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PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

**Size 20 Fixed Signal and
Thermocouple Contacts**
**Size 8 Removable Power, Shielded,
Air and High Voltage Contacts**

UL Recognized
File #E49351

CSA Recognized
File #LR54219

DSCC 85039

Telecommunication UL File #E140980



Combo-D series connectors permit mixed contact combinations of power, shielded, air, high voltage and signal contacts within the same connector body. Twenty-two connector variants are offered in six standard shell sizes.

Three performance levels of Combo-D series connectors are offered: professional, industrial and military. CBD series connectors are quality connectors recommended for use in sheltered, non-corrosive indoor and outdoor environments having normal ventilation, but without temperature or humidity controls. Signal contacts are offered with open entry professional level or PosiBand closed entry industrial level signal contacts. CBD series connectors meet performance requirements of IEC 60807-2, Performance Level One or Two. CBM series connectors are military quality connectors recommended for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. CBM series connectors will meet the applicable performance requirements of DSCC 85039.

Combo-D series connectors utilize precision machined signal contacts. Connector variants are available with contact terminations for solder and straight and right angle (90°) printed board mount terminations featuring a choice of inch or metric printed board footprints.

Power, shielded and high voltage contacts are removable, having solder and straight and right angle (90°) printed board mount terminations. Power and shielded contacts are available with crimp terminations. Air contact options are also available, see page 80 for details.

For low level shielding requirements, ferrite inductors may be attached to both signal and power contacts of connectors having contact terminations which are straight or right angle (90°) for printed board mounting applications. For additional information contact Technical Sales.

The female power contacts feature the Large Surface Area (L.S.A.) closed entry contact design which provides maximum mating surfaces between male and female contacts and reduced contact resistance during operation.

A wide assortment of printed board mounting hardware, cable support hoods, and locking systems is available from stock.

A blind mating system is available for applications requiring connector coupling in recessed areas or mobile power coupling systems.

Straight and right angle (90°) PCB mount thermocouple contacts are available, please contact Technical Sales for details.



TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

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

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

| | |
|--|---|
| Signal Contacts, Fixed: | Size 20 contacts, male - 0.040 inch [1.02mm] diameter. CBD series has open entry female contacts. PosiBand closed entry female options are also available. CBM series has PosiBand closed entry female contacts, see page 68 for details. |
| Contact Retention in Insulator: | Signal: 9 lbs. [40N]. Power, shielded and high voltage: 22 lbs [98N]. |
| Resistance to Solder Iron Heat: | 500°F [260°C] for 10 seconds duration per IEC 60512-6. |
| Signal Contact Terminations: | Solder contacts - 0.042 inch [1.06mm] minimum hole diameter for 20 AWG [0.5 mm ²] wire maximum. Straight Printed Board Mount - 0.028 inch [0.71mm] termination diameter. Right Angle (90°) Printed Board Mount - 0.028 inch [0.71 mm] termination diameter. |
| Power Contacts, Removable, Crimp or Solder Termination: | Size 8 contact, male - 0.142 inch [3.61mm] mating diameter. Terminations for 6, 8, 10, 12, and 16 AWG. Female contact features Large Surface Area (L.S.A.) closed entry contact design utilizing BeCu mechanical retention member. Closed crimp barrel. |
| Power Contacts, Printed Board Mount: | Size 8 contact, male - 0.142 inch [3.61mm] mating diameter. Printed board terminations with 0.078 inch [1.98mm], 0.094 inch [2.39mm] and 0.125 inch [3.18mm] termination diameters. |
| Shielded Contacts, Removable: | See table of cable sizes for contact termination dimensions, page 78. |

| | |
|------------------------------------|--|
| High Voltage Contacts: | Straight and right angle (90°) terminations - 0.041 inch [1.04mm] minimum hole diameter. |
| Shells: | Male shells may be dimpled for EMI/ESD ground paths. |
| Polarization: | Trapezoidally shaped shells and polarized jackscrews. |
| Mounting to Angle Brackets: | Jackscrews and riveted fasteners with 0.120 inch [3.05mm] diameter hole, and threaded riveted fasteners with 4-40 threads and nylon inserts. |
| Mounting to Printed Board: | Rapid installation push-on fasteners and threaded posts. |
| Locking Systems: | Jackscrews and vibration locking systems. |
| Mechanical Operations: | CBD series, open entry contacts, 500 operations. CBD series, PosiBand closed entry and CBM series, 1,000 operations. Per IEC 60512-5. |

ELECTRICAL CHARACTERISTICS:

SIZE 20 CONTACTS

| | |
|------------------------------------|----------------------|
| Contact Current Rating: | 7.5 amperes nominal. |
| Initial Contact Resistance: | 0.008 ohms maximum. |
| Proof Voltage: | 1000 V r.m.s. |

SIZE 8 CONTACTS

POWER CONTACTS

Contact Current Rating - Tested per UL 1977:

Standard Contact Material:

| | |
|--|-------------|
| 0.078 inches diameter / 12 AWG terminations: | 39 amperes. |
| 0.094 inches diameter / 10 AWG terminations: | 50 amperes. |
| 0.125 inches diameter / 8 AWG terminations: | 70 amperes. |

See Temperature Rise Curves on page 1 for details.

High Conductivity Contact Material:

| | |
|---------------------|-------------|
| 8 AWG terminations: | 80 amperes. |
|---------------------|-------------|

See Temperature Rise Curves on page 2 for details.

Initial Contact Resistance:

| | |
|-----------------------------------|--|
| Standard Contact Material: | 0.0005 ohms max. per IEC 60512-2, Test 2b. |
|-----------------------------------|--|

| | |
|--|---|
| High Conductivity Contact Material: | 0.00035 ohms max. per IEC 60512-2, Test 2b. |
|--|---|

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

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: | 0.039 [1.0mm] 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:

Straight and right angle PCB mount contacts are available, please contact Technical Sales for details.

Size 20 crimp contacts are available in CBC series, see page 74 for details.



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CONTACT VARIANTS FACE VIEW OF MALE OR REAR VIEW OF FEMALE

SHELL SIZE 1



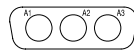
*1 2WK2



5W1

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

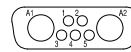
SHELL SIZE 2



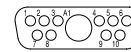
3W3



*2 3WK3

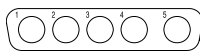


7W2

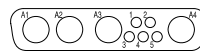


11W1

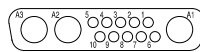
SHELL SIZE 3



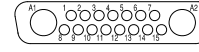
5W5



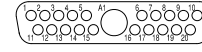
9W4



13W3

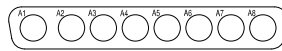


17W2

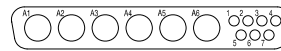


21W1

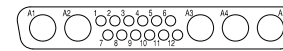
SHELL SIZE 4



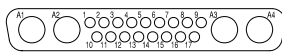
8W8



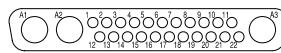
13W6



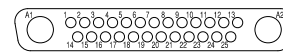
17W5



21WA4



25W3

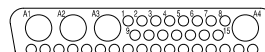


27W2

SHELL SIZE 5



24W7



36W4

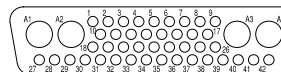


43W2



47W1

SHELL SIZE 6



46W4

Notes:

*1 2WK2 connectors have 1 male and 1 female contacts. Female connector should be loaded with female contact in A2 position.

*2 3WK3 male variant contains 2 male contacts and 1 female contact. Female variant contains 2 female contacts and 1 male contact

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

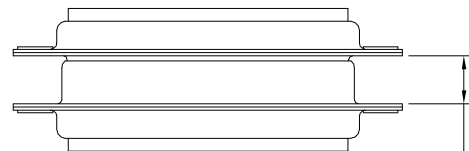
STANDARD SHELL ASSEMBLY



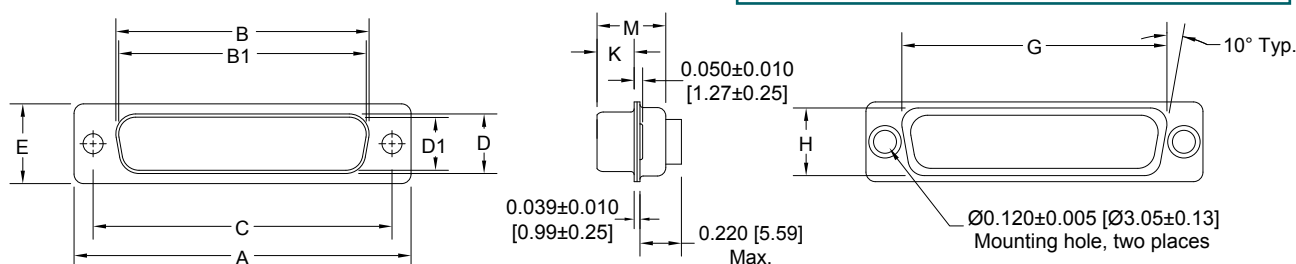
CBD3W3M00000

CBD5W5M00000

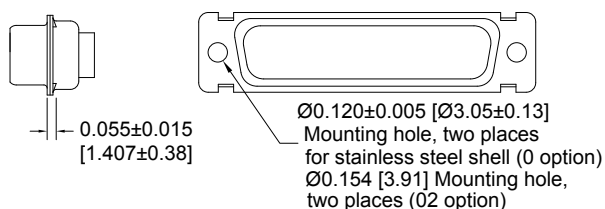
RECOMMENDED MATING DIMENSIONS



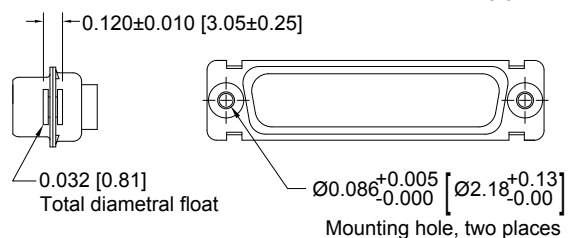
Shell Sizes 1 & 2 =
0.265±0.015 [6.73±0.38]
Shell Sizes 3, 4, 5 & 6 =
0.256±0.015 [6.50±0.38]



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



| SHELL SIZES | A ±0.015 [0.38] | B ±0.005 [0.13] | B1 ±0.005 [0.13] | C ±0.005 [0.13] | D ±0.005 [0.13] | D1 ±0.005 [0.13] | E ±0.015 [0.38] | G ±0.010 [0.25] | H ±0.010 [0.25] | K ±0.005 [0.13] | M ±0.010 [0.25] |
|---------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| SHELL SIZE 1 MALE | 1.213 [30.81] | | 0.666 [16.92] | 0.984 [24.99] | | 0.329 [8.36] | 0.494 [12.55] | 0.759 [19.28] | 0.422 [10.72] | 0.233 [5.92] | 0.422 [10.72] |
| SHELL SIZE 1 FEMALE | 1.213 [30.81] | 0.643 [16.33] | | 0.984 [24.99] | 0.311 [7.90] | | 0.494 [12.55] | 0.759 [19.28] | 0.422 [10.72] | 0.243 [6.17] | 0.429 [10.90] |
| SHELL SIZE 2 MALE | 1.541 [39.14] | | 0.994 [25.25] | 1.312 [33.32] | | 0.329 [8.36] | 0.494 [12.55] | 1.083 [27.51] | 0.422 [10.72] | 0.233 [5.92] | 0.422 [10.72] |
| SHELL SIZE 2 FEMALE | 1.541 [39.14] | 0.971 [24.66] | | 1.312 [33.32] | 0.311 [7.90] | | 0.494 [12.55] | 1.083 [27.51] | 0.422 [10.72] | 0.243 [6.17] | 0.429 [10.90] |
| SHELL SIZE 3 MALE | 2.088 [53.04] | | 1.534 [38.96] | 1.852 [47.04] | | 0.329 [8.36] | 0.494 [12.55] | 1.625 [41.28] | 0.422 [10.72] | 0.230 [5.84] | 0.426 [10.82] |
| SHELL SIZE 3 FEMALE | 2.088 [53.04] | 1.511 [38.38] | | 1.852 [47.04] | 0.311 [7.90] | | 0.494 [12.55] | 1.625 [41.28] | 0.422 [10.72] | 0.243 [6.17] | 0.429 [10.90] |
| SHELL SIZE 4 MALE | 2.729 [69.32] | | 2.182 [55.42] | 2.500 [63.50] | | 0.329 [8.36] | 0.494 [12.55] | 2.272 [57.71] | 0.422 [10.72] | 0.230 [5.84] | 0.426 [10.82] |
| SHELL SIZE 4 FEMALE | 2.729 [69.32] | 2.169 [54.84] | | 2.500 [63.50] | 0.311 [7.90] | | 0.494 [12.55] | 2.272 [57.71] | 0.422 [10.72] | 0.243 [6.17] | 0.429 [10.90] |
| SHELL SIZE 5 MALE | 2.635 [66.93] | | 2.079 [52.81] | 2.406 [61.11] | | 0.441 [11.20] | 0.605 [15.37] | 2.178 [55.32] | 0.534 [13.56] | 0.230 [5.84] | 0.426 [10.82] |
| SHELL SIZE 5 FEMALE | 2.635 [66.93] | 2.064 [52.43] | | 2.406 [61.11] | 0.423 [10.74] | | 0.605 [15.37] | 2.178 [55.32] | 0.534 [13.56] | 0.243 [6.17] | 0.429 [10.90] |
| SHELL SIZE 6 MALE | 2.729 [69.32] | | 2.212 [56.18] | 2.500 [63.50] | | 0.503 [12.78] | 0.668 [16.97] | 2.302 [58.47] | 0.596 [15.14] | 0.230 [5.84] | 0.426 [10.82] |
| SHELL SIZE 6 FEMALE | 2.729 [69.32] | 2.189 [55.60] | | 2.500 [63.50] | 0.485 [12.32] | | 0.668 [16.97] | 2.302 [58.47] | 0.596 [15.14] | 0.243 [6.17] | 0.429 [10.90] |

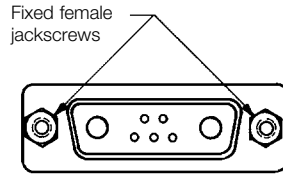
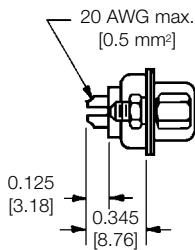


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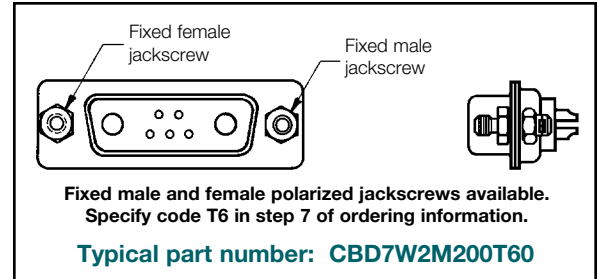
PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO
STANDARD DENSITY PCB MOUNT

Combo-D
D-Sub

SOLDER CUP CONNECTOR CODE 2



For solder cup contacts,
specify code 2 in step 4
of ordering information.



Typical part number: CBD7W2M200T0



CBD17W2F200E0 with FS4008D contacts.

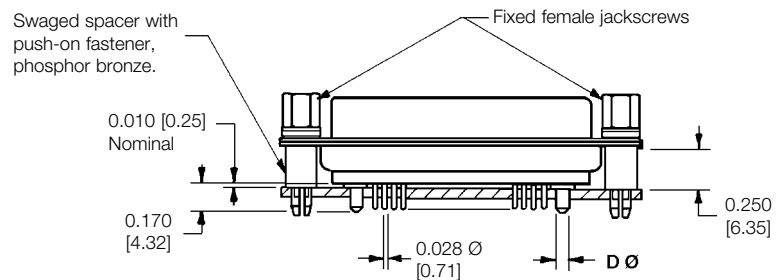
CBD17W2M55B30T20

STRAIGHT PRINTED BOARD MOUNT CONNECTOR CODE 3, 35, 36 AND 37

For Code 93 Press-Fit Board Mount Connectors, see page 20.

| CONTACT CODE | D Ø |
|--------------|--------------|
| 3 | ----- |
| 35 | 0.078 [1.98] |
| 36 | 0.094 [2.39] |
| 37 | 0.125 [3.18] |

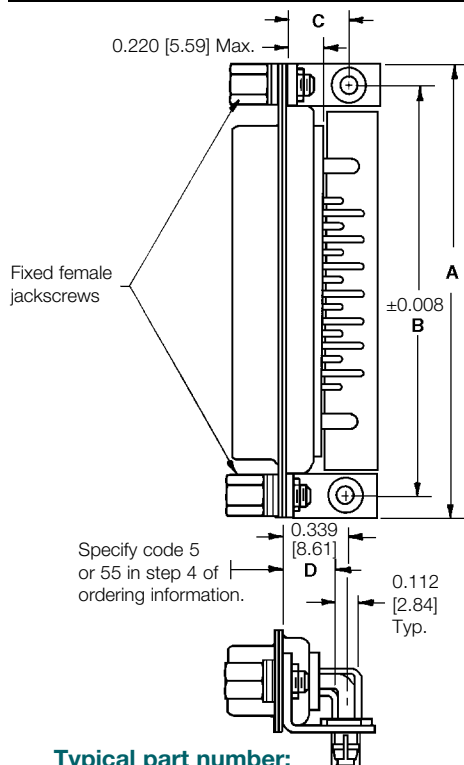
For straight printed board
mount contacts, specify
code no. in step 4 of
ordering information.



Typical part number: CBD17W2F35S60T2X

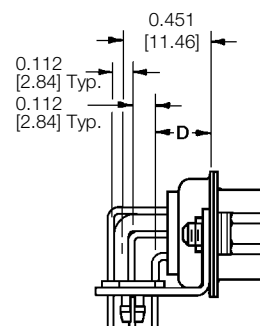
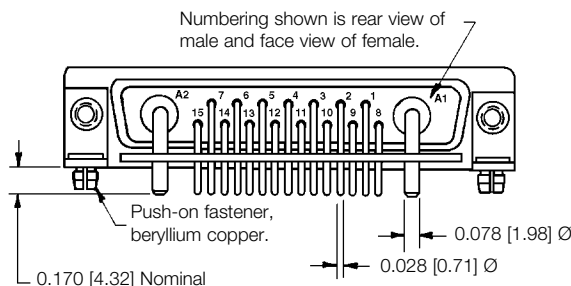
RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR WITH 0.078 [1.98] Ø POWER CONTACTS CODE 5 AND 55, 0.283 [7.19] CONTACT EXTENSION

See temperature rise curves on pages 1 and 2



Typical part number:
CBD17W2M55R7NT20

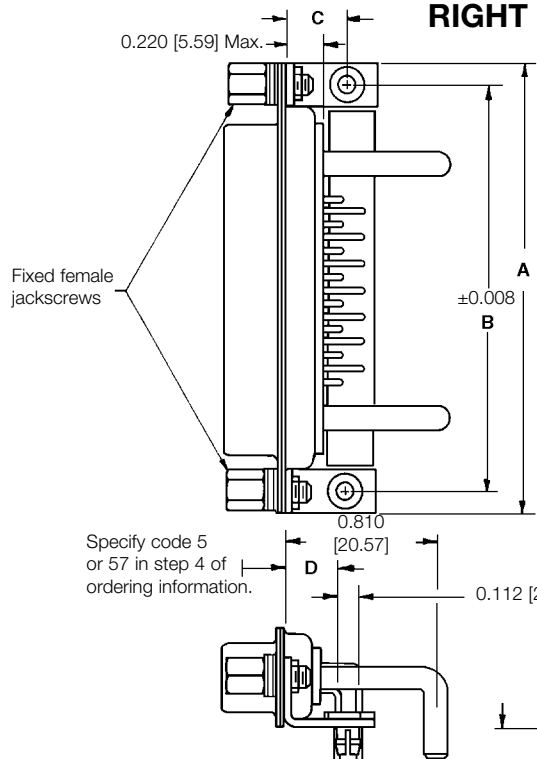
| CBD***R7*** 0.283 [7.19] CONTACT EXTENSION | | | | |
|--|------------------|------------------|------------------|-----------------|
| SHELL SIZE | A | B | C | D |
| SHELL SIZE 1 | 1.204 [30.58] | 0.984 [24.99] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 2 | 1.532 [38.91] | 1.312 [33.32] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 3 | 2.072 [52.63] | 1.852 [47.04] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 4 | 2.720 [69.09] | 2.500 [63.50] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 5 | 2.626 [66.70] | 2.406 [61.11] | 0.395 [10.03] | 0.283 [7.19] |



Typical part number:
CBD36W4F55R7NT2X

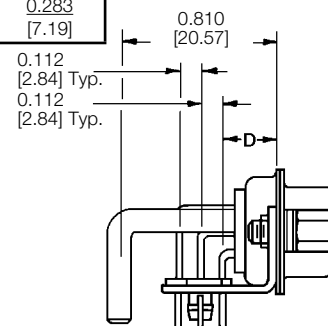
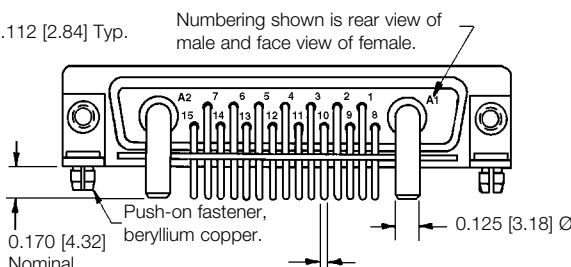
RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR WITH 0.125 [3.18] Ø POWER CONTACTS CODE 5 AND 57, 0.283 [7.19] CONTACT EXTENSION

See temperature rise curves on pages 1 and 2.



Typical part number:
CBD17W2M57R7NT20

| CBD***R7*** 0.283 [7.19] CONTACT EXTENSION | | | | |
|--|------------------|------------------|------------------|-----------------|
| SHELL SIZE | A | B | C | D |
| SHELL SIZE 1 | 1.204 [30.58] | 0.984 [24.99] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 2 | 1.532 [38.91] | 1.312 [33.32] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 3 | 2.072 [52.63] | 1.852 [47.04] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 4 | 2.720 [69.09] | 2.500 [63.50] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 5 | 2.626 [66.70] | 2.406 [61.11] | 0.395 [10.03] | 0.283 [7.19] |



Typical part number:
CBD36W4F57R7NT2X



Combo-D D-Sub

CONNECTOR VARIANT 46W4

See temperature rise curves on pages 1 and 2



CONNECTOR VARIANT 46W4

See temperature rise curves on pages 1 and 2



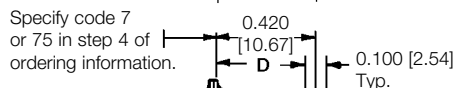
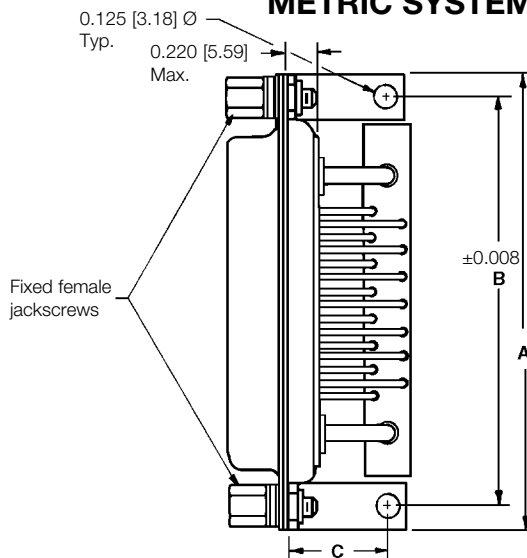
**METRIC SYSTEM RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.078 [1.98] Ø POWER CONTACTS**

CODE 7 AND 75, 0.370 [9.40] CONTACT EXTENSION

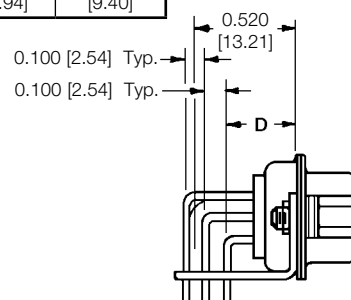
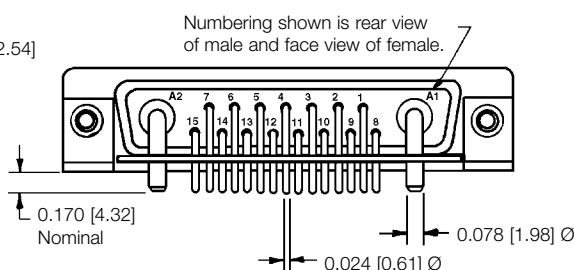
See temperature rise curves on pages 1 and 2

CBD*R7*** 0.370 [9.40] CONTACT EXTENSION**

| SHELL SIZE | A | B | C | D |
|--------------|------------------|------------------|------------------|-----------------|
| SHELL SIZE 1 | 1.204 [30.58] | 0.984 [24.99] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 2 | 1.532 [38.91] | 1.312 [33.32] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 3 | 2.072 [52.63] | 1.852 [47.04] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 4 | 2.720 [69.09] | 2.500 [63.50] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 5 | 2.626 [66.70] | 2.406 [61.11] | 0.470 [11.94] | 0.370 [9.40] |



Typical part number:
CBD17W2M75R70T20



Typical part number:
CBD36W4M75R70T20

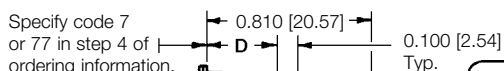
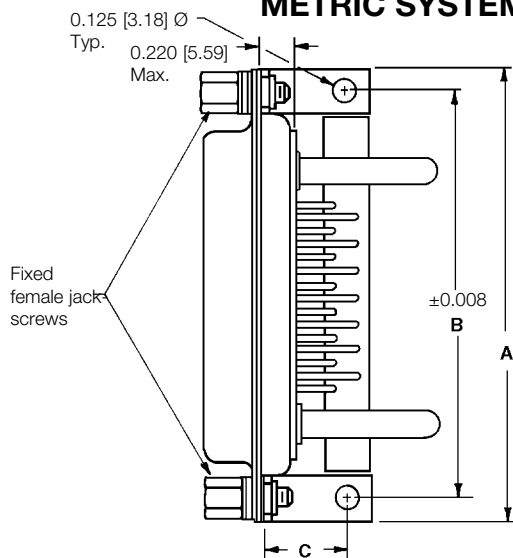
**METRIC SYSTEM RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH 0.125 [3.18] Ø POWER CONTACTS**

CODE 7 AND 77, 0.370 [9.40] CONTACT EXTENSION

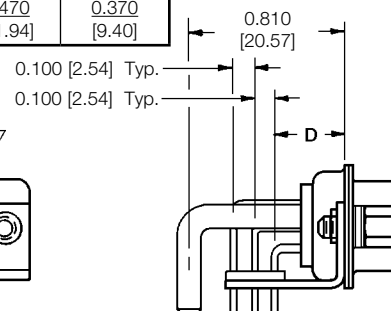
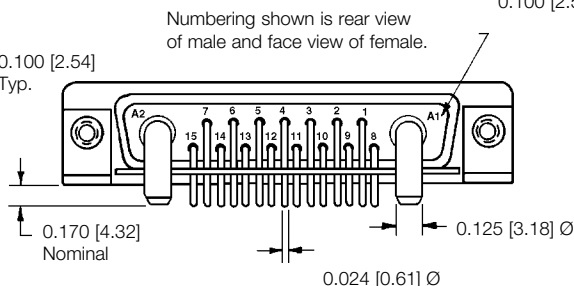
See temperature rise curves on pages 1 and 2

CBD*R7*** 0.370 [9.40] CONTACT EXTENSION**

| SHELL SIZE | A | B | C | D |
|--------------|------------------|------------------|------------------|-----------------|
| SHELL SIZE 1 | 1.204 [30.58] | 0.984 [24.99] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 2 | 1.532 [38.91] | 1.312 [33.32] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 3 | 2.072 [52.63] | 1.852 [47.04] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 4 | 2.720 [69.09] | 2.500 [63.50] | 0.420 [10.67] | 0.370 [9.40] |
| SHELL SIZE 5 | 2.626 [66.70] | 2.406 [61.11] | 0.470 [11.94] | 0.370 [9.40] |



Typical part number:
CBD17W2M77R70T20



Typical part number:
CBD36W4M77R70T20



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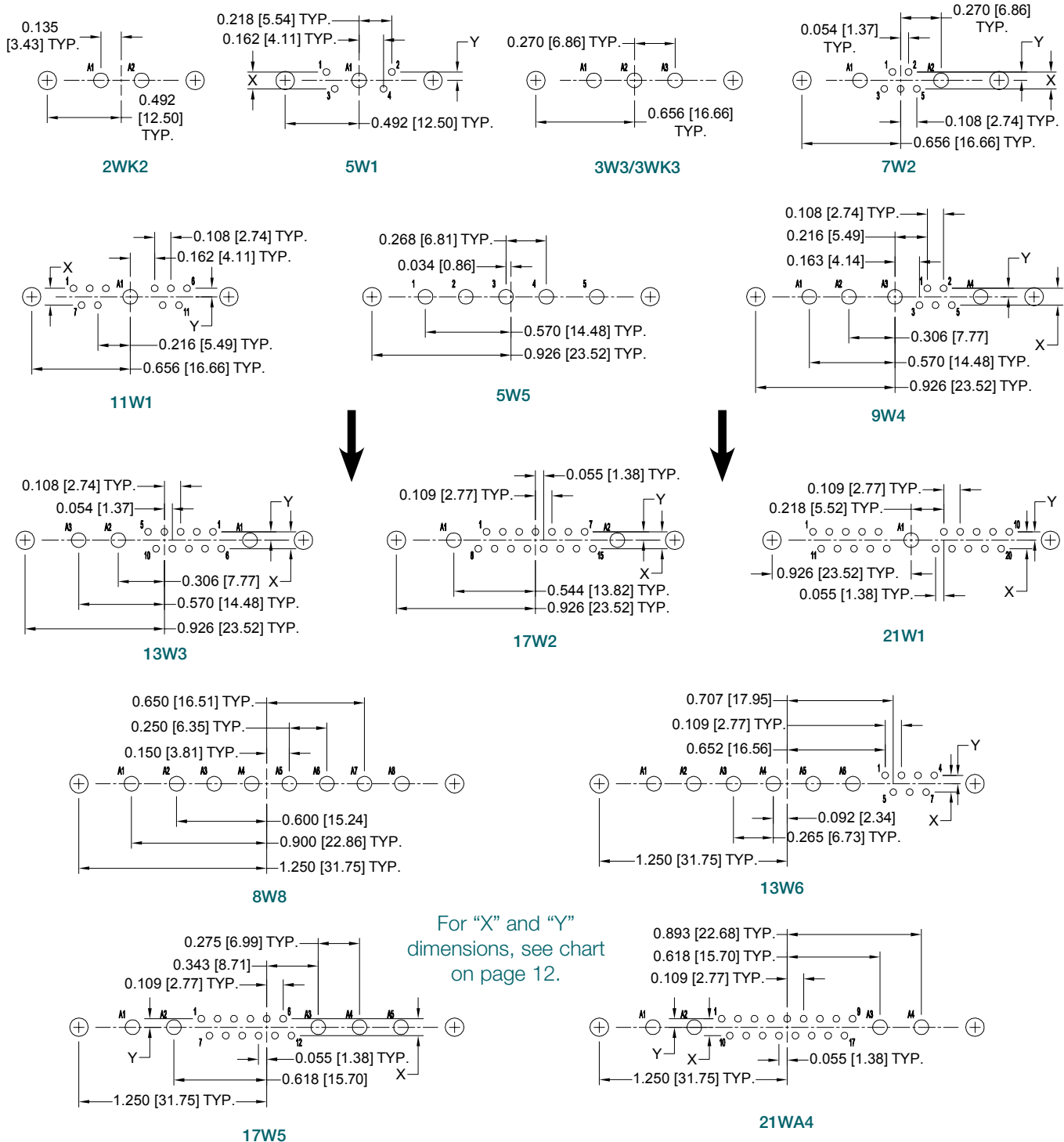
PROFESSIONAL, INDUSTRIAL AND MILITARY QUALITY
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STANDARD DENSITY PCB MOUNT

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RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø POWER CONTACTS AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø, 0.094 [2.39] Ø AND 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.

MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 86.

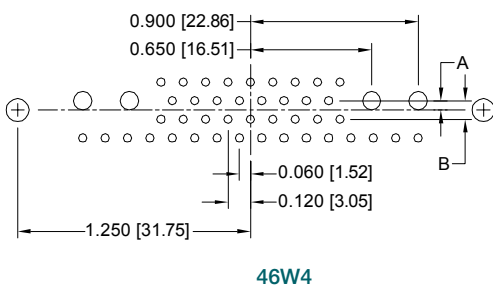
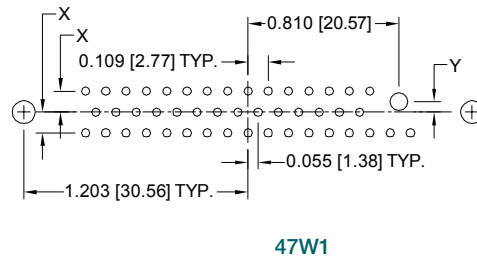
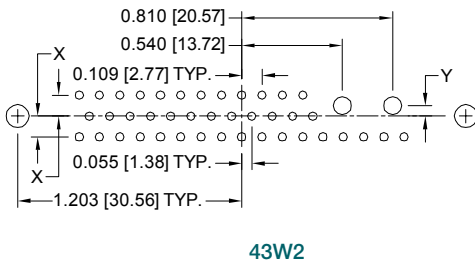
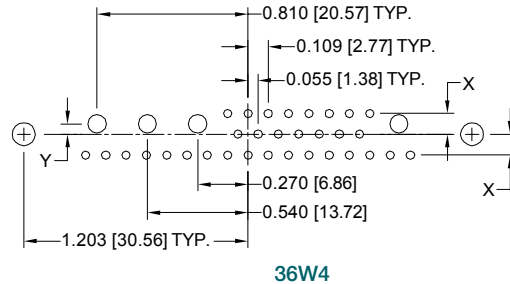
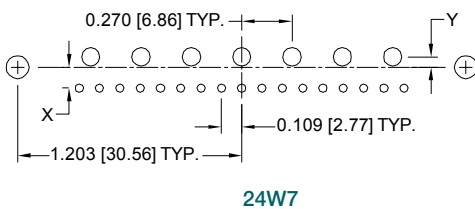
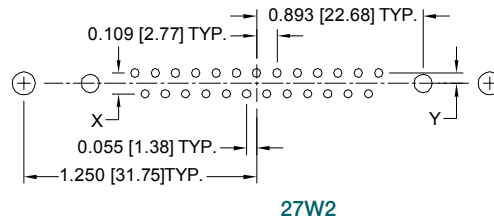
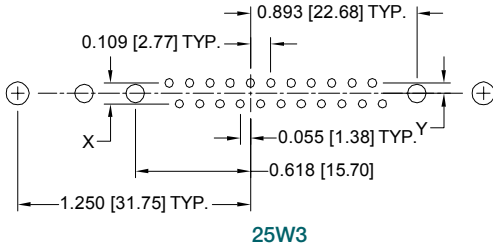
For press-fit connector installation tools, see page 86.

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.114 [2.90] Ø hole for 0.094 [2.39] Ø power contact termination positions.
Suggest 0.145 [3.68] Ø hole for 0.125 [3.18] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø POWER CONTACTS AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN WITH 0.078 [1.98] Ø, 0.094 [2.39] Ø AND 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.098 [2.49] Ø hole for 0.078 [1.98] Ø power contact termination positions.
Suggest 0.114 [2.90] Ø hole for 0.094 [2.39] Ø power contact termination positions.
Suggest 0.145 [3.68] Ø hole for 0.125 [3.18] Ø power contact termination positions.
Suggest 0.123 ±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

| CODE NO. | X | Y | A | B |
|----------|--------------|--------------|--------------|--------------|
| 3 | | | | |
| 35 | 0.112 [2.84] | 0.056 [1.42] | 0.050 [1.27] | 0.100 [2.54] |
| 36 | | | | |
| 37 | | | | |
| 5 | 0.112 [2.84] | 0.056 [1.42] | 0.056 [1.42] | 0.112 [2.84] |
| 55 | | | | |
| 7 | 0.100 [2.54] | 0.050 [1.27] | 0.050 [1.27] | 0.100 [2.54] |
| 75 | | | | |

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 85.

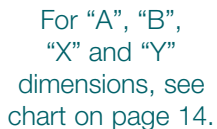
For press-fit connector installation tools, see page 86.

**DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 12**



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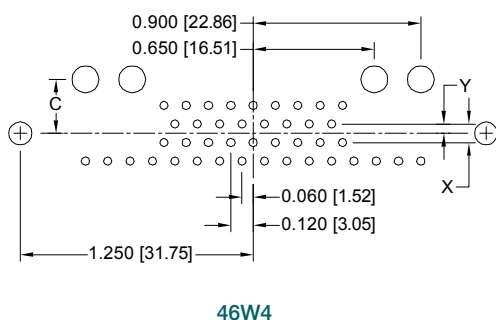
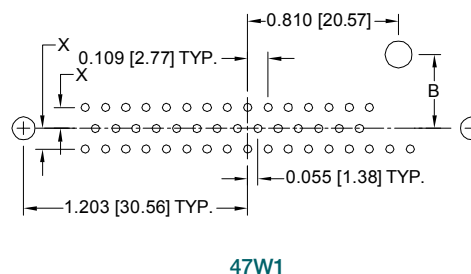
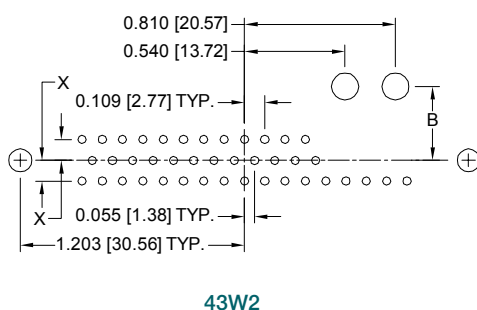
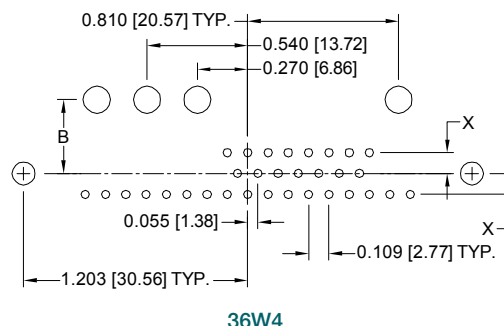
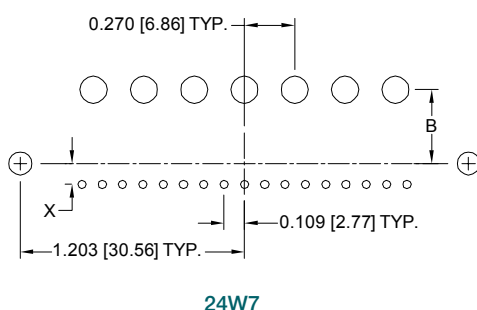
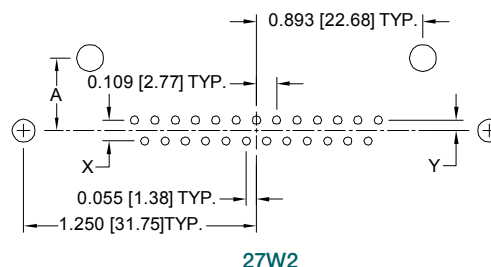
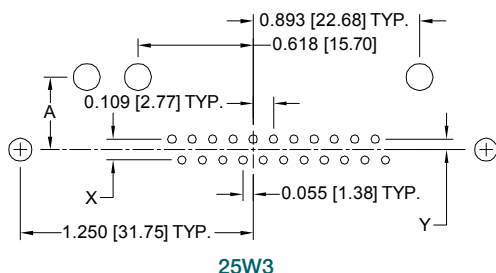
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.145 [3.68] Ø hole for power contact termination positions.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

RIGHT ANGLE (90°) PRINTED BOARD CONTACT HOLE PATTERN WITH 0.125 [3.18] Ø POWER CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination positions.
Suggest 0.145 [3.68] Ø hole for power contact termination positions.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

| CODE NO. | 5 & 57 | 7 & 77 |
|----------|---------------|--------------|
| A | 0.471 [11.96] | 0.390 [9.91] |
| B | 0.415 [10.54] | 0.340 [8.64] |
| C | 0.359 [9.12] | 0.290 [7.37] |
| X | 0.112 [2.84] | 0.100 [2.54] |
| Y | 0.056 [1.42] | 0.050 [1.27] |

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



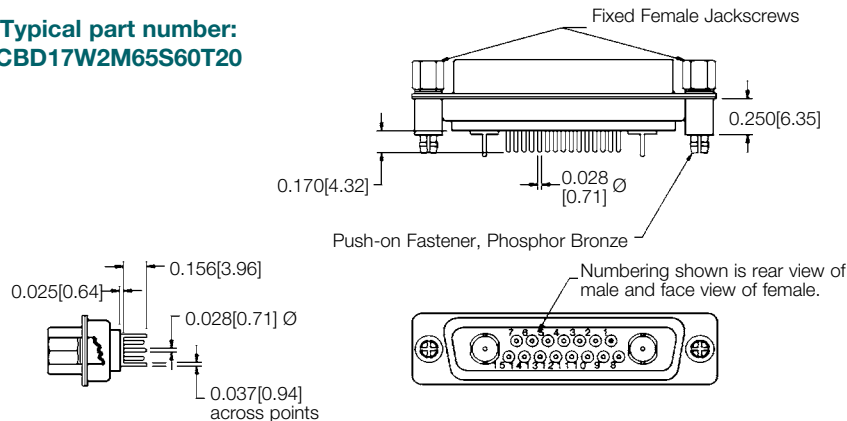
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STANDARD DENSITY PCB MOUNT

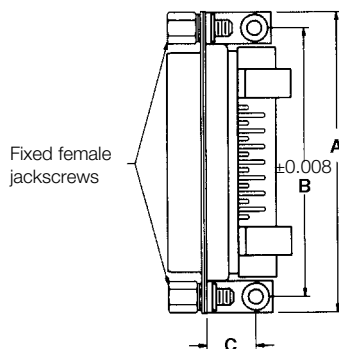
Combo-D
D-Sub

STRAIGHT PRINTED BOARD MOUNT CONNECTOR
WITH FDS4201D OR MDS4201D SHIELDED CONTACTS
CODE 65

Typical part number:
CBD17W2M65S60T20

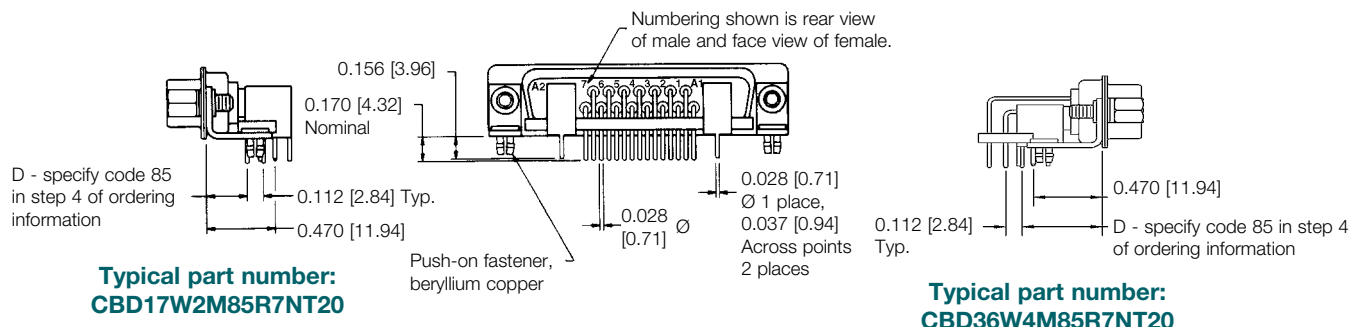


RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
WITH FRT4201D OR MRT4201D SHIELDED CONTACTS
CODE 85



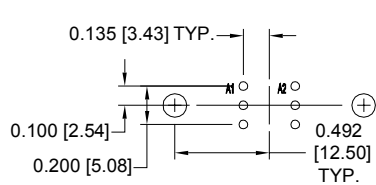
| CBD**85**** 0.283 [7.19] CONTACT EXTENSION | | | | |
|--|------------------|------------------|------------------|------------------|
| SHELL SIZE | A | B | C | D |
| SHELL SIZE 1 | 1.204 [30.58] | 0.984 [24.99] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 2 | 1.532 [38.91] | 1.312 [33.32] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 3 | 2.072 [52.63] | 1.852 [47.04] | 0.339 [8.61] | 0.283 [7.19] |
| SHELL SIZE 4 | 2.720 [69.09] | 2.500 [63.50] | 0.339 [8.61] | 0.283 [7.19] |
| **SHELL SIZE 5 | 2.626 [66.70] | 2.406 [61.11] | 0.395 [10.03] | 0.545 [13.84] |

***NOTE:**
Shell size 5 connectors are supplied inverted when ordered with right angle (90°) printed board mount shielded contacts.

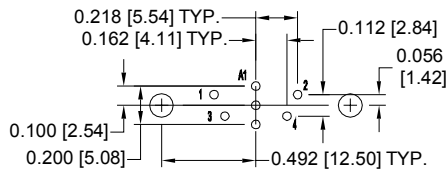


STRAIGHT PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FDS4201D AND MDS4201D SHIELDED CONTACTS

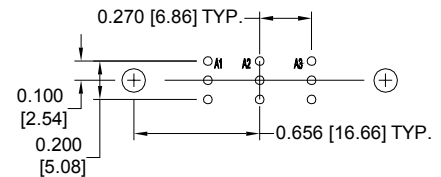
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.



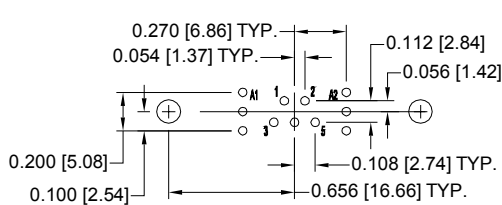
2WK2



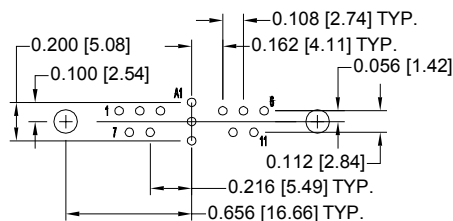
5W1



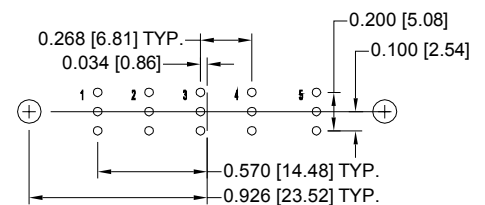
3W3/3WK3



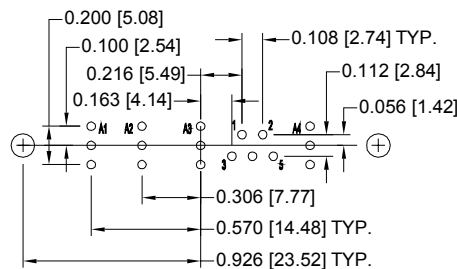
7W2



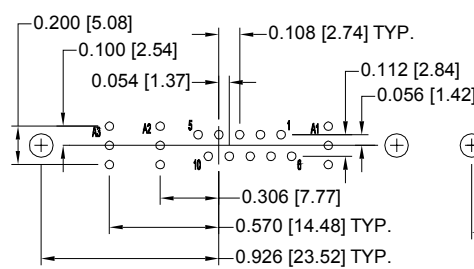
11W1



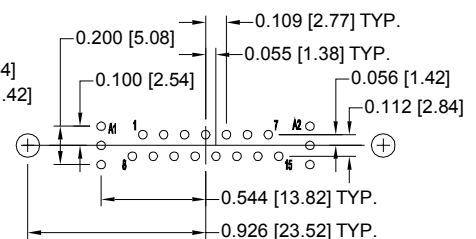
5W5



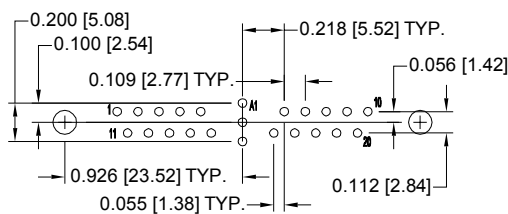
9W4



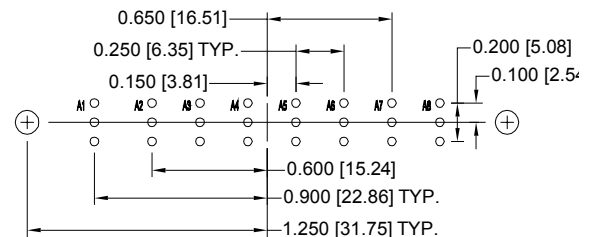
13W3



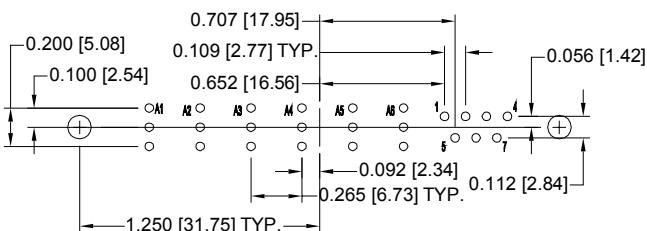
17W2



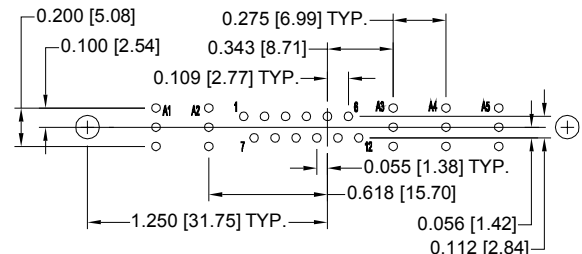
21W1



8W8



13W6



17W5

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.

Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 16



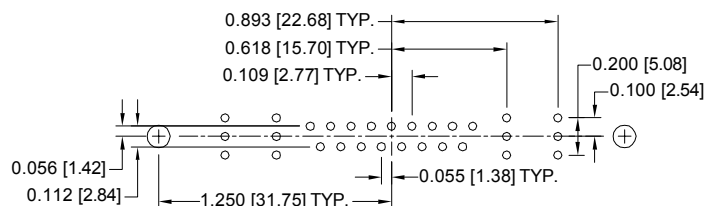
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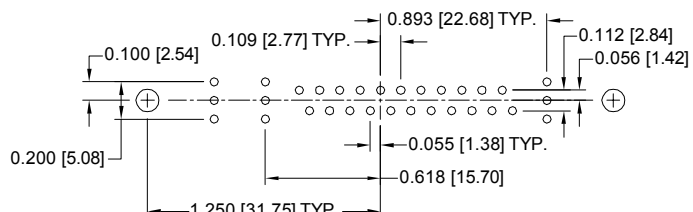
Combo-D
D-Sub

STRAIGHT PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FDS4201D AND MDS4201D SHIELDED CONTACTS

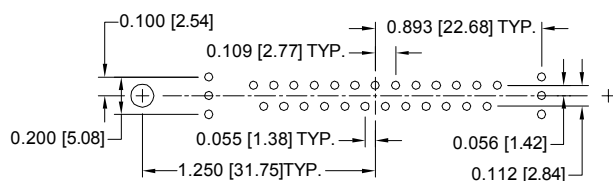
HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.



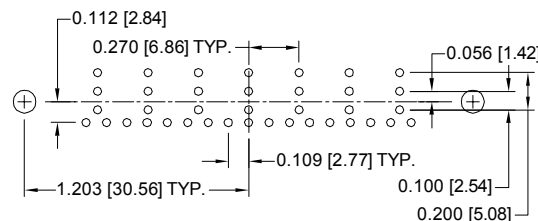
21WA4



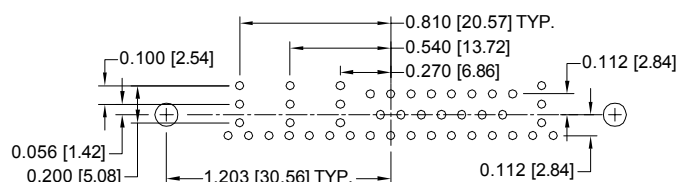
25W3



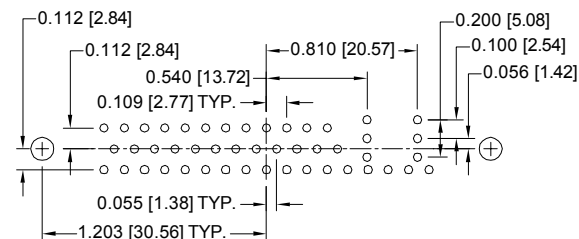
27W2



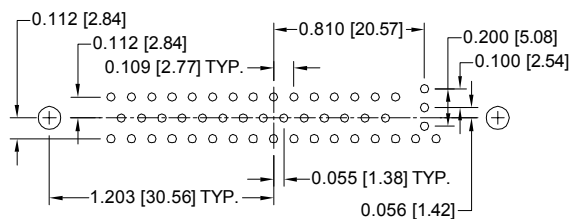
24W7



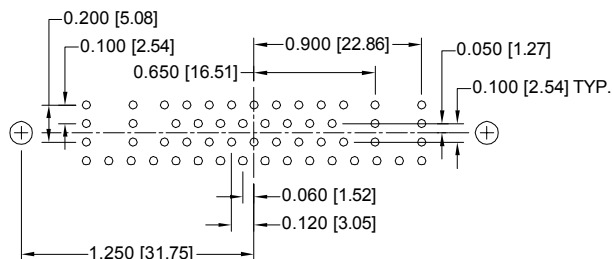
36W4



43W2



47W1



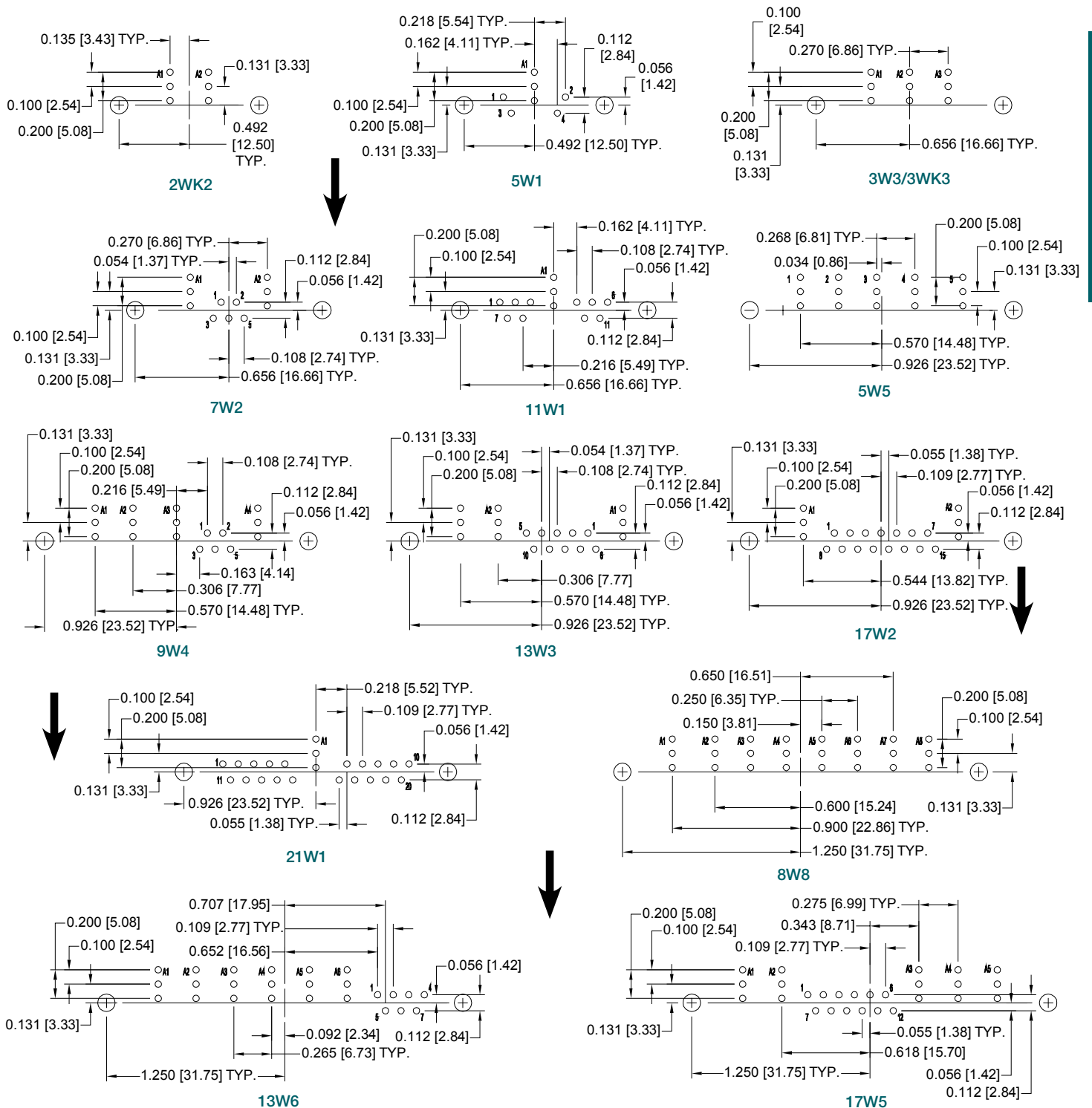
46W4

SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FRT4201D AND MRT4201D SHIELDED CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE. 18



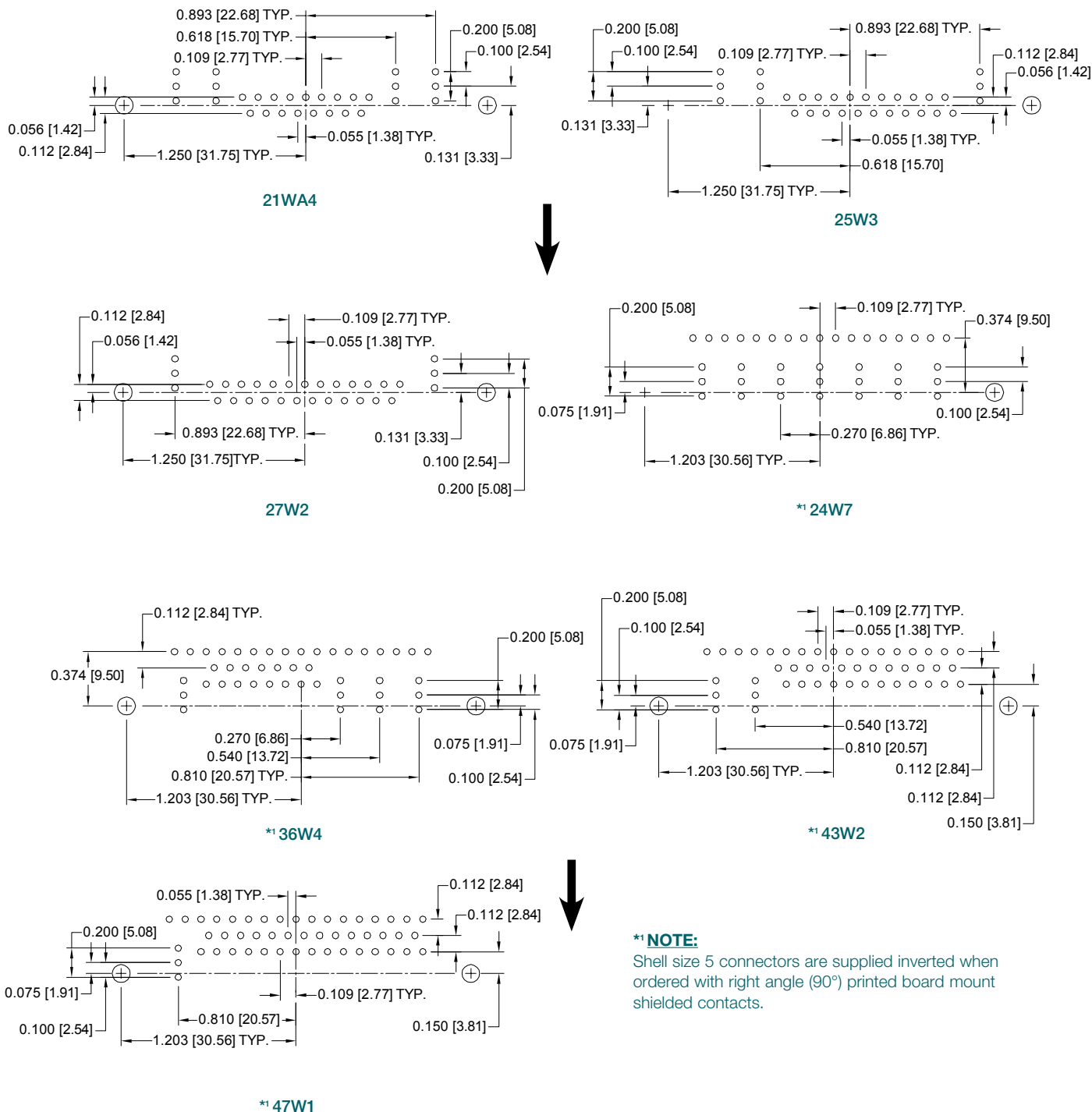
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Combo-D
D-Sub

RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONTACT HOLE PATTERN WITH FRT4201D AND MRT4201D SHIELDED CONTACTS

HOLE IDENTIFICATION SHOWN FOR MALE CONNECTOR; USE MIRROR IMAGE FOR FEMALE CONNECTOR.
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

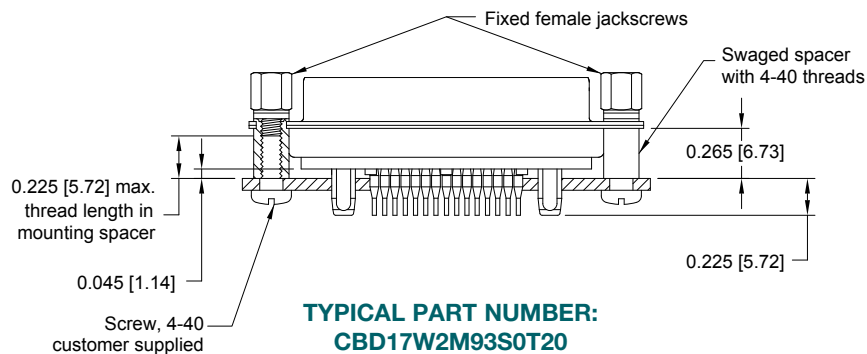


SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.045 [1.14] Ø hole for signal contact termination position.
Suggest 0.123±0.003 [3.12] Ø hole for mounting connector with push-on fasteners.

COMPLIANT PRESS-FIT CONNECTOR CODE 93

Positronic **recommends** the practice of **using mounting hardware** to secure connector to printed circuit board.



SUGGESTED PRINTED BOARD HOLE SIZES:

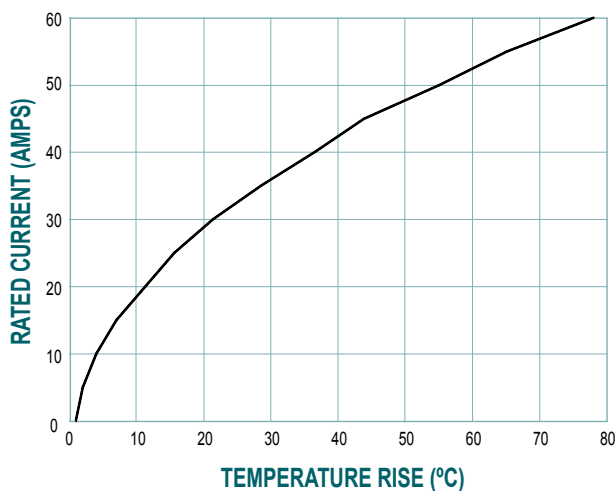
Suggest 0.123 [3.12] Ø hole for connector mounting holes.

NOTE: For suggested printed board recommended drill hole sizes, plating and finished hole sizes for compliant contact termination positions, see page 85.

For press-fit connector installation tools, see page 86.

FOR STRAIGHT PRINTED BOARD
CONTACT HOLE PATTERNS,
SEE PAGES 11 AND 12.

TEMPERATURE RISE CURVE



Test conducted in accordance with UL1977.

All power contacts under load.

Curve developed using CBD8W8M00000 and CBD8W8F93S000 connectors with MC4008D contacts terminated to 8 AWG wire.



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THREE PERFORMANCE LEVELS FOR BEST COST/PERFORMANCE RATIO

STANDARD DENSITY PCB MOUNT

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D-Sub

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 | CBD | 17W2 | F | 55 | R7 | N | T2 | X | /AA | -14 |

STEP 1 - BASIC SERIES

CBD – Professional/Industrial Quality, see Step 3.
CBM – Military conformance with "closed entry" female signal contacts plated 0.000050 [1.27μ] gold over nickel plate. Choose "S" or "M" in Step 3.

STEP 2 - CONNECTOR VARIANTS

Shell Size 1 - 2WK2, 5W1
Shell Size 2 - 3W3, 3WK3, 7W2, 11W1
Shell Size 3 - 5W5, 9W4, 13W3, 17W2, 21W1
Shell Size 4 - 8W8, 13W6, 17W5, 21WA4, 25W3, 27W2
Shell Size 5 - 24W7, 36W4, 43W2, 47W1
Shell Size 6 - 46W4

STEP 3 - CONNECTOR GENDER

F - Female - Professional Level - Open Entry Signal Contacts
M - Male
S - Female - Industrial / Military Level - PosiBand Closed Entry Signal Contacts

STEP 4 - CONTACT TERMINATION TYPE

- 0 - Connector ordered without size 8 power, shielded, air or high voltage removable contacts. See pages 60-88 for contact part numbers. Available on 2WK2, 3W3, 3WK3, 5W5 and 8W8.
- 2 - Fixed Solder Cup, Signal Contacts only.
- 3 - Solder, Straight Printed Board Mount with Signal Contacts, 0.170 [4.32] Tail Length.
- 35 - Solder, Straight Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.170 [4.32] Tail Length.
- 36 - Solder, Straight Printed Board Mount with Signal and 0.094 [2.39] Ø Power Contacts, 0.170 [4.32] Tail Length.
- 37 - Solder, Straight Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.170 [4.32] Tail Length.
- 5 - Solder, Right Angle (90°) Printed Board Mount with Signal Contacts only, 0.283 [7.19] Signal Contact Extension.
- 55 - Solder, Right Angle (90°) Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.283 [7.19] Signal Contact Extension.
- 57 - Solder, Right Angle (90°) Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.283 [7.19] Signal Contact Extension.
- 65 - Solder, Straight Printed Board Mount with Signal and Shielded Contacts MDS/FDS 4201D footprint, 0.170 [4.32] Signal Contact Tail Length.
- 7 - Solder, Metric System Right Angle (90°) Printed Board Mount with Signal Contacts only, 0.370 [9.40] Signal Contact Extension.
- 75 - Solder, Metric System Right Angle (90°) Printed Board Mount with Signal and 0.078 [1.98] Ø Power Contacts, 0.370 [9.40] Signal Contact Extension.
- 77 - Solder, Metric System Right Angle (90°) Printed Board Mount with Signal and 0.125 [3.18] Ø Power Contacts, 0.370 [9.40] Signal Contact Extension.
- *1 85 - Solder, Right Angle (90°) Printed Board Mount with Signal and Shielded Contacts MRT/FRT 4201D footprint, 0.283 [7.19] Signal Contact Extension.
- 93 - Size 20 Omega type compliant and Size 8 Bi-Spring type compliant, termination length 0.225 [5.72].

NOTES

- *1 Not available on shell size 6, CBD 46W4.
- *2 For additional information on accessories listed in steps 5, 6, 7 and 10, see Accessory Catalog.
- *3 When using G hood with CBD variants, use the extended height hood. See Accessories Catalog for extended G hood options.
- *4 For stainless steel dimpled male versions, contact Technical Sales.
- *5 Not available when using 2WK2, 3W3, 3WK3, 5W5, 8W8, instead use B, R, R3, R4, or R5.

DIMENSIONS ARE IN INCHES [MILLIMETERS].

21 ALL DIMENSIONS ARE SUBJECT TO CHANGE.

*2 STEP 10 - SPECIAL OPTIONS

FOR SPECIAL OPTIONS, SEE SPECIAL OPTIONS APPENDIX ON PAGE 81.

CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING:

Other Special Requirements.
Straight / Right Angle Thermocouple PCB mount contacts.

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - RoHS Compliant

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: CBD17W2F55R7NT2X

STEP 8 - SHELL OPTIONS

- 0 - Zinc Plated, with Chromate Seal.
- *4 S - Stainless Steel, passivated.
- X - Tin Plated.
- Z - Tin Plated and Dimpled (male connectors only).

*2 STEP 7 - LOCKING AND POLARIZING SYSTEMS

- 0 - None.
- V3 - Lock Tab, connector front panel mounted.
- V5 - Lock Tab, connector rear panel mounted.
- VL - Lock Lever, used with Hoods only.
- T - Fixed Female Jackscrews.
- T2 - Fixed Female Jackscrews.
- T6 - Fixed Male and Female Polarized Jackscrews.
- E - Rotating Male Jackscrews.
- E2 - Rotating Male Screw Locks.
- E3 - Rotating Male with Internal Hex for 3/32 Hex Drives
- E6 - Rotating Male and Female Polarized Jackscrews.

*2 STEP 6 - HOODS AND PUSH-ON FASTENERS

- 0 - None
- AN - Lightweight Aluminum Hood, nickel finish.
- AC - Lightweight Aluminum Hood, no finish.
- Z - Hood, Top or Side Opening, robust extended height, plastic and composite, with rotating male jackscrews, shell sizes 1 through 5
- H - Hood, Top Opening, Metal, shell sizes 2 through 5
- *3 G - Hood, EMI/RFI, Die Cast Zinc, shell sizes 1 through 6
- N - Push-on Fastener, for Right Angle (90°) Mounting Brackets

*2 STEP 5 - MOUNTING STYLE

- 0 - Mounting Hole, 0.120 [3.05] Ø
- 02 - Mounting Hole, 0.154 [3.91] Ø
- *5 B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar
- *5 B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar
- F - Float Mounts, Universal
- P - Threaded Post, Brass, 0.250 [6.35] Length
- P2 - Threaded Post, Nylon, 0.250 [6.35] Length
- *5 R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar
- *5 R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar
- *5 R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar
- *5 R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar
- S - Swaged Spacer, 4-40 Threads, 0.250 [6.35] Length, Spacer length changes to 0.265 [6.73] when used in conjunction with Code 93 contacts
- S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length
- S5 - Swaged Locknut, 4-40 Threads
- S6 - Swaged Spacer with Push-on Fastener, 4-40 Threads, 0.250 [6.35] Length