

Series 500 Low Profile Filtered Connectors

API's Spectrum Control brand of 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-sub 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.

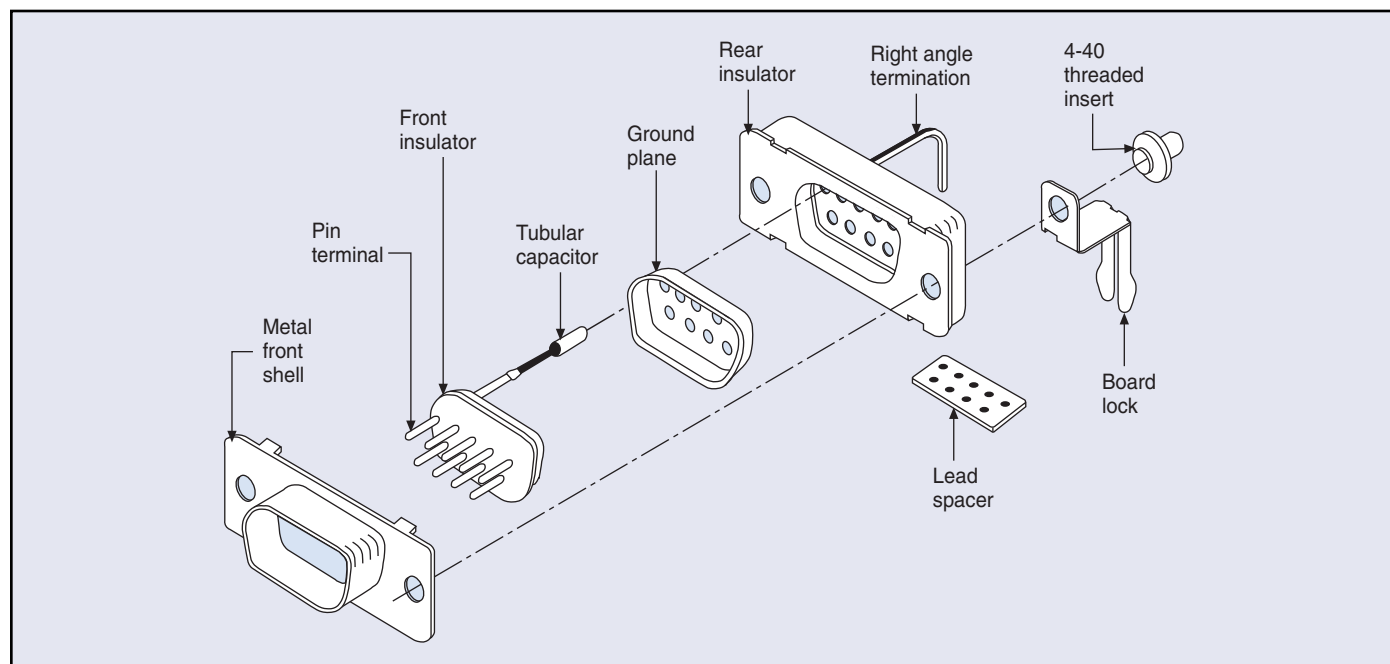
Series 500 Applications

- 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-through 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



Series 500 Low Profile Filtered Connectors

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 FC81.

Electrical Specifications

**Current
Rating** 5 Amps

**RF Current
Rating** 0.3 Amps

**Contact
Resistance** 10 milliohms maximum

Capacitance 120, 440, 840, 1000,
1500 pF $\pm 30\%$

**Working
Voltage** 100 VDC

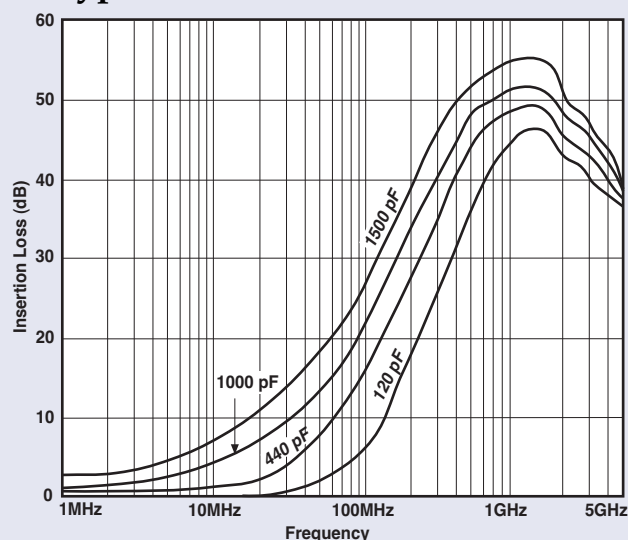
**Dielectric
Withstanding
Voltage** 300 VDC

**Insulation
Resistance** 1 Gohm minimum

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



Typical Insertion Loss



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

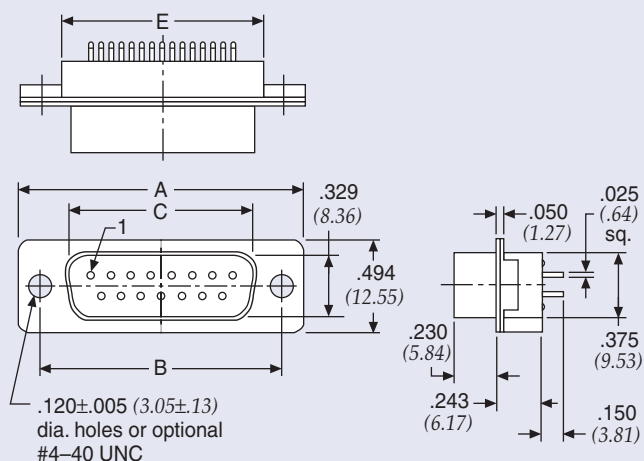
Filter Performance

Cap. (pF) Value $\pm 30\%$	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

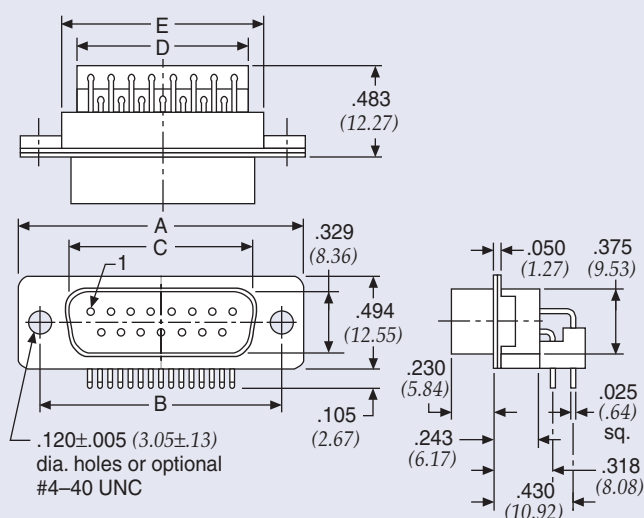
Insertion loss measured per MIL-STD-220, no load, 50 ohm source and load.
Above data represents guaranteed minimum.

Series 500 Low Profile Filtered Connectors

Pin Contact (plug) Straight PC Mount



90° PC Mount

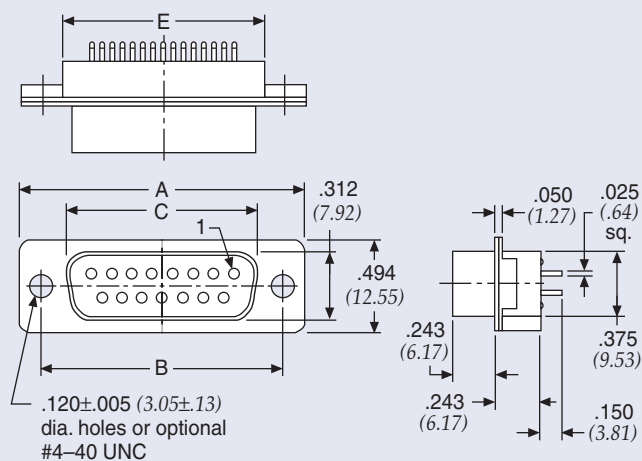


Size	A	B	C	D	E
9	1.213 (30.81)	0.984 (24.99)	0.666 (16.92)	0.540 (13.72)	0.748 (19.00)
15	1.541 (39.14)	1.312 (33.32)	0.994 (25.25)	0.867 (22.02)	1.076 (27.33)
25	2.088 (53.04)	1.852 (47.04)	1.534 (38.96)	1.412 (35.86)	1.616 (41.05)

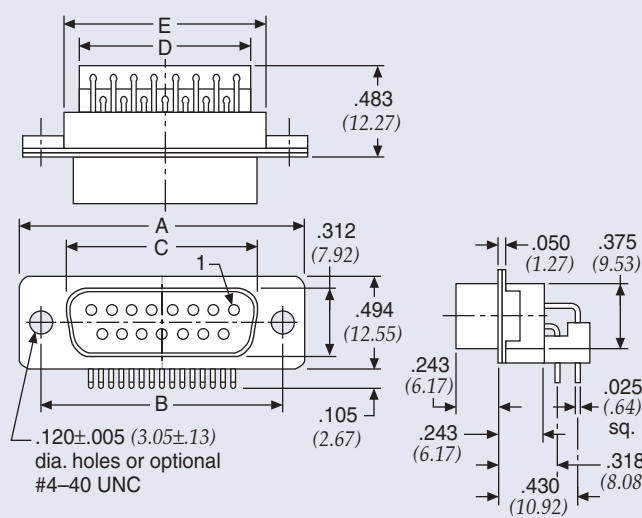
Standard Tolerance = ±.015 (0.38)

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)

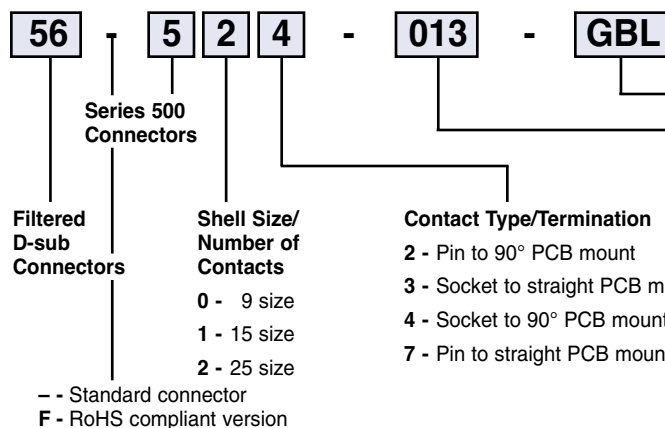
Standard Tolerance = ±.015 (0.38)

Dimensions in inches (mm)

Series 500 Low Profile Filtered Connectors

Ordering Information

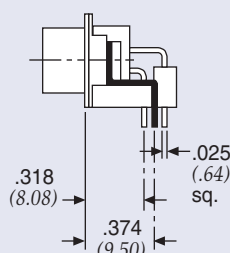
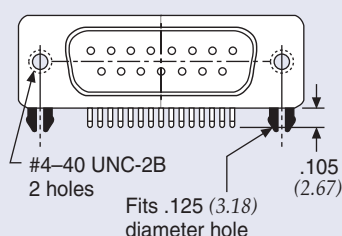
Example: **56-524-013-GBL**



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 API engineering.

GBL Option



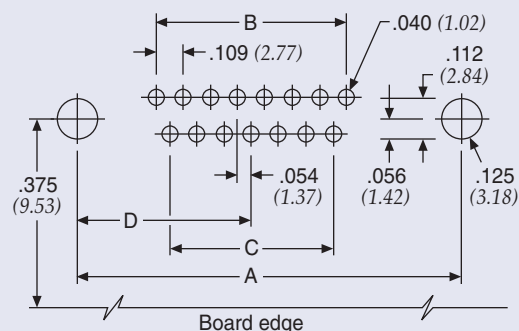
Features

- 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

Board Layout

Dimensions in inches (mm)

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)

Mouser Electronics

Authorized Distributor

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API Technologies:

[56-512-014-GBL](#) [56-502-013-GBL](#) [56-517-013-TI](#) [56-513-013-TI](#) [56-512-013-GBL](#) [56-524-012-GBL](#) [56-502-011-GBL](#) [56-504-012-GBL](#) [56-507-013-TI](#) [56-504-013-GBL](#) [56-502-014-GBL](#) [56F504-013-GBL](#) [56F502-013-GBL](#) [56F512-011-GBL](#) [56-514-013-GBL](#) [56-524-013-GBL](#) [56-512-011-GBL](#) [56F507-013-TI](#) [56F512-014-GBL](#) [56F517-013-TI](#) [56F513-013-TI](#) [56-523-012-TI](#) [56-527-012-TI](#) [56-522-012-GBL](#) [56F502-012-GBL](#) [56-503-014-TI](#) [56-504-014-GBLF](#)