SPECTRUM CONTROL INC.

Series 500 Low Profile Filtered Connectors

Spectrum Control's Series 500 are cost effective, highly reliable EMI filtered D-subminiature connectors that feature a .318" footprint for 90 degree PCB connectors and a low profile housing on straight PCB connectors. Series 500 filtered D-subs are "drop-in" replacements for standard unfiltered D-sub connectors.

The ability of these connectors to achieve EMI filtering within the smaller footprint is the result of technical advances in ceramic capacitors. Series 500 connectors use tubular capacitors for high performance EMI filtering. Quality features for these connectors include board lock mounting, metal front shells and gold plated contacts.

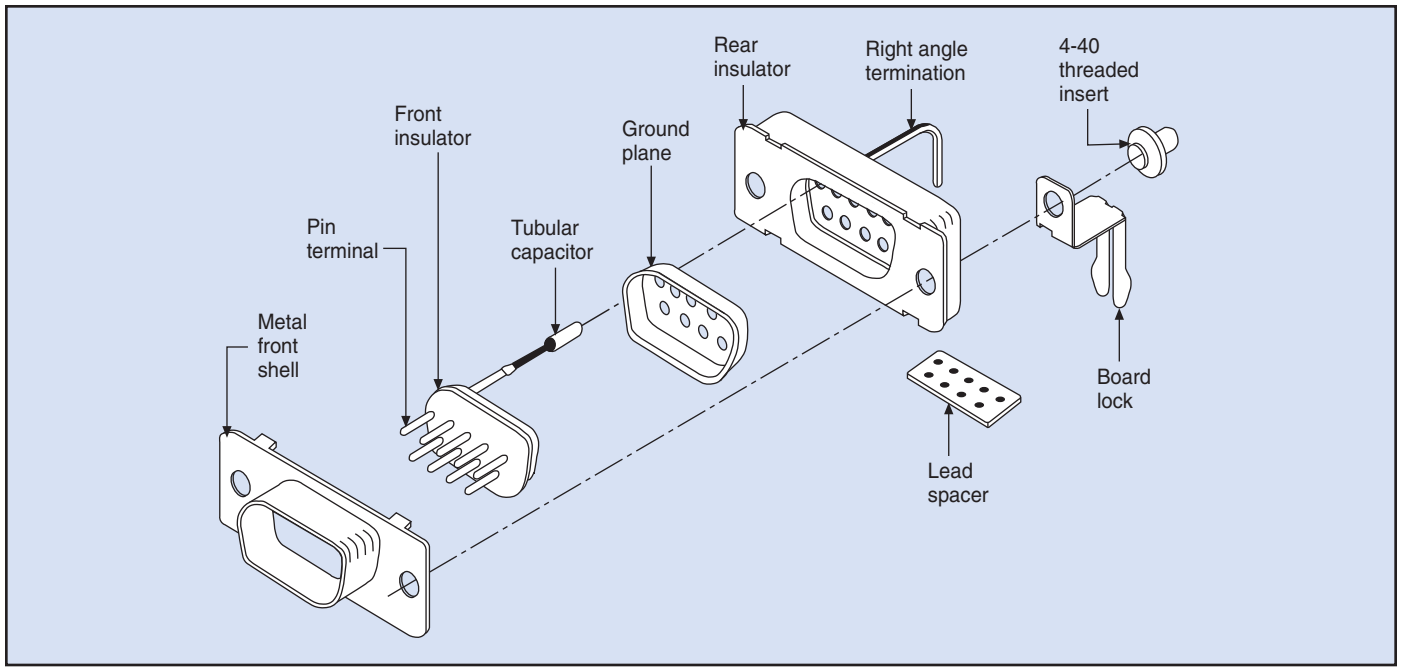
Series 500 capacitive filtered D-sub connectors are an ideal solution to FCC/EC/VCCI emissions problems. These connectors are designed to protect equipment from external EMI noise and eliminate system glitches.

Series 500 Applications

- Personal computers
- Industrial process equipment
- Graphics workstations
- PBX telecommunications equipment
- Cellular base stations and medical electronics

Features

- "Drop-in" replacements for unfiltered D-subminiatures
- Compact design, featuring .318" footprint
- Tubular feed-thru capacitors provide filtering superior to on-board components
- Ground plane design provides EMI shielding
- Full interchangeability; based on MIL-C-24308
- Each connector position is tested 100% for critical electrical parameters to ensure consistent performance
- Insulators are UL recognized UL94-V0 flammability rated
- 9, 15 and 25 shell sizes
- Available with board lock feature and 4-40 mounting threads
- Selective filtering available
- UL/CSA approved
- Greater than 40 dB filtering up through 1 GHz without resonances
- Bi-Directional control of EMI at the I/O ports



SPECTRUM CONTROL INC. • 8031 Avonia Rd. • Fairview, PA 16415 • Phone: 814-474-2207 • Fax: 814-474-2208 • Web site: www.spectrumcontrol.com
SPECTRUM CONTROL GmbH • Hansastrasse 6 • 91126 Schwabach, Germany • Phone: (49)-9122-795-0 • Fax: (49)-9122-795-58

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Mechanical Specifications

Shell . . . . . Steel, tin plated

Insulators . . . . . Glass-filled polyester, flammability UL94V-O

Pin Contacts . . . . . Copper alloy CA725, 15 microinch *(0.38 µm)* gold plated* over nickel

Socket Contacts . . . . . Copper alloy CA725, 30 microinch *(0.76 µm)* gold plated* over nickel

**Heavier gold plating available upon request.*

Ground Plane . . . . . Phosphor bronze, nickel plated

Operating Temperature . . . . . -40°C to +125°C

Capacitors . . . . . Proprietary barium titanate ceramic formulations

Other environmental tests such as shock, vibration, humidity, etc. are performed as detailed in our filtered connector performance specifications on page 203.

Electrical Specifications

Current Rating . . . . . 5 Amps

RF Current Rating . . . . . 0.3 Amps

Contact Resistance . . . . . 10 milliohms maximum

Capacitance . . . . . 120, 440, 840, 1000, 1500 pF ±30%

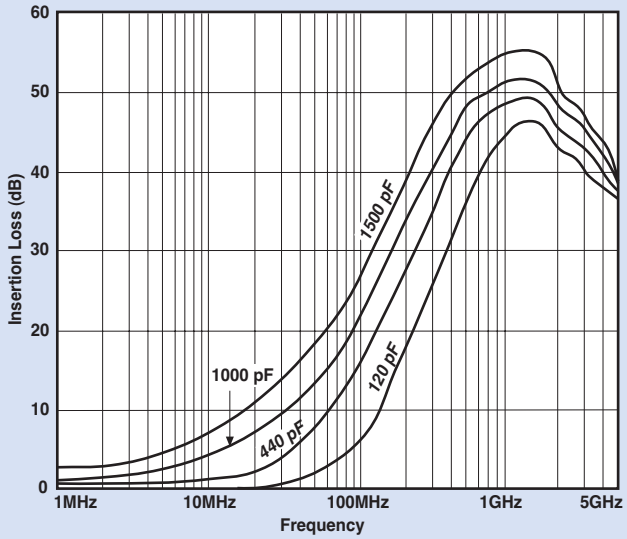
Working Voltage . . . . . 100 VDC

Dielectric Withstanding Voltage . . . . . 300 VDC

Insulation Resistance . . . . . 1 Gohm minimum

UL Recognized . . . . . Under category of communication circuit accessories, File #E149046

Typical Insertion Loss



Above curves represent application of proper grounding fundamentals. For assistance consult Spectrum Control.

840 pF is typically within 2 dB of 1000 pF curve.

Filter Performance

Cap. (pF) Value ±30%	3 dB Cut-off Freq. (MHz)	Insertion Loss (dB)					
		20 MHz	100 MHz	500 MHz	1 GHz	2 GHz	5 GHz
120	40	–	4	21	26	26	20
440	11	3	15	27	33	32	25
840	6	6	19	32	38	37	25
1000	3	8	21	35	41	38	25
1500	2	10	25	40	47	42	25

Insertion loss measured per MIL-STD-220, no load, 50 ohm source and load. Above data represents guaranteed minimum.

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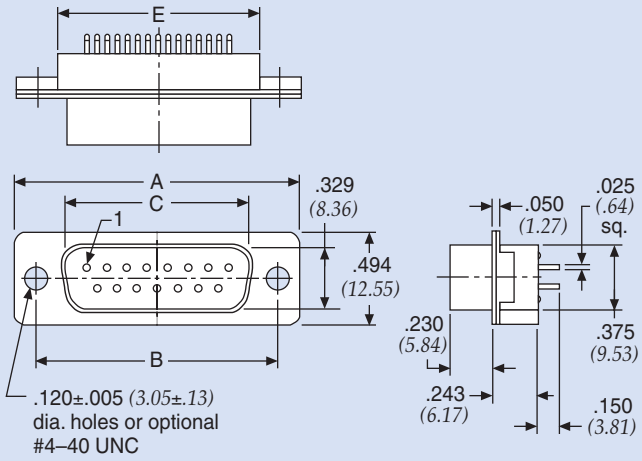
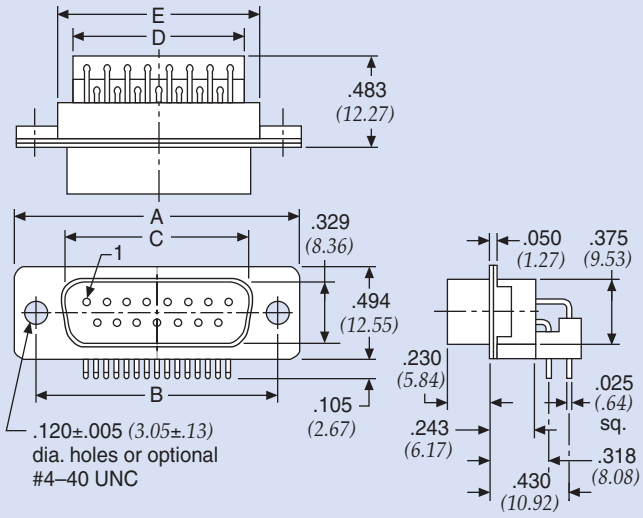
Pin Contact *(plug)*

Straight PC Mount



90° PC Mount



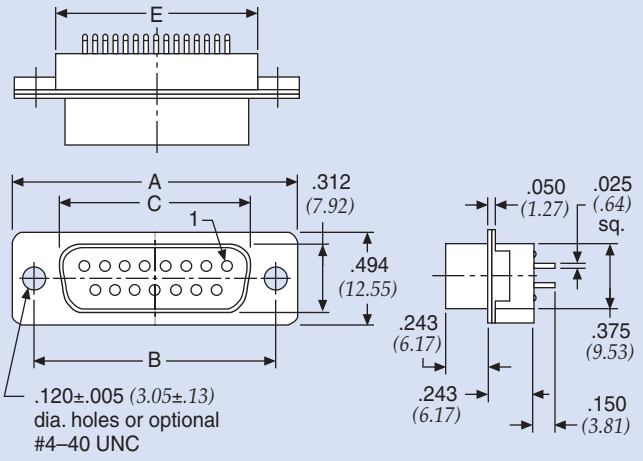
Size	A	B	C	D	E
9	1.213 *(30.81)*	0.984 *(24.99)*	0.666 *(16.92)*	0.540 *(13.72)*	0.748 *(19.00)*
15	1.541 *(39.14)*	1.312 *(33.32)*	0.994 *(25.25)*	0.867 *(22.02)*	1.076 *(27.33)*
25	2.088 *(53.04)*	1.852 *(47.04)*	1.534 *(38.96)*	1.412 *(35.86)*	1.616 *(41.05)*

Standard Tolerance = ±.015 *(0.38)*

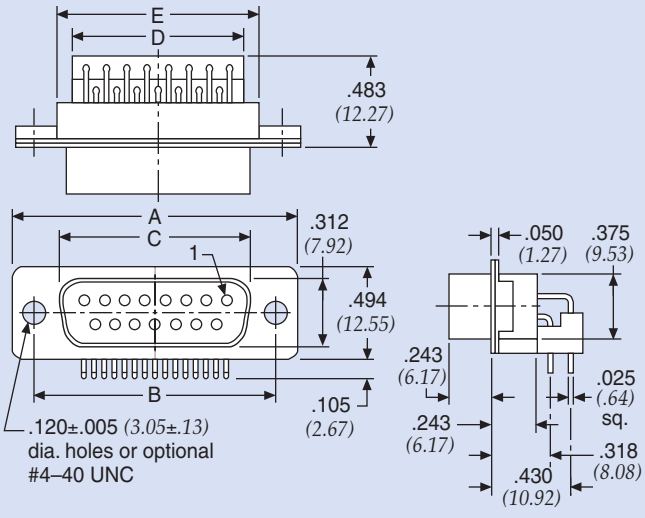
Dimensions in inches *(mm)*

Socket Contact *(receptacle)*

Straight PC Mount



90° PC Mount



Size	A	B	C	D	E
9	1.213 *(30.81)*	0.984 *(24.99)*	0.642 *(16.31)*	0.540 *(13.72)*	0.748 *(19.00)*
15	1.541 *(39.14)*	1.312 *(33.32)*	0.970 *(24.64)*	0.867 *(22.02)*	1.076 *(27.33)*
25	2.088 *(53.04)*	1.852 *(47.04)*	1.510 *(38.35)*	1.412 *(35.86)*	1.616 *(41.05)*

Standard Tolerance = ±.015 *(0.38)*

Dimensions in inches *(mm)*

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Ordering Information

Example: **56-524-013-GBL**

56 - **5** **2** **4** - **013** - **GBL**

This part number represents a Series 500 filtered D-sub connector with 25 contacts, socket to 90° PCB mount configuration. The filter has a capacitance value of 1000 pF and the connector includes a grounded board lock.

For special needs or combinations of features, contact Spectrum Control engineering.

Filtered D-sub Connectors
– - Standard connector
F - RoHS compliant version

Series 500 Connectors

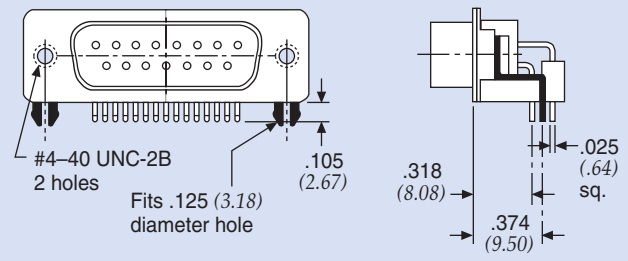
Shell Size/ Number of Contacts
0 - 9 size
1 - 15 size
2 - 25 size

Contact Type/Termination
2 - Pin to 90° PCB mount
3 - Socket to straight PCB mount
4 - Socket to 90° PCB mount
7 - Pin to straight PCB mount

Capacitance Value
010 - 120 pF
011 - 440 pF
012 - 840 pF
013 - 1000 pF
014 - 1500 pF

Mounting or Hardware Options
TI - 4-40 threads on mounting flange (.120" (3.05mm) hole if not selected)
GBL - Grounded board lock, includes 4-40 threads (available only on 90° PCB)
GBLF - Grounded board lock and ferrite slab, provides the enhanced performance of an (LC) filter (available only on 90° PCB)

GBL Option

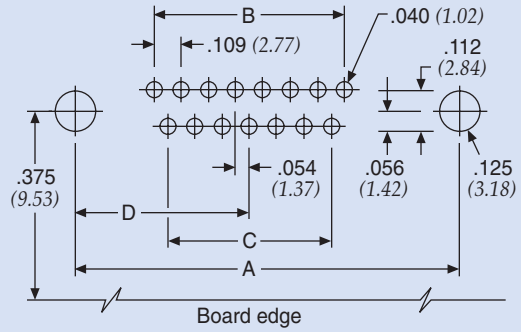


Features
- Snap-in retention to PC board, requires no hardware
- Ensures low ground impedance for superior filtering
- 4-40 threads on mounting flange eliminate loose hardware

Dimensions in inches *(mm)*

Board Layout

Typical Layout for .318" (8.08) Footprint



Shell Size	A	B	C	D
9	.984 *(24.99)*	.436 = 4 x .109 *(11.07 = 4 x 2.77)*	.327 = 3 x .109 *(8.31 = 3 x 2.77)*	.492 *(12.50)*
15	1.312 *(33.32)*	.763 = 7 x .109 *(19.38 = 7 x 2.77)*	.654 = 6 x .109 *(16.61 = 6 x 2.77)*	.656 *(16.66)*
25	1.852 *(47.04)*	1.308 = 12 x .109 *(33.22 = 12 x 2.77)*	1.199 = 11 x .109 *(30.45 = 11 x 2.77)*	.926 *(23.52)*

Dimensions in inches *(mm)*