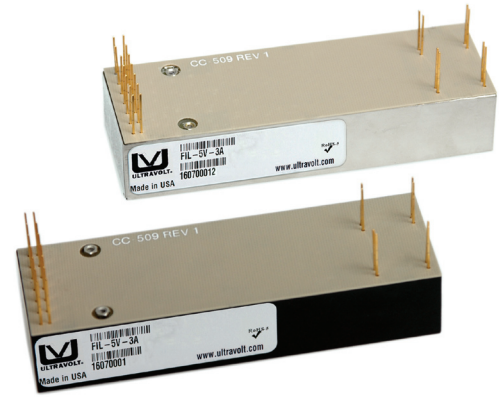


PRELIMINARY DATA SHEET

- High precision and high stability
- 0 to 5VDC
- 0 to 3 Amps of current
- Maximum Iout capability down to 0 Volts
- Indefinite output short-circuit protection
- Buffered output current & voltage monitors
- Excellent linearity & accuracy of control



GENERAL INFORMATION:

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.

DESIGN METHODOLOGY:

The “FIL” converters utilize a dual-ended forward converter topology with a nominal switching frequency of <math><100\text{kHz}</math>. A precision reference is provided so the remote control can program the power supply for a specific current or voltage. A constant-frequency PWM regulation system controls the MOSFET push-pull power stage.

INPUT AND OUTPUT RANGE:

The “FIL” Series is designed for full power operation at +24VDC $\pm 10\%$. Output voltage is adjustable from 0 to 5VDC. As the output voltage is reduced towards 0, the maximum current capability remains unchanged.

OUTPUT VOLTAGE AND CURRENT MONITORS:

The “FIL” Series features a voltage monitor on pin 14, referenced to Signal Ground pin 5. The scale factor is 10V = 5.0V out.

The “FIL” Series also features an output current monitor. Current can be monitored by reading the voltage appearing between Output Monitor pin 3 and Signal Ground pin 5. Accuracy for I_{mon} is 0.1% with a temperature coefficient of 15 ppm in current mode.

REMOTE CONTROL:

The “FIL” Series is remotely programmed with 0 to +10.0 VDC to produce an output voltage or current. Input may be from a control voltage, DAC, variable or fixed resistor.

STANDBY MODE:

The “FIL” converters also have an enable function. When the enable is TTL 0 ($<+0.7\text{V}$ $I_{\text{sink}}=1\text{mA}$), the converter is in a standby mode and input current is reduced to $<30\text{mA}$. All functions other than the internal reference are shut down. If the enable pin is left unconnected or TTL 1. The open-circuit output voltage from the Enable pin is $<+5\text{VDC}$. In the inhibit/disable mode, 1 mA will have to be sunk for proper shutdown.

MECHANICAL:

“FIL” Series converters are in PCB-mountable plastic cases requiring a footprint of 7.05 in² and only 6.35 in³ of volume. Mounting plates and brackets are available for chassis mounting. See Application Note 6 for thermal considerations and mounting configurations. All models are available with optional six-sided wrap-around Mu-Metal Shielding.

ENVIRONMENTAL:

The “FIL” Series provides full power operation at case temperatures from +10 to +45°C. All units receive a 24-hour burn-in prior to final testing. Extended temperature range is available along with other enhanced capabilities. Please contact the factory.



1800 OCEAN AVE., FRNT
RONKONKOMA, NY 11779

TEL 800-9HV-POWER
TEL 631-471-4444
FAX 631-471-4696

www.ultravolt.com

“FIL” SERIES

PRECISION FILAMENT SUPPLY

Typical Characteristics:

Parameter	Conditions	Models	Units
Input:		All Types	
Operating Range	All Conditions	+24V ± 10%	VDC
Current	Full Load Output	< 1	Amps
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 5.35	VDC
DC Current Range	Derated	0 to 3.4	Amps
Remote Programming:		All Types	
Input Impedance	Nominal Input	Output Models 10MΩ to GND	MΩ
Adjust Resistance	Typical Potentiometer Values	10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)	Ω
Adjust Voltage	Referenced to signal ground	0 to +10 VDC	VDC
Accuracy	Current Control	± 0.1%	Amps
Linearity	Current Control	≤ 0.01%	Amps
Offset	Voltage Control	0.04%	VDC
Offset	Current Control	0.01%	Amps
Reference:		All Types	
Output Voltage	T=+25°C, Initial Value	+10.0V ± 0.05%	VDC
Enable:		All Types	
Power Supply On	Floated, or voltage ≥ TTL High	+2.4 to 6	VDC
Power Supply Off	Grounded, or voltage ≤ TTL Low	0 to + 0.7 ± 0.2	VDC
Temperature:		All Types	
Operating	Full Load, Max Eout, Case Temp.	+10 to +45	°C
Storage	Non-Operating, Case Temp.	-55 to +85	°C
Coefficient	Over the Specified Temperature	≤ 15	PPM/°C
Thermal Shock	Mil-Std-810, Method 503-4, Proc. II	-40 to +65	°C
Altitude:		All Types	
Operating	Standard Package	Sea Level through Vacuum	
Non-operating	Standard Package	Sea Level through Vacuum	
Shock & Vibration:		All Types	
Shock	Mil-Std-810, Method 516.5, Proc. IV	20	G's
Vibration	Mil-Std-810, Method 514.5, Fig. 514.5C-3	10	G's
Packaging:		All Types	
Material	Outer construction	Plastic (DAP) Mil-M-14F SDG-F	
Length	Not including pins or mounting pts	4.70 ± 0.050 (119.4)	In (mm)
Width	Not including pins or mounting pts	1.50 ± 0.050 (38.1)	In (mm)
Height	Not including pins or mounting pts	0.90 ± 0.050 (22.9)	In (mm)
Volume	Not including pins or mounting pts	6.35 (104)	In ³ (cc)
Weight	Overall	6.75 (191)	Oz (g)

Specifications subject to change without notice



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Typical Performance Characteristics:

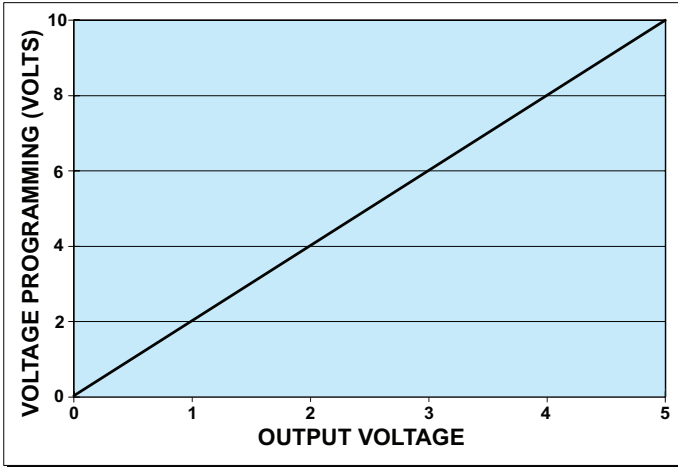


Fig. A
Voltage

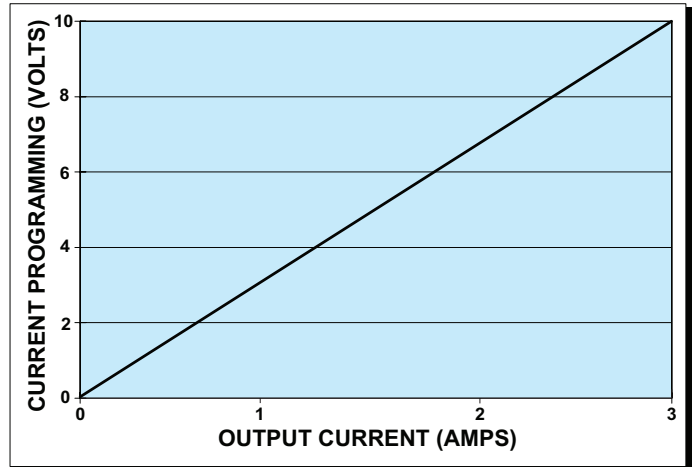
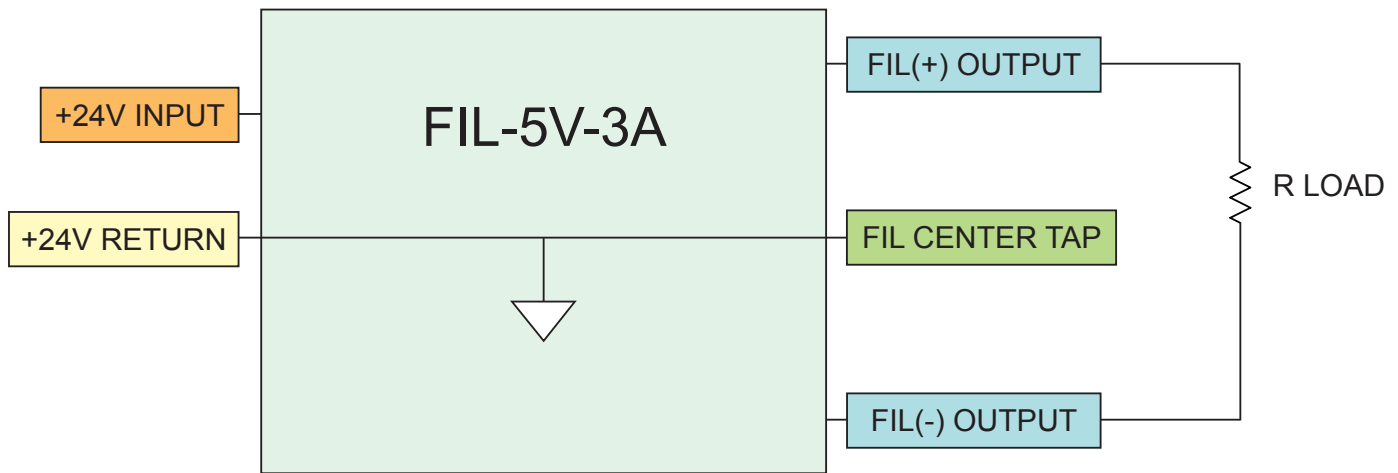


Fig. B
Current

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.



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"FIL" SERIES

PRECISION FILAMENT SUPPLY

PLASTIC CASE

CONSTRUCTION:

Epoxy-filled DAP box
certified to ASTM-D-5948

TOLERANCE:

Overall $\pm 0.050''$ (1.27)
Pin to Pin $\pm 0.015''$ (0.38)
Mounting hole location $\pm 0.025''$ (0.64)

MOUNTING:

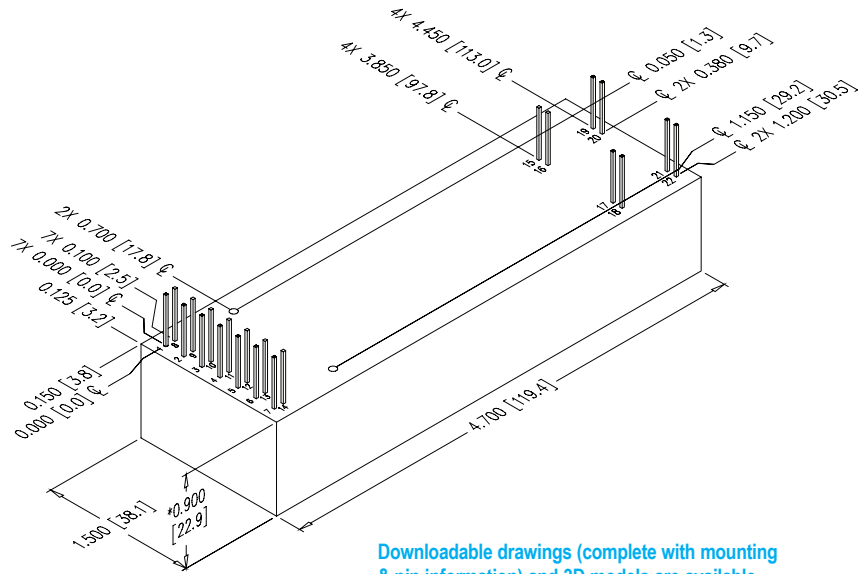
2-56 x 0.30 (7.62) 2 places
threaded post may not be flush to cover

PINS:

Gold-plated 0.025'' (0.64) sq.
The center of the pins and mounting holes is located from the center of pin 1.
Pins 1 thru 14 spacing 0.100 (2.54) on center
Pins 15, 16 and 17, 18 and 19, 20 and 21, 22 spacing 0.100 (2.54) on center

NOTE:

-M equipped units are an additional 0.030'' (0.76) in height.
Contact UV Customer Service for drawings of models equipped with -E or -H options.

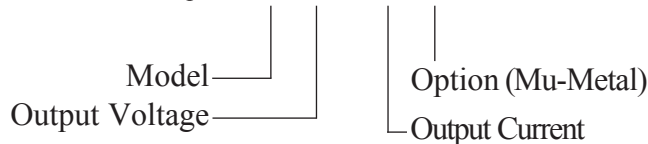


Downloadable drawings (complete with mounting & pin information) and 3D models are available online at: www.ultravolt.com/drawings.htm.

Ordering Information

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

Example: **FIL-5V-3A-M**



Connections

1 & 8 - Input-Power Ground
2 & 9 - Positive Power Input
3 - Iout Monitor
4 - Enable/Disable
5 - Signal Ground
6 - Voltage Programming
7 - +10.0V Reference Output
10 - Sync In
11 - Imode Indicator
12 - Vmode Indicator
13 - Current Programming
14 - Vout Monitor
15 & 16 - Fil Output (-)
17 & 18 - Vout Monitor
19 & 20 - Fil Output (+)
21 & 22 - Center Tap
All grounds joined internally.



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