



Positronic Industries
connectpositronic.com

MILITARY QUALITY, CRIMP REMOVABLE CONTACT SUBMINIATURE-D CONNECTORS

D-Sub

FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS

Size 20 Signal and
Thermocouple Contacts,
Crimp Removable
Military/Industrial
Quality Connectors
IEC Publication 807-3
Performance Level One

MIL-DTL-24308 and SAE AS 39029

U.L. Recognized
File #E49351

CSA Recognized
File #LR54219

Telecommunication
U.L. File #14098



Rhapsody-D Series connectors are Military/Industrial quality rectangular connectors designed for use in sheltered, mildly corrosive environments having a wide range of temperature, pressure and humidity changes. These crimp removable contact connectors are qualified to MIL-DTL-24308 and SAE AS 39029, and will meet the performance requirements of IEC 807-3, Performance Level One.

Rhapsody-D Series connectors utilize precision machined contacts with closed barrel, crimp terminations. The female contact features a rugged closed entry design contact with stainless steel shroud. A "Robi-D Open Entry" female contact is also available.

Six standard connector variants are offered in arrangements of 9, 15, 25, 29, 37 and 50 contacts. Rhapsody-D Series connectors are mateable and compatible with all D-Subminiature connectors conforming to MIL-DTL-24308, IEC 807-2 and IEC 807-3.

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

Rhapsody-D Series connectors conform to EIA RS 232 and RS 449, and CCITT X.24 interface connection requirements.



For RoHS options
see page 31.

RHAPSO-D SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass filled DAP per ASTM-D-5948, SDG-F, UL 94V-0, green color.
Contacts:	
Signal:	Male contacts – precision machined brass. Female contacts – precision machined high tensile copper alloy with stainless steel shroud or open entry Robi-D design.
Contact Plating:	Military performance – 0.000050 inch [1.27 microns] gold over copper plate. Industrial performance – gold flash over nickel plate. Other finishes available upon request.
Shells:	Steel with tin plate; zinc and cadmium plate with chromate seal, stainless steel, passivated. Other materials and finishes available upon request.
Mounting Spacers:	Brass, zinc plate with chromate seal.
Jackscrew Systems:	Steel with zinc plate and chromate seal, or clear zinc plate.
Vibration Lock Systems:	Slide lock and lock tabs, steel with nickel plate.
Hoods:	Thermoplastic UL 94V-0. Composite, brass or steel with zinc plate and chromate seal.

NEW! Non-magnetic versions are available, contact Technical Sales.

CLIMATIC CHARACTERISTICS:

Temperature Range:	-55°C to +125°C.
Damp Heat, Steady State:	21 days.

MECHANICAL CHARACTERISTICS:

Removable Contacts:	Insert contact to rear face of insulator and release from rear face of insulator. Size 20 contact, male – 0.040 inch [1.02mm] diameter; female – closed entry design with stainless steel shroud or open entry Robi-D design.
Contact Retention In Insulator:	9 lbs. [40 N].
Contact Terminations:	Closed barrel crimp, wire sizes 18 AWG [1.0mm ²] through 30 AWG [0.05mm ²].
Shells:	Male shells may be dimpled for EMI/ESD ground paths.
Polarization:	Trapezoidally shaped shells and polarized jackscrews.
Locking Systems:	Jackscrews and vibration locking systems.
Mechanical Operations:	1000 operations minimum per IEC 512-5 for closed entry female contact. 500 operations per IEC 512-5 for "Robi-D Open Entry" design female contact.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:	7.5 amperes nominal.
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.

THERMOCOUPLE CONTACTS:

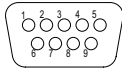
Size 20 crimp contacts are available, see page 30 for details.

PCB mount contacts are available in HDC series, see page 21 for details.

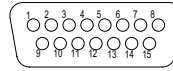


CONTACT VARIANTS

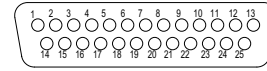
FACE VIEW OF MALE OR REAR VIEW OF FEMALE



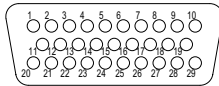
RD 9



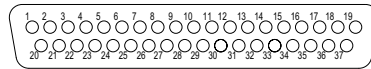
RD 15



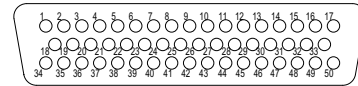
RD 25



RD 29

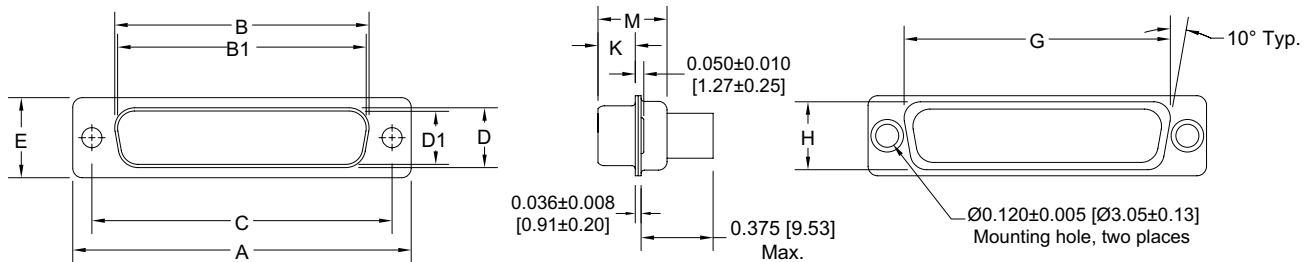


RD 37

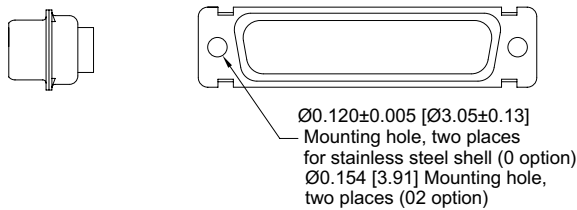


RD 50

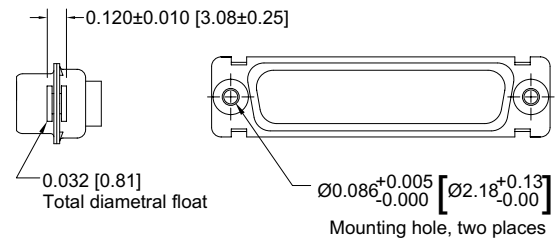
STANDARD SHELL ASSEMBLY



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]
RD 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]
RD 9 F	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]
RD 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]
RD 15 F	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]
RD 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]
RD 25 F	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]
RD 29 M	1.770 [44.96]		1.274 [32.36]	1.534 [38.96]		0.450 [11.43]	0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.217 [5.51]	0.426 [10.82]
RD 29 F	1.770 [44.96]	1.251 [31.78]		1.534 [38.96]	0.431 [10.95]		0.605 [15.37]	1.322 [33.58]	0.539 [13.69]	0.237 [6.02]	0.429 [10.90]
RD 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]
RD 37 F	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]
RD 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]
RD 50 F	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]

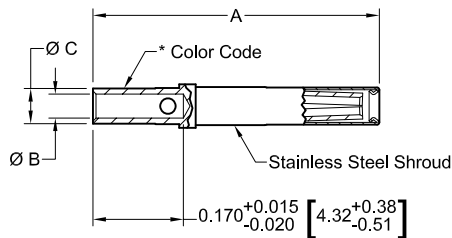


REMOVABLE CRIMP CONTACTS
CODE 1 AND 12

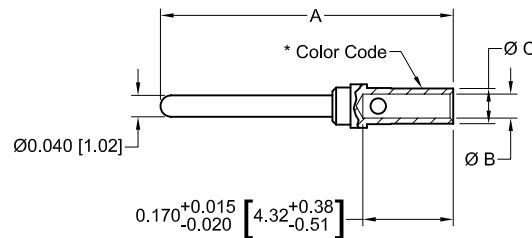
CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

CLOSED CRIMP BARREL

FEMALE CONTACT
"CLOSED ENTRY" DESIGN



MALE CONTACT



MATERIAL:

MALE CONTACT: Brass.

FEMALE CONTACT: Leaded nickel copper.

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. Example: FC6020D-14
0.000050 inch [1.27µ] gold over nickel by adding "-15" suffix onto part number. Example: MC6026D-15

*MILITARY SPECIFICATION CONTACTS:

STANDARD FINISH: 0.000050 inch [1.27µ] gold over copper

MALE CONTACT COLOR CODE: ORANGE/BLUE/WHITE

FEMALE CONTACT COLOR CODE: ORANGE/BLUE/GRAY

PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
FC6020D	20 / 22 / 24 [0.5/0.3/0.25]	0.538 [13.67]	0.045 [1.14]	0.066 [1.68]
FC6026D	26 / 28 / 30 [0.12/0.08/0.05]	0.538 [13.67]	0.027 [0.69]	0.066 [1.68]
*M39029/63-368	20 / 22 / 24 [0.5/0.3/0.25]	0.538 [13.67]	0.045 [1.14]	0.066 [1.68]

PART NUMBER	WIRE SIZE AWG/[mm ²]	A	ØB	ØC
MC6020D	20 / 22 / 24 [0.5/0.3/0.25]	0.550 [13.97]	0.045 [1.14]	0.066 [1.68]
MC6026D	26 / 28 / 30 [0.12/0.08/0.05]	0.550 [13.97]	0.027 [0.69]	0.066 [1.68]
*M39029/64-369	20 / 22 / 24 [0.5/0.3/0.25]	0.550 [13.97]	0.045 [1.14]	0.066 [1.68]

Note: *C60**D contacts can be used in the SD series.

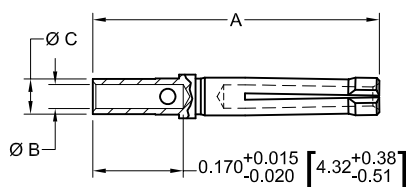
For crimping information and crimp tools, see Application Tools section, pages 69-72.

REMOVABLE CRIMP CONTACTS
CODE 14

20/22/24 AWG CONTACTS
20/22/24 AWG [0.5/0.3/0.25 mm²]

CONTACTS MAY BE SUPPLIED WITH CONNECTOR OR ORDERED SEPARATELY.

FEMALE CONTACT
"ROBI-D OPEN ENTRY" DESIGN



PART NUMBER	WIRE SIZE AWG/[mm ²]	A	BØ	CØ
FC6120D	20 / 22 / 24 [0.5/0.3/0.25]	0.538 [13.67]	0.045 [1.14]	0.066 [1.68]

MATERIAL: Phosphor bronze.

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

OPTIONAL FINISHES: 0.000030 [0.76 µ] gold over nickel by adding "-14" suffix onto part number. Example: FC6120D-14
0.000050 inch [1.27µ] gold over nickel by adding "-15" suffix onto part number. Example: FC6120D-15

For crimping information and crimp tools, see Application Tools section, pages 69-72.

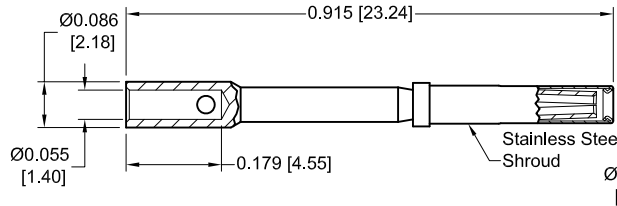


REMOVABLE CRIMP CONTACTS
18 AWG CRIMP CONTACTS

18 AWG [1.0mm²]

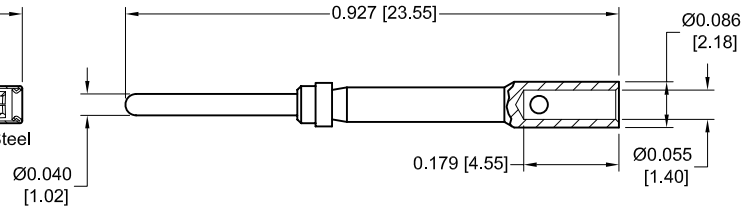
CONTACTS MUST BE ORDERED SEPARATELY.

FEMALE CONTACT
“CLOSED ENTRY” DESIGN



Part Number: FC6018D

MALE CONTACT



Part Number: MC6018D

MATERIAL:

MALE CONTACT: Brass.

FEMALE CONTACT: Phosphor bronze.

PLATING:

STANDARD FINISH: Gold flash over nickel plate.

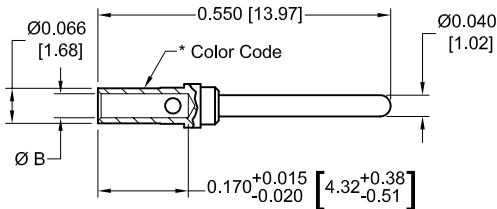
OPTIONAL FINISHES: 0.000030 [0.76 μ] gold over nickel by adding “-14” suffix onto part number. Example: FC6018D-14
0.000050 inch [1.27μ] gold over nickel by adding “-15” suffix onto part number. Example: MC6018D-15

For crimping information and crimp tools, see Application Tools section, pages 69-72.

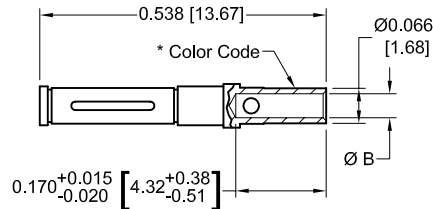
THERMOCOUPLE CONTACTS

CONTACTS MUST BE ORDERED SEPARATELY.

MALE CONTACT



FEMALE CONTACT



TYPE	MATERIAL	MALE PART NUMBER	FEMALE PART NUMBER	COLOR CODE	WIRE SIZE AWG [mm ²]	ØB
K	CHROMEL (+)	MC6020DCH [†]	FC6020DCH ^{††}	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]
		MC6026DCH	FC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.027 [0.69]
	ALUMEL (-)	MC6020DAL [†]	FC6020DAL ^{††}	GREEN	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]
		MC6026DAL	FC6026DAL		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.027 [0.69]
T	COPPER (+)	MC6020DCU [†]	FC6020DCU ^{††}	RED	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]
		MC6026DCU	FC6026DCU		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.027 [0.69]
	CONSTANTAN (-)	MC6020DCO [†]	FC6020DCO ^{††}	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]
		MC6026DCO	FC6026DCO		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.027 [0.69]
E	CHROMEL (+)	MC6020DCH [†]	FC6020DCH ^{††}	WHITE	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]
		MC6026DCH	FC6026DCH		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.027 [0.69]
	CONSTANTAN (-)	MC6020DCO [†]	FC6020DCO ^{††}	YELLOW	20 / 22 / 24 [0.5 / 0.3 / 0.25]	0.045 [1.14]
		MC6026DCO	FC6026DCO		26 / 28 / 30 [0.12 / 0.08 / 0.05]	0.027 [0.69]

For crimping information and crimp tools, see Application Tools section, pages 69-72.

For more information on the availability of Type J thermocouple contacts, and information about thermocouple contacts with PCB solder termination, please contact Technical Sales.

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[†]Dimensionally equivalent to M39029/64-369

^{††}Dimensionally equivalent to M39029/63-368



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ORDERING INFORMATION - CODE NUMBERING SYSTEM

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

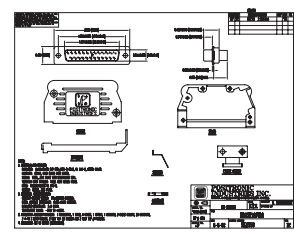
STEP	1	2	3	4	5	6	7	8	9	10
EXAMPLE	RD	25	F	1	0	J	VL	0	/AA	-50
STEP 1 - BASIC SERIES RD Series.										
STEP 2 - CONNECTOR VARIANTS 9, 15, 25, 29, 37, 50										
STEP 3 - CONNECTOR GENDER M - Male F - Female										
STEP 4 - CONTACT TERMINATION TYPE 0 - Ordered Without Contacts. 1 - Crimp, 20 AWG–24 AWG [0.5mm ² –0.25mm ²]. 12 - Crimp, 26 AWG–30 AWG [0.12mm ² –0.08mm ²]. 14 - Crimp, 20 AWG–24 AWG [0.5mm ² –0.25mm ²] "Robi-D Open Entry" female contact.										
*STEP 5 - MOUNTING STYLE 0 - Mounting Hole, 0.120 [3.05] Ø. 02 - Mounting Hole, 0.154 [3.91] Ø. F - Float Mounts, Universal. S2 - Swaged Spacer, 4-40 Threads, 0.125 [3.18] Length. S5 - Swaged Locknut, 4-40 Threads.										
*STEP 6 - HOODS 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 Extended Height, Composite and Plastic with Rotating Male Jackscrews. Available in size 9, 15, 25, 37, and 50 only. H - Hood, Top Opening, Metal. Available in size 15, 25, 37, and 50 only. G - Hood, EMI/RFI, Metal. Available in size 9, 15, 25, 37, and size 50 only. W - Hood, Top or Side Opening, Plastic. Available in size 9, 15, and 25 only.										
										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 SPECIAL OPTIONS
										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: SD25F3S60T6X
										STEP 8 - SHELL OPTIONS 0 - Zinc Plated with Chromate Seal. S - Stainless Steel. X - Tin Plated. Z - Tin Plated and Dimpled (male connectors only). C - Cadmium plated with Chromate Seal.
										*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.



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

For crimping information and crimp tools, see Application Tools section, pages 69-72.

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