

10W

DC-HVDC
converter 

The F Series is a broad line of robust, field-proven DC to HVDC converters which deliver 10 Watts continuous output power. Outputs range from 100V to 12kV.

The input and output are galvanically isolated so a unit can be used to deliver a positive or negative high voltage output. The output voltage is proportional to input voltage with a low 0.7V typical turn-on voltage.

The F Series employs a quasi-sinewave oscillator, a fully enclosed transformer, input and output filtering, and a 5-sided metal enclosure. As a result, these modules exhibit very low EMI/RFI, noise and ripple.

A dual output option has a center-tap pin which, when grounded provides both positive and negative outputs from one compact module.



Features

- ▶ Output voltages up to 12kVDC
- ▶ Isolated output voltage proportional to input voltage
- ▶ Positive or negative, reversible polarity
- ▶ General purpose, cost effective
- ▶ Low turn on voltage: <0.7VDC
- ▶ Input voltage 0 to 12VDC, or 0 to 15VDC
- ▶ Very low I/O leakage current
- ▶ Low noise, quasi-sinewave resonant oscillator
- ▶ MTBF>810khrs
- ▶ 3 year warranty

Applications



- ▶ Mass Spectrometry
- ▶ Electrostatic Chucks
- ▶ Electrophoresis
- ▶ Capacitor Charging
- ▶ Particle Counter
- ▶ Isolation Testing
- ▶ Medical Laser Treatment

Dimensions

71.1 x 43.2 x 21.6mm (2.80" x 1.70" x 0.85")

Documentation

For further information click the link or scan the code

→ xppower.com



Models & ratings

Model Number	Output Voltage	Output Current ⁽¹⁾	Input Voltage	Ripple
F02	0 to 200VDC	50mA	0 to 12VDC	<1.0%
F02CT	0 ±100VDC	50mA	0 to 12VDC	<1.0%
F02RH	0 to 200VDC	50mA	0 to 12VDC	<1.0%

Cont. on page 2

Notes:

1. All orderable part numbers are listed above.
2. CT indicates dual output, center tap.
3. H suffix indicates drilled mounting holes for F01 to F60.
4. R suffix is used as a RoHS indicator for legacy models.
5. Maximum rated output current is available at maximum rated output voltage and derates linearly as input voltage is decreased.
6. Output voltage is load dependent. Under light or no-load conditions, reduce the input voltage so maximum rated output voltage is not exceeded.
7. Specifications after 1 hour warm-up, full load, at 25°C unless otherwise indicated.
8. Proper thermal management techniques are required to maintain safe case temperature at maximum power output.
9. Ripple specification for center-tapped units applies to the voltage between the positive and negative output terminals.

Models & ratings

Model Number	Output Voltage	Output Current ⁽¹⁾	Input Voltage	Ripple
F03	0 to 300VDC	33.3mA	0 to 12VDC	<1.0%
F03CT	0 to $\pm$ 150VDC	33.3mA	0 to 12VDC	<1.0%
F03H	0 to 300VDC	33.3mA	0 to 12VDC	<1.0%
F04	0 to 400VDC	25mA	0 to 12VDC	<1.0%
F04CT	0 to $\pm$ 200VDC	25mA	0 to 12VDC	<1.0%
F04CTH	0 to $\pm$ 200VDC	25mA	0 to 12VDC	<1.0%
F04H	0 to 400VDC	25mA	0 to 12VDC	<1.0%
F05	0 to 500VDC	20mA	0 to 12VDC	<0.1%
F05H	0 to 500VDC	20mA	0 to 12VDC	<0.1%
F06	0 to 600VDC	16mA	0 to 12VDC	<0.1%
F06CT	0 to $\pm$ 300VDC	16mA	0 to 12VDC	<0.1%
F08	0 to 800VDC	12.5mA	0 to 12VDC	<0.1%
F10	0 to 1kVDC	10mA	0 to 12VDC	<0.1%
F10CT	0 to $\pm$ 500VDC	10mA	0 to 12VDC	<0.1%
F12	0 to 1.2kVDC	8.3mA	0 to 12VDC	<0.1%
F15	0 to 1.5kVDC	6.6mA	0 to 12VDC	<0.1%
F15CTH	0 to $\pm$ 750VDC	6.6mA	0 to 12VDC	<0.1%
F15H	0 to 1.5kVDC	6.6mA	0 to 12VDC	<0.1%
F20	0 to 2kVDC	5mA	0 to 12VDC	<1.0%
F30	0 to 3kVDC	3.3mA	0 to 15VDC	<1.0%
F30CT	0 to $\pm$ 1.5kVDC	3.3mA	0 to 15VDC	<1.0%
F40	0 to 4kVDC	2.5mA	0 to 15VDC	<1.0%
F50	0 to 5kVDC	2mA	0 to 15VDC	<1.0%
F50CT	0 to $\pm$ 2.5kVDC	2mA	0 to 15VDC	<1.0%
F60	0 to 6kVDC	1.66mA	0 to 15VDC	<1.0%
F60CT	0 to $\pm$ 3kVDC	1.66mA	0 to 15VDC	<1.0%
F60H	0 to 6kVDC	1.66mA	0 to 15VDC	<1.0%
F80	0 to 8kVDC	1.25mA	0 to 15VDC	<2.5%
F101R	0 to 10kVDC	1mA	0 to 15VDC	<2.5%
F121	0 to 12kVDC	0.83mA	0 to 15VDC	<2.5%
F121CT	0 to $\pm$ 6kVDC	0.83mA	0 to 15VDC	<2.5%

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Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage range	0.7		12, 15	VDC	See models & ratings table
Input current, no load			500	mA	
Input current, full load			1.5	A	

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage			12 000	VDC	See models & ratings table
Output current			100	mA	See models & ratings table
Output voltage tolerance		±5		%	At Max Vout, Full Load
Minimum load	No minimum load required				
Regulation	Unregulated, Output is proportional to Input. See Application Notes				
Short circuit protection	Protected against short circuit conditions indefinitely				
Ripple and noise	0.1		2.5	%	1See Models & Ratings table
Response time			260	msec	0 to Max Vout, Full Load

General

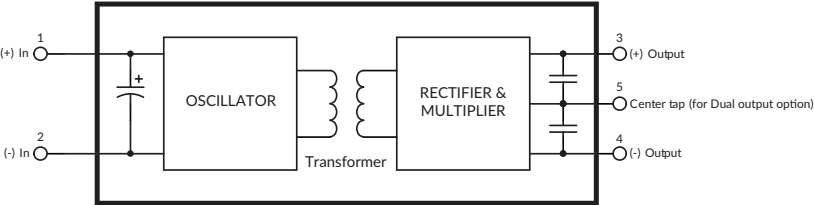
Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Isolation: input to output			3500	V	<±3,500 Bias for Models F01 to F60
Isolation: input to output			500	V	<±500 Bias for Models F70 to F121
Switching frequency	25		125	kHz	Stable frequency over entire output voltage range.
Construction	Case material is black anodized aluminum. UL 94 V-0 rated solid vacuum encapsulation.				
Mean time between failure	810			khrs	Bellcore TR 332

Environmental

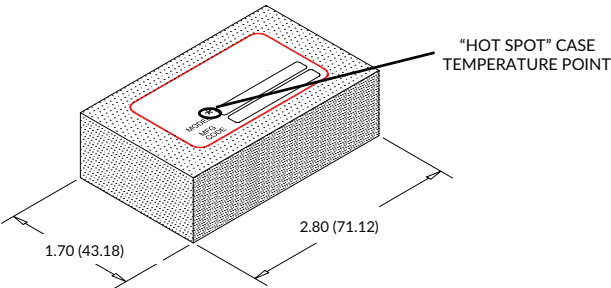
Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-10		+70	°C	Standard operating temperature
Storage temperature	-25		+90	°C	
Cooling	Natural convection				
Humidity			95	%RH	Non-condensing

Application notes

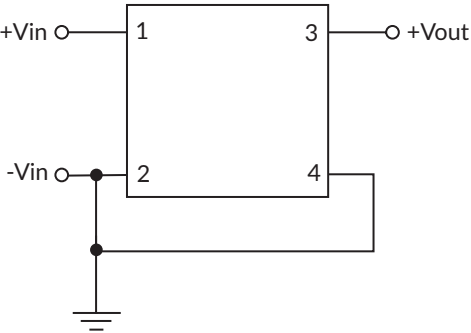
Block diagram



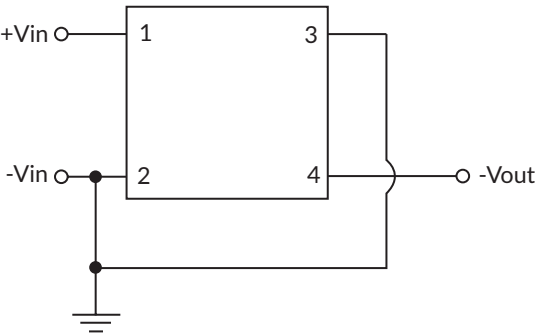
Case temperature hot spot



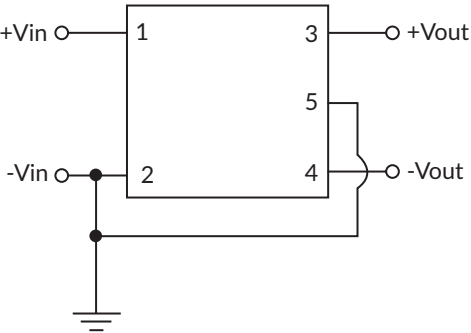
Positive output



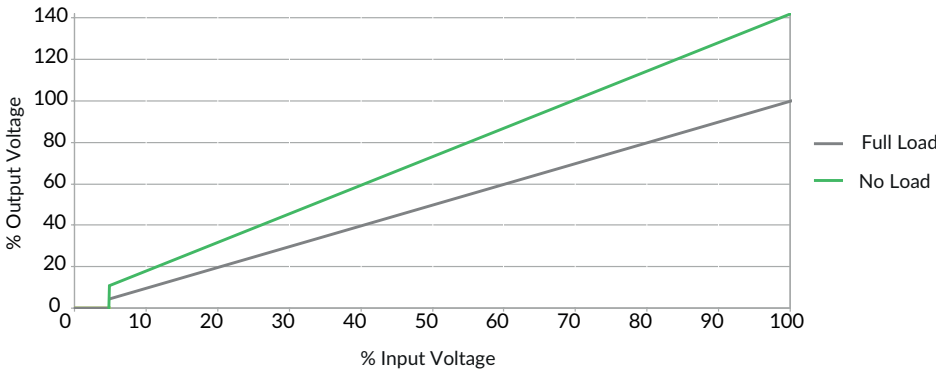
Negative output



Dual output



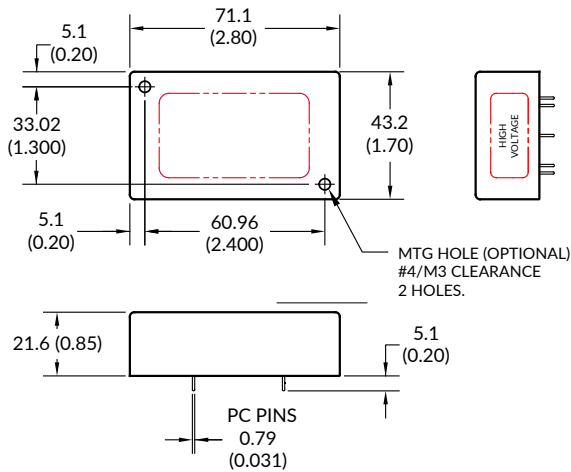
Output voltage vs. Input voltage



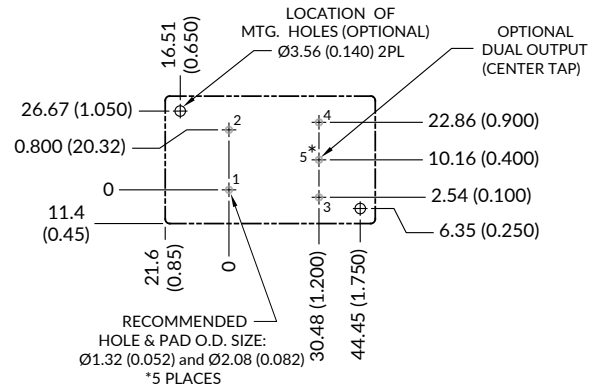
Mechanical details

F01-F60

Top View

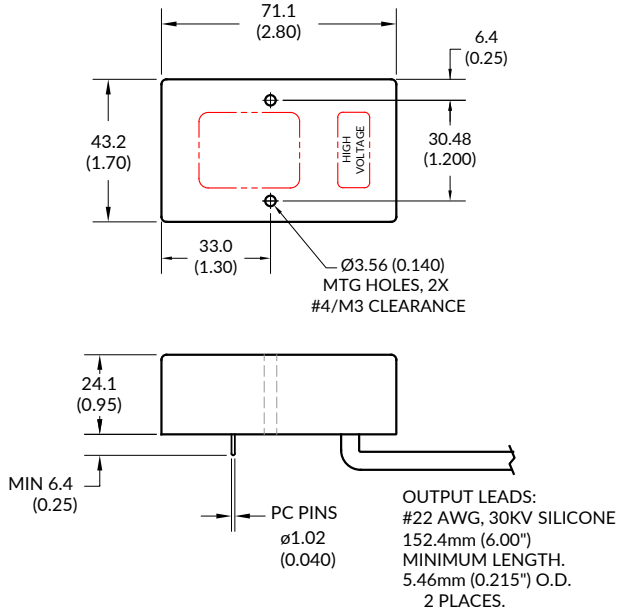


PCB Layout

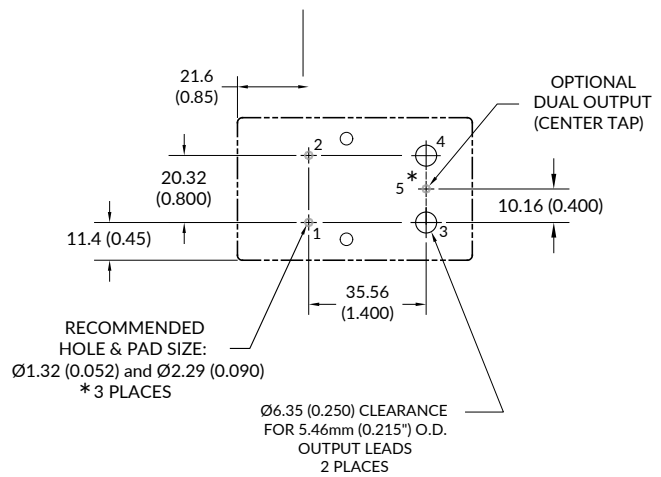


F80-F121

Top View



PCB Layout



Pin	Function
1	(+) Input
2	(-) Input
3	(+) Output
4	(-) Output
5	Dual Output/Center Tap (Optional)

Notes:

1. All dimensions are in mm (inches).
2. Weight: C01-C20: 31g (1.1oz); C25-C40: 36.8g (1.3oz).
3. Tolerance: X.XX±0.51 (0.02).
4. Pin Tolerance: ± 0.127 (0.005).

All grounds internally connected except case. Case ground (Pin 5) must be connected to ground, with no more than 50V between case ground (Pin 5) and circuit ground (Pin 2).