



Positronic  
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# PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO HIGH DENSITY CRIMP / SOLDER REMOVABLE CONTACTS

**Combo-D  
D-Sub**

**Size 22 Removable Signal and  
Thermocouple Crimp Contacts**

**Size 16 Removable Power Contacts**

**Size 8 Removable Power, Shielded,  
Air and High Voltage Contacts**

**UL and CSA Recognition,  
for status contact Technical Sales**



CBCD high density series connectors are quality connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. CBCD series connectors offer mixed crimp-removable contact combinations of power, signal, and thermocouple contacts within the same connector body.

A wide assortment of cable support hoods and locking systems is available from stock.

CBCD series connectors also offer a blind mating connector system for applications requiring connector couplings in recessed areas or for mobile power coupling systems.

CBCD series connectors utilize precision machined contacts and meet applicable performance and dimensional requirements of IEC 60807-7, MIL-DTL-24308 and AS39029.

## TECHNICAL CHARACTERISTICS

### MATERIALS AND FINISHES:

|                             |   |
|-----------------------------|---|
| <b>Insulator:</b>           | Glass filled polyester per ASTM D 5927<br>UL 94V-0, blue color.   |
| <b>Contacts:</b>            | Precision machined copper alloy.  |
| <b>Contact Plating:</b>     |   |
| <b><u>SIGNAL:</u></b>       | Gold flash over nickel plate and gold 0.000050<br>[1.27µ] over nickel plate. Other finishes available<br>upon request, see page 81.   |
| <b><u>POWER:</u></b>        | Gold flash over nickel. Other finishes available<br>upon request, see page 81.  |
| <b><u>SHIELDED:</u></b>     | For contact platings, see page 68.  |
| <b><u>HIGH VOLTAGE:</u></b> | For contact platings, see page 68.  |
| <b>Shells:</b>              | Steel with tin plate; zinc plate; stainless steel<br>passivated. Other materials and finishes<br>available upon request.  |
| <b>Mounting Spacers:</b>    | Copper alloy or steel with zinc plate or tin<br>plate; stainless steel, passivated.   |
| <b>Jackscrew Systems:</b>   | Brass or steel with zinc plate or clear zinc<br>plate or tin plate; stainless steel, passivated.  |
| <b>Hoods:</b>               | Composite and plastic, UL 94V-0; brass or<br>steel with zinc plate. Aluminum; aluminum<br>with electroless nickel plate. For aluminum<br>hoods, zinc content is 1% maximum. Die cast<br>zinc. |

Non-magnetic versions are available, contact Technical Sales.

### MECHANICAL CHARACTERISTICS:

|  |   |
|--|---|
| <b>Signal Contacts,<br/>Crimp Removable:</b> | Size 22 contacts, male – 0.030 inch<br>[0.76mm] mating diameter. Terminations<br>for 20, 22, 24, 26, 28 and 30 AWG.<br>Female PosiBand closed entry design,<br>see page 69 for details. Closed crimp<br>barrel.   |
| <b>Power Contacts,<br/>Crimp Removable:</b>  | Size 16 contacts, male – 0.0625 inch<br>[1.588mm] mating diameter. Terminations<br>for 12, 14, 16, 18, 20, 22, and 24 AWG.<br>Female closed entry design. Closed<br>crimp barrel.<br><br>Size 8 contacts, male – 0.142 inch<br>[3.61mm] mating diameter. Terminations<br>for 6, 8, 10, 12, and 16 AWG. Female<br>contact features Large Surface Area<br>(L.S.A.) closed entry contact design<br>utilizing BeCu mechanical retention<br>member. Closed crimp barrel. |
| <b>Contact Retention In Insulator:</b>       |   |
| <b><u>SIGNAL SIZE 22</u></b>                 | 9 lbs. [40N].   |
| <b><u>POWER SIZE 16</u></b>                  | 15 lbs. [67N]   |
| <b><u>POWER SIZE 8</u></b>                   | 22 lbs. [98N] - power, shielded and<br>high voltage.  |

## TECHNICAL CHARACTERISTICS, continued

continued from previous page. . . .

### MECHANICAL CHARACTERISTICS, continued:

|                               |   |
|-------------------------------|---|
| <b>Shells:</b>                | Male shells may be dimpled for EMI/ESD ground paths.  |
| <b>Polarization:</b>          | Trapezoidally shaped shells and polarized jackscrews. |
| <b>Locking Systems:</b>       | Jackscrews and vibration locking systems.             |
| <b>Mechanical Operations:</b> | 1000 operations minimum per IEC 60512-5.              |

### ELECTRICAL CHARACTERISTICS:

#### SIZE 22 CONTACTS

|                             |                     |
|-----------------------------|---------------------|
| Contact Current Rating:     | 5 amperes nominal.  |
| Initial Contact Resistance: | 0.005 ohms maximum. |
| Proof Voltage:              | 1000 V r.m.s.       |

#### SIZE 16 CONTACTS

##### POWER CONTACTS

Contact Current Rating - Tested per UL 1977:

|                                     |             |
|-------------------------------------|-------------|
| Standard Contact Material:          | 28 amperes. |
| High Conductivity Contact Material: | 40 amperes. |

See Temperature Rise Curves on page 2 for details.

##### Initial Contact Resistance:

|                            |  |
|----------------------------|--|
| Standard Contact Material: | 0.0016 ohms max. Per IEC 60512-2, Test 2b. |
|----------------------------|--|

##### High Conductivity

|                   |   |
|-------------------|---|
| Contact Material: | 0.001 ohms max. Per IEC 60512-2, Test 2b. |
|-------------------|---|

|                |               |
|----------------|---------------|
| Proof Voltage: | 1000 V r.m.s. |
|----------------|---------------|

#### SIZE 8 CONTACTS

##### POWER CONTACTS

For electrical characteristics, see page 4.

##### SHIELDED CONTACTS

For electrical characteristics, see page 69.

##### HIGH VOLTAGE CONTACTS

For electrical characteristics, see page 69.

#### CONNECTOR

|                                  |                              |
|----------------------------------|------------------------------|
| Insulation Resistance:           | 5 G ohms.                    |
| Clearance and Creepage Distance: | 0.042 inch [1.06mm] minimum. |
| Working Voltage:                 | 300 V r.m.s.                 |

#### CLIMATIC CHARACTERISTICS:

|                          |                  |
|--------------------------|------------------|
| Temperature Range:       | -55°C to +125°C. |
| Damp Heat, Steady State: | 10 days.         |

#### THERMOCOUPLE CONTACTS:

Size 22 crimp contacts are available. See page 71 for details.

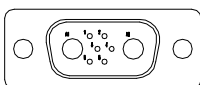
PCB mount contacts are available in CBDD series, see page 27 for details.

### \*1 CONTACT VARIANT

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

**Note:** Connectors can be kitted with all applicable removable contacts, contact Technical Sales for connector part number.

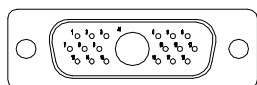
#### — SHELL SIZE 1 —



**8W2**

Six Size 22 Signal Contacts and  
Two Size 16 Power Contacts

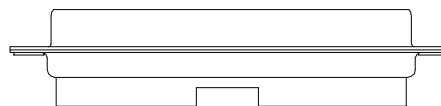
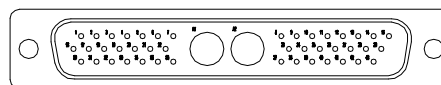
#### — SHELL SIZE 2 —



**19W1**

Eighteen Size 22 Signal Contacts  
and One Size 8 Power Contact

#### — SHELL SIZE 4 —



**\*2 45W2**

Forty-three Size 22 Signal Contacts  
and Two Size 8 Power Contacts

#### NOTES:

\*1 Additional contact variants may be tooled at customer request.

\*2 45W2 variant currently available in female only. Contact Technical Sales for availability of male connector.

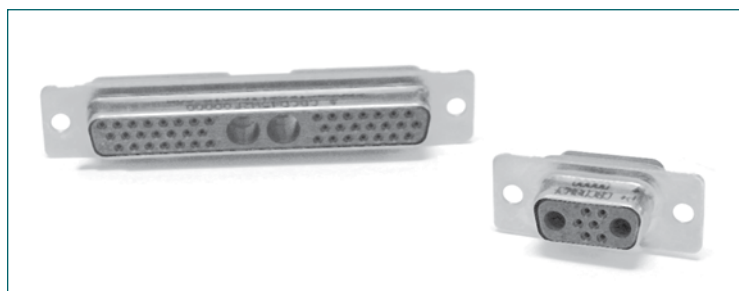


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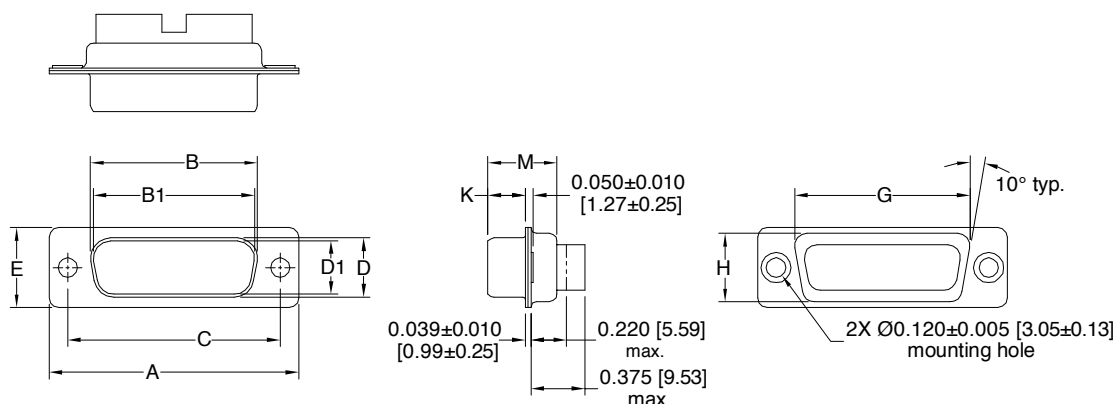
## STANDARD SHELL ASSEMBLY



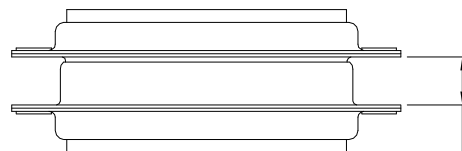
**CBCD45W2S00000**

**CBCD8W2S00000**

### TYPICAL CONNECTOR TOP VIEW

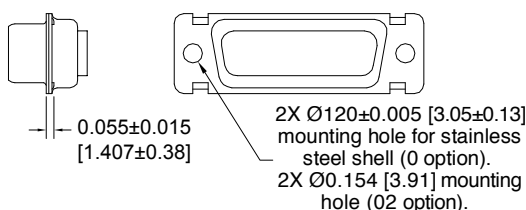


### RECOMMENDED MATING DIMENSIONS

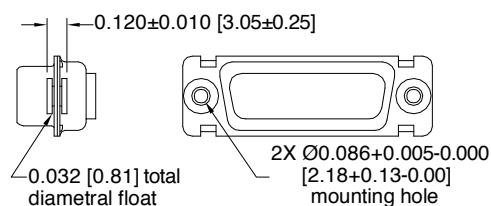


Shell Sizes 1 & 2 =  
0.265±0.015 [6.73±0.38]  
Shell Sizes 3, 4, 5 & 6 =  
0.256±0.015 [6.50±0.38]

### OPTIONAL SHELL ASSEMBLY (0, 02)



### OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



| SHELL SIZES | VARIANT | A<br>±0.015<br>[0.38] | B<br>±0.005<br>[0.13] | B1<br>±0.005<br>[0.13] | C<br>±0.005<br>[0.13] | D<br>±0.005<br>[0.13] | D1<br>±0.005<br>[0.13] | E<br>±0.015<br>[0.38] | G<br>±0.010<br>[0.25] | H<br>±0.010<br>[0.25] | K<br>±0.005<br>[0.13] | M<br>±0.010<br>[0.25] |
|-------------|---------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 1           | 8W2M    | 1.213<br>[30.81]      |                       | 0.666<br>[16.92]       | 0.984<br>[24.99]      |                       | 0.329<br>[8.36]        | 0.494<br>[12.55]      | 0.759<br>[19.28]      | 0.422<br>[10.72]      | 0.233<br>[5.92]       | 0.422<br>[10.72]      |
|             | 8W2S    | 1.213<br>[30.81]      | 0.643<br>[16.33]      |                        | 0.984<br>[24.99]      | 0.311<br>[7.90]       |                        | 0.494<br>[12.55]      | 0.759<br>[19.28]      | 0.422<br>[10.72]      | 0.243<br>[6.17]       | 0.429<br>[10.90]      |
| 2           | 19W1M   | 1.541<br>[39.14]      |                       | 0.994<br>[25.25]       | 1.312<br>[33.32]      |                       | 0.329<br>[8.36]        | 0.494<br>[12.55]      | 1.083<br>[27.51]      | 0.422<br>[10.72]      | 0.233<br>[5.92]       | 0.422<br>[10.72]      |
|             | 19W1S   | 1.541<br>[39.14]      | 0.971<br>[24.66]      |                        | 1.312<br>[33.32]      | 0.311<br>[7.90]       |                        | 0.494<br>[12.55]      | 1.083<br>[27.51]      | 0.422<br>[10.72]      | 0.243<br>[6.17]       | 0.429<br>[10.90]      |
| 4           | 45W2S   | 2.729<br>[69.32]      | 2.159<br>[54.84]      |                        | 2.500<br>[63.50]      | 0.311<br>[7.90]       |                        | 0.494<br>[12.55]      | 2.272<br>[57.71]      | 0.422<br>[10.72]      | 0.243<br>[6.17]       | 0.429<br>[10.90]      |

DIMENSIONS ARE IN INCHES [MILLIMETERS].  
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

## ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

| STEP   | 1    | 2   | 3 | 4 | 5 | 6 | 7 | 8 | 9   | 10  |
|--|------|-----|---|---|---|---|---|---|-----|---|
| EXAMPLE  | CBCD | 8W2 | S | 0 | 0 | 0 | 0 | S | /AA | -14   |
| <div>STEP 1 - BASIC SERIES<br/>CBCD Series</div> <div>STEP 2 - CONNECTOR VARIANTS<br/>Shell Size 1 - 8W2<br/>Shell Size 2 - 19W1<br/>*1 Shell Size 4 - 45W2</div> <div>STEP 3 - CONNECTOR GENDER<br/>M - Male<br/>S - Female - PosiBand Closed Entry Signal Contacts</div> <div>STEP 4 - CONTACT TERMINATION TYPE<br/>0 - Connector ordered without contacts. Order signal, power, thermocouple, shielded, high voltage or air contacts separately. See pages 68-80 for contact part numbers.<br/>1 - Signal contacts, 22 AWG-30 AWG [0.03mm<sup>2</sup>-0.05mm<sup>2</sup>].<br/>*2 11 - Signal contacts, 22 AWG-30 AWG [0.03mm<sup>2</sup>-0.05mm<sup>2</sup>] with MC/FC 4012D power contact.<br/>*2 12 - Signal contacts, 22 AWG-30 AWG [0.03mm<sup>2</sup>-0.05mm<sup>2</sup>] with MC/FC 4016D power contact.<br/>*2 13 - Signal contacts, 22 AWG-30 AWG [0.03mm<sup>2</sup>-0.05mm<sup>2</sup>] with MCC/FCC 4101D shielded contacts.<br/>*2 14 - Signal contacts, 22 AWG-30 AWG [0.03mm<sup>2</sup>-0.05mm<sup>2</sup>] with MCC/FCC 4102D shielded contacts.</div> <div>*3 STEP 5 - MOUNTING STYLE<br/>0 - Mounting Hole, 0.120 [3.05] Ø<br/>02 - Mounting Hole, 0.154 [3.91] Ø<br/>F - Float Mounts, Universal<br/>S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length<br/>S5 - Swaged Locknut, 4-40 Threads</div> |      |     |   |   |   |   |   |   |     | <div>*3 STEP 10 - SPECIAL OPTIONS<br/>FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.</div> <div>STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS<br/>/AA - RoHS Compliant<br/><b>NOTE:</b> If compliance to environmental legislation is not required, this step will not be used. Example: CBCD8W2S0000S</div> <div>STEP 8 - SHELL OPTIONS<br/>0 - Zinc Plated.<br/>*5 S - Stainless Steel, passivated.<br/>X - Tin Plated.<br/>Z - Tin Plated and Dimpled (male connectors only).</div> <div>*3 STEP 7 - LOCKING AND POLARIZING SYSTEMS<br/>0 - None.<br/>V3 - Lock Tab, connector front panel mounted.<br/>V5 - Lock Tab, connector rear panel mounted.<br/>VL - Lock Lever, used with Hoods only.<br/>T - Fixed Female Jackscrews.<br/>T2 - Fixed Female Jackscrews.<br/>T6 - Fixed Male and Female Polarized Jackscrews.<br/>E - Rotating Male Jackscrews.<br/>E2 - Rotating Male Screw Locks.<br/>E3 - Rotating Male with Internal Hex for 3/32 Hex Drives<br/>E6 - Rotating Male and Female Polarized Jackscrews.</div> <div>*3 STEP 6 - HOODS AND PUSH-ON FASTENERS<br/>0 - None<br/>AN - Lightweight Aluminum Hood, nickel finish.<br/>AC - Lightweight Aluminum Hood, no finish.<br/>H - Hood, Top Opening, Metal<br/>*4 G - Hood, EMI/RFI, Die Cast Zinc<br/>Z - Hood, Top or Side Opening, robust extended height, plastic and composite, with rotating male jackscrews</div> |

### NOTES

\*1 45W2 variant currently available in female only.

\*2 Available on 19W1 and 45W2 connectors only.

\*3 For additional information on accessories listed in steps 5, 6, 7 and 10, see Accessory Catalog.

\*4 When using G hood with CBCD variants, use the extended height hood. See Accessories Catalog for extended G hood options.

\*5 For stainless steel dimpled male versions, contact Technical Sales.

For crimping information and crimp tools,  
see Application Tools section, page 82.