

AMT2012-CE3
Triple MFC Power Supply
(Specification January 2015)

The **AMT2012-CE3** is a triple output power supply with one fixed 500 volt bias supply, and two variable outputs from 0 volts to 2KV. This power supply is specifically designed for Macro Fiber Composites (MFC) applications. Use of the bias supply allows a range of -500 volts to +1500 volts to be applied to the MFC's.

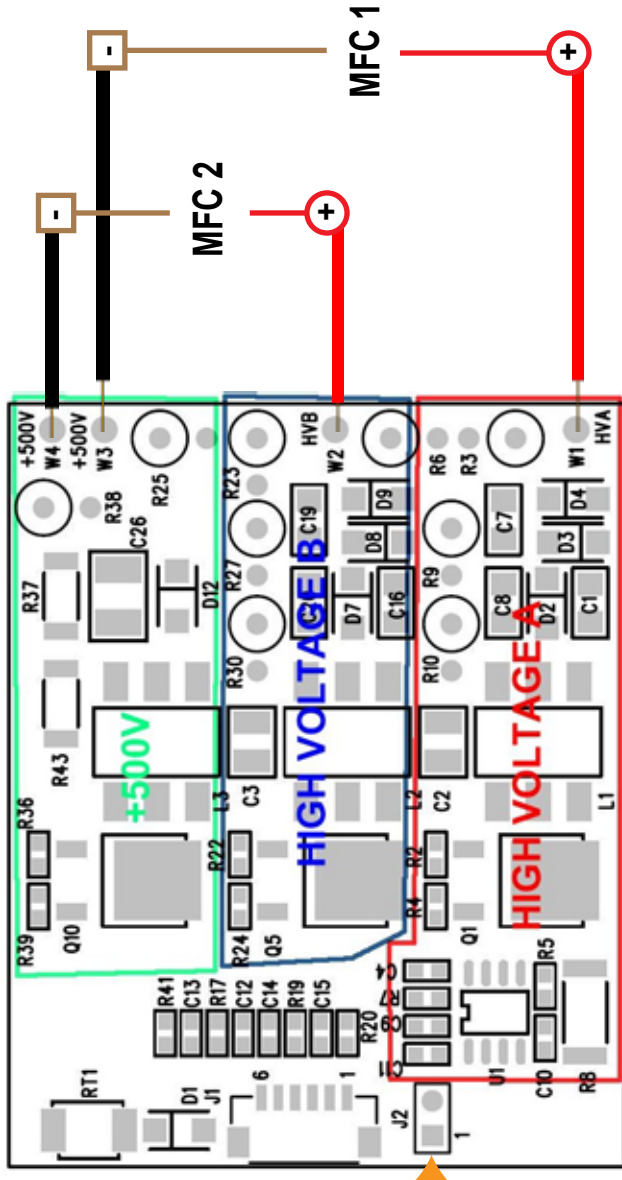
SPECIFICATIONS:

- Three power supplies are included - two variable supplies from 0 volts to 2000 volts, and a fixed 500 volt supply, for bias of the MFC.
- Input voltage: 8 to 15 volts. Reverse polarity protected. Includes a self-resetting (thermal) fuse and output short circuit protection (between the bias supply and the HV outputs).
- Input current (Nominal 12 volt input voltage.): 73 mA typ. (0.88W) with 500 volts on all outputs. 230 mA typ. (2.8W) with maximum output voltage on all outputs.
- Charge time with 5 nf capacitance load is less than 10 mS from 0V to 2000V (-500 to +1500V across the MFC). (This requires about 4 watts of peak input power during charging.)
- An active discharge circuit is employed for removal of the charge on the MFC when the control voltage is altered. The charge removal time is matched to the charging time. (Switched 510 kohm resistor)
- Mechanical dimensions are 2.2" x 1.8". Height will not exceed 0.75 inch for the tallest components. Components are mounted on both sides of the PCB. CAUTION - High voltages are present on both sides of the PCB. Input connections are through a 6 pin Hirose connector. Output connections are through PCB holes for connection with high voltage leads.
- Operating Temperature is -40 to 75C.
- Two modes of operation are available:
 - With the jumper J1 installed: The control pins provide a linear function of input voltage to output voltage for the 2 kV power supplies. The control pins operate over a 0 to 5 volt range for a 0 to 2000 volt output. A dual slope function has been implemented to match the characteristics of the MFC. This means, that with 0 volts on the control pin, there would be -500 volts across the MFC. At 2.5 volts, 0 volts will be placed across the MFC, and at +5 volts, 1500 volts will be placed across the MFC. The slope is a straight line between 0 and 2.5 volts and a different straight line slope from 2.5 to 5 volts.

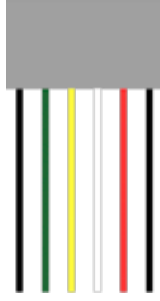
- With the jumper removed: The control pins accept pulse width modulation (PWM) from 1 ms to 2 ms for a 0 to 3 volt(min) pulse. The repetition rate is nominally 50 Hz, but may be between 5 Hz and 300 Hz. Pulses less than 0.1 ms, or greater than 5 ms are ignored. Pulses between 0.1 ms and 1 ms are treated as 1 ms for minimum output voltage (-500 volts). Pulses between 2 ms and 5 ms are treated as 2 ms pulses for maximum output voltage (+1500 volts). 1 ms pulses will produce -500 volts across the MFC. 1.5 ms pulses will produce around 0 volts across the MFC. And 2 ms pulses will produce 1500 volts across the MFC. Slope control is the same as in the analog mode mentioned above.
- An enable line is provided to shut down all power supplies to save power consumption, and for safety. The +500 volt bias supply is always on, except when the enable line is at a logic high, or not connected. 0 volts, or grounding the enable line will produce normal output voltages. Output voltages are referenced to a common ground – i.e. pins 1 and 6 of the Hirose connector.

*****CAUTION: BEWARE OF HIGH VOLTAGES ON BOTH SIDES OF THE PC BOARD WHEN POWER IS APPLIED!*****

Wiring Diagram AMT2012-CE3



Hirose Flat 6pin Connector
Housing: DF13-63-1.25C
Contacts: DF13-2630SCFA



Mode Selection Jumper



With the jumper J1 installed:

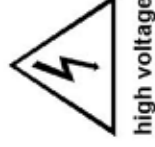
The Control pins 2 (HVA) and 3 (HVB) provide a linear function of 0-5V input voltage to 0-2 kV for the HVA and HVB high voltage outputs



With the jumper removed:

The control pins 2 (HVA) and 3 (HVB) accept pulse width modulation (PWM) from 1 ms to 2 ms for a 0 to 3 volt(min) pulse for a 0-2kV high voltage output on HVA and HVB.

AMT2012



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