



Positronic Industries
connectpositronic.com

MILITARY QUALITY FIXED CONTACT STANDARD DENSITY D-SUBMINIATURE

D-Sub

Size 20 Signal and
Thermocouple Contacts, Fixed
PosiBand® Closed Entry
IEC Publication 60807-2
Performance Level One
MIL-DTL-24308

U.L. Recognized File #E49351
CSA Recognized File #LR54219

Telecommunication
U.L. File #14098



Harmo-D series connectors are military quality connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. Applicable fixed contact connectors are qualified to MIL-DTL-24308 (see pages 84-94 for listing) and meet the performance requirements of IEC 60807-2, Performance Level One.

Harmo-D series connectors utilize precision machined contacts which are fixed within the connector body. The female contact features Positronic's unique PosiBand closed entry design, see page 1 for details.

Five standard connector variants are offered in arrangements of 9, 15, 25, 37 and 50 contacts. Each connector variant is available with contact terminations for solder cup, wrap post and straight and right angle (90°) printed board mount terminations with Inch and Metric footprints.

Harmo-D series connectors are mateable and compatible with all D-subminiature connectors conforming to IEC 60807-2, IEC 60807-3 and MIL-DTL-24308.

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



For RoHS options
see page 32.

HARMO-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

| | |
|---------------------------------------|---|
| Insulator: | Glass filled DAP per ASTM-D-5948, SDG-F, UL 94V-0, green color. |
| Contacts: | Precision machined copper alloy. |
| Contact Plating: | Military performance - 0.000050 inch [1.27 microns] gold over copper plate. IEC 60807-2, Performance Level One - gold flash over nickel plate. Other finishes available upon request. |
| Shells: | Steel or brass with tin plate; zinc and cadmium plate with chromate seal, stainless steel passivated. Other materials and finishes available upon request. |
| Mounting Spacers and Brackets: | Nylon; 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 or 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. |
| Vibration Lock Systems: | Slide lock and lock tabs, steel with nickel plate. |
| Hoods: | Composite and plastic, UL 94V-0; brass or steel with zinc plate and chromate seal; aluminum or aluminum with electroless nickel plate; die cast zinc. |

Non-magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

| | |
|--|--|
| Fixed Contacts: | Size 20 contact, male - 0.040 inch [1.02mm] mating diameter. Female contact - PosiBand closed entry design, see page 1 for details. |
| Contact Retention In Insulator: | 9 lbs. [40 N]. |
| Resistance To Solder Iron Heat: | 650°F [350°C] for 10 seconds duration per IEC 60512-6. |
| Contact Terminations: | Solder cup contacts - 0.042 inch [1.06mm] minimum hole diameter in solder style contact for 20 AWG [0.5mm ²] wire maximum. |

Straight Printed Board Mount - 0.028 inch [0.71mm] termination diameter and 0.024 inch [0.61mm] termination diameter.

Right Angle (90°) Printed Board Mount - 0.028 [0.71mm] termination diameter for Inch System footprint, and 0.024 [0.61mm] termination diameter for European Metric footprint.

Wrap Post - 0.025 inch [0.64mm] square

Male shells may be dimpled for EMI/ESD ground paths.

Shells:

Polarization:

Trapezoidally shaped shells and polarized jackscrews.

Mounting To Angle Brackets:

Jackscrews and riveted fasteners with 0.120 inch [3.05mm] clearance hole, and threaded riveted fasteners with 4-40 threads and nylon lock inserts.

Mounting To Printed Board:

Rapid installation push-on fasteners an mounting posts.

Locking Systems:

Jackscrews and vibration locking systems.

Mechanical Operations:

1000 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

| | |
|---|--|
| Contact Current Rating: | 14 amperes, tested per U.L. 1977, six contacts energized. <i>See temperature rise curve on page 2 for details.</i> |
| Initial Contact Resistance: | 0.005 ohms maximum. |
| Proof Voltage: | 1000 V r.m.s. |
| Insulator Resistance: | 5 G ohms. |
| Clearance and Creepage Distance [minimum]: | 0.039 inch [1.0mm]. |
| Working Voltage: | 300 V r.m.s. |

CLIMATIC CHARACTERISTICS:

| | |
|---------------------------------|------------------|
| Temperature Range: | -55°C to +125°C. |
| Damp Heat, Steady State: | 56 days. |

THERMOCOUPLE CONTACTS:

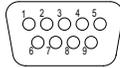
Straight and right angle (90°) PCB mount contacts are available, please contact Technical Sales for details.

Size 20 crimp contacts are available in RD series, see page 36 for details.

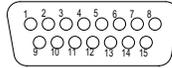


CONTACT VARIANTS

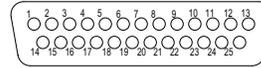
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



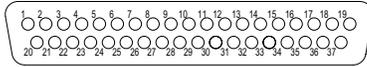
HDC 9



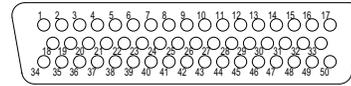
HDC 15



HDC 25

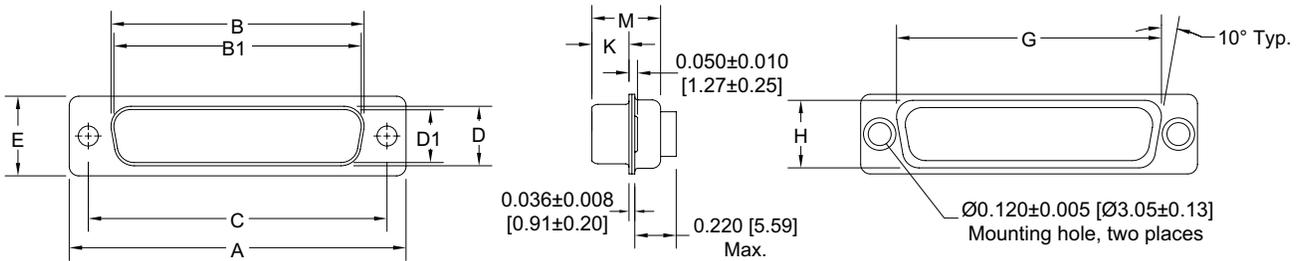


HDC 37

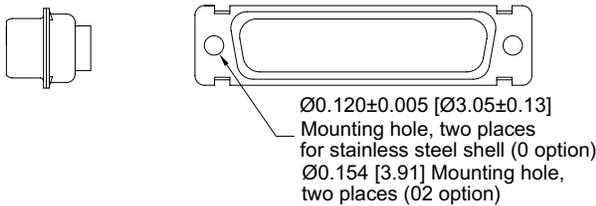


HDC 50

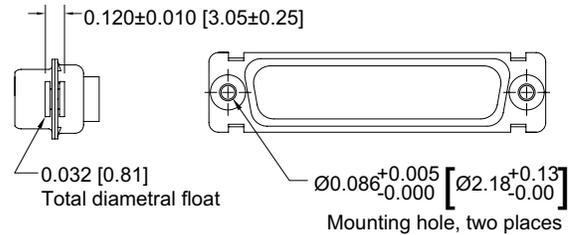
STANDARD SHELL ASSEMBLY



OPTIONAL SHELL ASSEMBLY (0, 02)



OPTIONAL SHELL ASSEMBLY WITH UNIVERSAL FLOAT MOUNTS (F)



| CONNECTOR VARIANT 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] |
|-------------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| HDC 9 M | 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] |
| HDC 9 S | 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] |
| HDC 15 M | 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] |
| HDC 15 S | 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] |
| HDC 25 M | 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] |
| HDC 25 S | 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] |
| HDC 37 M | 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] |
| HDC 37 S | 2.729 [69.32] | 2.159 [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] |
| HDC 50 M | 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] |
| HDC 50 S | 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] |

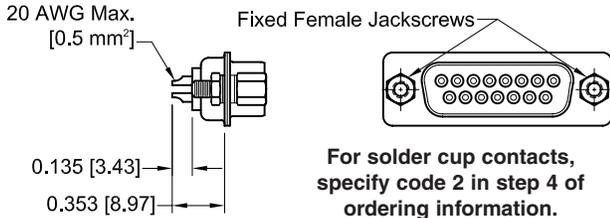


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SOLDER CUP CONNECTOR
CODE 2



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

Typical Part Number: **HDC15M200T2Z**

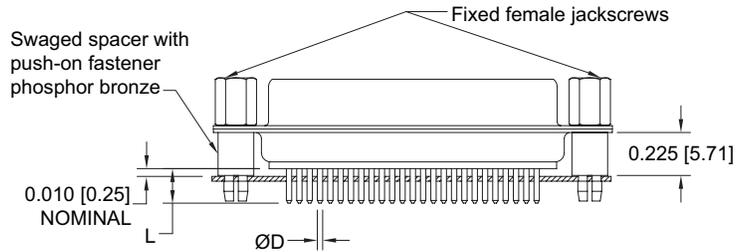
Fixed male and female polarized jackscrews available. Specify code T6 in step 7 of ordering information.

Typical Part Number: **HDC15M200T6Z**

STRAIGHT PRINTED BOARD MOUNT CONNECTOR
CODE 3, 32, 33, AND 36

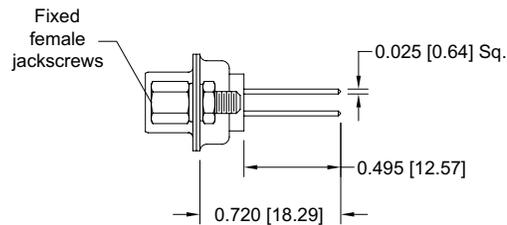
| CODE NUMBER | L | ØD |
|---|---------------|--------------|
| 3 | 0.170 [4.32] | 0.028 [0.71] |
| 32 | 0.375 [9.53] | 0.028 [0.71] |
|  33 | 0.500 [12.70] | 0.028 [0.71] |
| 36 | 0.236 [6.00] | 0.024 [0.61] |

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



Typical Part Number: **HDC25S3S60T0**

WRAP POST CONNECTOR
CODE 6



For wrap post contacts, specify code 6 in step 4 of ordering information.

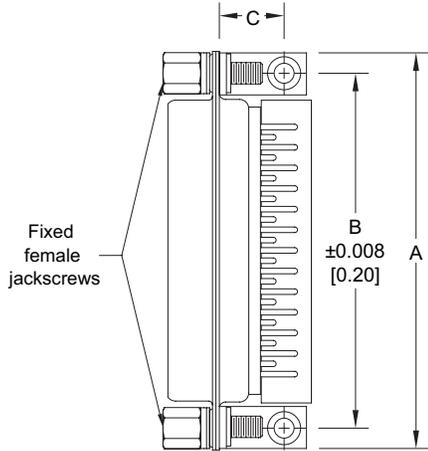
Typical part number: **HDC15S600T0**



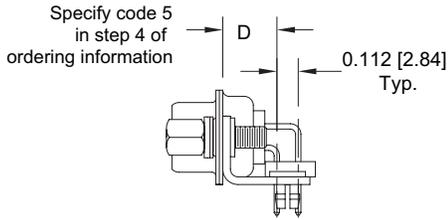
HDC25M6S50T0



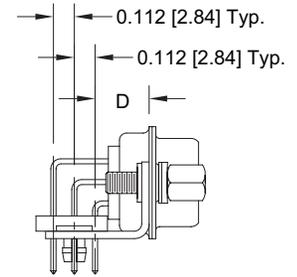
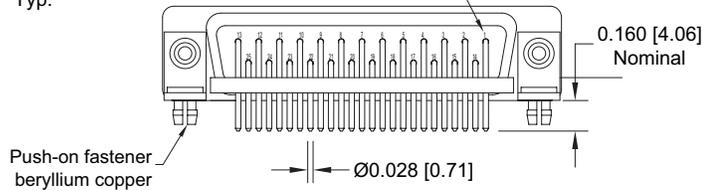
RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
CODE 5, 0.283 [7.19] CONTACT EXTENSION



| HDC**5B3*** 0.283 [7.19] CONTACT EXTENSION | | | | | |
|--|------------------|------------------|------------------|-----------------|-----------------|
| PART NUMBER | A | B | C | D | E |
| HDC9*5B3*** | 1.204 [30.58] | 0.984 [24.99] | 0.339 [8.61] | 0.283 [7.19] | 0.112 [2.84] |
| HDC15*5B3*** | 1.532 [38.91] | 1.312 [33.32] | 0.339 [8.61] | 0.283 [7.19] | 0.112 [2.84] |
| HDC25*5B3*** | 2.072 [52.63] | 1.852 [47.04] | 0.339 [8.61] | 0.283 [7.19] | 0.112 [2.84] |
| HDC37*5B3*** | 2.720 [69.09] | 2.500 [63.50] | 0.339 [8.61] | 0.283 [7.19] | 0.112 [2.84] |
| HDC50*5B3*** | 2.626 [66.70] | 2.406 [61.11] | 0.395 [10.03] | 0.283 [7.19] | 0.112 [2.84] |



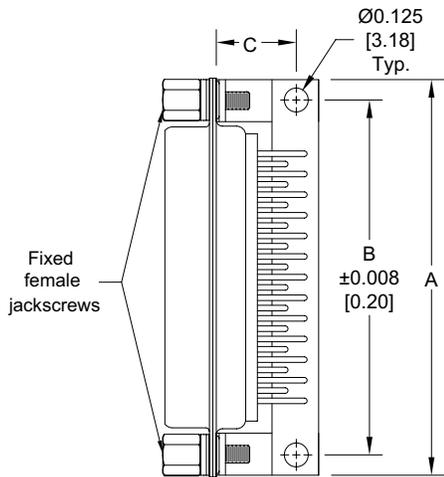
Numbering shown is rear view of male and face view of female.



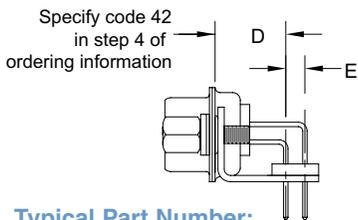
Typical Part Number:
HDC25M5R7NT2X

Typical Part Number:
HDC50S5R7NTX

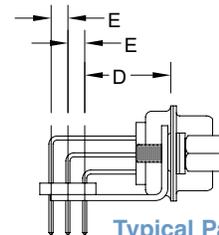
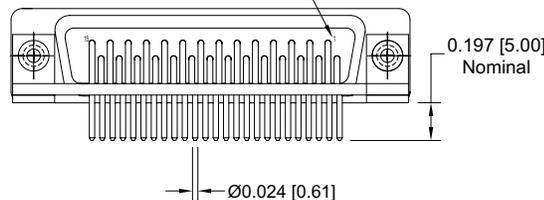
RIGHT ANGLE (90°) PRINTED BOARD MOUNT CONNECTOR
CODE 42, 0.370 [9.40] CONTACT EXTENSION



| HDC**42B3*** 0.370 [9.40] CONTACT EXTENSION | | | | | |
|---|------------------|------------------|------------------|-----------------|-----------------|
| PART NUMBER | A | B | C | D | E |
| HDC9*42B3*** | 1.204 [30.58] | 0.984 [24.99] | 0.420 [10.67] | 0.370 [9.40] | 0.100 [2.54] |
| HDC15*42B3*** | 1.532 [38.91] | 1.312 [33.32] | 0.420 [10.67] | 0.370 [9.40] | 0.100 [2.54] |
| HDC25*42B3*** | 2.072 [52.63] | 1.852 [47.04] | 0.420 [10.67] | 0.370 [9.40] | 0.100 [2.54] |
| HDC37*42B3*** | 2.720 [69.09] | 2.500 [63.50] | 0.420 [10.67] | 0.370 [9.40] | 0.100 [2.54] |
| HDC50*42B3*** | 2.626 [66.70] | 2.406 [61.11] | 0.470 [11.94] | 0.370 [9.40] | 0.100 [2.54] |



Numbering shown is rear view of male and face view of female.



Typical Part Number:
HDC25M42B30T2X

Typical Part Number:
HDC50M42B30T2X



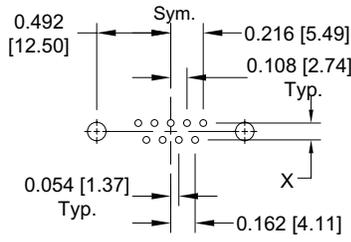
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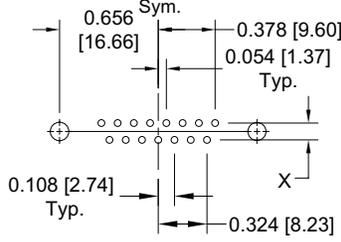
D-Sub

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN

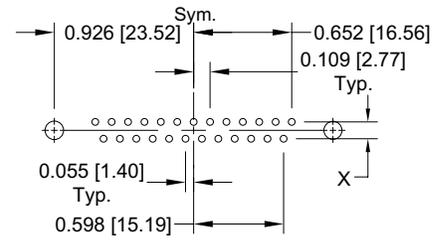
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROW.



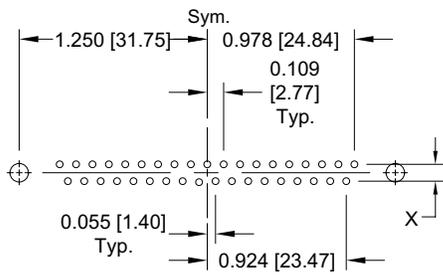
HDC 9



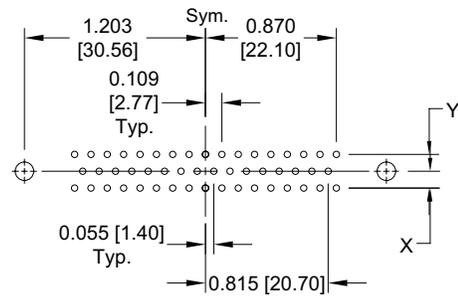
HDC 15



HDC 25



HDC 37



HDC 50

SUGGESTED PRINTED BOARD HOLE SIZES:

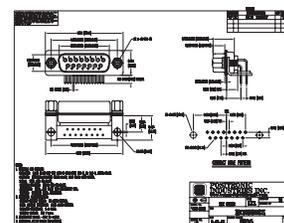
- Suggest 0.039 [0.99] Ø hole for 0.024 [0.61] Ø contact termination positions.
- Suggest 0.045 [1.14] Ø hole for 0.028 [0.71] Ø contact termination positions.
- Suggest 0.123 ±0.003 [3.12 ±0.08] Ø hole for mounting connector with push-on fasteners.



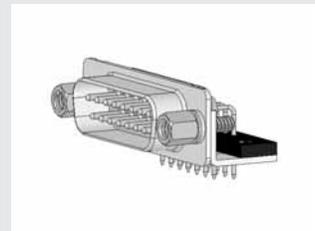
| CODE NUMBER | X | Y |
|---------------------|-----------------|-----------------|
| 3, 5, 32, 33, 36 | 0.112 [2.84] | 0.224 [5.69] |
| *42 | 0.100 [2.54] | 0.200 [5.08] |

*Metric system,
European contact
hole pattern.

NOTE: Once you have made a connector selection, contact Technical Sales if you would like to receive a drawing in DXF, PDF format or a 3-dimensional IGES, STEP, or SOLIDWORKS file.



SK Drawing



3-dimensional model



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 | HDC | 37 | S | 5 | B3 | 0 | T | 0 | /AA | -50 |
| STEP 1 - BASIC SERIES HDC series. | | | | | | | | | | |
| STEP 2 - CONNECTOR VARIANTS 9, 15, 25, 37, 50 | | | | | | | | | | |
| STEP 3 - CONNECTOR GENDER M - Male S - Female - PosiBand closed entry contacts | | | | | | | | | | |
| STEP 4 - CONTACT TERMINATION TYPE 2 - Solder cup. 3 - Solder, Straight Printed Board Mount with 0.170 [4.32] Tail Length. 32 - Solder, Straight Printed Board Mount with 0.375 [9.52] Tail Length. 33 - Solder, Straight Printed Board Mount with 0.500 [12.70] tail length. 36 - Solder, Straight Printed Board Mount with 0.236 [5.99] Tail Length. 42 - Solder, Metric System Right Angle (90°) Printed Board Mount with 0.370 [9.40] Contact Extension. 5 - Solder, Right Angle (90°) Printed Board Mount with 0.283 [7.19] Contact Extension. 6 - Wrap Post. | | | | | | | | | | |
| *1 STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø. 02 - Mounting Hole, 0.154 [3.91] Ø. B3 - Bracket, Mounting, Right Angle (90°) Metal with Cross Bar. B8 - Bracket, Mounting, Right Angle (90°) Plastic with Cross Bar. F - Float Mounts, Universal. P - Threaded Post, Brass, 0.225 [5.71] Length. P2 - Threaded Post, Nylon, 0.225 [5.71] Length. R2 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Thread Fixed Female Jackscrews with Cross Bar. R6 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 0.120 [3.05] Ø Mounting Hole with Cross Bar. R7 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Threads with Cross Bar. R8 - Bracket, Mounting, Right Angle (90°) Metal, Swaged to Connector with 4-40 Locknut with Cross Bar. S - Swaged Spacer, 4-40 Threads, 0.225 [5.71] Length. 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, 0.225 [5.71] Length. S7 - Swaged Spacer with Push-on Fastener for use with Ferrite Inductor, 4-40 Threads, 0.375 [9.53] Length. | | | | | | | | | | |
| STEP 6 - HOODS AND PUSH-ON FASTENERS *1 0 - None. J - Hood, Top Opening, Plastic. L - Hood, Side Opening, Plastic. Y - Hood, Top Opening, Plastic with Rotating Male Jackscrews. Available in size 50 only. Y6 - Hood, Top Opening, Plastic with Rotating Male and Female Polarized Jackscrews. Available in size 50 only. Z - Hood, Top or Side Opening, Robust and Extended Height, Composite and Plastic with Rotating Male Jackscrews. H - Hood, Top Opening, Metal. Available in size 15, 25, 37 and 50 only. G - Hood, EMI/RFI, Metal. AN - Lightweight Aluminum Hood, nickel finish. AC - Lightweight Aluminum Hood, no finish. W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only. N - Push-on Fastener, for Right Angle (90°) Mounting Brackets. *2 F - Ferrite Inductor. | | | | | | | | | | |
| STEP 7 - LOCKING AND POLARIZING SYSTEMS *1 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. | | | | | | | | | | |
| STEP 8 - SHELL OPTIONS 0 - Zinc Plated with Chromate Seal. *3 S - Stainless steel, passivated. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only). C - Cadmium plated with Chromate Seal | | | | | | | | | | |
| STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - Compliant per EU Directive 2002/95/EC (RoHS)  NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: HDC37S5B30T0 | | | | | | | | | | |
| STEP 10 - SPECIAL OPTIONS -14 - 0.000030 [0.76µ] gold over nickel. -15 - 0.000050 [1.27µ] gold over nickel. -50 - 0.000050 [1.27µ] gold over copper. CONTACT TECHNICAL SALES FOR ORDERING DETAILS OF THE FOLLOWING: Other Special Requirements. Straight and Right Angle (90°) Thermocouple PCB mount contacts | | | | | | | | | | |