

Commercial economy type high temperature/high Voltage power supply modules

Date of issue: Feb 9, 2007 Product model: MP series



1. General description

MP series HT/HV power supply modules incorporating the latest and the most advanced special type elements and devices are produced on our commercial article production line in accordance with commercial article production process and quality control system; before delivery, the product goes through +175°C aging for 1h. The product applies to the case requiring high temperature working environment, lower reliability and very reasonable price. It is a kind of economy type HT/HV power supply modules.

2. Lead wires

Input terminal: red wire – positive terminal of input power supply; black wire - input power supply earth connection; green wire – output voltage control terminal.

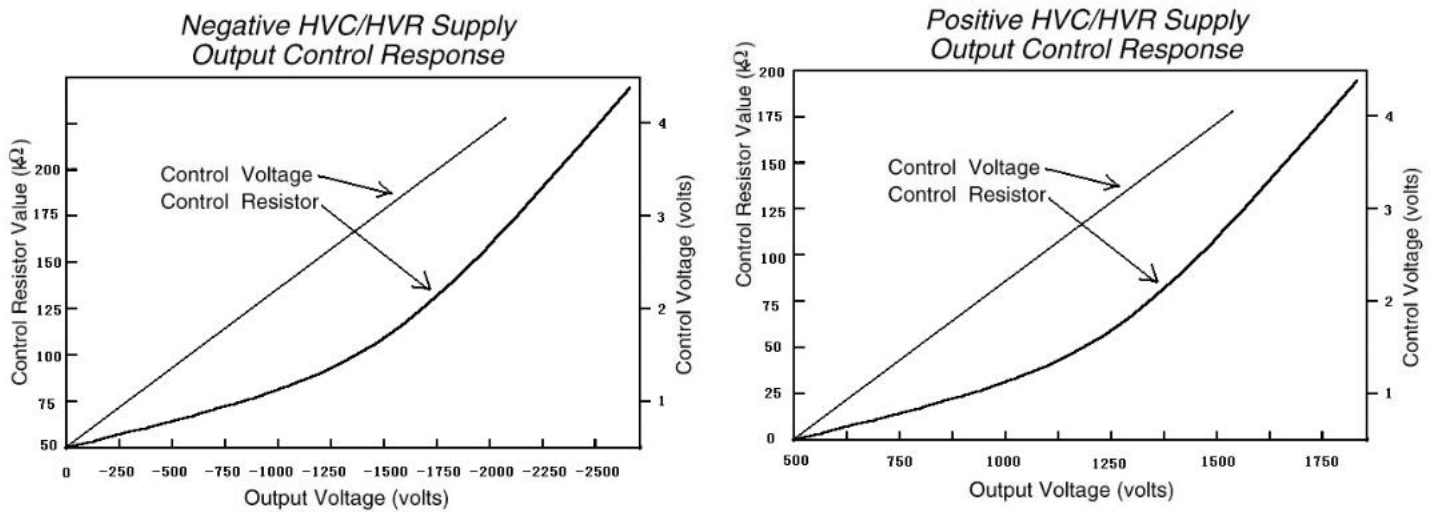
Output terminal: HV terminal – high voltage; GND terminal - earth connection (connecting to input power supply earth connection)

3. Main technical parameters

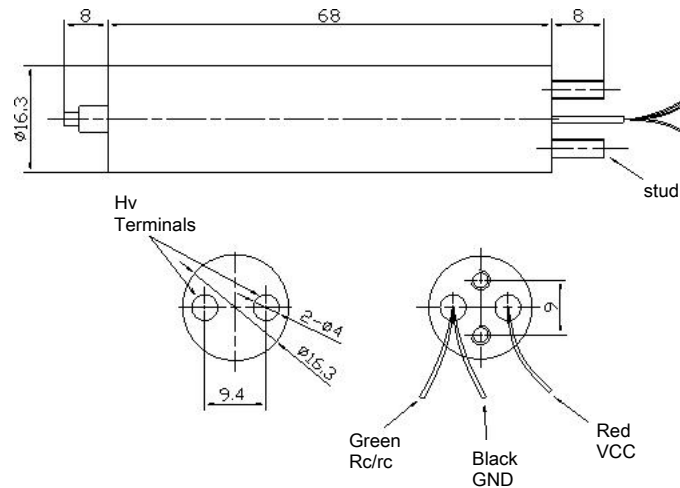
- (1) Working temperature scope: rating -40°C ~ +85°C (excessive rating -55°C ~ +200°C)
- (2) Input voltage: +5V ~ +40V
- (3) Input current: 12mA @ 1600V with 22M load (24V IN)
- (4) Output voltage: 0V ~ ±2400V
- (5) Output current: 0.1 ~ 0.5mA
- (6) Temperature stability: Lower than ±40 PPM/0 C (-55°C ~ +175°C)
- (7) Linear adjustment rate: ±0.2% (10% linear change)
- (8) Load adjustment rate: ±0.1 (50% load change)
50mA @ 2400V with 7M load (24V IN)
- (9) Shock resistance: 10G, 0~300Hz
- (10) Output ripple: 200.0mVp-p, typical 75mVp-p

(with recommended filter 2mVp-p, typical 0.5mVp-p)

(11) Output characteristic:



(12) Mechanical dimension: $\Phi 16.3*68.0\text{MM}$



(13) Storage temperature: $-65^{\circ}\text{C} \sim +150^{\circ}\text{C}$

4. Operating requirement

(1) The module can work reliably for a long time without any heat damage within rated working temperature range. The maximum laboratory time is 200h continuous working. However, after working environmental temperature is higher than rated working temperature, the damage and aging of elements, devices and materials would speed up. The random inspection of total 40 qualified MP series articles indicates: after going through continuous 24h aging under full load and $+175^{\circ}\text{C}$ environmental temperature, total 9 pieces fall into quite failure and the integral indexes of electric performance of other 31 pieces conform to leaving factory indexes. Meanwhile 12 parameters of the elements and devices of the main chip of these pieces are monitored, 5 parameters of 15 chips and 3 parameters of 16 chips exceed leaving factory indexes (after aging), only 3 parameters of the 31 chips do not change

(after aging) and the change amplitude of other parameters exceeds 5% (before and after aging).

(2) If it is required to make the HV output ripple smaller for application, just wire a RC filter using the self-contained resistances and HV capacitances; in such way, the ripple can be less than 1 mVp-p in general. See the attached drawing for the wiring method for the RC filter.

(3) If it is required to control negative HV power supply by voltage, just connect a resistance in series with the green control wire (the resistance magnitude is just the value for the HV output to begin to change from zero volt), here, the HV output just conforms to control drawing curve.

5. Testing notes

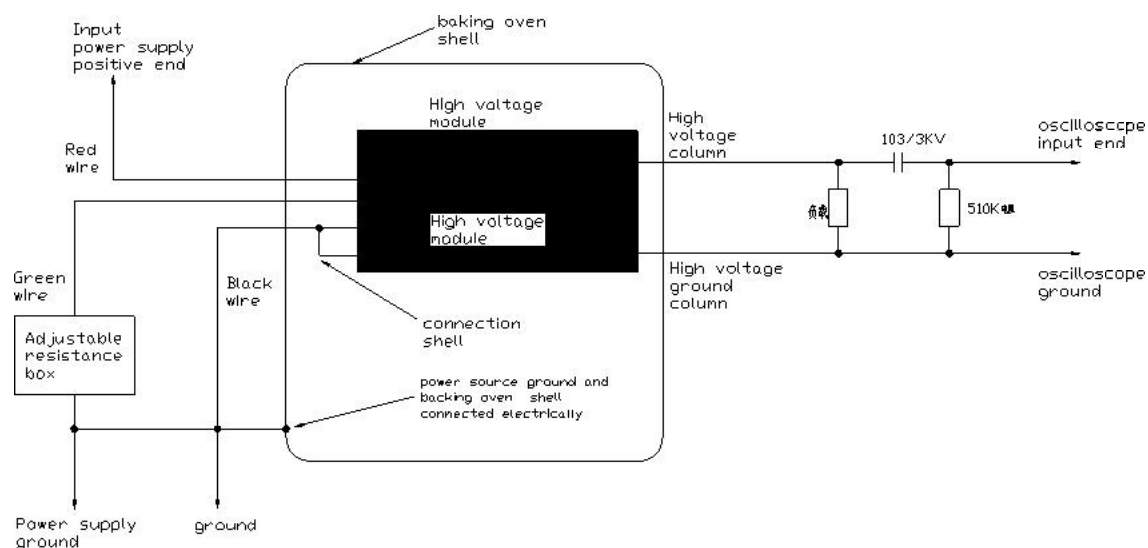
(1) The testing wiring drawing is shown in following figure. The HV lead wire shall adopt the HV and HT resistant wire.

(2) Before testing formally, supply the HV module with 0~+4V DC (Turn on DC power supply), at the moment the module does not start yet and the ripple measured by the oscilloscope is inherent in the testing system itself. After normal measurement, the ripple measured by the oscilloscope minus the ripple inherent in the testing system is just the ripple of the HV module.

(3) The minimum load of the HV module could be 2M, the maximum one could be infinitely great (with HE3 tube). When control resistance value is given, The HV output will be a unique value and no longer change along with the change of input voltage. However, the maximum output value of the HV module is relative to input voltage and load (the greater the input voltage and/or the load resistance, the higher the maximum output value of the HV module would be). If HV output changes along with the change of input voltage, surely because of small input voltage and/or small load resistance, on this occasion, either increase load resistance value or enhance input voltage.

(4) When conducting testing, use HV (3KV) resistant resistance for load resistance.

(5) In course of testing, if both the HV value and HV ripple twinkle along with oven turning on/off, please check oven ground wire and electric leakage.



6. Denomination rules

7. Recommended filter wiring method:

