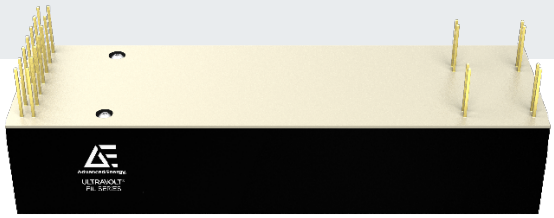
ULTRAVOLT FIL SERIES

PRECISION FILAMENT SUPPLY



The FIL Series is a non-isolated precision filament supply. This line of regulated DC-DC converters addresses the needs of the high precision and high stability power supply user. Designed and built utilizing a state-of-the-art power-conversion topology, these units feature surface-mount technology and encapsulation techniques that provide high reliability and low cost. The FIL Series supply allows users to properly operate the filament to maximize performance and extend its life.

PRODUCT HIGHLIGHTS

- High precision and high stability
- 15 PPM temperature coefficient
- 0 to 5 VDC
- 0 to 3 Amps of current
- Maximum Iout capability down to 0 Volts
- Programmable voltage and current controls
- Indefinite output short-circuit protection
- Buffered output current and voltage monitors
- Excellent linearity and accuracy of control
- Current mode and voltage mode indicator
- Synchronizable

TYPICAL APPLICATIONS

- Precision filaments for use in
  - mass spectrometry
  - electron beams
  - test equipment

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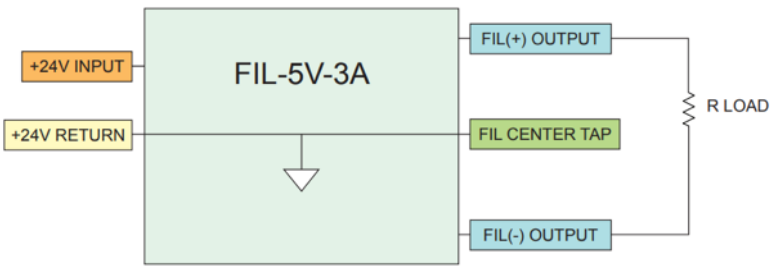
ELECTRICAL SPECIFICATIONS

Parameter	Conditions	Models	Units
Input		**All Types**	
Operating Range	All Conditions	+24 ±10	VDC
Current	Full Load Output	900 mA Typical	mA
Output		**All Types**	
Voltage Range	Nominal Input	0 to 5	VDC
DC Current Range	Nominal Input	0 to 3	Amps
Voltage Range	Derated	0 to 5.7	VDC
DC Current Range	Derated	0 to 3.3	Amps
Voltage Monitor Scaling	Full Load	10	VDC
Current Monitor Scaling	Full Load	10	VDC
Programming & Controls		**All Types**	
Input Impedance	Nominal Input	+ Output Models 10 MΩ to GND	MΩ
Adjust Resistance	Typical Potentiometer Values	10 K to 100 K (Pot across Vref. and Signal GND, Wiper to Adjust)	Ω
Adjust Voltage	Referenced to signal ground	0 to +10 VDC	VDC
Accuracy	In current control	±0.1%	Amps
Offset	Voltage control	0.04%	VDC
Offset	Current control	0.001%	Amps
Output Voltage	T=+25°C, Initial Value	+10.0V ±0.05%	VDC
Enable/Disable		0 to +0.5 Disable, +2.4 to 10 Enable (Default = Enable)	VDC
Environmental		**All Types**	
Operating	Full Load, Max Eout, Case Temp.	+10 to +45°C	
Coefficient	Over the Specified Temperature	≤15 ppm/°C	
Thermal Shock	Mil-Std 810, Method 503-4, Proc. II	-40 to +65°C	
Storage	Non-Operating, Case Temp.	-55 to +85°C	
Altitude	All Conditions, Standard Package	Sea Level through Vacuum	
Shock	Mil-Std-810, Method 516.5, Proc. IV	20 Gs	
Vibration	Mil-Std-810, Method 514.5, Fig.514.5C-3	10 Gs	

MECHANICAL SPECIFICATIONS

Input/Output Wiring Diagram

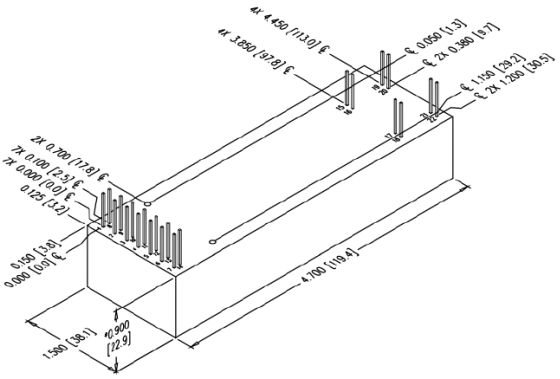
The filament power supply load should be connected between the FIL(+) output and the FIL(-) output, load current should not flow through the center tap, which is common with the (+)24V return. The FIL(-) or FIL(+) outputs should not be grounded.



MECHANICAL SPECIFICATIONS (CONTINUED)

Construction	
Case	Epoxy-filled DAP box cer tified to ASTM-D-5948
Volume	6.35 in^3 (104 cc)
Weight	6.75 oz (191 g)
Tolerance	Overall ±0.050" (1.27 mm)
	Pin to Pin ±0.015" (0.38 mm)
	Mounting hole locations ±0.025 " (0.64 mm)

*-M equipped units are an additional 0.030" (0.76) in height. Contact Advanced Energy for drawings of models equipped with -E or -H options.



INTERFACE

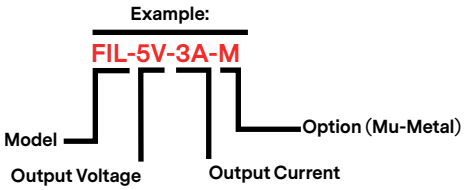
Connections	
Pin	**Function**
1 and 8	Input-Power Ground
2 and 9	Positive Power Input
3	Iout Monitor
4	Enable/Disable
5	Signal Ground
6	Voltage Programming
7	+10 V Reference Output
10	Sync In

Connections	
Pin	**Function**
11	Imode Indicator
12	Vmode Indicator
13	Current Programming
14, 17 and 18	Vout Monitor
15 and 16	Fil Output (-)
19 and 20	Fil Output (+)
21 and 22	Center Tap

All grounds joined internally.

ORDERING INFORMATION

Type	0 to 5 VDC Output	FIL-5V
Current	Current Output (0 to 3 A)	-3A
Case	'Eared' Chassis Mounting Plate	-E
Heat Sink	.400" High (sized to fit case)	-H
Shield	Six-sided Mu-Metal Shield	-M



ABOUT ADVANCED ENERGY

Since 1981, Advanced Energy (AE) — and its UltraVolt® family of products — has perfected how power performs for its customers. For both end users and OEMs, AE's comprehensive portfolio of standard and custom high-voltage components precisely match system specifications to deliver unparalleled energy, quality, and performance. Through close customer collaboration, design expertise, application insight, and world-class support, AE creates successful partnerships and enables customers to push the boundaries of innovation and stay ahead of evolving market needs.

PRECISION | POWER | PERFORMANCE



CAUTION:
High Voltage

Read and understand all documentation before you install, operate, or maintain Advanced Energy high voltage power supplies. Follow all safety instructions and precautions to protect against property damage and serious or possibly fatal bodily injury. Never defeat safety interlocks or grounds.

Advanced Energy

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RoHS

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