

Filter adapters present an effective and economical method of introducing EMI/EMP protection to an installed system. The adapter series of filter connectors from Amphenol are available to intermate with all the popular MIL-Specs.

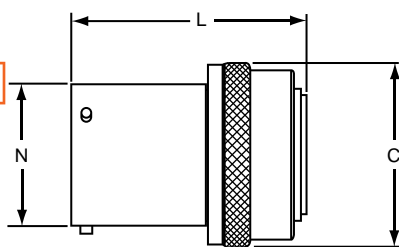
Features of the Amphenol Adapter include:

- Planar technology from the industry's leader in circulars
- Filter products
- MOV or diode capability for transient protection
- Wide range of tooled patterns
- Space qualified components

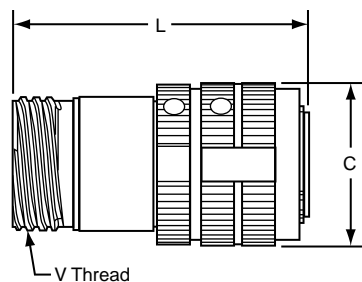


Installation of the adapter is quick and efficient, requiring no tools, fixtures or extended downtime. Simply unmate the existing cable harness from the receptacle; attach the coupling nut to the receptacle on the unit; then mate the cable harness to the receptacle side of the adapter. Several design alternatives are available that will help ensure that the adapter remains permanently attached to either the cable harness or the unit receptacle.

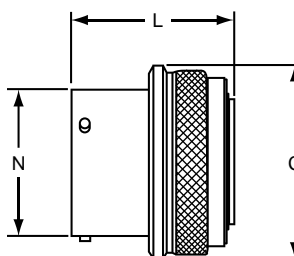
FPT Adapter
21-900075-XXX



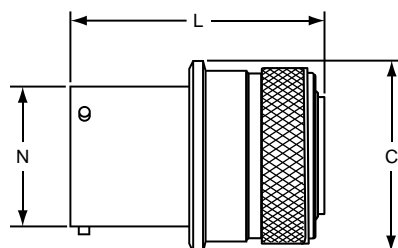
FTV Adapter
21-900529-XXX



FJT Adapter
21-900393-XXX



FLJT Adapter
21-900423-XXX



All dimensions for reference only.
Consult Amphenol, Sidney, NY for ordering information.

FPT Shell Size	C Dia. Ref.	N Dia. +.001 - .005	L Max.
8	.729	.473	1.626
10	.851	.590	1.626
12	1.035	.750	1.626
14	1.158	.875	1.626
16	1.280	1.000	1.626
18	1.403	1.125	1.626
20	1.525	1.250	1.688
22	1.648	1.375	1.688
24	1.770	1.500	1.688

FTV Shell Size	C Dia. Ref.	V Thread 0.1P-0.3L-TS Class 2A	L Max.
9	.845	.6250	2.257
11	.950	.7500	2.257
13	1.121	.8750	2.257
15	1.249	1.0000	2.257
17	1.386	1.1875	2.257
19	1.493	1.2500	2.257
21	1.620	1.3750	2.257
23	1.737	1.5000	2.257
25	1.864	1.6250	2.257

FJT Shell Size	C Dia. +.011 - .010	N Dia. +.001 - .005	L Max.
8	.847	.473	1.397
10	.969	.590	1.397
12	1.143	.750	1.397
14	1.255	.875	1.397
16	1.388	1.000	1.397
18	1.510	1.125	1.397
20	1.633	1.250	1.397
22	1.756	1.375	1.397
24	1.878	1.500	1.397

FLJT Shell Size	C Dia. +.011 - .010	N Dia. +.001 - .005	L Max.
9	.920	.572	2.038
11	1.045	.700	2.038
13	1.246	.850	2.038
15	1.371	.975	2.038
17	1.496	1.100	2.038
19	1.616	1.207	2.038
21	1.743	1.332	2.038
23	1.866	1.457	2.038
25	1.991	1.582	2.038

38999
SJT I II III

26482
Matrix 2

83723 III
Matrix Pyle

5015
Crimp Rear Release Matrix

26500 Pyle

Printed
Circuit Board

EMI Filter
Transient

Fiber Optics

High Speed
Contacts

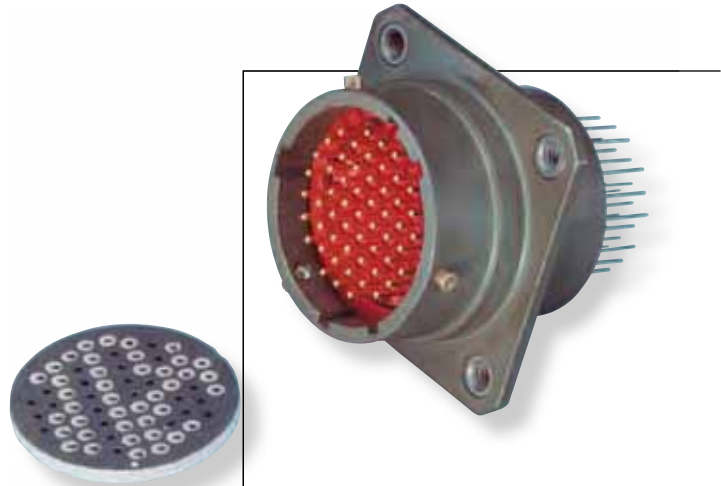
Options
Others

Transient Protection

MOV– Metal Oxide Varistor Connectors



- Filter connector size package
- Protection for 14, 31, 38 DC voltage circuits
- Radiation hardened
- No additional circuits required
- Low impedance
- Increased reliability
- Nanosecond response time
- Elimination of costly external suppression assemblies



MOV

The Amphenol® MOV Connector offers the versatility of a standard connector, with transient protection for sensitive circuits. Transients in electrical circuits caused by a sudden release of stored energy can originate within or outside of the circuit and may be repeatable or random.

Regardless of frequency or origin, transient caused failures generated by load switching, lightning, electrostatic discharge (ESD) and electromagnetic pulse (EMP) can destroy unprotected IC components.

Compatible with present filter connector assembly procedures, MOVs can be combined with existing filters. Internal housing of the MOV offers weight and space savings over other protection methods available today, and eliminates costly and bulky exterior suppression mechanisms in appropriate situations. MOVs are presently available in contact sizes 22, 20 and 16.

Transient protection can be provided in receptacle, plug or adapter configuration. These connectors are intermateable and intermountable with the following MIL-Specs:

- MIL-DTL-5015
- MIL-DTL-38999
- MIL-DTL-26482
- MIL-DTL-83723
- MIL-DTL-26500
- MIL-DTL-27599

38999
III
II
I
SJT

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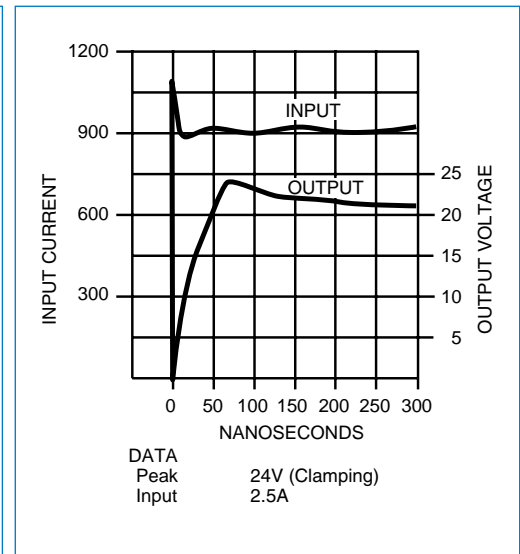
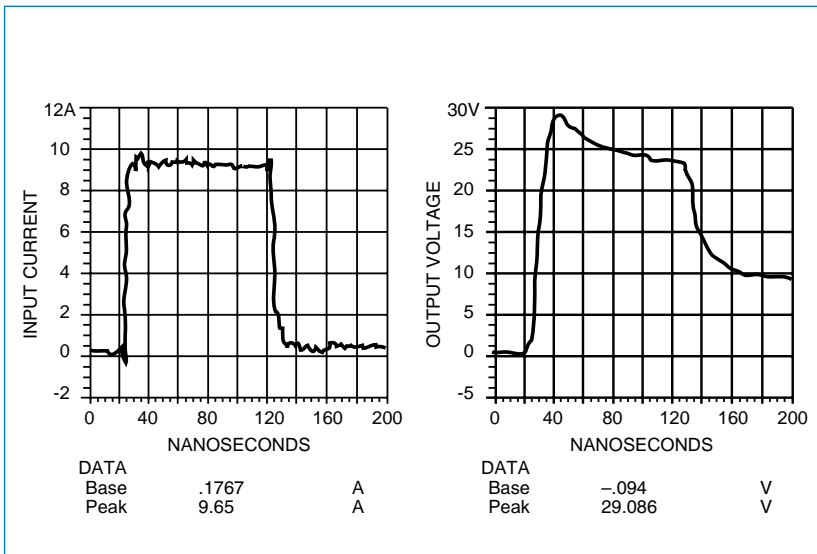
M.O.V. PERFORMANCE CHARACTERISTICS

Designation	Contact Size	Maximum Rating (125°C)				Specifications (25°C)						Maximum Leakage Current at V _t (dc)			
		Continuous		Transient		Varistor Voltage at 1mA (DC)			Maximum Clamping Voltage V _c at Test Current I _p (8/20μS)		Capacitance at 1 MHz		I _L Max.	I _L Max.	V _t
		DC Voltage	RMS Voltage	Energy (10/1000μS)	Peak Current (8/20μS)										
		V _m Volts	V _m Volts	W _{tm} Joules	I _{tm} Amperes	Min.	Max.	25°C	125°C	DC Volts					
F14	22	14	10	1.5	250	18.5	22	25.5	42	10	800	2000	5	50	14
F31	22	31	25	1.5	250	35	39	48	85	5	400	1400	5	50	28
F38	22	38	30	1.5	250	42	47	58	100	5	200	1000	5	50	36
F45	22	45	35	1.5	250	53	59	68	100	5	200	850	5	50	45
F31	20	31	25	2	300	35	39	48	85	10	400	1400	5	50	28
F38	20	38	30	2	300	42	47	58	100	10	200	1000	5	50	36
F45	20	45	35	2	300	53	59	68	100	10	200	850	5	50	45
F38	16	38	30	3	350	42	47	58	100	20	200	1000	5	50	36
F45	16	45	35	3	350	53	59	68	100	20	200	850	5	50	45

NOTE: Continuous voltage ratings are based on 1000 hour reliability assurance tests at 125°C rated ambient temperature per MIL-STD-202 method 108. Contact Amphenol Sidney for options not listed in chart.

The following charts show the typical MOV response to an input pulse open circuit of 1000V and 10A peak square wave with a 5 nanosecond rise time in a 50 Ohm system.

The following chart shows response time and output voltage of a typical MOV with 1000V, 5 nanosecond, 2.5A input pulse mounted in an LJT 13-35P connector. Test was performed without load.



- 38999 SJT I II III
- 26482 Matrix 2
- 83723 III Pyle Matrix
- 5015 Crimp Rear Release Matrix
- 26500 Pyle Circuit Board
- Printed Circuit Board
- EMI Filter Transient
- Fiber Optics
- High Speed Contacts
- Options Others

Transient Protection Diode Connectors



- Clamping voltage as low as 11.9 volts
- Low capacitance – suitable for high frequency applications
- Unipolar or bipolar – using existing proven diode technology
- Protection for 5.8 to 60 VDC circuits
- No additional circuits required
- Low impedance – high frequency response
- Increased reliability
- Nanosecond response time
- Elimination of costly external suppression assemblies
- Screening to applicable requirements of MIL-S-19500TX/TXV available
- Keeps transients outside of the box
- Minimizes fast transient voltage overshoot

The Amphenol® Diode Connector offers the versatility of a standard connector, with transient protection for sensitive circuits, such as TTL Lines.

Transients in electrical circuits caused by a sudden release of stored energy can originate within or outside of the circuit and may be repeatable or random.

Regardless of frequency or origin, transient caused failures generated by load switching, lightning, electrostatic discharge (ESD) and electromagnetic pulse (EMP) can destroy unprotected IC components.

Compatible with present filter connector assembly procedures, diodes can stand alone or can be combined in series with filters. Internal housing of the diode offers weight and space savings over other protection methods available today, and eliminates costly and bulky exterior suppression mechanisms in appropriate situations. Diodes are presently available in contact sizes 22 and 20.

Transient protection can be provided in receptacle, plug or adapter configurations. These connectors are intermountable and intermountable with the following MIL-Specs:



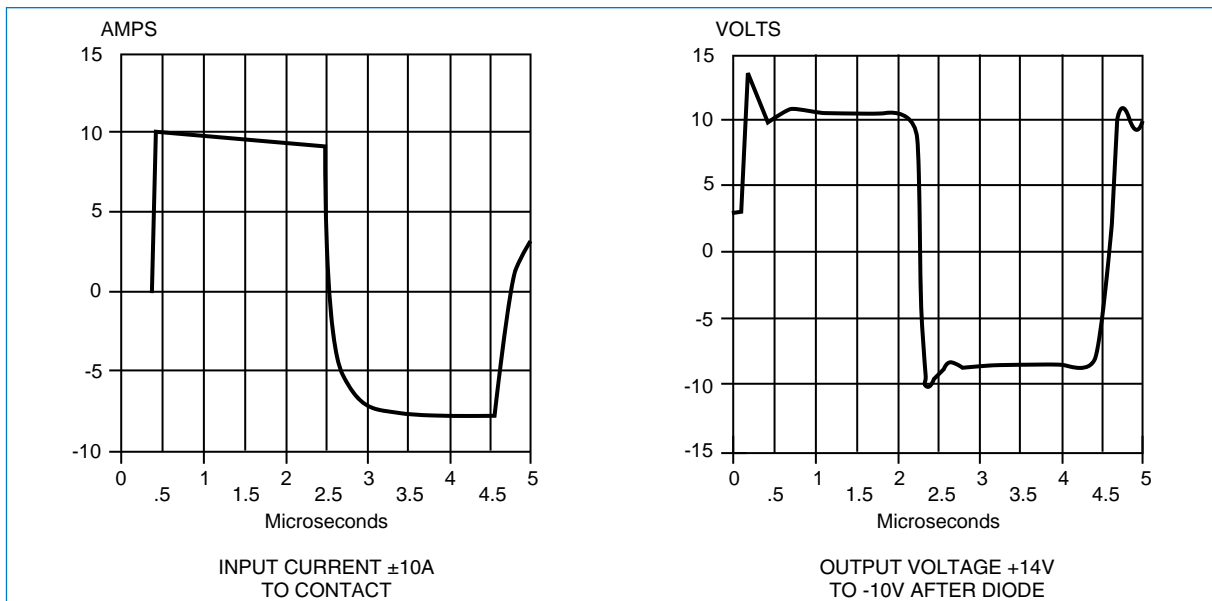
Diode Diode Connector and Adapter



Close-up View of Diode Contact

- MIL-DTL-5015
- MIL-DTL-26482
- MIL-DTL-26500
- MIL-DTL-27599
- MIL-DTL-38999
- MIL-DTL-83723

DIODE CONTACT PULSE TEST, ±5.8 DIODE



38999 III II I SJT

26482 Matrix 2

83723 III Matrix Pyle

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STANDARD DIODE CONNECTOR CHARACTERISTICS AT 25°C

Stand-off Voltage † (VDC)	Max. Capacitance* (pf)	Breakdown Voltage at 1 mA (VDC)	Max. Clamping Voltage (8 x 20µ sec. pulse)	Leakage Current at Stand-off Voltage (µA)	Power Capability † 20µs Exp. Impulse (Peak) (Watts)
+ 5.8	1600	+ 6.45 to+ 7.1**	+11.9	<100	1000
± 5.8	1000	± 6.45 to± 7.1**	±11.9	<150	1000
± 7.0	750	± 7.3 to± 9.3	±13.5	<10	1000
± 8.0	750	± 8.2 to±10.6	±15.4	<5	1000
+ 8.0	1500	+ 8.5 to+10.6	+15.4	<5	1000
±10.0	500	±11.1 to±12.3	±17.0	<1	1000
+10.0	1100	+11.1 to+12.3	+17.0	<1	1000
±15.0	500	±16.7 to±18.5	±24.9	<1	1000
+15.0	750	+16.2 to+19.2	+24.9	<1	1000
-15.0	750	-16.2 to-19.2	-24.9	<1	1000
±17.0	500	±18.9 to±23.0	±32.0	<1	1000
+17.1	600	+19.0 to+21.0	+27.7	<1	1000
±22.0	500	±25.7 to±28.4	±38.0	<1	1000
±25.0	500	±27.8 to±30.7	±40.5	<1	1000
+28.0	500	+30.5 to+35.7	+46.4	<1	1000
±33.3	500	+37.1 to+41.0	±53.9	<1	1000
+33.3	500	+37.1 to+41.0	+53.9	<1	1000
±40.0	500	±44.4 to±49.1	±64.5	<1	1000
±45.0	500	±47.1 to±58.1	±84.2	<1	1000
+57.8	500	+64.6 to+71.4	+95.2	<1	1000
±57.8	500	±64.6 to±71.4	±95.2	<1	1000

Clamping Time -

Unipolar: Less than 1 nanosecond, 0V to breakdown

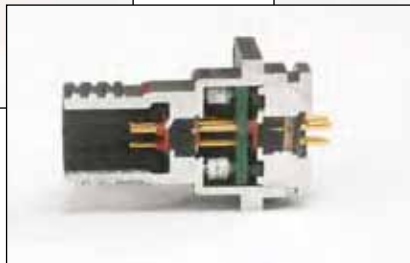
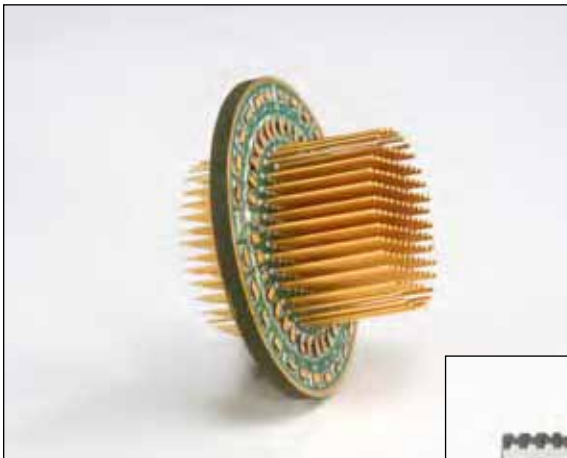
Bipolar: Less than 5 nanoseconds, 0V to breakdown

* Lower capacitance devices available; consult Amphenol, Sidney, NY.

**This device only measured at 10ma

† Higher power ratings also available

Amphenol can provide COTS solutions utilizing leaded & surface mounted devices. For more information contact Amphenol Aerospace at 800-678-0141.



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Transient Protection

ESA – Energy Shunting Assembly



The Amphenol® Energy Shunting Assembly (ESA) is a simple, compact unit which provides lightning and electromagnetic pulse (EMP) protection of systems in which many signal lines enter sensitive electronic equipment. The efficient packaging of the ESA circumvents the concept of one protective device per line. It provides a surge arrester which has the advantage of space saving and simplified assembly when compared to current protective devices which range from diodes to large spark gaps.

The current ESA design consists of two 53-pin contact, Mil-Standard, hermetic connectors assembled back to back, and encompassing a ground plate. A sealed chamber is formed within this thru-bulkhead unit, housing 53 in-line spark gaps. Introducing a controlled atmosphere enhances fast rise breakdown.

The ESA can be integrated with an EMI filter connector which can improve its performance. These two assemblies provide a method to help protect against lightning, EMP, EMI and TEMPEST effects.



ESA Energy Shunting Assembly

Performance Characteristics

1. DC breakdown voltage		230 Volts
2. Maximum rated surge discharge current (8 x 20 microsecond pulse)		5,000 Amperes per pin
3. Insulation resistance		10 ¹⁰ ohms minimum
4. Capacitance between each electrode and the ground plane		Less than 2 pf
5. Rate-of-rise breakdown voltage	Maximum Breakdown Voltage (Volts)	Rate of Rise (Volts/microsecond)
	600	10
	800	1,000
	1,500	10,000
2,000		1000,000
6. Surge breakdown unbalance (at 100 Volts/microseconds)		180 Volts
7. Surge life (500 Ampere – 10 x 1,000 microsecond)		400 Surges
8. Hold-over voltage		100 Volts
9. Arcing voltage		40 Volts
10. Glow to arc transition point		1 Ampere
11. Temperature range		-40°F to 150°F (233°K to 339°K)

III
II
I
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The Hermetic Filter Connector

While only approximately 1/2 inch longer than standard series connectors, the hermetic filter connector provides all the benefits of a hermetic connector, as well as EMI protection for sensitive circuits. The filter assembly is protected by a fused glass insert within a unique steel housing. This design accounts for the connector's capability in tolerating high level static pressure, while maintaining a low level leakage rate. Applications include pressurized test equipment, environmental and toxic gas chambers, and moisture sealing on industrial equipment and missiles.



Hermetic Filter Connector

Filtered Plug

This connector is designed for applications where EMI protection is essential, but access to the receptacle is denied. The filtered plug presents an alternative for the electrical engineer. The filter plug is designed with the same components as a standard filter receptacle, but offers the option of being mounted on the cable harness. This device is a cost effective method of achieving EMI protection when length restrictions prohibit inclusion of an adapter to the system.



Filtered Plug

Filter Connectors can also incorporate high frequency coax, twinax, triax, quadax and differential twinax contacts.

Amphenol MIL-DTL-38999 Series III connectors are the most commonly used connectors for incorporation of shielded contacts along with traditional crimp contacts. High performance shielded coaxial, twinax and triax contacts are available to fit various RG and special cables. They eliminate discontinuities or impedance variations due to movement of parts under axial load. Size 8 quadax and differential twinax contacts provide high speed data transfers.



Filter Connectors with Coax Shielded Contacts

Filter Connectors with Flex Termination

Flex circuits are available for MIL-DTL-38999, MIL-DTL-5015 and MIL-DTL-26482 filter connectors. They are offered in flat or sculptured styles and provide flexibility in assembling to printed circuit boards. Through Amphenol's Advanced Circuit Technology division, these strong and rigid, yet highly flexible circuits eliminate the need to purchase and attach individual pins or connectors. Thus they promote system automation, reduce space requirements and lower installation costs. Sculptured® Flexible Circuits have built-in terminations which eliminate the failure associated with crimped or soldered-on contacts, and geometrically fit the tight space requirements within a unit.



Flex Circuitry for Attachment to Printed Circuit Boards



MIL-DTL-38999 with Quadrax Contacts

For more information on these specials, consult Amphenol Aerospace and see our website at www.amphenol-aerospace.com.

- 38999 III
- SJT I II III
- 26482 Matrix 2
- 83723 III Pyle
- Matrix Pyle
- 5015 Crimp Rear Release Matrix
- 26500 Pyle
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