) | 10.595 | 10.275 | .590   |
| 376                | IO4-376(*) | 10.695 | 10.375 | .590   |
| 380                | IO4-380(*) | 10.795 | 10.475 | .590   |
| 384                | IO4-384(*) | 10.895 | 10.575 | .590   |
| 388                | IO4-388(*) | 10.995 | 10.675 | .590   |
| 392                | IO4-392(*) | 11.095 | 10.775 | .590   |
| 396                | IO4-396(*) | 11.195 | 10.875 | .590   |
| 400                | IO4-400(*) | 11.295 | 10.975 | .590   |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force PC connector



## MATES WITH DB AND IO SERIES CONNECTORS

Notes:

When mating with DB connector, a total of .035 inch minimum radial pilot is available for connector body alignment.

All dimensions for reference only.

Polarization keys are not supplied as part of PC Connector Series assemblies. See Accessories How to Order, page 5 and further description, page 24.

\*\* Locking busings are not supplied as part of PC Connector Series assemblies. See Accessories How to Order, page 5, and further description, page 28.

□ Designates Basic Dimension

| Contact Data                           |                          |                 |                     |
|----------------------------------------|--------------------------|-----------------|---------------------|
| Description                            | Termination Style Letter | Arrangement Row | J<br>+.035<br>-.025 |
| Round PCB Stud, 90° Solder Termination | P                        | A               | .095                |
|                                        | P                        | B               | .095                |
|                                        | P                        | C               | .095                |
|                                        | P                        | D               | .095                |
|                                        | P-(714)                  | A               | .150                |
|                                        | P-(714)                  | B               | .150                |
|                                        | P-(714)                  | C               | .150                |
|                                        | P-(714)                  | D               | .150                |

NOTE: Other variations available - see pages 4 and 5, or consult Amphenol Aerospace.

# Low Mating Force

## PC connector

### 2 row contact arrangements

| Number of Contacts | PC Number* | A Max. | B     | C Max. |
|--------------------|------------|--------|-------|--------|
| 020                | PC2-020P   | 2.295  | 1.975 | .390   |
| 022                | PC2-022P   | 2.395  | 2.075 | .390   |
| 024                | PC2-024P   | 2.495  | 2.175 | .390   |
| 026                | PC2-026P   | 2.595  | 2.275 | .390   |
| 028                | PC2-028P   | 2.695  | 2.375 | .390   |
| 030                | PC2-030P   | 2.795  | 2.475 | .390   |
| 032                | PC2-032P   | 2.895  | 2.575 | .390   |
| 034                | PC2-034P   | 2.995  | 2.675 | .390   |
| 036                | PC2-036P   | 3.095  | 2.775 | .390   |
| 038                | PC2-038P   | 3.195  | 2.875 | .390   |
| 040                | PC2-040P   | 3.295  | 2.975 | .390   |
| 042                | PC2-042P   | 3.395  | 3.075 | .390   |
| 044                | PC2-044P   | 3.495  | 3.175 | .390   |
| 046                | PC2-046P   | 3.595  | 3.275 | .390   |
| 048                | PC2-048P   | 3.695  | 3.375 | .390   |
| 050                | PC2-050P   | 3.795  | 3.475 | .390   |
| 052                | PC2-052P   | 3.895  | 3.575 | .390   |
| 054                | PC2-054P   | 3.995  | 3.675 | .390   |
| 056                | PC2-056P   | 4.095  | 3.775 | .390   |
| 058                | PC2-058P   | 4.195  | 3.875 | .390   |
| 060                | PC2-060P   | 4.295  | 3.975 | .390   |
| 062                | PC2-062P   | 4.395  | 4.075 | .390   |
| 064                | PC2-064P   | 4.495  | 4.175 | .390   |
| 066                | PC2-066P   | 4.595  | 4.275 | .390   |
| 068                | PC2-068P   | 4.695  | 4.375 | .390   |
| 070                | PC2-070P   | 4.795  | 4.475 | .390   |
| 072                | PC2-072P   | 4.895  | 4.575 | .390   |
| 074                | PC2-074P   | 4.995  | 4.675 | .390   |
| 076                | PC2-076P   | 5.095  | 4.775 | .390   |
| 078                | PC2-078P   | 5.195  | 4.875 | .390   |
| 080                | PC2-080P   | 5.295  | 4.975 | .390   |
| 082                | PC2-082P   | 5.395  | 5.075 | .390   |
| 084                | PC2-084P   | 5.495  | 5.175 | .390   |
| 086                | PC2-086P   | 5.595  | 5.275 | .390   |
| 088                | PC2-088P   | 5.695  | 5.375 | .390   |
| 090                | PC2-090P   | 5.795  | 5.475 | .390   |
| 092                | PC2-092P   | 5.895  | 5.575 | .390   |
| 094                | PC2-094P   | 5.995  | 5.675 | .390   |
| 096                | PC2-096P   | 6.095  | 5.775 | .390   |
| 098                | PC2-098P   | 6.195  | 5.875 | .390   |
| 100                | PC2-100P   | 6.295  | 5.975 | .390   |
| 102                | PC2-102P   | 6.395  | 6.075 | .390   |
| 104                | PC2-104P   | 6.495  | 6.175 | .390   |
| 106                | PC2-106P   | 6.595  | 6.275 | .390   |
| 108                | PC2-108P   | 6.695  | 6.375 | .390   |
| 110                | PC2-110P   | 6.795  | 6.475 | .390   |

| Number of Contacts | PC Number* | A Max. | B      | C Max. |
|--------------------|------------|--------|--------|--------|
| 112                | PC2-112P   | 6.895  | 6.575  | .390   |
| 114                | PC2-114P   | 6.995  | 6.675  | .390   |
| 116                | PC2-116P   | 7.095  | 6.775  | .390   |
| 118                | PC2-118P   | 7.195  | 6.875  | .390   |
| 120                | PC2-120P   | 7.295  | 6.975  | .390   |
| 122                | PC2-122P   | 7.395  | 7.075  | .390   |
| 124                | PC2-124P   | 7.495  | 7.175  | .390   |
| 126                | PC2-126P   | 7.595  | 7.275  | .390   |
| 128                | PC2-128P   | 7.695  | 7.375  | .390   |
| 130                | PC2-130P   | 7.795  | 7.475  | .390   |
| 132                | PC2-132P   | 7.895  | 7.575  | .390   |
| 134                | PC2-134P   | 7.995  | 7.675  | .390   |
| 136                | PC2-136P   | 8.095  | 7.775  | .390   |
| 138                | PC2-138P   | 8.195  | 7.875  | .390   |
| 140                | PC2-140P   | 8.295  | 7.975  | .390   |
| 142                | PC2-142P   | 8.395  | 8.075  | .390   |
| 144                | PC2-144P   | 8.495  | 8.175  | .390   |
| 146                | PC2-146P   | 8.595  | 8.275  | .390   |
| 148                | PC2-148P   | 8.695  | 8.375  | .390   |
| 150                | PC2-150P   | 8.795  | 8.475  | .390   |
| 152                | PC2-152P   | 8.895  | 8.575  | .390   |
| 154                | PC2-154P   | 8.995  | 8.675  | .390   |
| 156                | PC2-156P   | 9.095  | 8.775  | .390   |
| 158                | PC2-158P   | 9.195  | 8.875  | .390   |
| 160                | PC2-160P   | 9.295  | 8.975  | .390   |
| 162                | PC2-162P   | 9.395  | 9.075  | .390   |
| 164                | PC2-164P   | 9.495  | 9.175  | .390   |
| 166                | PC2-166P   | 9.595  | 9.275  | .390   |
| 168                | PC2-168P   | 9.695  | 9.375  | .390   |
| 170                | PC2-170P   | 9.795  | 9.475  | .390   |
| 172                | PC2-172P   | 9.895  | 9.575  | .390   |
| 174                | PC2-174P   | 9.995  | 9.675  | .390   |
| 176                | PC2-176P   | 10.095 | 9.775  | .390   |
| 178                | PC2-178P   | 10.195 | 9.875  | .390   |
| 180                | PC2-180P   | 10.295 | 9.975  | .390   |
| 182                | PC2-182P   | 10.395 | 10.075 | .390   |
| 184                | PC2-184P   | 10.495 | 10.175 | .390   |
| 186                | PC2-186P   | 10.595 | 10.275 | .390   |
| 188                | PC2-188P   | 10.695 | 10.375 | .390   |
| 190                | PC2-190P   | 10.795 | 10.475 | .390   |
| 192                | PC2-192P   | 10.895 | 10.575 | .390   |
| 194                | PC2-194P   | 10.995 | 10.675 | .390   |
| 196                | PC2-196P   | 11.095 | 10.775 | .390   |
| 198                | PC2-198P   | 11.195 | 10.875 | .390   |
| 200                | PC2-200P   | 11.295 | 10.975 | .390   |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force

## PC connector

### 3 row contact arrangements

| Number of Contacts | PC Number* | A Max. | B     | C Max. |
|--------------------|------------|--------|-------|--------|
| 030                | PC3-030P   | 2.295  | 1.975 | .490   |
| 033                | PC3-033P   | 2.395  | 2.075 | .490   |
| 036                | PC3-036P   | 2.495  | 2.175 | .490   |
| 039                | PC3-039P   | 2.595  | 2.275 | .490   |
| 042                | PC3-042P   | 2.695  | 2.375 | .490   |
| 045                | PC3-045P   | 2.795  | 2.475 | .490   |
| 048                | PC3-048P   | 2.895  | 2.575 | .490   |
| 051                | PC3-051P   | 2.995  | 2.675 | .490   |
| 054                | PC3-054P   | 3.095  | 2.775 | .490   |
| 057                | PC3-057P   | 3.195  | 2.875 | .490   |
| 060                | PC3-060P   | 3.295  | 2.975 | .490   |
| 063                | PC3-063P   | 3.395  | 3.075 | .490   |
| 066                | PC3-066P   | 3.495  | 3.175 | .490   |
| 069                | PC3-069P   | 3.595  | 3.275 | .490   |
| 072                | PC3-072P   | 3.695  | 3.375 | .490   |
| 075                | PC3-075P   | 3.795  | 3.475 | .490   |
| 078                | PC3-078P   | 3.895  | 3.575 | .490   |
| 081                | PC3-081P   | 3.995  | 3.675 | .490   |
| 084                | PC3-084P   | 4.095  | 3.775 | .490   |
| 087                | PC3-087P   | 4.195  | 3.875 | .490   |
| 090                | PC3-090P   | 4.295  | 3.975 | .490   |
| 093                | PC3-093P   | 4.395  | 4.075 | .490   |
| 096                | PC3-096P   | 4.495  | 4.175 | .490   |
| 099                | PC3-099P   | 4.595  | 4.275 | .490   |
| 102                | PC3-102P   | 4.695  | 4.375 | .490   |
| 105                | PC3-105P   | 4.795  | 4.475 | .490   |
| 108                | PC3-108P   | 4.895  | 4.575 | .490   |
| 111                | PC3-111P   | 4.995  | 4.675 | .490   |
| 114                | PC3-114P   | 5.095  | 4.775 | .490   |
| 117                | PC3-117P   | 5.195  | 4.875 | .490   |
| 120                | PC3-120P   | 5.295  | 4.975 | .490   |
| 123                | PC3-123P   | 5.395  | 5.075 | .490   |
| 126                | PC3-126P   | 5.495  | 5.175 | .490   |
| 129                | PC3-129P   | 5.595  | 5.275 | .490   |
| 132                | PC3-132P   | 5.695  | 5.375 | .490   |
| 135                | PC3-135P   | 5.795  | 5.475 | .490   |
| 138                | PC3-138P   | 5.895  | 5.575 | .490   |
| 141                | PC3-141P   | 5.995  | 5.675 | .490   |
| 144                | PC3-144P   | 6.095  | 5.775 | .490   |
| 147                | PC3-147P   | 6.195  | 5.875 | .490   |
| 150                | PC3-150P   | 6.295  | 5.975 | .490   |
| 153                | PC3-153P   | 6.395  | 6.075 | .490   |
| 156                | PC3-156P   | 6.495  | 6.175 | .490   |
| 159                | PC3-159P   | 6.595  | 6.275 | .490   |
| 162                | PC3-162P   | 6.695  | 6.375 | .490   |
| 165                | PC3-165P   | 6.795  | 6.475 | .490   |

| Number of Contacts | PC Number* | A Max. | B      | C Max. |
|--------------------|------------|--------|--------|--------|
| 168                | PC3-168P   | 6.895  | 6.575  | .490   |
| 171                | PC3-171P   | 6.995  | 6.675  | .490   |
| 174                | PC3-174P   | 7.095  | 6.775  | .490   |
| 177                | PC3-177P   | 7.195  | 6.875  | .490   |
| 180                | PC3-180P   | 7.295  | 6.975  | .490   |
| 183                | PC3-183P   | 7.395  | 7.075  | .490   |
| 186                | PC3-186P   | 7.495  | 7.175  | .490   |
| 189                | PC3-189P   | 7.595  | 7.275  | .490   |
| 192                | PC3-192P   | 7.695  | 7.375  | .490   |
| 195                | PC3-195P   | 7.795  | 7.475  | .490   |
| 198                | PC3-198P   | 7.895  | 7.575  | .490   |
| 201                | PC3-201P   | 7.995  | 7.675  | .490   |
| 204                | PC3-204P   | 8.095  | 7.775  | .490   |
| 207                | PC3-207P   | 8.195  | 7.875  | .490   |
| 210                | PC3-210P   | 8.295  | 7.975  | .490   |
| 213                | PC3-213P   | 8.395  | 8.075  | .490   |
| 216                | PC3-216P   | 8.495  | 8.175  | .490   |
| 219                | PC3-219P   | 8.595  | 8.275  | .490   |
| 222                | PC3-222P   | 8.695  | 8.375  | .490   |
| 225                | PC3-225P   | 8.795  | 8.475  | .490   |
| 228                | PC3-228P   | 8.895  | 8.575  | .490   |
| 231                | PC3-231P   | 8.995  | 8.675  | .490   |
| 234                | PC3-234P   | 9.095  | 8.775  | .490   |
| 237                | PC3-237P   | 9.195  | 8.875  | .490   |
| 240                | PC3-240P   | 9.295  | 8.975  | .490   |
| 243                | PC3-243P   | 9.395  | 9.075  | .490   |
| 246                | PC3-246P   | 9.495  | 9.175  | .490   |
| 249                | PC3-249P   | 9.595  | 9.275  | .490   |
| 252                | PC3-252P   | 9.695  | 9.375  | .490   |
| 255                | PC3-255P   | 9.795  | 9.475  | .490   |
| 258                | PC3-258P   | 9.895  | 9.575  | .490   |
| 261                | PC3-261P   | 9.995  | 9.675  | .490   |
| 264                | PC3-264P   | 10.095 | 9.775  | .490   |
| 267                | PC3-267P   | 10.195 | 9.875  | .490   |
| 270                | PC3-270P   | 10.295 | 9.975  | .490   |
| 273                | PC3-273P   | 10.395 | 10.075 | .490   |
| 276                | PC3-276P   | 10.495 | 10.175 | .490   |
| 279                | PC3-279P   | 10.595 | 10.275 | .490   |
| 282                | PC3-282P   | 10.695 | 10.375 | .490   |
| 285                | PC3-285P   | 10.795 | 10.475 | .490   |
| 288                | PC3-288P   | 10.895 | 10.575 | .490   |
| 291                | PC3-291P   | 10.995 | 10.675 | .490   |
| 294                | PC3-294P   | 11.095 | 10.775 | .490   |
| 297                | PC3-297P   | 11.195 | 10.875 | .490   |
| 300                | PC3-300P   | 11.295 | 10.975 | .490   |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force

## PC connector

### 4 row contact arrangements

| Number of Contacts | PC Number* | A Max. | B     | C Max. |
|--------------------|------------|--------|-------|--------|
| 040                | PC4-040P   | 2.295  | 1.975 | .590   |
| 044                | PC4-044P   | 2.395  | 2.075 | .590   |
| 048                | PC4-048P   | 2.495  | 2.175 | .590   |
| 052                | PC4-052P   | 2.595  | 2.275 | .590   |
| 056                | PC4-056P   | 2.695  | 2.375 | .590   |
| 060                | PC4-060P   | 2.795  | 2.475 | .590   |
| 064                | PC4-064P   | 2.895  | 2.575 | .590   |
| 068                | PC4-068P   | 2.995  | 2.675 | .590   |
| 072                | PC4-072P   | 3.095  | 2.775 | .590   |
| 076                | PC4-076P   | 3.195  | 2.875 | .590   |
| 080                | PC4-080P   | 3.295  | 2.975 | .590   |
| 084                | PC4-084P   | 3.395  | 3.075 | .590   |
| 088                | PC4-088P   | 3.495  | 3.175 | .590   |
| 092                | PC4-092P   | 3.595  | 3.275 | .590   |
| 096                | PC4-096P   | 3.695  | 3.375 | .590   |
| 100                | PC4-100P   | 3.795  | 3.475 | .590   |
| 104                | PC4-104P   | 3.895  | 3.575 | .590   |
| 108                | PC4-108P   | 3.995  | 3.675 | .590   |
| 112                | PC4-112P   | 4.095  | 3.775 | .590   |
| 116                | PC4-116P   | 4.195  | 3.875 | .590   |
| 120                | PC4-120P   | 4.295  | 3.975 | .590   |
| 124                | PC4-124P   | 4.395  | 4.075 | .590   |
| 128                | PC4-128P   | 4.495  | 4.175 | .590   |
| 132                | PC4-132P   | 4.595  | 4.275 | .590   |
| 136                | PC4-136P   | 4.695  | 4.375 | .590   |
| 140                | PC4-140P   | 4.795  | 4.475 | .590   |
| 144                | PC4-144P   | 4.895  | 4.575 | .590   |
| 148                | PC4-148P   | 4.995  | 4.675 | .590   |
| 152                | PC4-152P   | 5.095  | 4.775 | .590   |
| 156                | PC4-156P   | 5.195  | 4.875 | .590   |
| 160                | PC4-160P   | 5.295  | 4.975 | .590   |
| 164                | PC4-164P   | 5.395  | 5.075 | .590   |
| 168                | PC4-168P   | 5.495  | 5.175 | .590   |
| 172                | PC4-172P   | 5.595  | 5.275 | .590   |
| 176                | PC4-176P   | 5.695  | 5.375 | .590   |
| 180                | PC4-180P   | 5.795  | 5.475 | .590   |
| 184                | PC4-184P   | 5.895  | 5.575 | .590   |
| 188                | PC4-188P   | 5.995  | 5.675 | .590   |
| 192                | PC4-192P   | 6.095  | 5.775 | .590   |
| 196                | PC4-196P   | 6.195  | 5.875 | .590   |
| 200                | PC4-200P   | 6.295  | 5.975 | .590   |
| 204                | PC4-204P   | 6.395  | 6.075 | .590   |
| 208                | PC4-208P   | 6.495  | 6.175 | .590   |
| 212                | PC4-212P   | 6.595  | 6.275 | .590   |
| 216                | PC4-216P   | 6.695  | 6.375 | .590   |
| 220                | PC4-220P   | 6.795  | 6.475 | .590   |

| Number of Contacts | PC Number* | A Max. | B      | C Max. |
|--------------------|------------|--------|--------|--------|
| 224                | PC4-224P   | 6.895  | 6.575  | .590   |
| 228                | PC4-228P   | 6.995  | 6.675  | .590   |
| 232                | PC4-232P   | 7.095  | 6.775  | .590   |
| 236                | PC4-236P   | 7.195  | 6.875  | .590   |
| 240                | PC4-240P   | 7.295  | 6.975  | .590   |
| 244                | PC4-244P   | 7.395  | 7.075  | .590   |
| 248                | PC4-248P   | 7.495  | 7.175  | .590   |
| 252                | PC4-252P   | 7.595  | 7.275  | .590   |
| 256                | PC4-256P   | 7.695  | 7.375  | .590   |
| 260                | PC4-260P   | 7.795  | 7.475  | .590   |
| 264                | PC4-264P   | 7.895  | 7.575  | .590   |
| 268                | PC4-268P   | 7.995  | 7.675  | .590   |
| 272                | PC4-272P   | 8.095  | 7.775  | .590   |
| 276                | PC4-276P   | 8.195  | 7.875  | .590   |
| 280                | PC4-280P   | 8.295  | 7.975  | .590   |
| 284                | PC4-284P   | 8.395  | 8.075  | .590   |
| 288                | PC4-288P   | 8.495  | 8.175  | .590   |
| 292                | PC4-292P   | 8.595  | 8.275  | .590   |
| 296                | PC4-296P   | 8.695  | 8.375  | .590   |
| 300                | PC4-300P   | 8.795  | 8.475  | .590   |
| 304                | PC4-304P   | 8.895  | 8.575  | .590   |
| 308                | PC4-308P   | 8.995  | 8.675  | .590   |
| 312                | PC4-312P   | 9.095  | 8.775  | .590   |
| 316                | PC4-316P   | 9.195  | 8.875  | .590   |
| 320                | PC4-320P   | 9.295  | 8.975  | .590   |
| 324                | PC4-324P   | 9.395  | 9.075  | .590   |
| 328                | PC4-328P   | 9.495  | 9.175  | .590   |
| 332                | PC4-332P   | 9.595  | 9.275  | .590   |
| 336                | PC4-336P   | 9.695  | 9.375  | .590   |
| 340                | PC4-340P   | 9.795  | 9.475  | .590   |
| 344                | PC4-344P   | 9.895  | 9.575  | .590   |
| 348                | PC4-348P   | 9.995  | 9.675  | .590   |
| 352                | PC4-352P   | 10.095 | 9.775  | .590   |
| 356                | PC4-356P   | 10.195 | 9.875  | .590   |
| 360                | PC4-360P   | 10.295 | 9.975  | .590   |
| 364                | PC4-364P   | 10.395 | 10.075 | .590   |
| 368                | PC4-368P   | 10.495 | 10.175 | .590   |
| 372                | PC4-372P   | 10.595 | 10.275 | .590   |
| 376                | PC4-376P   | 10.695 | 10.375 | .590   |
| 380                | PC4-380P   | 10.795 | 10.475 | .590   |
| 384                | PC4-384P   | 10.895 | 10.575 | .590   |
| 388                | PC4-388P   | 10.995 | 10.675 | .590   |
| 392                | PC4-392P   | 11.095 | 10.775 | .590   |
| 396                | PC4-396P   | 11.195 | 10.875 | .590   |
| 400                | PC4-400P   | 11.295 | 10.975 | .590   |

\*See How to Order, pages 3, 4 and 5

# Low Mating Force Connector Accessories

## polarization keys

General information follows on this page and the next three pages for assembling connector accessories with Amphenol® Low Mating Force B<sup>3</sup> Brush Contact Connectors.\* Provided are suggestions for proper connector installation that will help to maintain connector straightness after equipment assembly.

Low mating force connector bodies are intentionally designed to be non-rigid to facilitate application variables such as compliance to printed circuit boards, fixtures and card cages, vibration and shock exposure, thermal excursions and differential expansion characteristics. Users may employ installation procedures that will provide mating surface straightness of these non-rigid bodies within 0.010 inch to ensure maximum connector performance.

Generally, no external board support structures are required with B<sup>3</sup> brush contact connectors as long as the mounting surface offers sufficient rigidity. However, longer installations should consider external support to prevent excessive flexing of the connector/printed circuit board assembly.

### POLARIZATION KEYS

Polarization Keys, 10-285422-2 are accessory items, ordered separately for MB, DB, IO and PC Series Low Mating Force Connectors. If used, 4 keys are required per connector half. See page 5 for ordering information.

Examples at right show key locations for mating connector halves. The number or letter designations on all mating connectors are arranged so that the projecting keys on one relate to the same numbers or letters on the other. With the numbers or letters matching, the connector will mate.

#### TYPICAL CODE SEQUENCE

B, H - 1, 5  
4 Different possibilities  
at each position = 256



DAUGHTER BOARD CONNECTOR  
WITH POLARIZATION KEYS

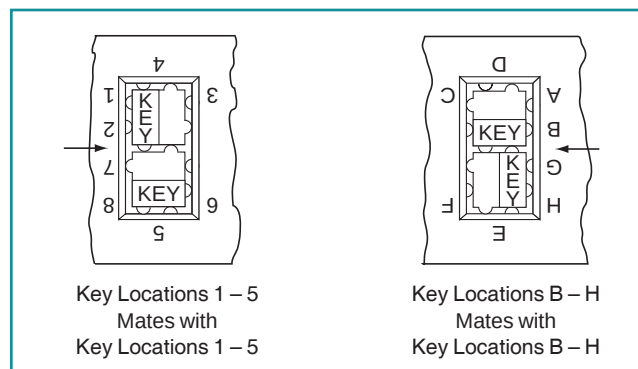
### CONNECTOR ACCESSORIES THAT ARE USED WITH B<sup>3</sup> BRUSH CONNECTORS INCLUDE:

- Locking screws for I/O connector mounting to board
- Locking/mounting bushings:
  - for PC connector mounting to board or mating to I/O connector
  - for MB connector mounting to board or mating to I/O connector
- Polarization keys for each style connector provide up to 256 different key locations for alternate keying
- Test Probe kits for ensuring that contacts are properly wired within a connector and to prevent damage to brush contacts during probing.

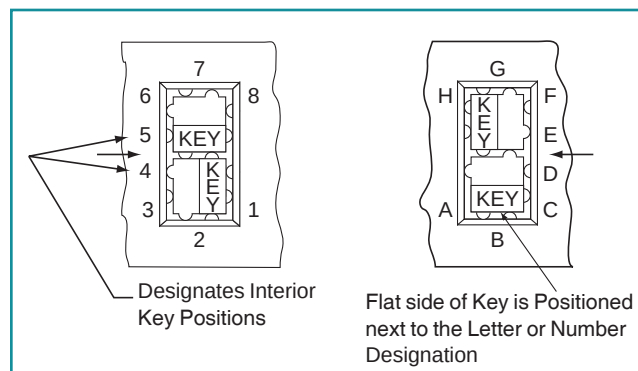
For How to Order Accessories see page 5.

B<sup>3</sup> brush PC style connectors are shipped with PC tail combs that not only protect the tails during shipment, but aid the person assembling the connectors to boards to align the contacts.

Refer to page 2 of this catalog for illustration of the connector styles and how they mate.



KEY LOCATIONS  
MOTHER BOARD OR PC CONNECTORS



KEY LOCATIONS  
DAUGHTER BOARD OR INPUT/OUTPUT CONNECTORS

\* Installation Instructions for B<sup>3</sup> Low Mating Force Connectors had formerly been covered in publication L-1220. This has been discontinued and all installation instructions are covered here on pages 24-29.

# Low Mating Force Connector Accessories

## test probe kit

In order to insure that contacts are properly wired within a connector, a Test Probe Kit is needed (Part number to order is 11-10400-22). This kit is especially designed to prevent damage to brush contacts during probing. It consists of a plastic holder, insert, and two contacts, usable for either Mother Board or Daughter Board applications. It is recommended that the user buy two kits, if using connectors of two genders. The kits are not convertible after assembly.

**Instructions:**

- DB-IO Test Probe -

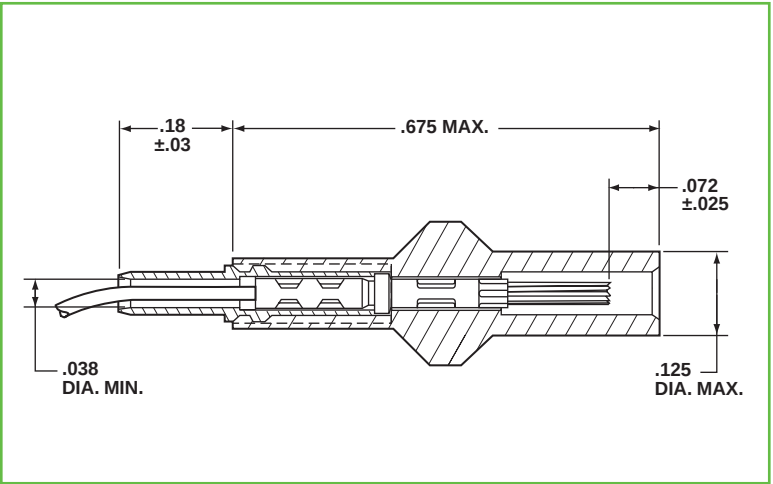
Slide the insert back over the wire and crimp contact on. Follow crimping procedure below. Then snap the insert and contact assembly into the holder.
- MB-PC Test probe -

Slide holder over wire and then crimp contact. Follow crimping procedure below. Slide the insert on the contact and seat it against the shoulder. Slide the holder forward and snap it onto the insert.

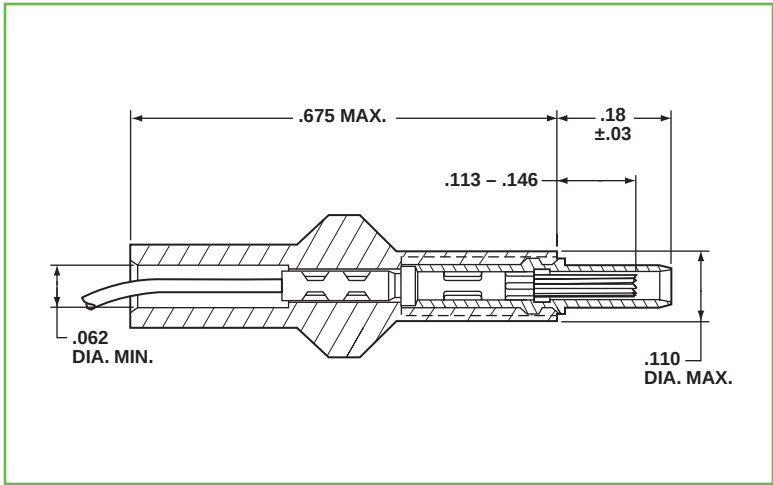
Crimping Procedure: Using accepted industry procedures, strip wire end to be terminated 1/8 to 5/32 inch. Care should be taken not to nick wire strands. Assemble the M22520/2-01 crimp tool and the M22520/2-27 positioner, and place tool selector in correct setting for wire size. Selected wire size must not have an insulation diameter more than .062 for MB-PC and not more than .038 for DB/IO.

|     |    |    |    |    |
|-----|----|----|----|----|
| AWG | 22 | 24 | 26 | 28 |
| SEL | 5  | 4  | 3  | 2  |

Insert stripped wire end into contact wire well. Strands should be visible in wire well inspection hole. Bottom contact and wire assembly in positioner, and close handles of crimp tool to complete crimp. Handles will not open unless full crimping cycle has been completed.



DAUGHTER BOARD - INPUT/OUTPUT TEST PROBE



MOTHER BOARD - PC TEST PROBE

# Low Mating Force Connector Installation

## BRUSH CONNECTORS USER APPLICATION INFORMATION

The Brush B<sup>3</sup> connector is a highly sophisticated, innovative low mating force device designed to provide a multiplicity or highly redundant number of contact sites for high density, high performance applications. Contact resistance is stable and low, approximately 1/3 lower than the most widely available contemporary two piece printed circuit card connector type. To maximize the B<sup>3</sup> connector capability and assure the greatest potential reliability, several guidelines should be followed.

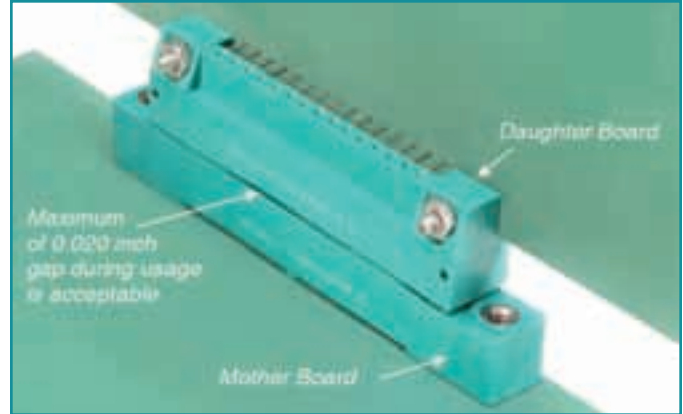
Ideally, connectors should be fully mated and not used as a packaging system tolerance absorber. Full mating occurs when the two molded thermoplastic contact housings (connector bodies) touch, plug skirt to receptacle shoulder over the entire length of the connector. However, manufacturing tolerances and user installation procedures must be considered and can be expected to prevent the “ideal” situation.

Connector bodies were intentionally designed to be non-rigid as permanent flexibility is necessary to allow compliance to user printed circuit cards, fixtures and card cages. Vibration and shock exposure, thermal excursions, contact repairability, and differential expansion characteristics further dictate the desirability of flexible connectors.

Amphenol drawing call-outs of part flatness to a 0.010 inch FIM (Total Indicator Reading - Full Indicator Movement) over the mating surface length is to be interpreted as in an “as used” condition. Rigid mounting of Mother Board (plug) parts to frames, multi-layer printed circuit boards or back panels should consider the need for the 0.010 inch maximum condition after soldering or solderless wrapping procedures.

Normal Mother Board parts in an unrestrained, unused condition may exceed the “as used” 0.010 inch reading at normal ambient or storage environments. Thermal cycling may further aggravate or adjust the condition. These parts present a profile from flat to a “smile” appearance when viewed from the side with the mating surface uppermost. (For example, see photo above). Normal positioning of this part on the Mother Board with slight restraint through use of mounting hardware or standard mounting bolts will automatically allow part compliance to the flatness condition of the board. Slight restraint is urged to allow for differential thermal expansion compensation during preheating and soldering operations. Final torquing or permanent fastening should be effected after cool down and thermal neutralization. Normal solderless wrapping procedures could ignore the differential expansion consideration.

Daughter Board connectors present the same flat to “smile” profile in a free state with the mating surface downward. The relief shelf can be used as a reference or guide when used with a straight edged Daughter Board or printed circuit board “page”. Once proper positioning is verified and contact tails are solder fixed to the plated through holes, straightness will be permanently retained.



DAUGHTER BOARD AND MOTHER BOARD  
FULLY MATED CONDITION

Users are urged to monitor the quality of connector installation to optimize the mating of connectors.

During usage and when mated the worst case condition of the “as used” 0.010 inch maximum reading of both the plug and receptacle could cause a maximum gap between plug and receptacle moldings of 0.020 inch. This condition is well within the B<sup>3</sup> product mated performance goals as our minimum effective electrical contact engagement has greater than a 100% safety factor. Users are urged to monitor the quality of connector installation to optimize the mating of connectors.

Input/Output connectors also normally exhibit a flat to “smile” profile with the mating surface downward. This “smile” condition self corrects once mated with the Mother Board counterpart and accessory locking screws are fastened. Again, checking for the 0.020 inch maximum gap is urged as a quality control monitor of user application techniques.

Amphenol has attempted to design in the ultimate for connector compliancy and self-correction during normal user installation procedures. The connector capabilities and inherent reliability rely in part on practical user procedures and application considerations. Refer to pages 27 - 29 for other installation instructions. And, refer to page 2 for correct mating of low mating force connectors. Amphenol board level engineers and product specialists are available to assist the user with application recommendations and processing guidance. Give us a call at 607-563-5011 and ask for board level technical assistance if further information is needed.

# Low Mating Force Connector Installation

## MOTHER BOARD CONNECTOR

MB connectors that are mounted on printed circuit boards should be installed on the board and held somewhat loosely, yet assuring all connector molding standoff pads contact the surface of the board, prior to soldering. There are several methods for attaching the MB connector to the board.

Inserting locking/mounting bushings with an arbor press is shown in the top photo at right. Locking/mounting bushing accessory, two per connector, may be inserted into 0.185 inch diameter CSK holes at each end of the front of a MB connector body. (Part number to order locking/mounting bushing is 10-41196-3). Using a light arbor press or similar device, firmly press the knurled section of the bushing into the lower 0.122 inch diameter hole until the front of the bushing is flush with, or slightly below, the front surface of the MB connector. Refer to Figure 1 at right.

Make sure the bushing and hole axis are properly aligned. Avoid excessive force which may crack the back surface of the MB connector body.

The back of the locking/mounting bushing has a 4-40 UNC-2A THD to mount the connector. Fasten the connector with a suitable washer and nut. The front of the locking/mounting bushing has a 4-40 UNC-2B THD which will mate with the locking screw accessory of an IO connector.

### Alternate Mounting Variations for Mother Board Connector

A clinch nut (such as all ESNA 79NCFMA2-26 or equivalent) may be pressed from the front, knurled end first, through the 0.185 inch diameter CSK into the 0.122 inch diameter hole at each end of the connector. An appropriate length 2-56 UNC-3A screw, washer, and nut may be used to mount the connector. Mounting forces should be applied to the bushing toward the rear of the connector. (See Figure 2 below)

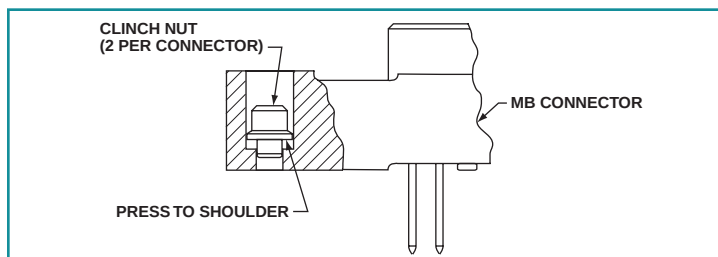


FIGURE 2: MB CONNECTOR WITH CLINCH NUT MOUNTING

When a Daughter Board is mated, use a 4-40 screw of appropriate length with a suitable washer under the head. Insert the screw from the front of the connector through the 0.185 inch diameter CSK into the 0.122 inch diameter hole at each end of the connector and fasten with a suitable washer and nut. (Refer to Figure 3 below). Torque to 5.5 pound-inch maximum after soldering operation has been completed.

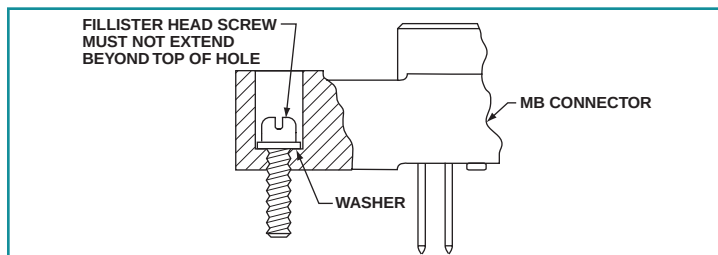


FIGURE 3: MB CONNECTOR WITH SCREW MOUNTING



LOCKING/MOUNTING BUSHING ACCESSORY INSERTED INTO MB CONNECTOR BODY

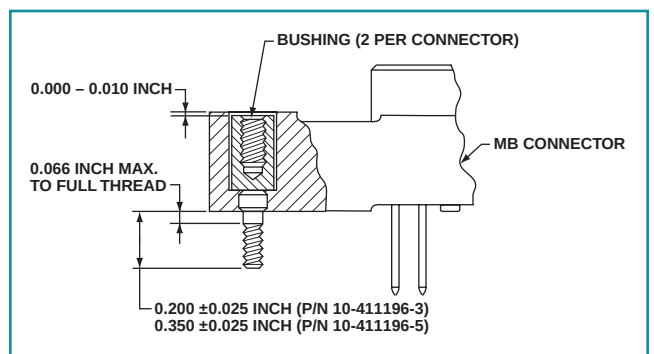


FIGURE 1:  
ASSEMBLY OF LOCKING/MOUNTING BUSHING INTO MB CONNECTOR

If MB connectors are to be wave soldered to printed circuit boards, the boards should be fixtured to maintain assembly straightness prior to and during the wave soldering process. (Refer to Figure 4 below).

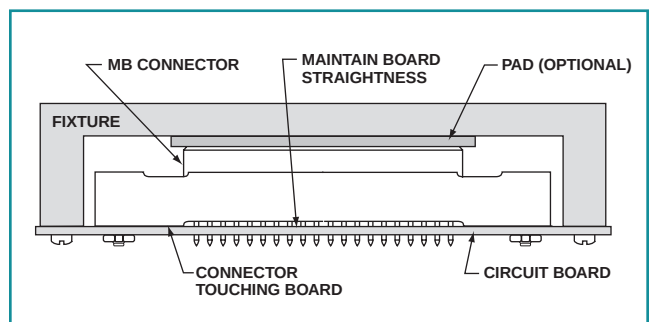


FIGURE 4: TYPICAL FIXTURE FOR SOLDERING MB CONNECTORS

# Low Mating Force Connector Installation

## DAUGHTER BOARD CONNECTOR

DB connectors should be loosely held on the printed circuit board prior to and during wave soldering. Care must be taken to ensure that the board does not bow away from the center of the connector during the soldering process. Also, especially on long length daughter board connectors, care must be taken that the connector does not bow on the circuit board. (Refer to Figure 5.)

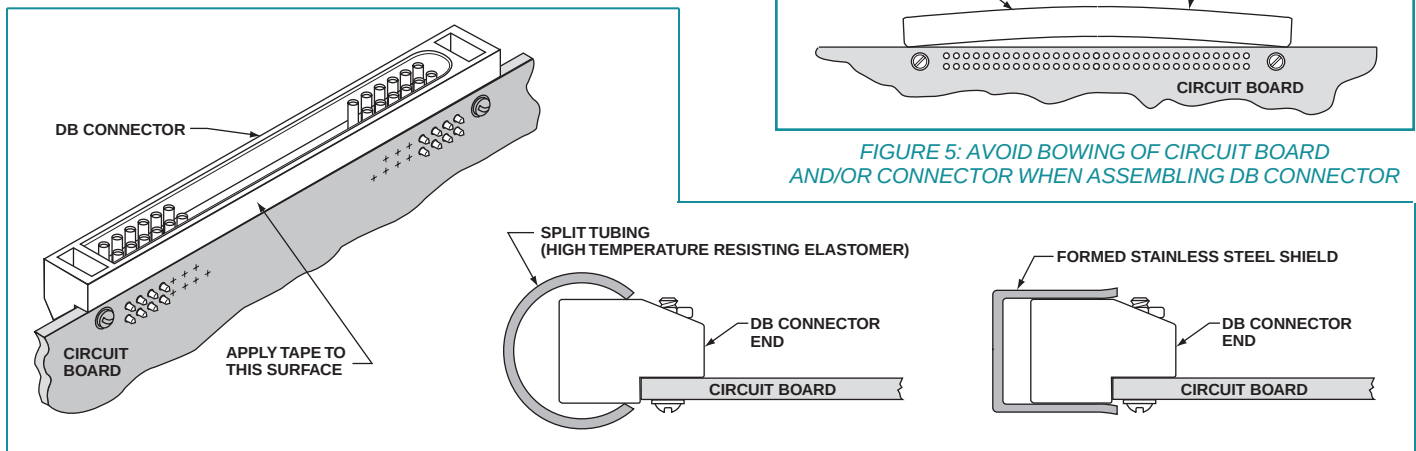


FIGURE 5: AVOID BOWING OF CIRCUIT BOARD AND/OR CONNECTOR WHEN ASSEMBLING DB CONNECTOR

FIGURE 6: THREE TYPICAL MASKING APPLICATIONS FOR SOLDERING DB CONNECTORS

After soldering, mounting screws should be properly torqued.

For cosmetic purposes, the board side of the DB connector can be masked prior to wave soldering to protect it from heat exposure and solder wash. Acceptable masking may be accomplished with split tubing, stainless steel, or Mystik Tape #7010 or #7367. (Refer to Figure 6).

Printed wiring boards with DB connectors attached should be inserted into the housing until firmly seated. If possible, visual observation of the MB/DB mated condition is recommended. The fully mated condition occurs when the DB connector skirt bottoms on the MB or PC connector shoulder along the full length. (Refer to Figure 7).

Printed circuit boards should be supported in card guides and locked in position when connectors are fully mated.

## PC CONNECTOR

The PC connector should be loosely attached to the printed circuit board prior to any soldering of contacts.

Locking bushing accessory, two per connector, may be inserted from the back of a PC connector body into large mounting holes at each end. See photo at right. Part number to order locking bushing accessory for PC connectors is 10-411196-4. The 0.126 inch diameter cross holes in the locking bushing must be aligned with the 0.126 inch diameter cross hole in the PC connector body. These holes accept a 4-40 UNC-2A screw which should be long enough to allow mounting to the board. Fasten with a suitable washer and nut, making sure an appropriate washer is also under the head.

The front of the locking bushing has a 4-40 UNC-2B thread which will mate with the locking bushing accessory of an IO connector.

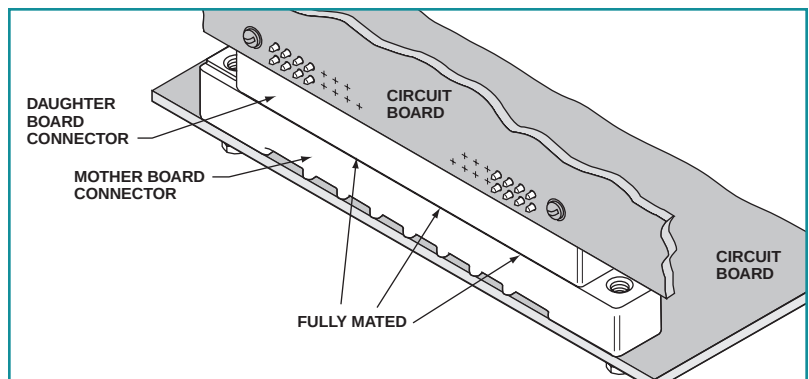


FIGURE 7: MB CONNECTOR & DB CONNECTOR IN FULLY MATED CONDITION



LOCKING BUSHING ACCESSORY INSERTED INTO PC CONNECTOR BODY

# Low Mating Force Connector Installation

## PC CONNECTOR, CONT.

The mounting surface to which the connector is applied should not extend forward of the shoulder of the PC connector. If the mounting surface does extend beyond the shoulder, a shim (minimum 0.005 inch thick) must be inserted between the connector body and the mounting surface. (Refer to Figure 8). After soldering, mounting screws should be properly torqued. Fixturing of the PC connector and mounting surface may be desirable to assure straightness after wave soldering.

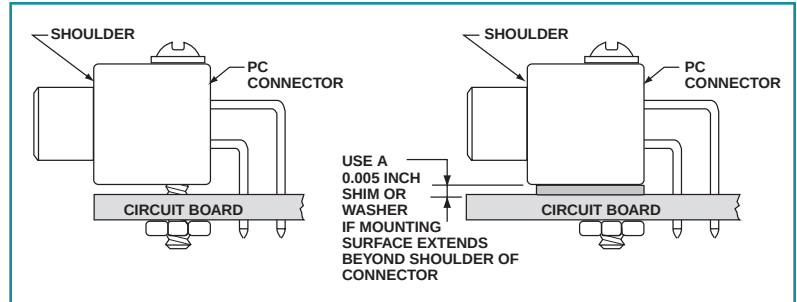


FIGURE 8: PC CONNECTOR MOUNTING

## INPUT/OUTPUT CONNECTOR

Use of mating hardware, such as locking screws, is recommended with I/O connectors. See photo at right. Locking screw accessory, two per connector, may be inserted into the large holes at each end of the back of an IO connector body. Part number to order locking screw accessory is 10-411196-4. By hand, press the locking screw firmly down into the cavity until it reaches a positive stop. The locking screw is then captivated in the retention system of the cavity. The front of the locking screw has a 4-40 UNC-2A thread which will mate with the locking bushing accessories of MB or PC connectors. (Refer to Figure 9 for I/O locking screw dimensions).

Should it be necessary to remove the captivated locking screw accessory, push the screw as far forward as possible. Using vise grip pliers to grasp the threaded end and pliers to hold the knurled end, apply torque until the locking screw breaks in two. Each half will then drop out.



LOCKING SCREW ACCESSORY INSERTED INTO I/O CONNECTOR BODY

## Alternate Mounting Variation for Input/Output Connectors

For fixed mounting, a 6-32 thread forming screw, type AB (MS5186) may be inserted through the mounting member and into the holes at each end of the connector body from the back. The screws must be used with suitable washers and must be of sufficient length to penetrate the connector body 0.350 inch. Care must be taken not to over-tighten the screws.

Visual observation of the mating of the MB connector to the I/O connector or the PC connector to the I/O connector is recommended. The fully mated condition occurs when the I/O connector skirt bottoms on the MB or PC shoulder along the full length. (Refer to Figure 10).

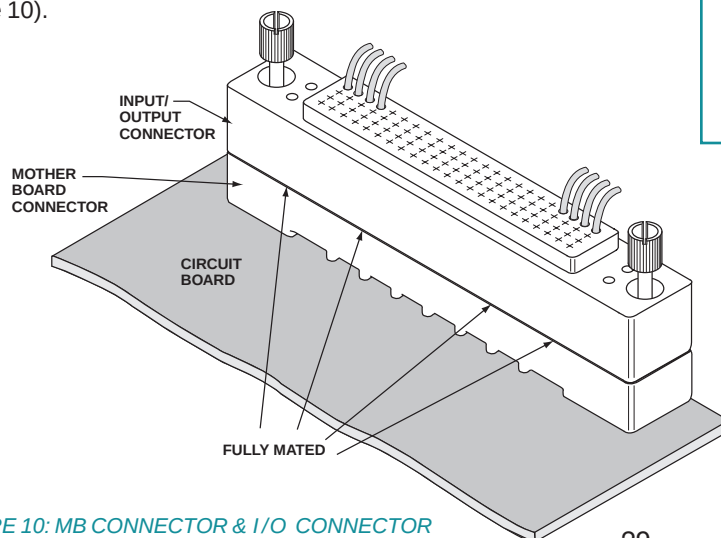


FIGURE 10: MB CONNECTOR & I/O CONNECTOR FULLY MATED CONDITION

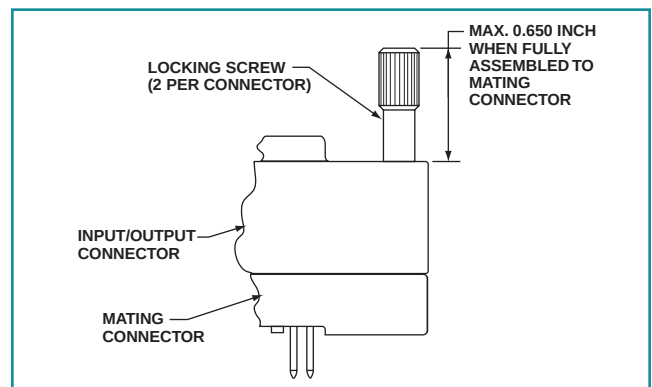


FIGURE 9: I/O LOCKING SCREW DIMENSIONS

Printed circuit boards containing PC connectors that are mating with I/O connectors should utilize a holding device that is capable of locking the board in place to prevent back-off during use.

# Low Mating Force Connector

## Smaller Sizes with .100 X .100 Sq. Inch Grid

### design flexibility

To meet more customer needs and provide more design flexibility, Amphenol expanded their low mating force connector family with smaller contact count connectors (sizes with less than standard 10 contacts per row). These are available with as few as 10 brush contacts per connector and up to 36 brush contacts per connector. The arrangements are in the same .100 X .100 square inch grid pattern as standard low mating force connectors. They are offered in mother board, daughter board, input/output and printed circuit styles. (Shown on this page and the following page). For how to order information please consult Amphenol Aerospace.



LOW MATING FORCE CONNECTORS IN SMALLER SIZES

### Mother Board Connector

| Number of Contacts | Contact Pattern | A Max. | B     | C Max. |
|--------------------|-----------------|--------|-------|--------|
| 10                 | 2 Row X 5       | 1.795  | 1.475 | .390   |
| 12                 | 2 Row X 6       | 1.895  | 1.575 | .390   |
| 14                 | 2 Row X 7       | 1.995  | 1.675 | .390   |
| 15                 | 3 Row X 5       | 1.795  | 1.475 | .490   |
| 16                 | 2 Row X 8       | 2.095  | 1.775 | .390   |
| 18                 | 2 Row X 9       | 2.195  | 1.875 | .390   |
|                    | 3 Row X 6       | 1.895  | 1.575 | .490   |
| 20                 | 4 Row X 5       | 1.795  | 1.475 | .590   |
| 21                 | 3 Row X 7       | 1.995  | 1.675 | .490   |
| 24                 | 3 Row X 8       | 2.095  | 1.775 | .490   |
|                    | 4 Row X 6       | 1.895  | 1.575 | .590   |
| 27                 | 3 Row X 9       | 2.195  | 1.875 | .490   |
| 28                 | 4 Row X 7       | 1.995  | 1.675 | .590   |
| 32                 | 4 Row X 8       | 2.095  | 1.775 | .590   |
| 36                 | 4 Row X 9       | 2.195  | 1.875 | .590   |

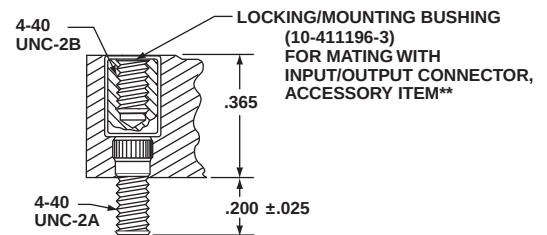
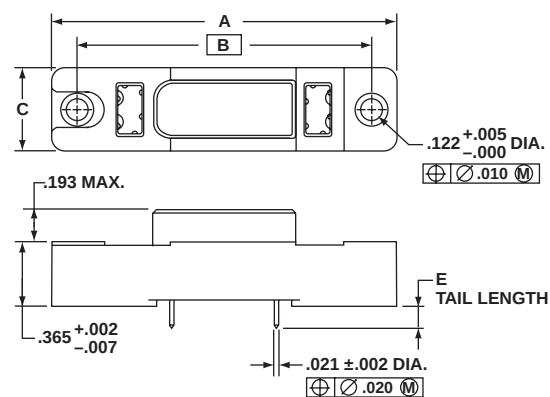
\*\* Accessory item supplied separately. See Accessory How to Order page 5 and page 27 for alternate mounting methods.

### Daughter Board Connector

| Number of Contacts | Contact Pattern | A Max. | B     | C Max. | D Max. |
|--------------------|-----------------|--------|-------|--------|--------|
| 10                 | 2 Row X 5       | 1.180  | .850  | .375   | .545   |
| 12                 | 2 Row X 6       | 1.280  | .950  | .375   | .545   |
| 14                 | 2 Row X 7       | 1.380  | 1.050 | .375   | .545   |
| 15                 | 3 Row X 5       | 1.180  | .850  | .475   | .645   |
| 16                 | 2 Row X 8       | 1.480  | 1.150 | .375   | .545   |
| 18                 | 2 Row X 9       | 1.580  | 1.250 | .375   | .545   |
|                    | 3 Row X 6       | 1.280  | .950  | .475   | .645   |
| 20                 | 4 Row X 5       | 1.180  | .850  | .575   | .745   |
| 21                 | 3 Row X 7       | 1.380  | 1.050 | .475   | .645   |
| 24                 | 3 Row X 8       | 1.480  | 1.150 | .475   | .645   |
|                    | 4 Row X 6       | 1.280  | .950  | .575   | .745   |
| 27                 | 3 Row X 9       | 1.580  | 1.250 | .475   | .645   |
| 28                 | 4 Row X 7       | 1.380  | 1.050 | .575   | .745   |
| 32                 | 4 Row X 8       | 1.480  | 1.150 | .575   | .745   |
| 36                 | 4 Row X 9       | 1.580  | 1.250 | .575   | .745   |

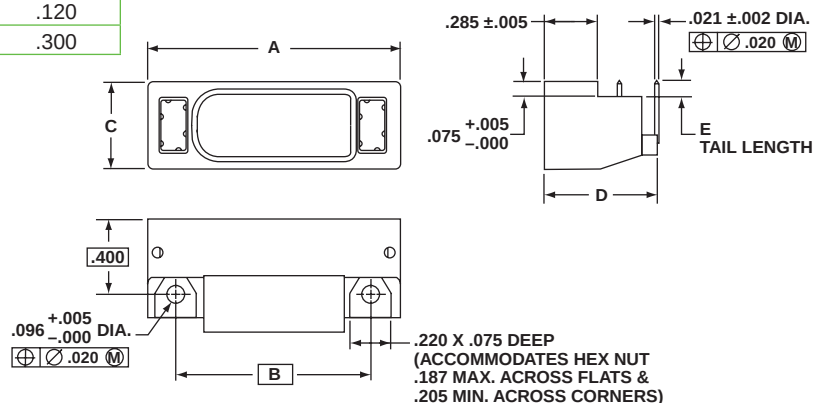
| E Tail Length<br>±.020 |
|------------------------|
| .148                   |
| .180                   |
| .335                   |

### Mother Board Connector



### Daughter Board Connector

| E Tail Length<br>±.020 |
|------------------------|
| .085                   |
| .120                   |
| .300                   |



## Low Mating Force Connector

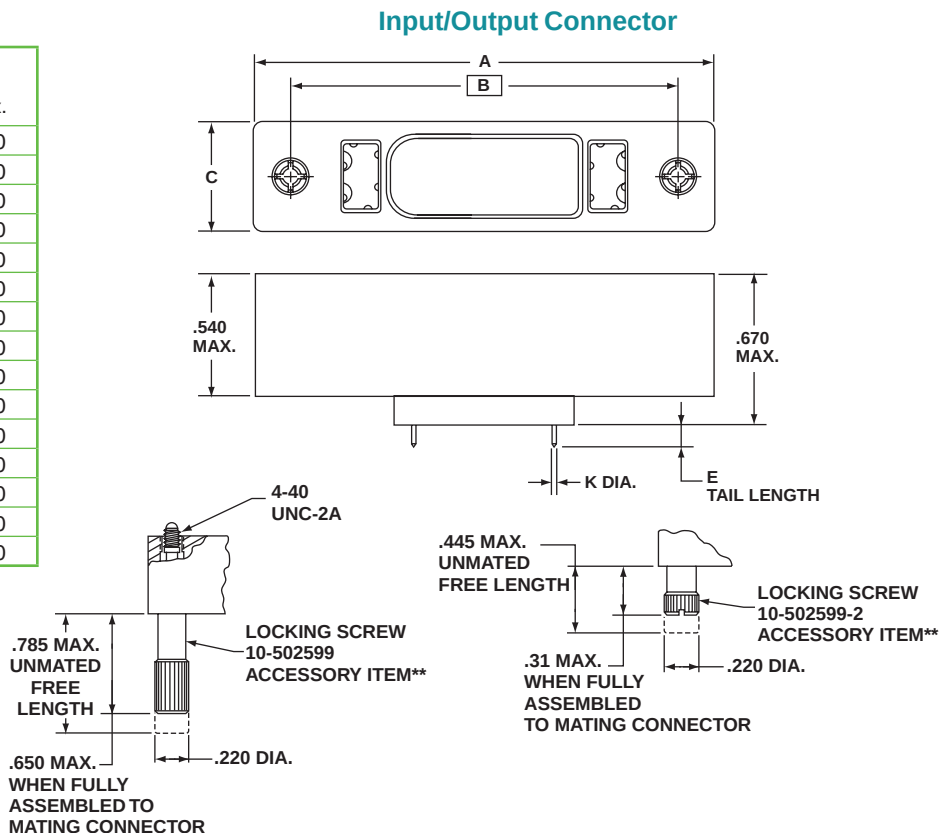
### Smaller Sizes, cont.

design flexibility

## Input/Output Connector

| Number of Contacts | Contact Pattern | A Max. | B     | C Max. |
|--------------------|-----------------|--------|-------|--------|
| 10                 | 2 Row X 5       | 1.795  | 1.475 | .390   |
| 12                 | 2 Row X 6       | 1.895  | 1.575 | .390   |
| 14                 | 2 Row X 7       | 1.995  | 1.675 | .390   |
| 15                 | 3 Row X 5       | 1.795  | 1.475 | .490   |
| 16                 | 2 Row X 8       | 2.095  | 1.775 | .390   |
| 18                 | 2 Row X 9       | 2.195  | 1.875 | .390   |
|                    | 3 Row X 6       | 1.895  | 1.575 | .490   |
| 20                 | 4 Row X 5       | 1.795  | 1.475 | .590   |
| 21                 | 3 Row X 7       | 1.995  | 1.675 | .490   |
| 24                 | 3 Row X 8       | 2.095  | 1.775 | .490   |
|                    | 4 Row X 6       | 1.895  | 1.575 | .590   |
| 27                 | 3 Row X 9       | 2.195  | 1.875 | .490   |
| 28                 | 4 Row X 7       | 1.995  | 1.675 | .590   |
| 32                 | 4 Row X 8       | 2.095  | 1.775 | .590   |
| 36                 | 4 Row X 9       | 2.195  | 1.875 | .590   |

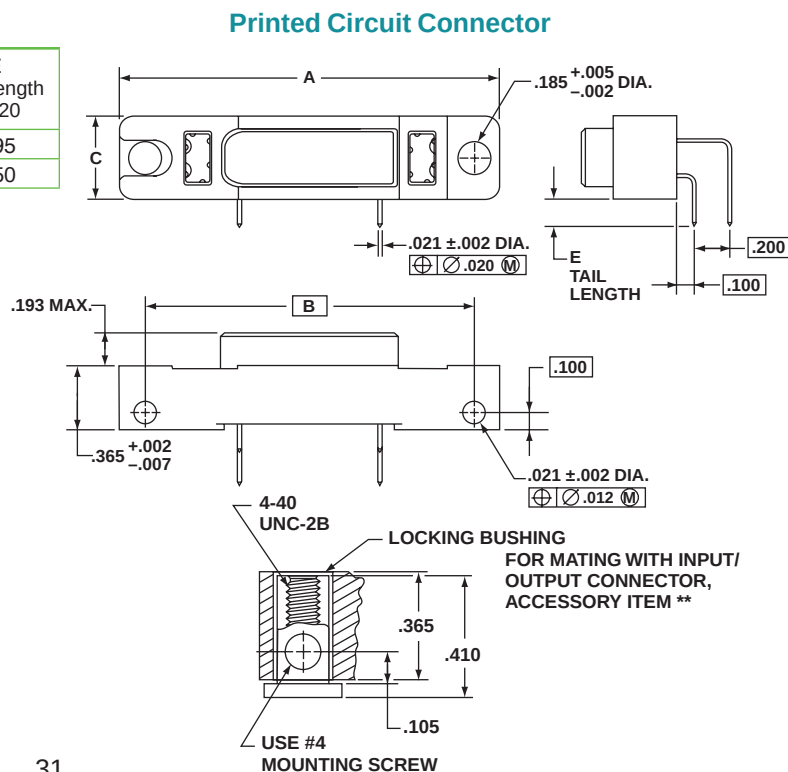
| Contact Type                      | K<br>Dia.<br>±.020 | E<br>Tail Length<br>±.020 |
|-----------------------------------|--------------------|---------------------------|
| Rear Removable Crimp Contact      | N/A                | N/A                       |
| Round PCB Stud Solder Termination | .021               | .145                      |
|                                   | .021               | .335                      |



## Printed Circuit Connector

| Number of Contacts | Contact Pattern | A Max. | B     | C Max. | D Max. |
|--------------------|-----------------|--------|-------|--------|--------|
| 10                 | 2 Row X 5       | 1.180  | .850  | .375   | .545   |
| 12                 | 2 Row X 6       | 1.280  | .950  | .375   | .545   |
| 14                 | 2 Row X 7       | 1.380  | 1.050 | .375   | .545   |
| 15                 | 3 Row X 5       | 1.180  | .850  | .475   | .645   |
| 16                 | 2 Row X 8       | 1.480  | 1.150 | .375   | .545   |
| 18                 | 2 Row X 9       | 1.580  | 1.250 | .375   | .545   |
|                    | 3 Row X 6       | 1.280  | .950  | .475   | .645   |
| 20                 | 4 Row X 5       | 1.180  | .850  | .575   | .745   |
| 21                 | 3 Row X 7       | 1.380  | 1.050 | .475   | .645   |
| 24                 | 3 Row X 8       | 1.480  | 1.150 | .475   | .645   |
|                    | 4 Row X 6       | 1.280  | .950  | .575   | .745   |
| 27                 | 3 Row X 9       | 1.580  | 1.250 | .475   | .645   |
| 28                 | 4 Row X 7       | 1.380  | 1.050 | .575   | .745   |
| 32                 | 4 Row X 8       | 1.480  | 1.150 | .575   | .745   |
| 36                 | 4 Row X 9       | 1.580  | 1.250 | .575   | .745   |

|                           |
|---------------------------|
| E<br>Tail Length<br>±.020 |
| .095                      |
| .150                      |



**\*\* Accessory item supplied separately. See Accessory How to Order page 5 and page 27 for alternate mounting methods.**

# Hybrid Configurations with Contact Options

## signal, power, coax or fiber optics

The B<sup>3</sup> Brush contact is the standard contact for Low mating force connectors due to its low mating force, stable electrical performance and extended service life. Design flexibility is expanded with the ability to add combinations of other types of contacts: signal, power, high speed coax or fiber optic termini; in one high density hybrid connector.

Power, shielded coax or twinax contacts, in combination with Brush signal contacts are available in configurations of the following (see next page for illustrations):

- A single row of size 16 power or coax or twinax contacts with 2 rows of brush contacts
- A single row of size 12 power or coax or twinax contacts with 3 rows of brush contacts
- A double row of size 16 power or coax or twinax contacts with 4 rows of brush contacts

Power and coax contacts are standard MIL-DTL-38999 Series II type. Consult Amphenol board level product marketing (800-678-0141) for assistance with available hybrid configurations.

**NOTE:** Power and coax contacts and fiber optic termini are not provided with the connector and must be purchased separately.

### POWER STRIP CONNECTORS

Amphenol's Power Strip connectors were developed for use as a dedicated power interface between module cards and backplanes. These connectors use the same insert bodies as Amphenol low mating force connectors, but have power contacts rather than brush contacts. Cavities allow for size 16 or 12 power contacts. Or, coax/twinax contacts can also be used in these size 16 or 12 cavities.

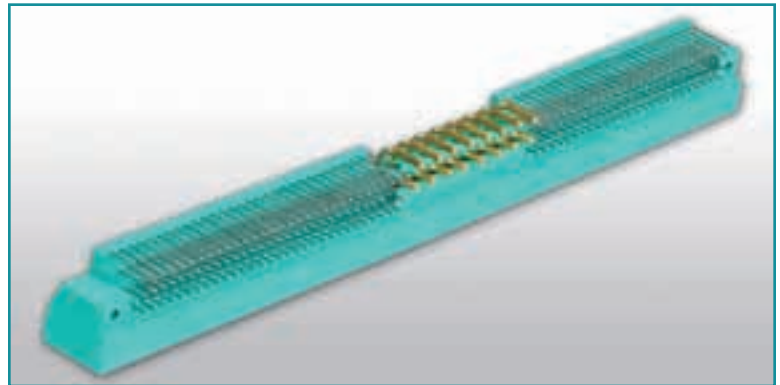
### HYBRID BRUSH CONNECTORS WITH FIBER OPTIC TERMINI

Amphenol's superiority and breadth of product offering is demonstrated in its capability for packaging fiber termini and the Brush contact in a printed circuit board rectangular connector. Fiber optic MIL-PRF-29504 termini size 16 and HD20 can be used as well as the 90° termini style with optical performance the same as when used in cylindrical connectors.

For more information on Amphenol fiber optic connectors and termini, see the Fiber Optic section of Amphenol's Combined Circular Interconnects catalog on-line at [www.amphenol-aerospace.com](http://www.amphenol-aerospace.com).



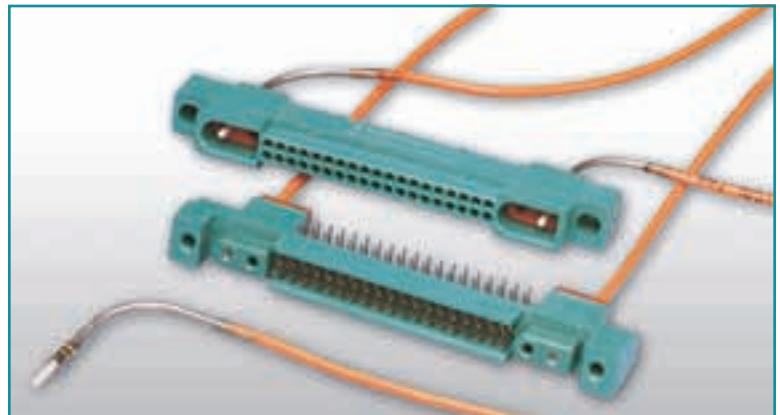
COMBINATION OF BRUSH CONTACTS & SHIELDED CONTACTS



CONNECTOR WITH BRUSH CONTACTS & SIZE 16 POWER PIN CONTACTS



POWER STRIP RECTANGULARS WITH SIZE 16 POWER CONTACTS

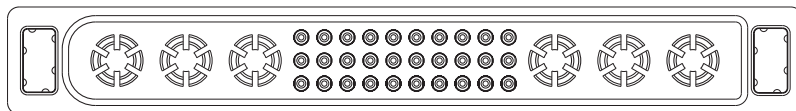


COMBINATION OF BRUSH CONTACTS & MS29504 FIBER OPTIC TERMINI

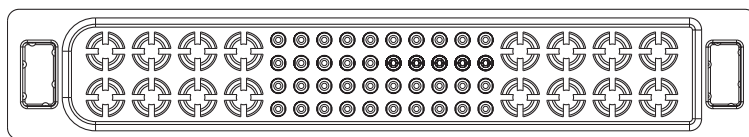
# Custom Hybrid Designs, Small Color-Coded Brush Connectors design flexibility

The following shows a few hybrid configuration connectors that have been developed. Consult Amphenol Aerospace for assistance in solving design problems and for part numbers that will provide the proper combination of these hybrid configurations to meet your specific connector application requirements.

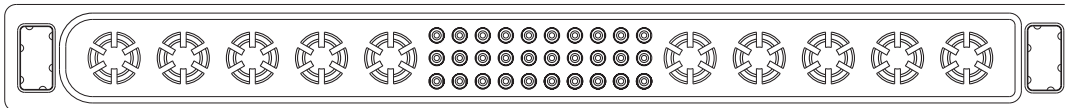
**Hybrid: 30 B<sup>3</sup> brush contacts, 6 size 12 power/coax/twinax contacts**



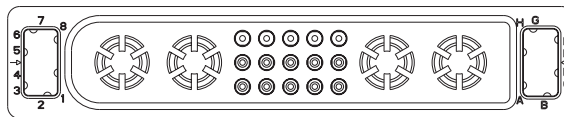
**Hybrid: 40 B<sup>3</sup> brush contacts, 16 size 16 power/coax/twinax contacts**



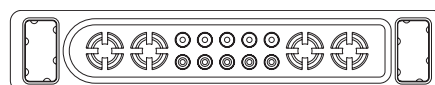
**Hybrid: 30 B<sup>3</sup> brush contacts, 10 size 12 power/coax/twinax contacts**



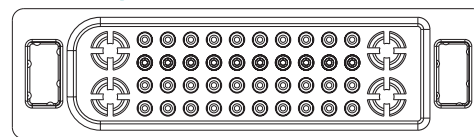
**Hybrid: 15 B<sup>3</sup> Brush contacts, 4 size 12 power/coax/twinax contacts**



**Hybrid: 10 B<sup>3</sup> brush contacts, 4 size 16 power/coax/twinax contacts**

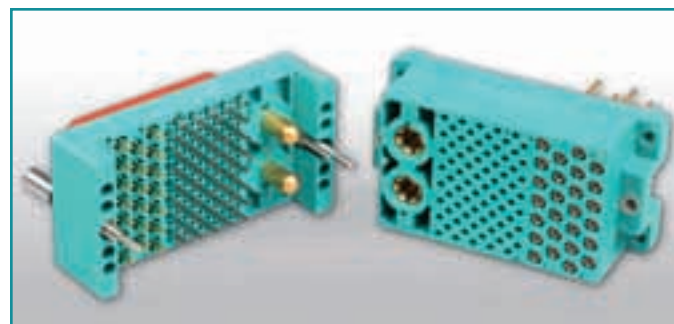


**Hybrid: 40 B<sup>3</sup> Brush contacts, 4 size 16 power/coax/twinax contacts**



Amphenol can meet innovative connector solutions with custom designs. Our board level engineers can work with customers who need special contact arrangements or special sized inserts.

The special hybrid connector shown at right was developed for the Vetronics System on a military tank. This custom shape insert design houses a combination of contact types, a sealing grommet and it has special mounting/locking screws.



**HYBRID CUSTOM CONNECTOR WITH  
75 BRUSH DIGITAL CONTACTS,  
26 SIZE 16 POWER CONTACTS & 2 SIZE 04 POWER CONTACTS**

## SMALL COLOR-CODED BRUSH CONTACT CONNECTORS DESIGNED FOR MEDICAL INSTRUMENTATION

Amphenol has responded to the needs of the medical industry by offering even smaller inserts with brush contacts. These small profile, but highly reliable interconnects, are ideal for medical and test equipment such as patient monitoring systems. Color coding of these connectors was a market-driven requirement for frequent plugging and unplugging on equipment, so Amphenol provides these small sized brush connectors in a variety of color materials.



**SMALL COLOR-CODED BRUSH CONNECTORS WITH AS  
FEW AS 5 CONTACTS PER CONNECTOR**

# Other Brush Contact Rectangular Connectors

## Docking Connectors

### with (.0787 inch X .100 inch) staggered grid spacing

#### BRUSH CONTACT CONNECTORS MAKE THE IDEAL CHOICE FOR FREQUENT DOCKING APPLICATIONS

When frequent docking to charge and transfer data is a necessity, the brush contact system offers high performance of over 100,000 mating cycles. This long contact life without degradation in performance provides customers with reliability in frequent docking applications such as:

- Handheld GPS units
- Scanners
- Handheld radios
- Accessories
- Rugged computers
- Cellular phones
- Controllers

#### Performance

Durability: . . . . . Up to 100,000 mating cycles  
 Insertion/Extraction Force: . . . 1.5 ounce typical per contact  
 Operating Temperature: . . . -65° to 125°C  
 Current Rating: . . . . . Up to 5 amperes (termination dependent)  
 Hot swap 1 ampere maximum (load dependent)

#### Data Rate

(Select connectors only): . . . Configurable for 3.125 Gbps differential signal

Insulation Resistance: . . . 5 gigohms minimum

#### Dielectric Withstanding

Voltage: . . . . . 750 volts @ sea level minimum  
 250 volts @ 70,000 feet elevation min.

Solderability: . . . . . MIL-STD-202, method 208

Salt Fog: . . . . . 48 hours IAW MIL-STD-1344, method 1002, type II

Humidity: . . . . . IAW MIL-STD-1344, method 1002, type II

Vibration: . . . . . 4 hours in each of 3 mutually perpendicular axes IAW MIL-STD-1344, method 2004, test condition G

Shock: . . . . . 1 shock along each of three mutually perpendicular axes IAW MIL-STD-1344, method 2004, test condition G

#### Features

Radial Misalignment: . . . Capable of correcting up to a .040" initial radial misalignment

Angular Misalignment: . . . Capable of mating with up to a 4° initial angular misalignment

Polarization: . . . . . "D" shaped interface

Color: . . . . . Standard is black, variety of other colors are available

#### Materials

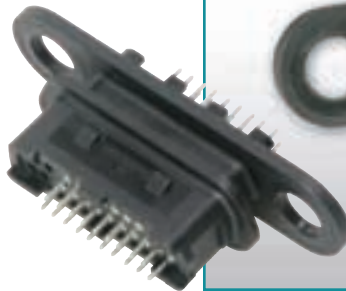
Insulator: . . . . . Glass-filled thermoplastic molding

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)

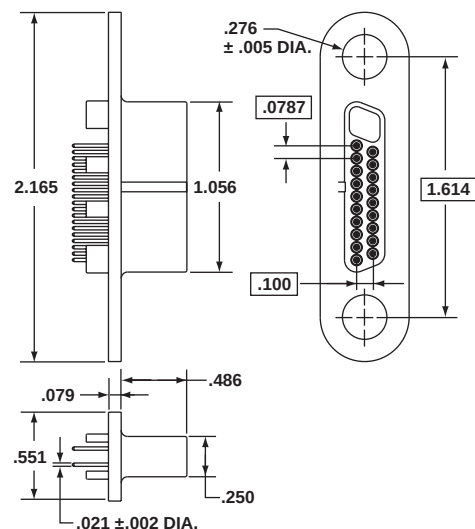
Sleeve: . . . . . Stainless steel per AMS-5514, passivated IAW QQ-P-35 (DB and I/O connectors only)

For more information, including how to order, consult Amphenol Aerospace. Call 800-678-0141 and ask for Amphenol board level product marketing for assistance.

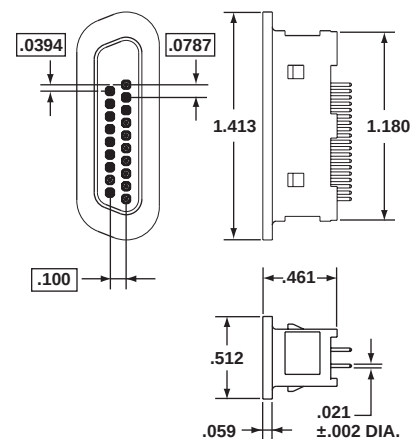


Amphenol offers Docking Connectors in a compact size, with tighter spaced custom brush contacts (.0787 inch x .100 inch staggered grid spacing).

#### Mother Board Docking Connector



#### Daughter Board Docking Connector



# Other Brush Contact Rectangular Connectors

## HDB<sup>3</sup> High Density Brush Series - tighter (.070 in. X .060 in.) staggered grid spacing

### HDB<sup>3</sup> CONNECTORS

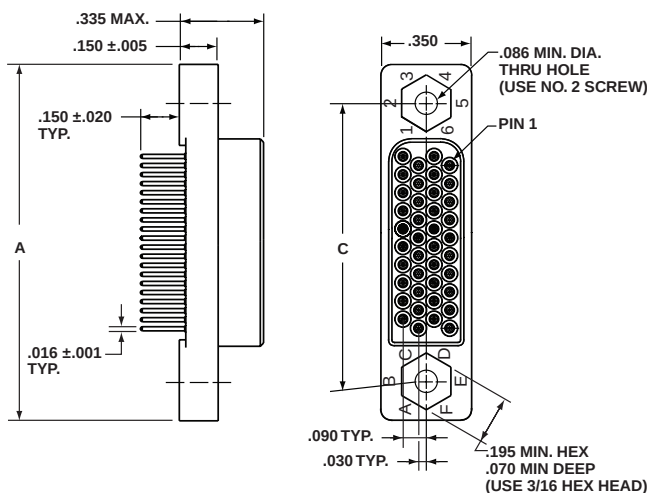
The new connector series of brush connectors incorporates an even higher density contact pattern and lower mated height than Amphenol's standard low mating force rectangular connectors. These HDB<sup>3</sup> connectors utilize the same durable and reliable B<sup>3</sup> brush contact, but in a tighter .070 inch X .060 inch staggered grid spacing. They offer the advantage of a higher density pattern in a compact-height connector that will take up less board space; thus saving cost over adding additional connectors to meet power requirements. HDB<sup>3</sup> connector styles include mother board, daughter board, input/output and a stacker style.

For how to order information of the HDB<sup>3</sup> see Amphenol brochure SL-402\* online at [www.amphenol-aerospace.com](http://www.amphenol-aerospace.com).

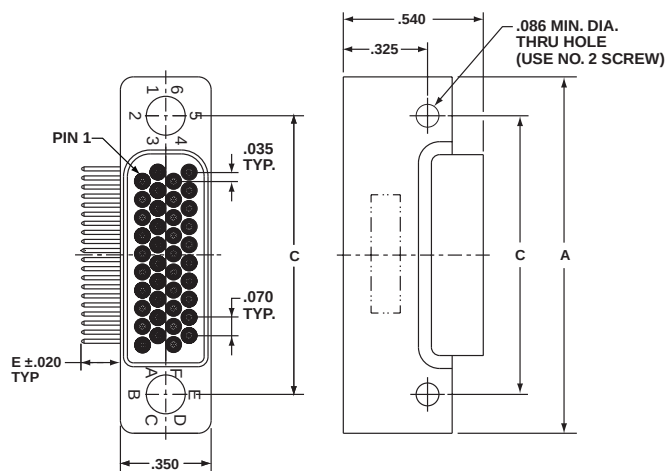


When more contact density is required, the HDB<sup>3</sup> High Density Series with .070 inch X .060 inch staggered grid spacing is the solution.

#### Mother Board HDB<sup>3</sup> Connector

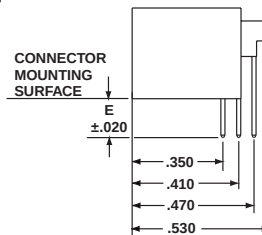


#### Daughter Board HDB<sup>3</sup> Connector



#### Mother Board/Daughter Board HDB<sup>3</sup> Connector

| Number of Contacts | Contact Pattern | A Max. | C Max. |
|--------------------|-----------------|--------|--------|
| 40                 | 4 Row X 10      | 1.375  | 1.075  |
| 60                 | 4 Row X 15      | 1.725  | 1.425  |
| 80                 | 4 Row X 20      | 2.075  | 1.775  |
| 120                | 4 Row X 30      | 2.775  | 2.475  |
| 160                | 4 Row X 40      | 3.475  | 3.175  |



\* Also in SL-402 brochure are other HDB<sup>3</sup> style connectors: input/output style, stacker and high speed configurations.

Please note, the new Amphenol Combined Rectangular Products catalog, 12-R1, will combined 12-035 (this catalog) and HDB3 product covered in SL-402, along with other Amphenol rectangular interconnect products. Ask for the new combined Amphenol Rectangular Interconnect Products catalog; available Jan. 2011

# Other Brush Contact Rectangular Connectors

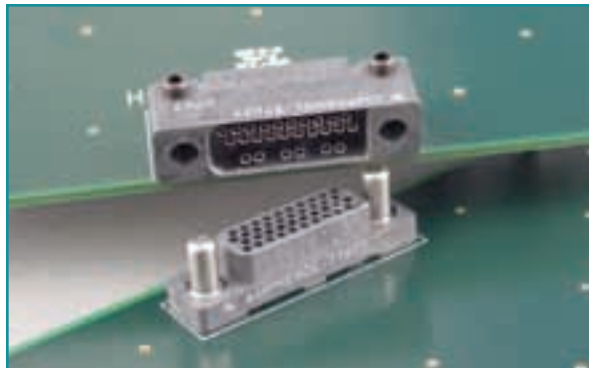
## HSB<sup>3</sup> High Density Series with 3.125 Gb/s High Speed data rate

### HSB<sup>3</sup> CONNECTORS

The HSB<sup>3</sup> is a further new development of the higher density HDB<sup>3</sup> connector series. The HSB<sup>3</sup> offers higher speed as well as higher density. Benefits include:

- Allows data rates up to 3.125 Gb/s via 100 ohm matched impedance differential pairs
- Uses partially populated HDB<sup>3</sup> mother board and daughter board inserts. See HSB<sup>3</sup> arrangements below.

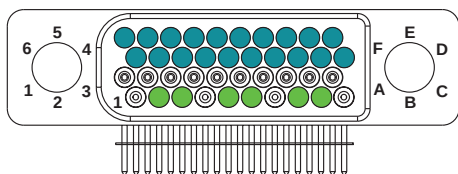
For more information refer to Amphenol® brochure SL-402, on-line at [www.amphenol-aerospace.com](http://www.amphenol-aerospace.com). or call 800-678-0141 and ask for Amphenol board level product marketing for assistance.



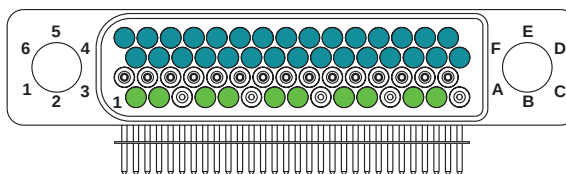
HSB<sup>3</sup> HIGH DENSITY/HIGH SPEED BRUSH CONNECTOR

### HSB<sup>3</sup> Insert Arrangements

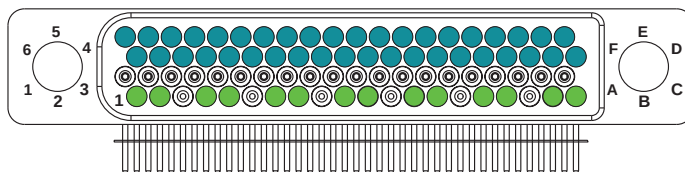
As viewed from front face of Daughter Board Connector



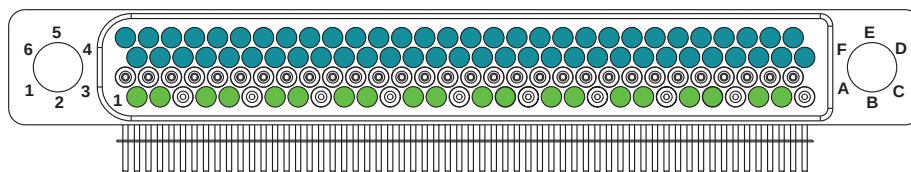
40 Pin Body with 3 Differential Pair, 20 Signal Contacts



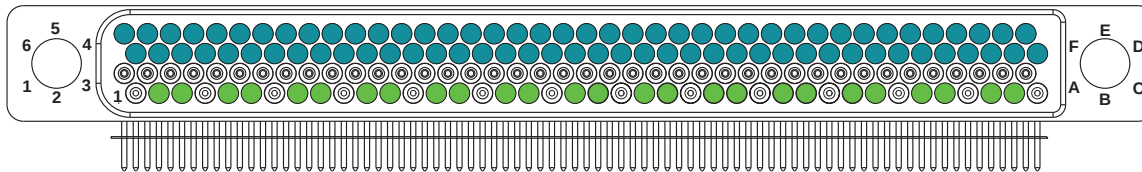
60 Pin Body with 5 Differential Pair, 30 Signal Contacts



80 Pin Body with 7 Differential Pair, 40 Signal Contacts



120 Pin Body with 10 Differential Pair, 60 Signal Contacts



160 Pin Body with 13 Differential Pair, 80 Signal Contacts

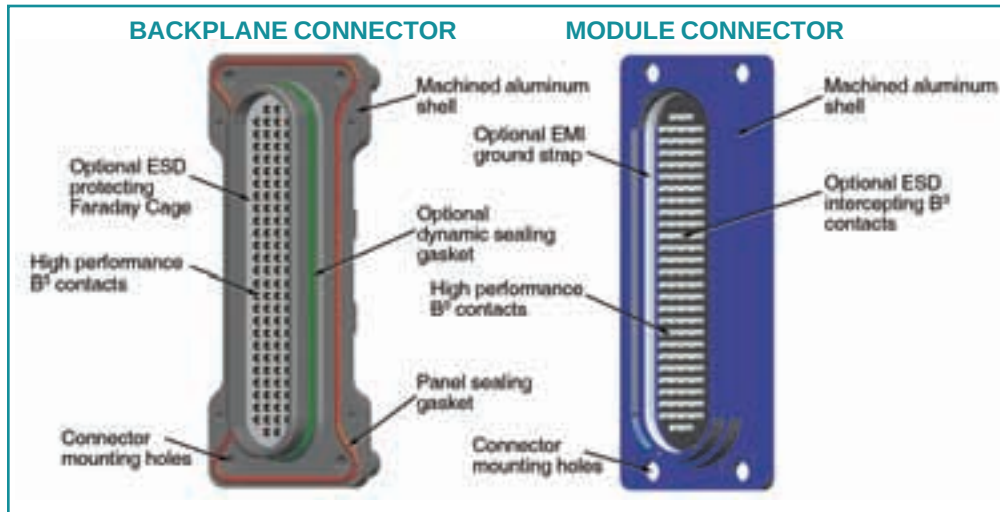
#### KEY

- 100 Ohm Differential Pair Contacts (100 Ohm Differential contact pairs capable of 3.125 Gb/s data rates)
- Empty Contact Cavity
- Standard Digital, Low Speed Signal Contacts

# Other Brush Contact Rectangular Connectors

## Ruggedized, Non-Floating Brush Rack and Panel Connectors

This new connector series utilizes Amphenol's durable and reliable B<sup>3</sup> contact system in a rugged, non-floating Rack and Panel connector. Included in this series are digital and power/digital "hybrid" insert arrangements.



Standard Ruggedized, Non-floating Brush Rack and Panel Connector Features include:

- 126 high performance B<sup>3</sup> brush contacts
- 0.100 inch x 0.100 inch square grid footprint
- Environmentally sealed at connector interface with mated (optional feature)
- Environmentally sealed connector mounting interface
- EMI protection is available at mounting surfaces and connector interface
- ESD protection is available - allows use of Class 3 hardened chips (4KV max. voltage)

Standard Ruggedized Brush Rack and Panel Connector Performance:

- Durability: 500 mating cycles
- Insertion/Extraction Force: 7 lbs. typical
- Operating Temp.: -60° to +125°C
- Current Rating: 3 amperes  
Hot swap 1 ampere maximum (load dependant) - non ESD protected version
- Insulation Resistance: 1 gaohm minimum
- Dielectric Withstanding Voltage: 500V, 60 Hz RMS @ sea level  
300V, 60 Hz RMS @ 15,000 ft. elevation
- Solderability: J-STD-004, -005 & -006
- Salt Fog: EIA-364-26B, test condition B
- Humidity: EIA-364-31B, test method III
- Vibration: EIA-364-28B, test condition III
- Shock: EIA-364-27B, test condition G

Hybrid arrangements are available as shown in top photo at right, that utilize a combination of brush contacts and high power RADSOK® contacts. The photo shows a 74 signal and 6 power configuration. For other hybrid arrangements and assistance on how to order this product, consult Amphenol Aerospace.



HYBRD RUGGEDIZED, NON-FLOATING  
RACK & PANEL CONNECTOR  
(8 RADSOK® HIGH POWER CONTACTS, 72 BRUSH CONTACTS)



2 BAY SHELL CONFIGURATION  
RUGGEDIZED, NON-FLOATING RACK AND PANEL CONNECTOR  
(126 BRUSH CONTACTS PER BAY)

# Other Brush Contact Rectangular Connectors

## LRM (Line Replaceable Modules)

### AMPHENOL CONTINUES TO DEVELOP INTERCONNECTS THAT MEET THE DEMANDS OF THE AVIONICS INDUSTRY

Starting with the development of the B<sup>3</sup> contact, incorporated into the low mating force PCB connectors, the LRM line replaceable module followed as the avionics high density rectangular interconnect solution. LRM interconnects are combinations of module and backplane inserts, in one bay, two bay, three bay or more configurations. LRM products are used on major programs of aircraft and military vehicles.

This page and the next briefly describe the LRM family of connectors. For complete information please see Amphenol® High Performance Line Replaceable Module (LRM) Interconnects catalog, 12-037.\*

The Brush contact has superior performance in LRM interconnects due to its low mating force, stable electrical performance and extended life. Other LRM features include:

- Backplane versatility: available with through-hole solder posts or with compliant pins for solderless applications
- Wide range of PCB/heat sink accommodations with standard surface mount tails or flex termination
- Polarization keys - up to 4096 possible keying positions
- Superior intermittency-free performance under vibration
- Dielectric withstanding voltage: Staggered grid and GEN-X styles: 100 volts at sea level (due to the incorporation of ESD shield)
- Temperature range: suitable for vapor phase soldering; normal operating temp. is -65°C to +125°C
- Current rating: 3.0A derated to 1.5A typical (dependant on loading)

### LRM CONNECTORS WITH STAGGERED GRID

- Provides higher contact density for high speed integrated circuitry in SEM-E and custom form factors
- 180 contact insert pattern grid in 8 rows: 0.100 inch spacing along the row with 0.050 inch between rows, rows offset 0.050 inch
- Options include various shell designs to accommodate a wide range of PC board/heat sink combinations
- Solder tail, wire wrap or compliant contact availability
- Amphenol ESD (Electrostatic Discharge) protection: Utilization of the Faraday Cage principal to shunt electrostatic discharge events to the conductive enclosure on which the connector is mounted, thus never allowing the high voltage, high current discharge event to reside on any contacts.
- Designed for level 2 (flight line) maintenance
- Provides routing channels for backplane

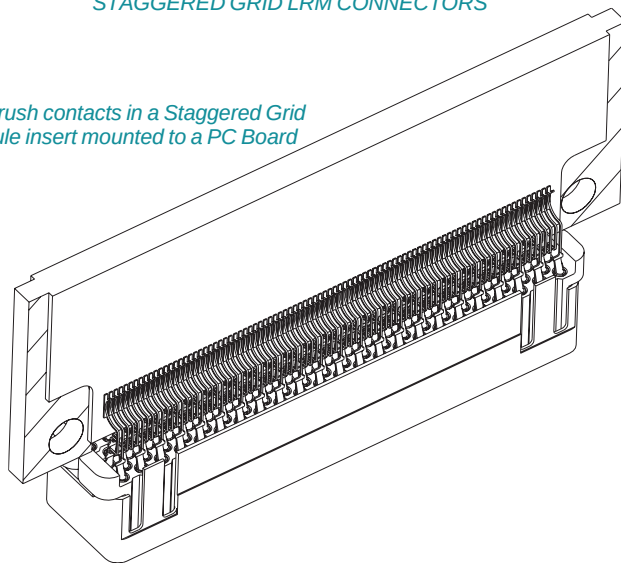
### LRM CONNECTORS WITH STAGGERED GRID AIRFLOW-THRU CONTACT PATTERN

- Accommodate standard B<sup>3</sup> tails in staggered pattern, but with increased spacing in the center, and also provide more airflow cooling of inserts; for use with wider boards, up to 0.425 inch



STAGGERED GRID LRM CONNECTORS

180 Brush contacts in a Staggered Grid module insert mounted to a PC Board



GEN-X GRID LRM CONNECTOR

### LRM CONNECTORS WITH GEN-X GRID

- Even higher contact density than staggered grid and improved electrical performance
- All the feature of the 180 contact pattern, including ESD protection
- Available in SEM-E and custom form factors
- 236 contact pattern grid in 8 rows: 0.075 inch spacing along the row with 0.060 inch between rows, rows offset 0.0375 inch

\* Amphenol LRM Catalog, 12-037, is on-line at [www.amphenol-aerospace.com](http://www.amphenol-aerospace.com). Please note that Amphenol's New Combined Rectangular Catalog (available Jan. 2011) will include LRM interconnects. Call Amphenol Aerospace (800-678-0141) for more information.

# Other Brush Contact Rectangular Connectors

## LRM Hybrids and High Speed LRM Gigastak & Digastak Inserts

### LRM OPTIONAL HYBRID DESIGNS

- Custom combinations of digital contacts and fiber optic termini. Optical performance of fiber optic termini within LRM connectors are the same as termini used in cylindrical connectors.\*\* Insertion losses range from .3dB to <1.5dB depending upon launch conditions, fiber NA, fiber size and the type of termination. LRM connectors are available with fiber optic termini in the following configurations:
  - Modified MIL-PRF-29504/4, /5, MIL-PRF-14 & MIL-PF-15 termini - size 16, straight and 90 degree styles
  - MT ferrule (2-24 fiber lines per ferrule)
  - Hybrid arrangements with fiber optic and other contact types
- LRM inserts with RF contacts
- LRM power supply modules with 270VDC sections which are capable of providing corona-free operation at 100,000 ft.
- Designs with high speed shielded contacts - coax, triax, twinax, differential twinax, and quadrx contacts
- Combinations of power contact, standard brush, high power, differential pair brush and fiber optic termini
- New designs that utilizes the RADSOK® high amperage socket contact with inserts.  
The RADSOK® design is a socket cylinder within the female contact which has several equally spaced longitudinal beams twisted into a hyperbolic shape. As the male pin is inserted, axial members in the female half deflect, imparting high current flow across the connection with minimal voltage loss. This twisted hyperbolic grid ensures a large coaxial, face-to-face surface area engagement.
- Incorporation of flex circuits for more versatility of PC board terminations
- Custom shells with multiple bay configurations
- Backplane shell grounding capabilities

### HIGH SPEED LRM GIGASTAK AND DIGASTAK INSERTS

More and more speed is needed in today's interconnection products. Amphenol has recently developed a new family of high speed LRM connectors that are capable of achieving data rates in excess of 6.25 Gbps via 100 ohm matched impedance differential pairs. Each insert arrangement has been optimized through strategic placement of signal and ground contacts for the perfect balance of impedance control and cross talk mitigation for a given data rate. As an enhancement over the standard LRM, this new series offers a unique solderless termination to module cards via Amphenol Intercon's cStack technology.

\*\* For more information on Amphenol fiber optic connectors and termini, see the Fiber Optic section of Amphenol's Combined Circular Interconnects catalog, on-line at [www.amphenol-aerospace.com](http://www.amphenol-aerospace.com).



*LRM INTERCONNECTS (SHOWN FROM TOP TO BOTTOM):*

- LRM Backplane, 2 bays of staggered B<sup>3</sup> brush contacts and inserts for size 12 coax contacts
- LRM Module with Fiber Optic MT ferrules in one insert and B<sup>3</sup> Brush in a differential pair insert
- LRM inserts with PC tails
- LRM mating Module and Backplane with MT-PRF-29504 Fiber optic termini and B<sup>3</sup> Brush contacts



*HIGH SPEED LRM GIGASTAK AND DIGASTAK INSERTS*

# Other Amphenol Rectangular Connectors

## Total packaging with Amphenol Printed Circuit Boards, Rectangular and Cylindrical Connectors

### BOARD LEVEL CONNECTORS WITH QUADRAx CONTACTS

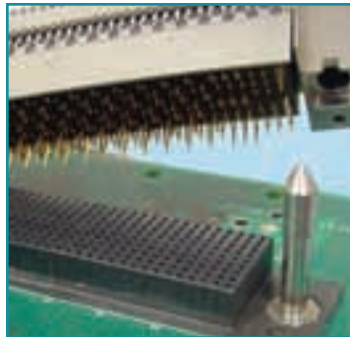
Amphenol leads in the electrical connector arena in offering a wide range of interconnects that provide high speed transmission and operate in high frequency conditions. The photo at right shows a board level connector with 4 size 8 quadrax compliant contacts. This will accommodate a backplane of .125 inch min. thickness. Consult Amphenol Aerospace for more information.

### VIPER® INTERCONNECTS

Amphenol Backplane Systems (ABS) developed the VIPER interconnect platform to provide a ruggedized and high density modular connector solution that can scale to higher bandwidths; from 80 Mbps to over 10 Gbps. Features and benefits of the VIPER include:

- Designed for 10+ Gbps data rate performance
- 100 ohm impedance for differential pair in a 1.8mm x 1.35mm grid
- Press-fit termination compliant pins
- Backplane modules available in 8 & 16 row increments, 1.8mm x 1.8mm grid
- Fully footprint-compatible with VITA 46 & VITA 48 standards
- ESD protection

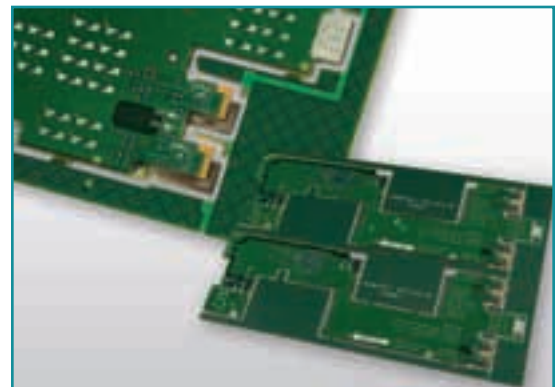
Consult Amphenol Backplane Systems for more information.  
Phone: 603-883-5100



VIPER® CONNECTORS



BOARD LEVEL CONNECTOR WITH COMPLIANT PIN QUADRAx CONTACTS



AMPHENOL PRINTED CIRCUIT BOARDS

### AMPHENOL PRINTED CIRCUIT BOARD CAPABILITIES

Amphenol Printed Circuits' capabilities are among the world's broadest and most advanced, delivering consistent quality and reliability for demanding high bandwidth systems and mission critical applications. Designs of printed circuit boards are available from Amphenol APC with a wide variety of materials, formation types, panel sizes and layer counts.

### AMPHENOL FLEX CIRCUIT ASSEMBLIES

Amphenol Printed Circuits' capabilities also includes the design and manufacture of flex circuits used to attach cylindrical and rectangular connectors to PCB boards. Sculptured® Flexible Circuits with built-in terminations eliminate the failures associated with crimped or soldered-on contacts. Flex geometrically fits tight space requirements and eliminates the need to purchase and attach individual pins or connectors.

Consult APC, Amphenol Printed Circuits, for more information on printed circuit boards and flex assemblies. Phone: 603-324-4500

### INTEGRATED SYSTEM PACKAGING

Amphenol can provide system solutions - everything you need inside and outside the box: Interconnect products, printed circuit boards, backplane assemblies, heat-sinks and metal enclosures. Amphenol also provides value added assembly including bussing; full system assembly including chassis build and sub-system integration and testing. The breadth of Amphenol's products and the proven expertise of being a world-wide interconnect product leader makes Amphenol the premier choice for system-level packaging. For more information on integrated systems, call: Amphenol Aerospace at 800-678-0141

Amphenol Backplane Systems at 888-318-3553

An example integrated system box, shown at right, includes the following Amphenol interconnect products:

- Circulars: D38999 cylindrical connectors with MT fiber optics, RJ Field connectors
- Rectangulars: LRM interconnects, NAFI connectors, UHD connectors
- Rectangulars: ARINC 600 connectors, Micro-D Subminiature connectors
- Rectangulars: HDB3 high density brush contact connectors
- Backplane Systems, Flex Circuitry, metal enclosure



FLEX CIRCUITRY WITH RECTANGULAR CONNECTORS



AMPHENOL INTEGRATED SYSTEMS