Introduction

Corcom brand SignalSentry filtered modular jack series product combines different levels of filtering with RJ45 and RJ11 modular jacks to solve signal line noise problems and crosstalk.

Corcom brand SignalSentry filtered modular jack series product has expanded into 80 different products for filtering the signal line, including inductor and capacitor, shielded, ganged, low profile and surface mountable versions. Designs not only save valuable panel space, but also place the filtering elements where they can be most effective in eliminating RFI.

The L and N series RJ11 and RJ45 jacks offer filtering with inductance and optional shielding, while the LC and LCT series combine inductance with 82pF or 820pF capacitors. The X and Z series complete the offering with unfiltered versions of our standard profile and low profile jacks.

Use the selector chart to combine your filtering performance with the RJ11 or RJ45 jacks. Mechanical dimensions are listed following the series information.

For the latest information and additional technical articles, find Corcom products on the Internet at www.corcom.com.

SignalSentry Filtered Modular Jacks

Corcom brand SignalSentry filtered modular jacks are a space saving and cost-effective solution to RFI problems on signal lines. Its inductive and optional capacitive elements effectively strip common-mode noise from the incoming signal, and at the same time limit the signal line's ability to radiate emissions like an antenna.

The SignalSentry filtered modular jack series has expanded into 80 different products for filtering the signal line, including inductor and capacitor, shielded, ganged, low profile and surface mountable versions. Filtered RJ jacks provide interference suppression at the optimal location by integrating the filtering into the RJ jack itself. Our new ganged jacks are the only RJ11 filtered ganged jacks available in the market.

SignalSentry filtered modular jack products are useful for any electronic equipment that sends or receives data on unshielded twisted pair or other multi-conductor cabling systems. Modems, PBX's, LAN, ISDN, and local I/O interfaces that use RJ connectors are all candidates.

Jack design and component selection compatible with equipment registered under FCC part 68.

UL Recognized

CSA Certified

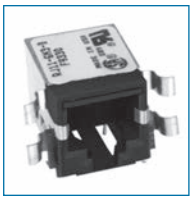
Applications

A fax/modem board was being certified for FCC Class B emissions at an independent test laboratory. The board caused every computer it was tested in to exceed the radiated limits above 30 MHz, at multiples of each microprocessor's clock frequency, on the telephone line. The test lab replaced the modem's unfiltered RJ11 jack with a **Corcom RJ11-4L-B** filtered modular jack out of their sample kit, and the board/computer combinations passed with 4 dB margin worst case.

An RISC workstation designed to operate in a twisted-pair Local Area Network required two DIP package inductors and 12 chip capacitors to meet

FCC radiated emissions limits. All 14 discrete components were eliminated by replacing the two RJ45 connectors with two **Corcom RJ45-8LC1-B** shielded and filtered jacks, and the margin of compliance actually improved.

A secure telephone set failed hardened application testing at a government facility, due to intelligible emanations radiated from the coiled handset cord. The unit passed after the handset connector in the desk set was replaced by a **Corcom RJH-4L-B** filtered handset jack.



A medical manufacturer was designing a heart monitor which would transfer data over a signal line to the nurses' station so they could monitor patients. When the doctors used their modems, the data coming from the monitor became distorted. This occurred due to the close proximity of the modem card and monitor communication card placed next to each other. A **Corcom low profile RJ45-8N3-B** modular jack was designed in to filter out the unwanted noise.

SignalSentry Part Number Matrix / Ordering Information

WHAT TYPE OF CONNECTOR DO YOU NEED?

Handset jack four pin connector	RJH
RJ11 six pin connector	RJ11
RJ45 eight pin connector	RJ45

RJ11-4L1-B

HOW MANY TERMINALS WILL BE LOADED? (See below)

4 on RJH
2, 4 or 6 on RJ11
6 or 8 on RJ45

RJ11-**4**L1-B

WHAT LEVEL OF FILTERING PERFORMANCE DO YOU NEED?

No filter, standard profile	X models
Inductor (block or sleeve), standard profile	L models
Inductor plus capacitors with shield	LC models
Inductor, 82 pF cap. and shield	LCT model
Inductor (block or sleeve), low profile	N models
No filter, low profile	Z models

RJ11-4**L**1-B

DO YOU WANT A SHIELDED JACK? (Optional on L, X, N, Z models, required on LC or LCT.)

WHAT TYPE OF GROUND?

[1]Panel and board ground (spring fingers on panel interface)	1
[1]Board ground pins only	2
[2]Panel, board and cable ground (low profile versions)	3
[2]Board ground and cable ground (low profile versions)	4

RJ11-4L**1**-B

[1]L, LC, LCT, X models
[2]N, Z models

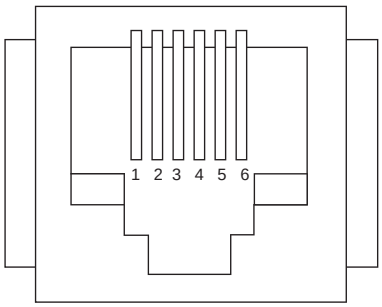
WHAT TYPE OF INDUCTORS DO YOU NEED?

Sleeve — Average performance	S
Block — Higher performance	B

RJ11-4L1-**B**

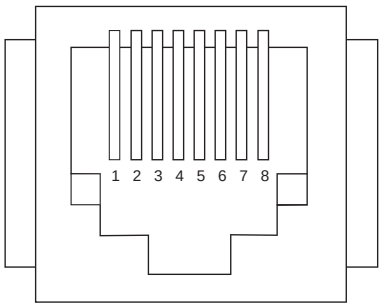
Sleeve inductance is recommended in cases where crosstalk may be a problem.

RJ11 Model Contact Loading Program



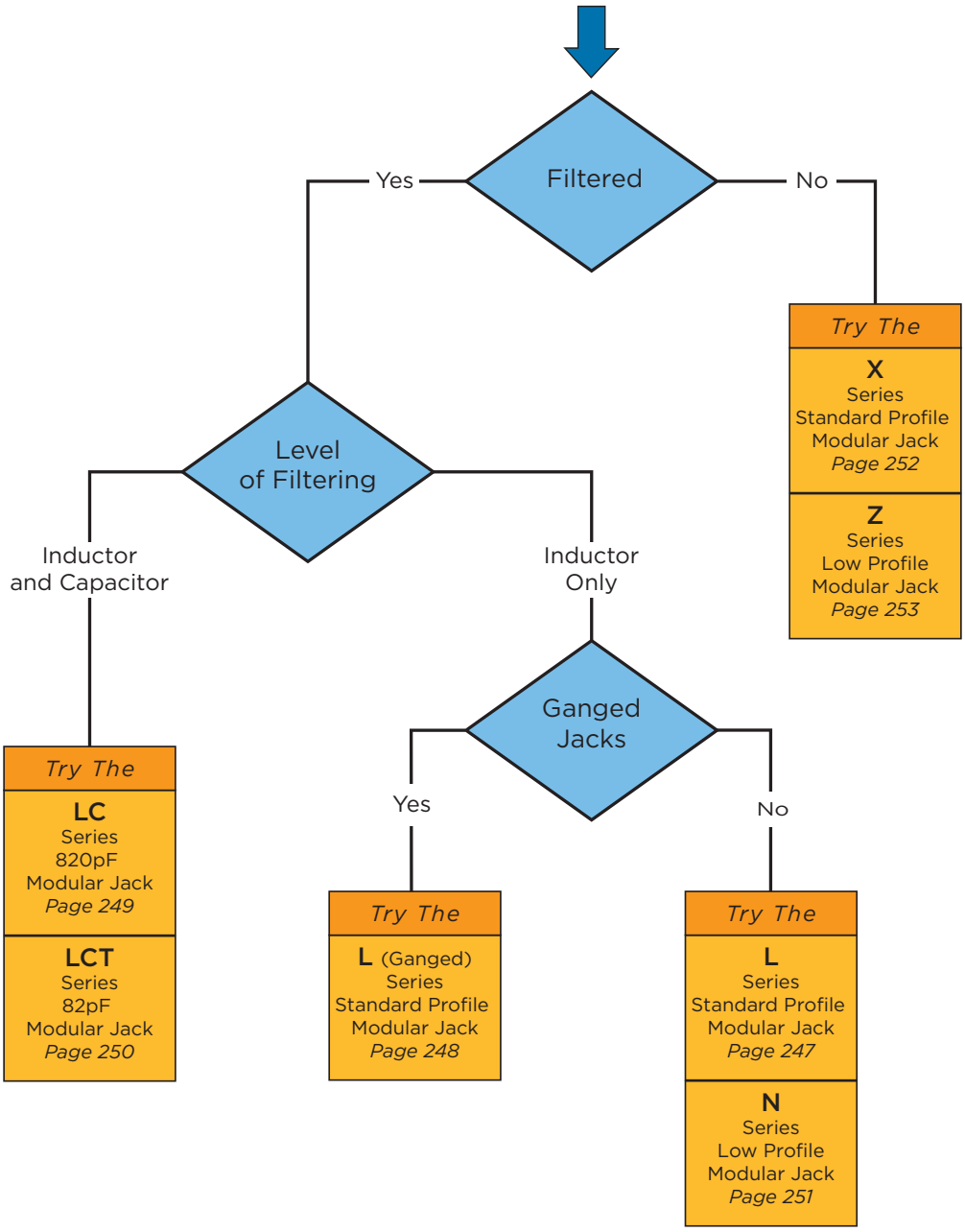
Jack Designation	Lead Frame Position					
	1	2	3	4	5	6
RJ11 – 2			X	X		
RJ11 – 4		X	X	X	X	
RJ11 – 6	X	X	X	X	X	X

RJ45 Model Contact Loading Program



Jack Designation	Lead Frame Position							
	1	2	3	4	5	6	7	8
RJ45 – 6		X	X	X	X	X	X	
RJ45 – 8	X	X	X	X	X	X	X	X

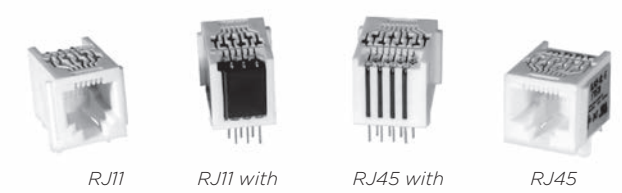
SignalSentry Selector Chart



Engineering Notes

L Series

UL Recognized
CSA Certified



RJ11 *RJ11 with Block Filter* *RJ45 with Sleeve Filter* *RJ45*

L Series

- Inductive filtering in standard RJ11, RJ45, or handset jacks.
- Available with standard ferrite sleeve inductors or higher performance ferrite blocks
- Available unshielded or shielded with board grounded shield or spring fingered panel ground interface

Available Part Numbers

Inductor Filter	
RJH-4L-B	RJ45-6L-S
RJ11-2L-S	RJ45-6L-B
RJ11-2L-B	RJ45-8L-S
RJ11-4L-S	RJ45-8L-B
RJ11-4L-B	
RJ11-6L-S	
RJ11-6L-B	
Inductor Filter and Shield	
RJ11-2L2-B	RJ45-6L1-S
RJ11-4L1-S	RJ45-6L1-B
RJ11-4L1-B	RJ45-6L2-S
RJ11-4L2-S	RJ45-6L2-B
RJ11-4L2-B	RJ45-8L1-S
RJ11-6L1-S	RJ45-8L1-B
RJ11-6L1-B	RJ45-8L2-S
RJ11-6L2-S	RJ45-8L2-B
RJ11-6L2-B	

Shield 2   Shield 1

Specifications

Contacts:
Material: Phosphor Bronze
Plating: 50 microinches gold
Barrier underplating: 100 microinches nickel
Resistance:
Initial: 20 mΩ max.
After 500 mating cycles: 30 mΩ max.

Ferrites:
Type: High resistivity, nickel zinc ceramic
Sleeves: Single-aperture cylinders
Block: Multi-aperture rectangular prism

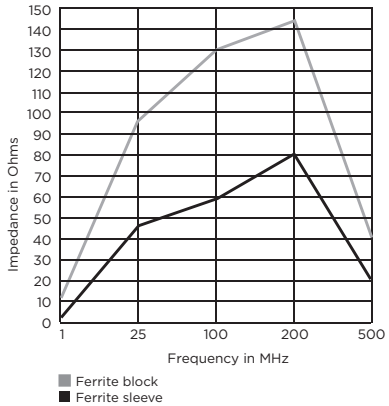
Shield Material: Tin-plated copper alloy

Housing Material: Glass-filled polyester (UL94V-0)

Dielectric Withstanding Voltage:
Line to Line and Line to Ground: 1000 VAC for 60 seconds

Printed Circuit Board Retention:
Before soldering: 1 lb. minimum
After soldering: 20 lb. minimum

Typical Impedance in Ohms



Model dimensions and PC board layout on pages 255-259

Dimensions are in inches and millimeters unless otherwise specified. Values in italics are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change.

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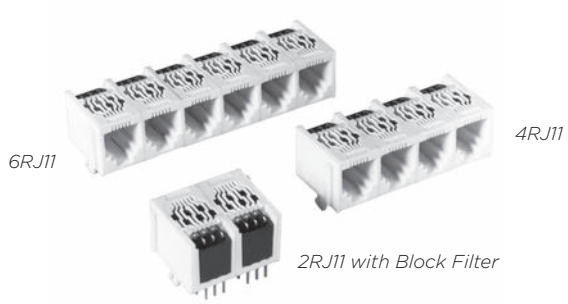
L – Ganged Series

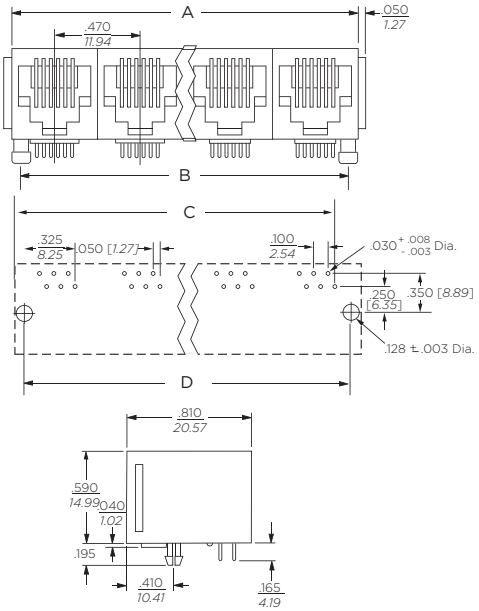
UL Recognized
CSA Certified



L – Ganged Series

- Ganged version of our L Series filtered jacks
- Available in RJ11 models with block inductors
- Available in gangs of 2, 4 or 6
- Retrofits existing unfiltered ganged jack footprints

Dimensions and PC Board Layout



Ports	A	B	C	D
2	**0.99** *25.15*	**0.87** *22.1*	**0.795** *20.19*	**.87** *22.1*
4	**1.93** *49.02*	**1.81** *45.97*	**1.735** *44.07*	**1.81** *25.97*
6	**2.87** *72.9*	**2.75** *69.85*	**2.675** *67.95*	**2.75** *69.85*

Specifications

Contacts:

Material:	Phosphor Bronze
Plating:	50 microinches gold
Barrier underplating:	100 microinches nickel
Resistance:	
Initial:	20 mΩ max.
After 500 mating cycles:	30 mΩ max.

Ferrites:

Type:	High resistivity, nickel zinc ceramic
Block:	Multi-aperture rectangular prism

Housing Material: Glass-filled polyester (UL94V-0)

Dielectric Withstanding Voltage:

Line to Line and Line to Ground:	1000 VAC for 60 seconds

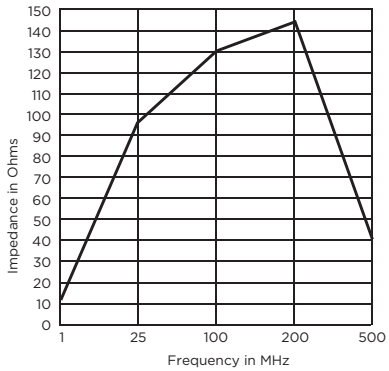
Printed Circuit Board Retention:

Before soldering:	1 lb. minimum
After soldering:	20 lb. minimum

Available Part Numbers

2RJ11-6L-B	4RJ11-6L-B
6RJ11-6L-B	

Typical Impedance in Ohms



Dimensions are in inches and millimeters unless otherwise specified. Values in italics are metric equivalents. Dimensions are shown for reference purposes only. Specifications subject to change.

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LC Series

UL Recognized
CSA Certified

Shield 2 RJ11 *Shield 1 RJ11* *Shield 2 RJ45* *Shield 1 RJ45*

LC Series

- Chip capacitors provide enhanced filtering performance on each line
- Available with block or sleeve inductance
- Available with board grounded shield or spring fingered panel ground interface

Performance Data

Typical Insertion Loss

Line to ground (stop band) in 50 Ohm circuit

	Frequency – MHz						
Model	**30**	**60**	**80**	**100**	**200**	**500**	**1000**
S – Ferrite Sleeves	28	40	51	40	27	24	22
B – Ferrite Blocks	30	41	59	40	31	28	24

Line to line (pass band) in 50 Ohm circuit

	Frequency – MHz						
Model	**2**	**5**	**10**	**30**	**50**	**70**	**100**
S – Ferrite Sleeves	-	4	8	18	24	30	40
B – Ferrite Blocks	1	8	11	21	28	33	37

Model dimensions and PC board layout on pages 255-259

Specifications

Contacts:
Material: Phosphor Bronze
Plating: 50 microinches gold
Barrier underplating: 100 microinches nickel
Resistance:
Initial: 20 mΩ max.
After 500 mating cycles: 30 mΩ max.

Capacitors:
Type: Monolithic ceramic chip
Standard Value: 820 pF
Standard Tolerance: ± 20%

Ferrites:
Type: High resistivity, nickel zinc ceramic
Sleeves: Single-aperture cylinders
Block: Multi-aperture rectangular prism

Shield Material: Tin-plated copper alloy

Housing Material: Glass-filled polyester (UL94V-0)

Dielectric Withstanding Voltage:
Line to Line and Line to Ground: 1000 VAC for 60 seconds

Printed Circuit Board Retention:
Before soldering: 1 lb. minimum
After soldering: 20 lb. minimum

Available Part Numbers

RJ11-2LC1-S	RJ11-6LC2-S
RJ11-2LC1-B	RJ11-6LC2-B
RJ11-2LC2-S	RJ45-6LC1-S
RJ11-2LC2-B	RJ45-6LC1-B
RJ11-4LC1-S	RJ45-6LC2-S
RJ11-4LC1-B	RJ45-6LC2-B
RJ11-4LC2-S	RJ45-8LC1-S
RJ11-4LC2-B	RJ45-8LC1-B
RJ11-6LC1-S	RJ45-8LC2-S
RJ11-6LC1-B	RJ45-8LC2-B

LCT Series

UL Recognized
CSA Certified

Shield 2 RJ11 *Shield 1 RJ11* *Shield 2 RJ45* *Shield 1 RJ45*

LCT Series

- Low capacitance model for improved performance.
- Particularly suited for ethernet applications
- Available with block or sleeve inductance
- Available with board grounded shield or spring fingered panel ground interface

Performance Data

Typical Insertion Loss

Line to ground (stop band) in 50 Ohm circuit

	Frequency – MHz						
Model	**40**	**100**	**200**	**250**	**300**	**500**	**1000**
S – Ferrite Sleeves	8	12	27	50	38	25	20
B – Ferrite Blocks	10	18	22	55	40	28	24

Line to line (pass band) in 50 Ohm circuit

	Frequency – MHz						
Model	**2**	**5**	**10**	**30**	**50**	**70**	**100**
S – Ferrite Sleeves	-	1.2	1.9	4	5	7	10
B – Ferrite Blocks	1	2	3	5	8	10	13

Model dimensions and PC board layout on pages 255-259

Specifications

Contacts:
Material: Phosphor Bronze
Plating: 50 microinches gold
Barrier underplating: 100 microinches nickel
Resistance:
Initial: 20 mΩ max.
After 500 mating cycles: 30 mΩ max.

Capacitors:
Type: Monolithic ceramic chip
Standard Value: 82 pF
Standard Tolerance: ± 20%

Ferrites:
Type: High resistivity, nickel zinc ceramic
Sleeves: Single-aperture cylinders
Block: Multi-aperture rectangular prism

Shield Material: Tin-plated copper alloy

Housing Material: Glass-filled polyester (UL94V-0)

Dielectric Withstanding Voltage:
Line to Line and Line to Ground: 1000 VAC for 60 seconds

Printed Circuit Board Retention:
Before soldering: 1 lb. minimum
After soldering: 20 lb. minimum

Available Part Numbers

RJ11-6LCT1-S	RJ45-8LCT1-S
RJ11-6LCT1-B	RJ45-8LCT1-B
RJ11-6LCT2-S	RJ45-8LCT2-S
RJ11-6LCT2-B	RJ45-8LCT2-B

N Series

UL Recognized
CSA Certified

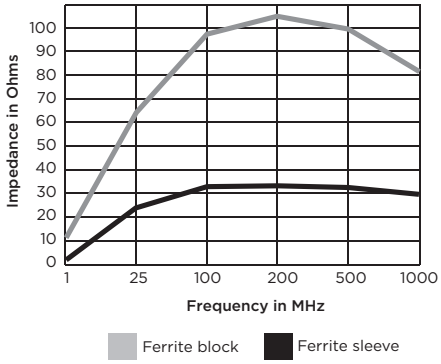
Shield 3
RJ11

Shield 4
RJ45

N Series

- Low profile SignalSentry filtered jack
- Available with sleeve or block inductors
- Available unshielded or shielded with board grounded shield or spring fingered panel ground interface

Typical Impedance in Ohms



Unshielded
Ferrite Block

Specifications

Contacts:

Material:	Phosphor Bronze
Plating:	50 microinches gold
Barrier underplating:	100 microinches nickel
Resistance:	
Initial:	20 mΩ max.
After 500 mating cycles:	30 mΩ max.

Ferrites:

Type:	High resistivity, nickel zinc ceramic
Sleeves:	Single-aperture cylinders
Block:	Multi-aperture rectangular prism

Shield Material: Tin-plated copper alloy

Housing Material: Black glass-filled polyamide (STANYL TE250F3)

Dielectric Withstanding Voltage:
Line to Line and Line to Ground: 1000 VAC for 60 seconds

Printed Circuit Board Retention:

Before soldering:	1 lb. minimum
After soldering:	20 lb. minimum

Available Part Numbers

RJ11-6N-B	RJ45-8N-B
	RJ45-8N-S
RJ11-6N3-B	RJ45-8N3-B
	RJ45-8N3-S
RJ11-6N4-B	RJ45-8N4-B
	RJ45-8N4-S

Model dimensions and PC board layout on pages 255-259

X Series

UL Recognized
CSA Certified

RJ45

RJ11

X Series

- Unfiltered standard jack
- RJ11 or RJ45
- 2, 4, 6 or 8 loaded contacts
- Available unshielded or shielded with board grounded shield or spring fingered panel ground interface

Shield 1

Shield 2

Specifications

Contacts:

Material:	Phosphor Bronze
Plating:	50 microinches gold
Barrier underplating:	100 microinches nickel
Resistance:	
Initial:	20 mΩ max.
After 500 mating cycles:	30 mΩ max.

Shield Material: Tin-plated copper alloy

Housing Material: Glass-filled polyester (UL94V-0)

Dielectric Withstanding Voltage:

Line to Line and Line to Ground:	1000 VAC for 60 seconds

Printed Circuit Board Retention:

Before soldering:	1 lb. minimum
After soldering:	20 lb. minimum

Available Part Numbers

RJ11-2X	RJ45-6X
RJ11-4X	RJ45-8X
RJ11-6X	RJ45-8X1
	RJ45-8X2

Model dimensions and PC board layout on pages 255-259

Z Series

UL Recognized
CSA Certified

Shield 3
RJ11

Shield 4
RJ45

Z Series

- Low profile
- Unfiltered
- Available unshielded or shielded with board grounded shield or spring fingered panel ground interface

Available Part Numbers

RJ11-6Z	RJ45-8Z
RJ11-6Z3	RJ45-8Z3
RJ11-6Z4	RJ45-8Z4

Specifications

Contacts:

Material:	Phosphor Bronze
Plating:	50 microinches gold
Barrier underplating:	100 microinches nickel
Resistance:	
Initial:	20 mΩ max.
After 500 mating cycles:	30 mΩ max.

Shield Material: Tin-plated copper alloy

Housing Material: Black glass-filled polyester (VALOX 457)

Dielectric Withstanding Voltage:
Line to Line and Line to Ground: 1000 VAC for 60 seconds

Printed Circuit Board Retention:

Before soldering:	1 lb. minimum
After soldering:	20 lb. minimum

Model dimensions and PC board layout on pages 255-259