DD SERIES

MILITARY QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE



Size 22 Signal and Thermocouple Contacts, Removable Crimp and **Printed Board Mount**

PosiBand® Closed Entry

MIL-DTL-24308 and SAE AS39029

UL Recognized File #E49351

CSA Recognized File #LR54219

Telecommunication UL File #E140980

Densi-D series connectors are military quality, high density connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. Applicable connectors are qualified to MIL-DTL-24308 and SAE AS39029 (see page 82 for more information).

Densi-D series connectors utilize precision machined contacts with closed barrel crimp terminations, solder cup terminations, straight and right angle (90°) printed board mount. All female contacts utilize



Positronic's unique PosiBand closed entry design, see page 1 for

Six standard contact variants are offered in arrangements of 15, 26, 44, 62, 78 and 104 contacts. Densi-D series connectors are mateable and compatible with other high density D-subminiature connectors conforming to MIL-DTL-24308. A wide variety of unique accessories are available.

DENSI-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulators: Glass filled polyester per ASTM D5927, UL

94V-0, blue color.

Contacts: Precision machined copper alloy.

Contact Plating: Military performance - 0.000050 inch [1.27 μ] gold over nickel plate. Industrial performance

gold flash over nickel plate. Other finishes

available upon request.

Interfacial Seal: Fluorosilicone rubber per MIL-R-25988.

Shells:

Steel with tin plate; zinc plate, stainless steel passivated. Other materials and finishes

available upon request.

Mounting Spacers: Nylon; copper alloy or steel with zinc plate or tin

plate; phosphor bronze with tin plate; stainless

steel, passivated.

Push-On Fastener: Phosphor bronze or beryllium copper with tin

plate.

Vibration Lock Systems: Slide lock and lock tabs, steel with nickel

Jackscrew Systems:

Brass or steel with zinc plate or clear zinc

plate or tin plate; stainless steel, passivated.

Composite and plastic, UL 94V-0; brass or steel with zinc plate. Aluminum; aluminum Hoods: with electroless nickel plate. For aluminum

hoods, zinc content is 1% maximum. Die cast

Low magnetic versions are available, contact Technical Sales.

MECHANICAL CHARACTERISTICS:

Removable Contacts: Insert contact to rear face of insulator and release from rear face of insulator. Size 22

contacts, male - 0.030 inch [0.76mm] mating diameter. Female contacts - PosiBand closed

entry design, see page 1 for details.

9 lbs. [40 N].

Contact Retention

In Insulator:

Contact Terminations:

Closed barrel crimp, wire sizes 22 AWG [0.3mm²] through 30 AWG [0.05mm²] per IEC

Right Angle (90°) Printed Board Mount contact terminations.

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

Polarization: Trapezoidally shaped shells and polarized

jackscrews.

and riveted fasteners with **Mounting To** Jackscrews Angle Brackets: 0.120 inch [3.05mm] clearance hole, and

threaded riveted fasteners with 4-40 threads

and polyester lock inserts.

Mounting To Rapid installation push-on fasteners and **Printed Board:** mounting posts.

Jackscrews and vibration locking systems. **Locking Systems:** Mechanical Operations: 1000 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating, Tested per UL 1977:

12 amperes, 2 contacts energized. 10 amperes, 6 contacts energized. 7.5 amperes, 26 contacts energized. 6.5 amperes, 62 contacts energized. 5.0 amperes, 104 contacts energized.

See temperature rise curves on page 2 for details.

Initial Contact Resistance: 0.005 ohms maximum.

Proof Voltage: 1000 V r.m.s. Insulation Resistance: 5 G ohms.

Clearance and Creepage

Distance [minimum]: 0.042 inch [1.06mm].

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

Damp Heat, Steady State: 21 days.

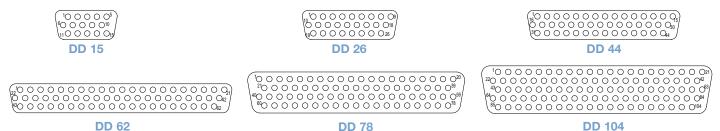
THERMOCOUPLE CONTACTS:

Size 22 crimp contacts are available, see page 52 for details.

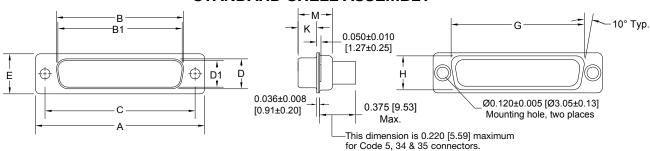
Printed circuit board mount contacts are available, please Consult Accessories D-subminiature catalog for details.

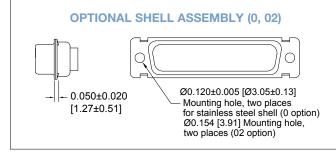
CONTACT VARIANTS

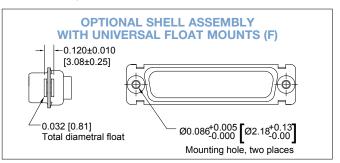
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



STANDARD SHELL ASSEMBLY







CONNECTOR VARIANT SIZES	A ±0.015 [0.38]	B ±0.005 [0.13]	B1 ±0.005 [0.13]	C <u>±0.005</u> [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]
DD 15 M	1.213 [30.81]		<u>0.666</u> [16.92]	<u>0.984</u> [24.99]		<u>0.329</u> [8.36]	<u>0.494</u> [12.55]	<u>0.759</u> [19.28]	<u>0.422</u> [10.72]	<u>0.233</u> [5.92]	<u>0.422</u> [10.72]
DD 15 S	1.213 [30.81]	<u>0.643</u> [16.33]		<u>0.984</u> [24.99]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	<u>0.759</u> [19.28]	<u>0.422</u> [10.72]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 26 M	1.541 [39.14]		<u>0.994</u> [25.25]	<u>1.312</u> [33.32]		<u>0.329</u> [8.36]	<u>0.494</u> [12.55]	1.083 [27.51]	<u>0.422</u> [10.72]	<u>0.233</u> [5.92]	<u>0.422</u> [10.72]
DD 26 S	1.541 [39.14]	<u>0.971</u> [24.66]		1.312 [33.32]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	1.083 [27.51]	<u>0.422</u> [10.72]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 44 M	2.088 [53.04]		1.534 [38.96]	<u>1.852</u> [47.04]		<u>0.329</u> [8.36]	<u>0.494</u> [12.55]	<u>1.625</u> [41.28]	<u>0.422</u> [10.72]	<u>0.230</u> [5.84]	<u>0.426</u> [10.82]
DD 44 S	2.088 [53.04]	1.511 [38.38]		<u>1.852</u> [47.04]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	<u>1.625</u> [41.28]	<u>0.422</u> [10.72]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 62 M	2.729 [69.32]		2.182 [55.42]	2.500 [63.50]		<u>0.329</u> [8.36]	<u>0.494</u> [12.55]	<u>2.272</u> [57.71]	<u>0.422</u> [10.72]	<u>0.230</u> [5.84]	<u>0.426</u> [10.82]
DD 62 S	2.729 [69.32]	2.159 [54.84]		2.500 [63.50]	<u>0.311</u> [7.90]		<u>0.494</u> [12.55]	<u>2.272</u> [57.71]	<u>0.422</u> [10.72]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 78 M	2.635 [66.93]		2.079 [52.81]	<u>2.406</u> [61.11]		<u>0.441</u> [11.20]	<u>0.605</u> [15.37]	<u>2.178</u> [55.32]	<u>0.534</u> [13.56]	<u>0.230</u> [5.84]	<u>0.426</u> [10.82]
DD 78 S	2.635 [66.93]	2.064 [52.43]		<u>2.406</u> [61.11]	<u>0.423</u> [10.74]		<u>0.605</u> [15.37]	2.178 [55.32]	<u>0.534</u> [13.56]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]
DD 104 M	2.729 [69.32]		2.212 [56.18]	2.500 [63.50]		<u>0.503</u> [12.78]	<u>0.668</u> [16.97]	2.302 [58.47]	<u>0.596</u> [15.14]	<u>0.230</u> [5.84]	<u>0.426</u> [10.82]
DD 104 S	2.729 [69.32]	2.189 [55.60]		2.500 [63.50]	<u>0.485</u> [12.32]		<u>0.668</u> [16.97]	2.302 [58.47]	<u>0.596</u> [15.14]	<u>0.243</u> [6.17]	<u>0.429</u> [10.90]



REMOVABLE CRIMP CONTACT

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

QUALIFIED TO SAE AS39029

*MILITARY SPECIFICATION CONTACTS

STANDARD FINISH: per SAE AS39029 specifications

COLOR CODE:

MALE CONTACT: ORANGE/BLUE/BLACK

FEMALE CONTACT:
ORANGE/GREEN/YELLOW

"CLOSED ENTRY" DESIGN 00.047 [1.19] **Color Code Stainless Steel Shroud

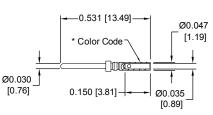
-0.150 [3.81]

FEMALE CONTACT

MALE CONTACT

Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for

connector part number.



FEMALE PART NUMBER	WIRE SIZE AWG/[mm²]
*M39029/57-354	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]

[0.89]

Positronic is qualified to supply the legacy design, as well as, the PosiBand design. If the requirement is for the PosiBand design exclusively, notify sales at time of quotation for order placement when requesting M39029 contacts.

MALE	WIRE SIZE		
PART NUMBER	AWG/[mm²]		
*M39029/58-360	22 / 24 / 26 / 28 [0.3/0.25/0.12/0.08]		

REMOVABLE CRIMP CONTACT CODE 1

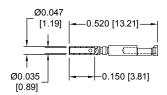
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.



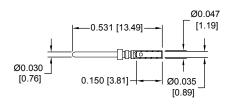
Note: Connectors can be kitted with all applicable crimp/solder contacts, contact Technical Sales for connector part number.

FEMALE CONTACT

"CLOSED ENTRY" DESIGN



MALE CONTACT



FEMALE	WIRE SIZE		
PART NUMBER	AWG/[mm²]		
FC8022D2	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]		

MALE	WIRE SIZE		
PART NUMBER	AWG/[mm²]		
MC8022D	22 / 24 / 26 / 28 / 30 [0.3/0.25/0.12/0.08/0.05]		

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC8022D2-14 0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC8022D-15

For information regarding crimp tools & crimping tool techniques, see page 69.





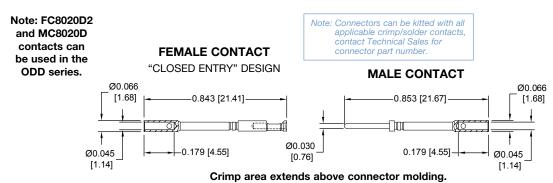
REMOVABLE CRIMP CONTACT

20 AWG CONTACTS

20 AWG [0.5 mm²]

The crimp area of this contact is not protected when fully seated in the connector molding. These contacts require shrink tubing after installation. Wire cannot be removed from molding after insertion. Not suitable for fully loaded connector.

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.



FEMALE	WIRE SIZE		
PART NUMBER	AWG/[mm²]		
FC8020D2	20 [0.5] max		

MALE	WIRE SIZE		
PART NUMBER	AWG/[mm²]		
MC8020D	20 [0.5] max		

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FC8020D2-14

0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MC8020D-15

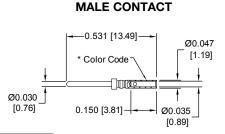
REMOVABLE THERMOCOUPLE CRIMP CONTACT

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

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



CLOSED ENTRY" DESIGN ### Color Code ### Color Code ### 0.150 [3.81] ### 10.89



TYPE	MATERIAL	FEMALE PART NUMBER	MALE PART NUMBER	COLOR CODE*	WIRE SIZE AWG [mm²]
К	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	ALUMEL (-)	FC8022D2AL	MC8022DAL	GREEN	22 / 24 / 26 [0.3 / 0.25 / 0.12]
т	COPPER (+)	FC8022D2CU	MC8022DCU	RED	22 / 24 / 26 [0.3 / 0.25 / 0.12]
•	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]
E	CHROMEL (+)	FC8022D2CH	MC8022DCH	WHITE	22 / 24 / 26 [0.3 / 0.25 / 0.12]
	CONSTANTAN (-)	FC8022D2CO	MC8022DCO	YELLOW	22 / 24 / 26 [0.3 / 0.25 / 0.12]

For more information on the availability of Type J thermocouple contacts, please contact Technical Sales.

For more information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

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For information regarding crimp tools & crimping tool techniques, see page 69.



REMOVABLE SOLDER CUP CONTACTS CODE 2

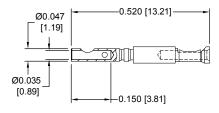
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.



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

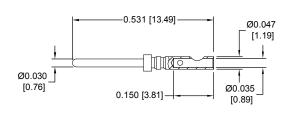
FEMALE CONTACT

"CLOSED ENTRY" DESIGN



FEMALE	WIRE SIZE		
PART NUMBER	AWG/[mm²]		
FS8022D2	22 [0.3] max		

MALE CONTACT



MALE	WIRE SIZE		
PART NUMBER	AWG/[mm²]		
MS8022D	22 [0.3]max		

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76] gold over nickel by adding "-14" suffix onto part number. Example: FS8022D2-14 0.000050 inch [1.27] gold over nickel by adding "-15" suffix onto part number. Example: MS8022D-15

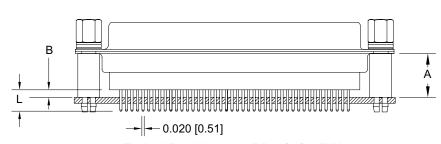
For information regarding crimp tools & crimping tool techniques, see page 69.

STRAIGHT PRINTED BOARD MOUNT TERMINATION

CODE 3, 32, 33, 34 AND 35

CODE NUMBER	L	A	B (Nominal)
3	<u>0.150</u>	<u>0.375</u>	<u>0.047</u>
	[3.81]	[9.53]	[1.19]
32	<u>0.300</u>	<u>0.375</u>	<u>0.047</u>
	[7.62]	[9.53]	[1.19]
33	<u>0.500</u>	<u>0.375</u>	<u>0.047</u>
	(12.70]	[9.53]	[1.19]
34	<u>0.150</u>	<u>0.225</u>	<u>0.010</u>
Low Profile	[3.81]	[5.71]	[3.81]
35	<u>0.300</u>	<u>0.225</u>	<u>0.010</u>
Low Profile	[7.62]	[5.71]	[3.81]

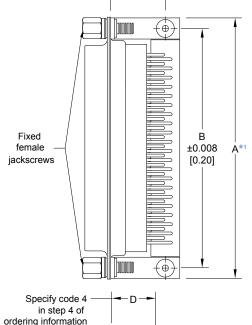
For straight printed board mount contacts specify code no. in step 4 of ordering information.



Typical Part Number: DD62S3S60T2X



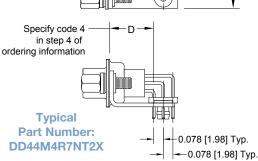
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION CODE 4, 0.450 [11.43] CONTACT EXTENSION

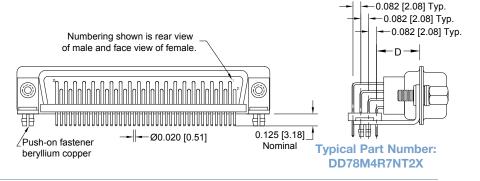


DD**4**** 0.450 [11.43] CONTACT EXTENSION						
PART NUMBER	A*1	В	C	D		
DD15*4****	1.204	<u>0.984</u>	<u>0.528</u>	<u>0.450</u>		
	[30.58]	[24.99]	[13.41]	[11.43]		
DD26*4****	<u>1.532</u>	<u>1.312</u>	<u>0.528</u>	<u>0.450</u>		
	[38.91]	[33.32]	[13.41]	[11.43]		
DD44*4***	2.072	<u>1.852</u>	<u>0.528</u>	<u>0.450</u>		
	[52.63]	[47.04]	[13.41]	[11.43]		
DD62*4****	<u>2.720</u>	2.500	<u>0.528</u>	<u>0.450</u>		
	[69.09]	[63.50]	[13.41]	[11.43]		
DD78*4****	2.626	<u>2.406</u>	<u>0.573</u>	<u>0.450</u>		
	[66.70]	[61.11]	[14.55]	[11.43]		

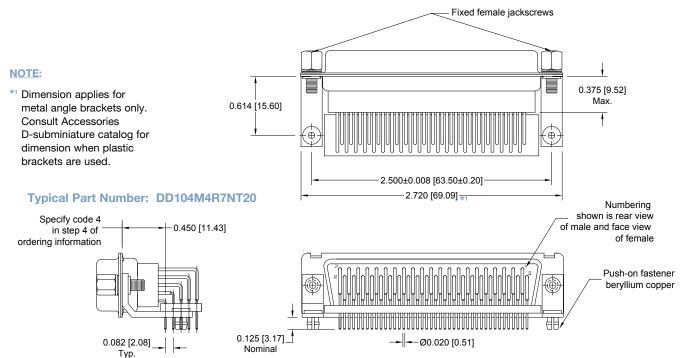
NOTE:

*1 "A" dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for "A" dimension when plastic brackets are used.



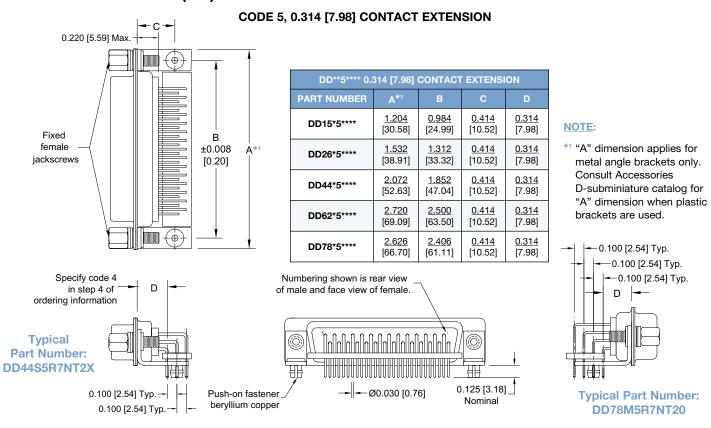


RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION, SIZE 104 CODE 4, 0.450 [11.43] CONTACT EXTENSION



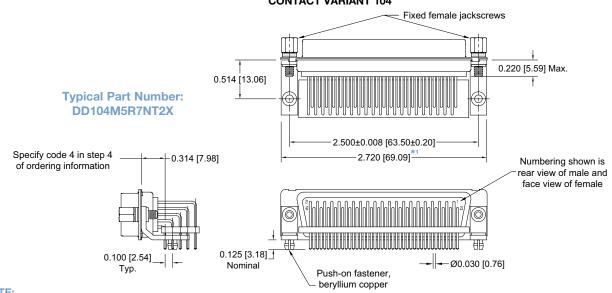


RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION - LOW PROFILE



RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION, SIZE 104 - LOW PROFILE

CODE 5, 0.314 [7.98] CONTACT EXTENSION CONTACT VARIANT 104



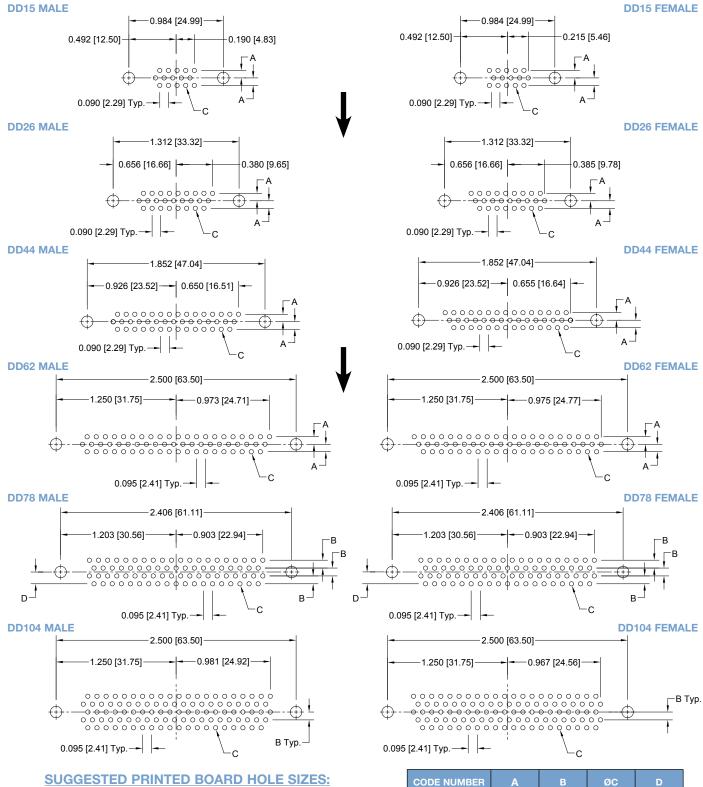
NOTE:

^{*1} Dimension applies for metal angle brackets only. Consult Accessories D-subminiature catalog for dimension when plastic brackets are used.

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

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

Contact Technical Sales for hole dimensions using lead-free solder.



SUGGESTED PRINTED BOARD HOLE SIZES:

Suggest 0.123 \pm 0.003 [3.12 \pm 0.08] Ø hole for mounting connector with push-on fasteners.

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

DD SERIES

Α

DD SERIES

MILITARY QUALITY FIXED AND REMOVABLE CONTACTS HIGH DENSITY D-SUBMINIATURE



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	DD	62	S	4	R7	N	Т6	S	/AA		-50	
 35 - Solder, straigh tail length and 4 - Solder, right a 0.450 [11.43] o 5 - Solder, right ar 	CTOR VARIAN 104*5 ECTOR GEND facial seal Band closed entr CCT TERMINA ored separately, seal G-30 AWG [0.3r older cup, 22 AV t printed board m t printed board m t printed board m t printed board m tow profile moldin t printed board m low profile moldin togle (90°) printec ontact extension	y contact TION TO see page: nm²-0.05 VG-30 AV nount with count with count with nount with ng. board mo	YPE s 50-52. mm²]. VG [0.3m n 0.150 [3 0.300 [7.6 0.150 [3.8 0.150 [3.8 0.300 [7.6 0.150 [3.8 0.300 [7.6 0.150 [3.8 0.150 [3.8 0.300 [7.6 0.150 [3.8 0.150	.81] 62] .70] 31] 62]				0 - 2 C - 0 L - E R - E ((S - S	/AA NOTE legisla not be 8 -SHEI Zinc plate Cadmium Electroles Electroles male con Stainless Tin plated	-14 - 015 - 015 - 050 - 0. Contact Details Other S Straight Thermo mount 9 - EN' CO - RoHS C :: If comp tition is not e used. E: LL OPTI d. plated w s nickel. s nickel a nectors o steel, pas	.000030 [0.000030 [0.000030 [1.00005	equirements. Angle (90°) Inted circuit board ENTAL DE OPTIONS Invironmental Ithis step will D62S4R7NT6S Interest of the seal.
*1 STEP 5 - MOU 0 - Mounting ho 02 - Mounting ho	le, 0.120 [3.05] (le, 0.154 [3.91] (ð. ð.	otal with	oross ha	r		0 -	None.			panel mou	IG SYSTEMS unted.

- B3 Bracket, mounting, right angle (90°) metal with cross bar.
- B8*4- Bracket, mounting, right angle (90°) plastic with cross bar.
- Float mounts, universal.
- Threaded post, brass, 0.375 [9.53] length.
- P2 Threaded post, nylon, 0.375 [9.53] length.
- Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 thread fixed female jackscrews with cross bar.
- Bracket, mounting, right angle (90°) metal, swaged to connector with 0.120 [3.05] ø mounting hole with cross bar.
- Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 threads with cross bar.
- Bracket, mounting, right angle (90°) metal, swaged to connector with 4-40 locknut with cross bar.
- Swaged spacer, 4-40 threads, 0.375 [9.53] length.
- S2 Swaged spacer, 4-40 threads, 0.125 [3.18] length.
- S5 Swaged locknut, 4-40 threads.
- Swaged spacer with push-on fasteners, 4-40 threads, 0.375 [9.53] length.
- Swaged spacer with push-on fastener for use with ferrite inductor, 4-40 threads, 0.515 [13.08] length.
- *1 For additional information on accessories listed in steps 5, 6 and 7, see Accessory Catalog.
- *2 Ferrite inductor is available on contact types 32 and 33 only. For more information on ferrite inductors, see page 7.
- *3 VL, V3 and V5 locking systems are not available for connector variants 62, 78 and 104. Jackscrews are highly recommended to minimize damage to contacts on variants with high mating forces
- *4 Mounting style B8 bracket is not available for use with the 104 variant.

- *3 V5 Lock tab, connector rear panel mounted.
- *3 VL Lock lever, used with hoods only.
 - T Fixed female jackscrews.
 - Fixed female jackscrews.
 - Fixed male and female polarized jackscrews.
 - 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.

*1 STEP 6 - HOODS AND PUSH-ON FASTENERS

- J Hood, top opening, plastic.
- L Hood, side opening, plastic.
- Y Hood, top opening, plastic with rotating male jackscrews.
 Available in size 78 and 104 only.
- Y6 Hood, top opening, plastic with rotating male and female polarized jackscrews. Available in size 78 and 104 only.
- Z Hood, top or side opening, robust and extended height, composite and plastic with rotating male jackscrews. Available in size 15, 26, 44, 62, and 78 only.
- H Hood, top opening, metal. Available in size 26, 44, 62, and 78 only.
- G Hood, EMI/RFI, die cast zinc.
- AN Lightweight aluminum hood, nickel finish.
- AL Lightweight aluminum hood, nickel finish, low-profile.
- W Hood, top or side opening, plastic. Available in size 15, 26, and 44 only.
- N Push-on fastener, for right angle (90°) mounting brackets.
- *2F Ferrite inductor