



Figure 1. Physical Photo of AHVAC5KV1MABT

### FEATURES

- High precision
- High efficiency
- High output voltage stability
- Linear modulation of output voltage
- Low cost
- Overcurrent protection
- Short circuit protection
- Digital display for output voltage

### APPLICATIONS

AHVAC5KV1MABT, is designed for achieving AC-DC conversion from AC voltage to high DC voltage. High voltage power supply is widely used in industrial measurement and control, energy spectrum analysis, and medical equipment such as: X-ray machine, vacuum/plasma processing, semiconductor fabrication equipment, analytical instrumentation, medical diagnostic and therapeutic systems, test equipment, and research and academic applications, etc.

### DESCRIPTION

Connect AC 100~240V input, and then power on. When the potentiometer is in “0”, open the high voltage switch, and then adjust the potentiometer clockwise. Observe the digital display readings, and high voltage power supply

output voltage = the reading  $\times$  10V. When the required voltage is achieved, then rotate the potentiometer lock clockwise to lock the potentiometer. This prevents the output voltage changes caused by rotating the potentiometer by accident. High voltage connection wire is used for high voltage output.

### SAFETY PRECAUTIONS

High voltage power supply must be connected to ground reliably.

Do not touch the high voltage wire, unless the high voltage power supply is powered off, and the load and internal capacitors are fully discharged.

When the high voltage power supply is powered off, wait for another 5 minutes for fully discharging all the capacitors inside the power supply.

Do not operate the power supply in humid environment, and do not connect the operator to ground.

The internal protection circuit is provided in the high voltage power supply, but the high voltage short circuit shall be avoided.

Make sure the circuit is insulated perfectly, especially between the high voltage output and the surroundings so as to avoid electronic shock.



**SPECIFICATIONS**

Table 1. Characteristics.

T<sub>A</sub> = 25°C, unless otherwise noted

| Parameter                            | Symbol                  | Condition                    | Min.              | Typ.  | Max. | Unit/Note       |
|--------------------------------------|-------------------------|------------------------------|-------------------|-------|------|-----------------|
| AC Input Voltage                     | VPS                     |                              | 100               | 110   | 240  | V <sub>AC</sub> |
| Quiescent Input Current              | I <sub>INQ</sub>        | I <sub>OUT</sub> = 0mA       | 22                | 27    | 32   | mA              |
| Full Load Input Current              | I <sub>INFLD</sub>      | I <sub>OUT</sub> = 1.0mA     | 80                | 85    | 90   | mA              |
| Input Voltage Regulation Ratio       | ΔV <sub>OUT</sub> /ΔVPS | VPS = 100V ~ 240V            |                   | 0.5   |      | %               |
| Output Voltage                       | V <sub>OUT</sub>        | I <sub>OUT</sub> = 0 ~ 1.0mA | 0                 |       | 5000 | V               |
| Maximum Output Current               | I <sub>OUTMAX</sub>     | VPS = 100V ~ 240V            |                   |       | 1.0  | mA              |
| Load                                 |                         |                              |                   | 5     |      | MΩ              |
| Potentiometer Adjustment             |                         |                              | 10k potentiometer |       |      |                 |
| Output Modulation Linearity          |                         |                              |                   | <1    |      | %               |
| Load Regulation Rate                 |                         | I <sub>OUT</sub> = 0 ~ 1.0mA |                   | ≤0.05 |      | %               |
| Instantaneous Short Circuit Current  | I <sub>SC</sub>         |                              |                   | <20   |      | mA              |
| Full Load Efficiency                 | η                       |                              |                   | ≥70   |      | %               |
| Temperature Coefficient              | TCV <sub>O</sub>        | -20 ~ 50°C                   |                   | <0.05 |      | %/°C            |
| Time Drift                           | Short Time Drift        |                              |                   | <0.5  |      | %/ min          |
|                                      | Long Time Drift         |                              |                   | <1    |      | %/h             |
| Output Voltage Temperature Stability |                         | -20 ~ 50°C                   |                   | <±1   |      | %               |
| Operating Temperature Range          | T <sub>opr</sub>        |                              | -10               |       | 55   | °C              |
| Storage Temperature Range            | T <sub>stg</sub>        |                              | -25               |       | 65   | °C              |
| External Dimensions                  |                         |                              | 180×120×50        |       |      | mm              |
| Weight                               |                         |                              |                   | 1192  |      | g               |
|                                      |                         |                              |                   | 2.63  |      | lbs             |
|                                      |                         |                              |                   | 42.05 |      | Oz              |



### PANEL INSTRUCTIONS

#### Left Panel

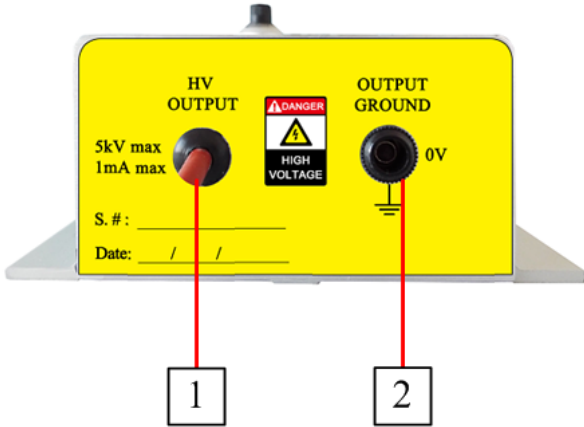


Figure 2. Left Panel

1. HV output: 1m long connection wire outputs 5kV 1MA.
2. Output ground: high voltage power supply output ground terminal.

#### Front Panel

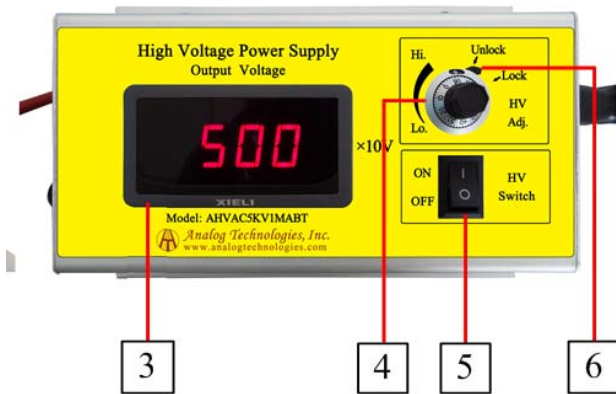


Figure 3. Front Panel

3. Output display: Digital display for output voltage. The actual output voltage = display reading  $\times$  10V.
4. HV adjustment: 10-turn potentiometer for adjusting output voltage. Rotate it clockwise to increase the output voltage, and the potentiometer resistance = the corresponding scale  $\times$  10 $\Omega$ . For example, as Figure 4 shows, when the scale is 10, and the frame above the scale

shows 1 (1k $\Omega$ ), then the resistance =  $10 \times 10\Omega + 1k\Omega = 1.1k\Omega$ , and the like.



Figure 4. Scale and Resistance Calculation

5. High voltage ON/OFF switch
6. Potentiometer lock: when turn the lock clockwise, then the potentiometer is locked, so that the POT will not be rotated for any voltage change.

#### Right Panel

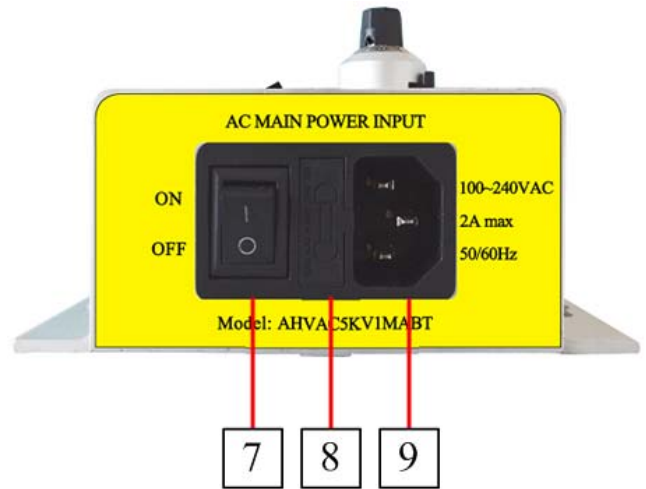


Figure 5. Right Panel

7. Main power ON/OFF switch
8. Fuse: 250V/2A
9. Input connector: AC input 100 ~ 240 50/60Hz connector.



TESTING DATA

High voltage power supply testing data (Test condition: the load is 5 MΩ)

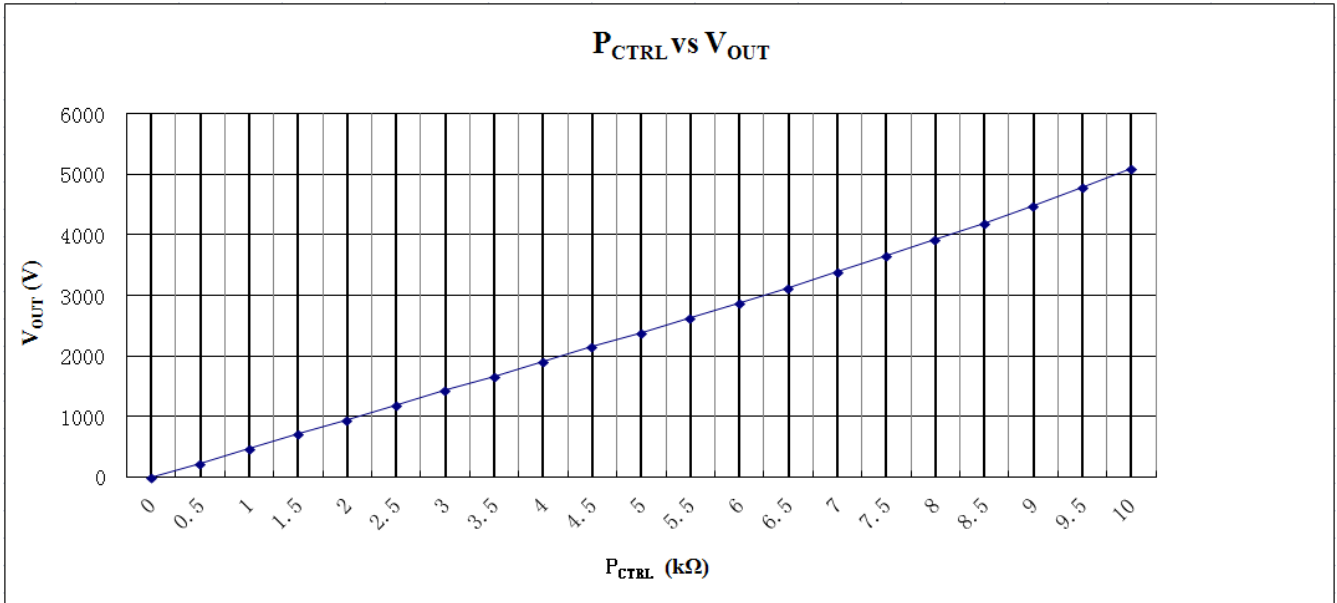


Figure 6. P\_CTRL vs. V\_OUT

Naming instructions

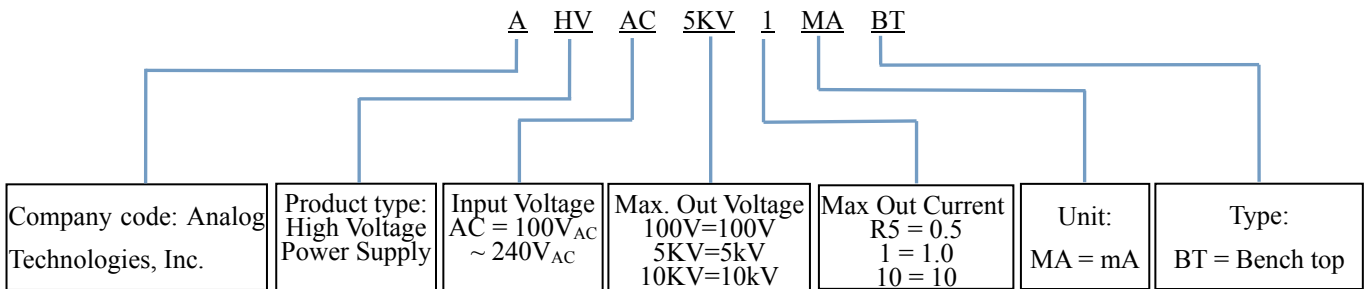


Figure 7. Physical Photo of AHVAC5KV1MABT



**DIMENSIONS**

I. Dimension of the leads.



Figure 8. Leads of AHVAC5KV1MABT

| Leads            | Diameter (mm) | Length (m) |
|------------------|---------------|------------|
| Thick brown lead | 4.5           | 1.0        |
| Power cord       | 6.5           | 1.8        |

II. Dimension of AHVAC5KV1MABT.

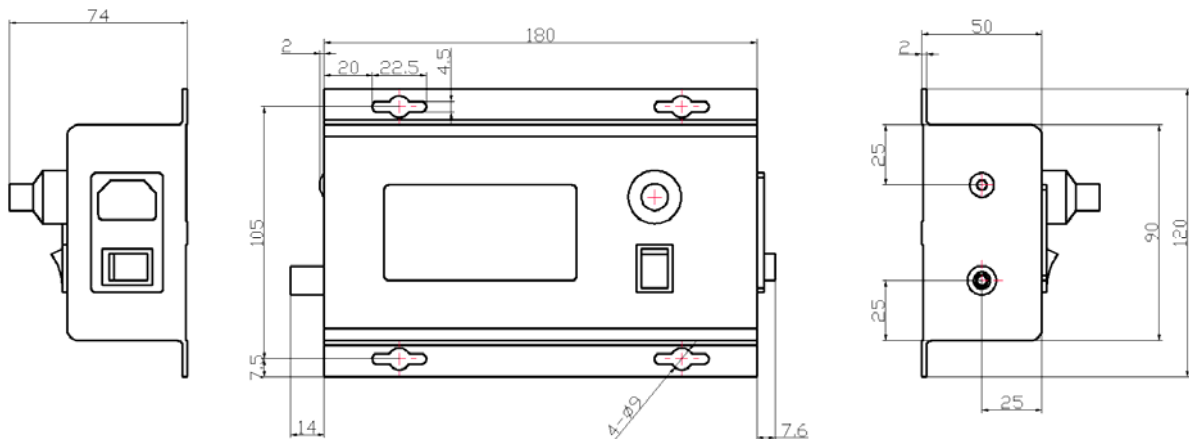


Figure 9. Dimensions for AHVAC5KV1MABT



#### PRICES

| Quantity (pcs) | 1~9   | 10~49 | 50~99 | ≥100  |
|----------------|-------|-------|-------|-------|
| AHVAC5KV1MABT  | \$389 | \$379 | \$369 | \$359 |

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