


Figure 1.1. Back View of A1UHVACP10KV5MARM and Its Accessories




Figure 1.2. Front View of A1UHVACP10KV5MARM




Figure 1.3. Front View and Side View of A1UHVACP10KV5MARM


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Figure 1.4. Back View and Side View of A1UHVACP10KV5MARM

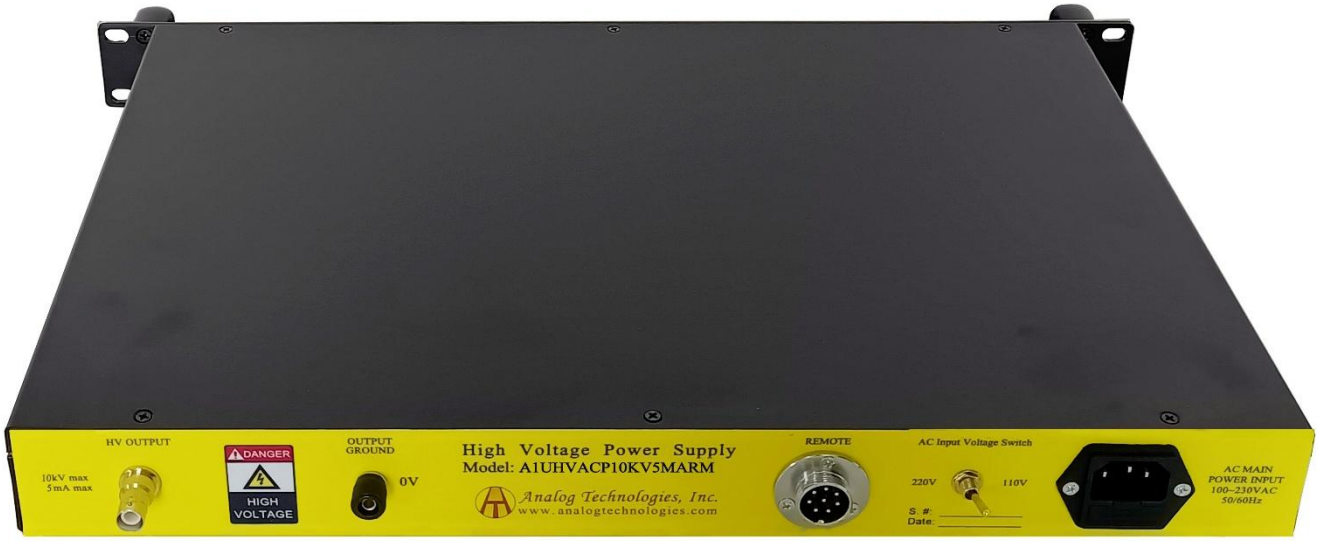



Figure 1.5. Back View of A1UHVACP10KV5MARM


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## FEATURES

High precision

High efficiency

High output voltage stability

Linear modulation of output voltage

Overcurrent protection

Arc and Short circuit protection

Digital display for output voltage and current

OEM Customization Available

## APPLICATIONS

A1UHVACP10KV5MARM, is designed for achieving AC-DC conversion from AC voltage to high DC voltage. This series high voltage power supply is rack-mounted, and is mainly used in ion beam injection, semiconductor technology, electron beam welding, capacitor charging, high power radio frequency transmitter, accelerator, CW laser, high voltage insulation test, lithography technology, X-ray system, electrostatic applications, scientific experiments, industrial applications and other fields.

## DESCRIPTION

The power supply comes with high stability, high reliability, high accuracy of output voltage regulation, and continuously adjustable output voltage; low time drift and temperature drift; it adopts modular design inside the power supply, with protection against overvoltage, overcurrent, and arcing; the control interface uses industrial interface, with industrial design from circuit schematic to the overall structure; high integration and high detection accuracy; it has functions such as start-up soft-start and control; convenient for control, easy operation; the internal transformation of the power supply can be made based on the actual needs of the customer

## 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.


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## SPECIFICATIONS

Table 1. Characteristics. $T_A$ = 25°C, unless otherwise noted

| Parameter | | Symbol | Condition | Min. | Typ. | Max. | Unit/Note |
|---|---|---|---|---|---|---|---|
| AC Input Voltage | | $V_{VPS}$ | | 100 | | 230 | $V_{AC}$ |
| Quiescent Input Current | | $I_{INQQ}$ | $I_{OUT}$ = 0 mA<br>$V_{VPS}$ = 110 $V_{AC}$ | 100 | 150 | 200 | mA |
| | | | $I_{OUT}$ = 0 mA<br>$V_{VPS}$ = 220 $V_{AC}$ | 65 | 75 | 85 | mA |
| Full Load Input Current | | $I_{INFLD}$ | $I_{OUT}$ = 5mA<br>$V_{VPS}$ = 110 $V_{AC}$ | 0.5 | 0.6 | 0.7 | A |
| | | | $I_{OUT}$ = 5 mA<br>$V_{VPS}$ = 220 $V_{AC}$ | 0.2 | 0.3 | 0.4 | A |
| Output Voltage | | $V_{OUT}$ | $I_{OUT}$ = 0 ~ 5mA | 0 | | 10000 | V |
| Maximum Output Current | | $I_{OUTMAX}$ | Full load | | | 5 | mA |
| Ripple | | | Bandwidth = 1MHz | | <0.1 | | $\%V_{P-P}$ |
| Load | | | | | 2 | | MΩ |
| Potentiometer Adjustment | | | | 10k potentiometer or remote control 0 ~ +5V | | | |
| Output Modulation Linearity | | | | | <0.1 | | % |
| Voltage Regulation | Load | | $I_{OUT}$ = 0 ~ 5mA | | <0.1 | | % |
| | Input | | $V_{VPS}$ = 110V ~ 130V | | <±0.1 | | % |
| Current Regulation | Load | | $I_{OUT}$ = 0 ~ 5mA | | <0.1 | | % |
| | Input | | $V_{VPS}$ = 110V ~ 130V | | <0.1 | | % |
| Full Load Efficiency | | η | | | ≥75 | | % |
| Temperature Coefficient | | $TCV_O$ | 0 ~ 50°C | | <0.1 | | %/°C |
| Time Drift | Short Time Drift | | After 30 minute's warming up | | <0.1 | | %/ min |
| | Long Time Drift | | | | <0.5 | | %/h |
| Output Voltage Temperature Stability | | | 0 ~ 50°C | | <±0.1 | | % |
| Operating Temperature Range | | $T_{opr}$ | | 0 | | 50 | °C |
| Storage Temperature Range | | $T_{stg}$ | | -20 | | 85 | °C |
| Humidity | | | | 20%-85% relative humidity non-condensing | | | |
| External Dimensions | | | | 482.5×350×44 | | | mm |
| | | | | 19×13.78×1.73 | | | inch |
| Weight | | | | | 3.6 | | kg |
| | | | | | 7.93 | | lbs |
| | | | | | 126.98 | | Oz |


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## PANEL INSTRUCTIONS

### Front Panel

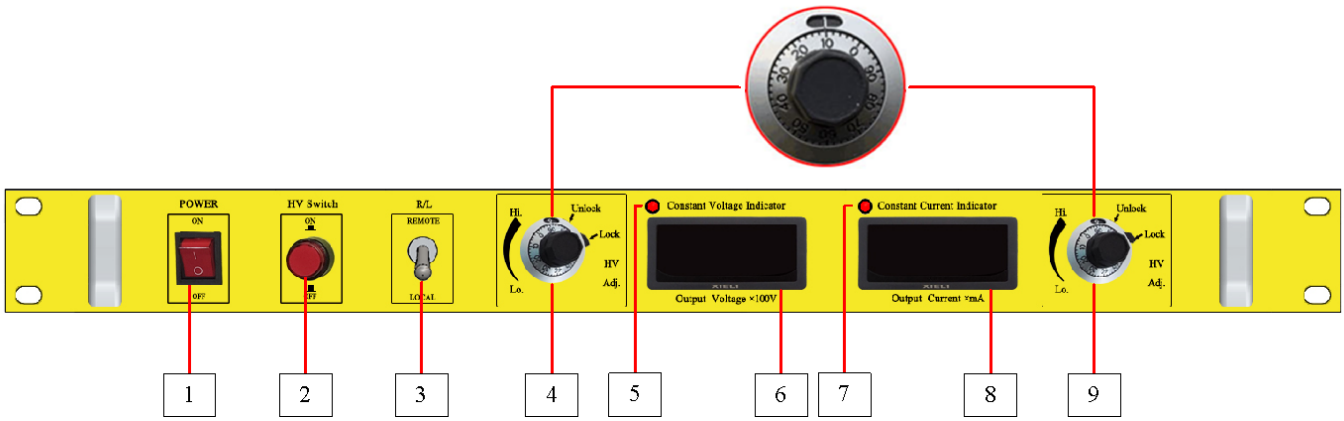



Figure 2. Front Panel

Table 2. Definitions of front panel keys

| No. | Signal | Signal Parameters |
|---|---|---|
| 1 | Power | When the power is turned on, the indicator is on; when the power is turned off, the indicator is off. |
| 2 | HV Switch | High voltage ON， the indicator is on。 |
| 3 | R/L | When the switch is in Remote, it is controlled remotely; when the switch is in Local, it is controlled locally. |
| 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 × 10Ω. For example, when the scale is 10, and the frame above the scale shows 1 (1kΩ), then the resistance =10×10Ω+1kΩ=1.1kΩ, and the like.<br>HV output: 1.5m long connection wire outputs 10kV. |
| 5 | Constant Limit Indicator | When the voltage exceeds the preset voltage, the indicator is on. |
| 6 | Output Voltage Display | Digital display for the output voltage. The actual output voltage = the reading × 100V. |
| 7 | Constant Limit Indicator | When the current exceeds the preset current, the indicator is on. |
| 8 | Output Current Display | Digital display for the output current. The actual output current = the reading × mA. |
| 9 | Current Adjustment | 10-turn potentiometer for adjusting output voltage. Rotate it clockwise to increase the output voltage, and the potentiometer resistance = the corresponding scale × 10Ω. For example, when the scale is 10, and the frame above the scale shows 1 (1kΩ), then the resistance =10×10Ω+1kΩ=1.1kΩ, and the like.<br>HV output: 1.5m long connection wire outputs 5mA. |


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**Back Panel**

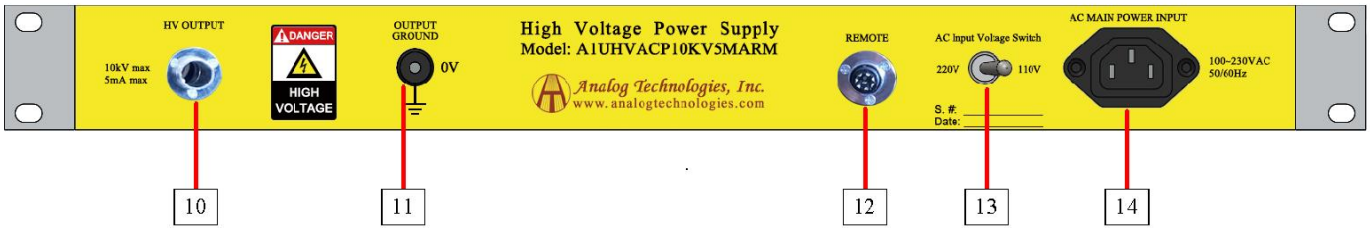



Figure 3. Front Panel

Table 3. Definitions of back panel function keys

| No. | Signal | Signal Parameters |
|---|---|---|
| 10 | HV Output | High voltage output port with removable 1m long connection wire outputting 10kV and 5mA. |
| 11 | Output Ground | High voltage power supply output ground terminal. |
| 12 | Remote | 8-pin connector. Refer to the following Table 4 and Figure 4 for remote control function. |
| 13 | Ac Input Voltage Switch | 110V or 220V Input voltage selector switch |
| 14 | AC Main Power Input | AC input 110V\220V 50/60Hz connector. |

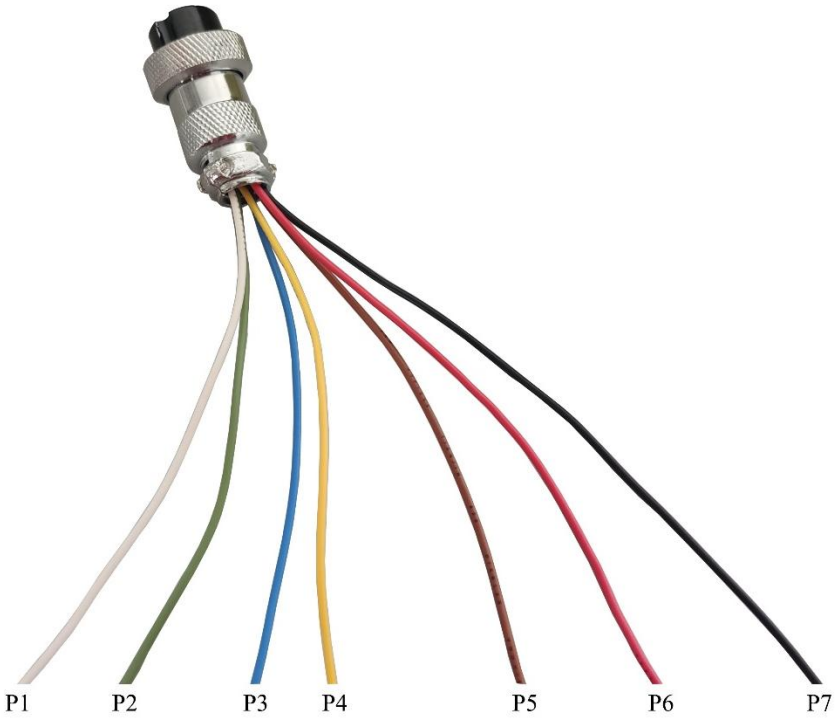



Figure 4. 8-pin Connector


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Table 4. 8-pin connector.

| Pin | Signal | Signal Parameters | Lead the color |
|---|---|---|---|
| P1 | Remote Voltage Program In | 0 to 5V=0 to 100% rated output. | White |
| P2 | Voltage Monitor | 0 to 5V=0 to 100% rated output. | Green |
| P3 | Current Monitor | 0 to 5V=0 to 100% rated output. | Blue |
| P4 | Remote Current Program In | 0 to 5V=0 to 100% rated output. | Yellow |
| P5 | Shutdown | A logic low 0.8V or a 0V on the SDN pin will turn the device off. When SDN is in logic high 1.2V<SDN<5V or left unconnected, the product is working well. | Brown |
| P6 | Voltage Reference | +5VDC Reference | Red |
| P7 | GND | Signal ground | Black |
| P8 | NC | No connection | |

## TESTING DATA

High voltage power supply testing data (Test condition: the load is 2MΩ).

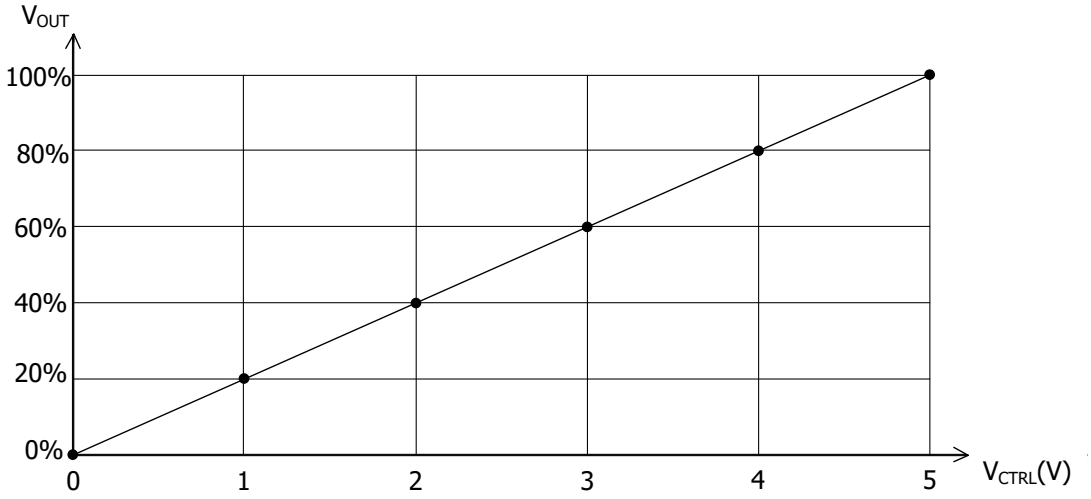



Figure 5. $V_{CTRL}$ vs. $V_{OUT}$

## NAMING INSTRUCTIONS

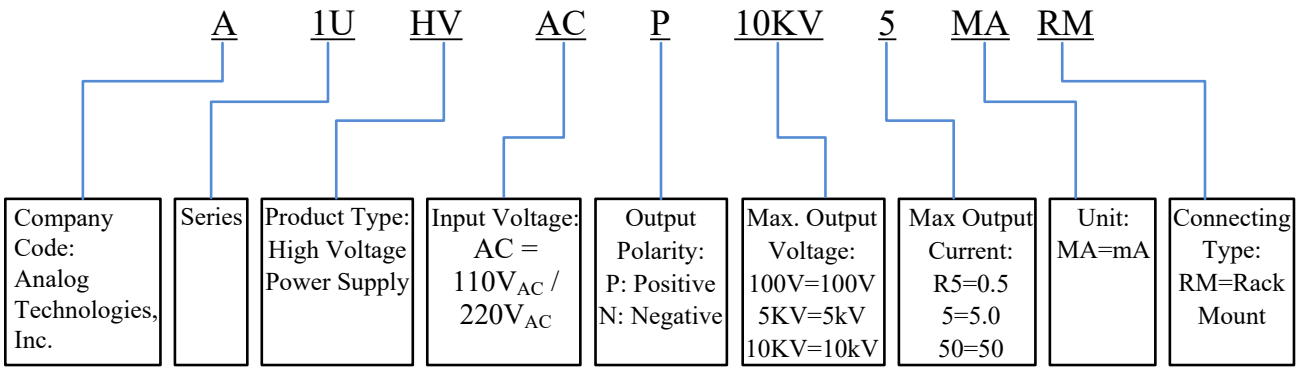



Figure 6. Naming Rules of A1UHVACP10KV5MARM


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## DIMENSIONS

I. Dimension of the leads.

| Leads | Diameter (mm) | Length (m) |
|---|---|---|
| High voltage output wire | 4.5 | 1.5 |
| Power cord | 6.5 | 1.8 |

II. Dimension of A1UHVACP10KV5MARM.

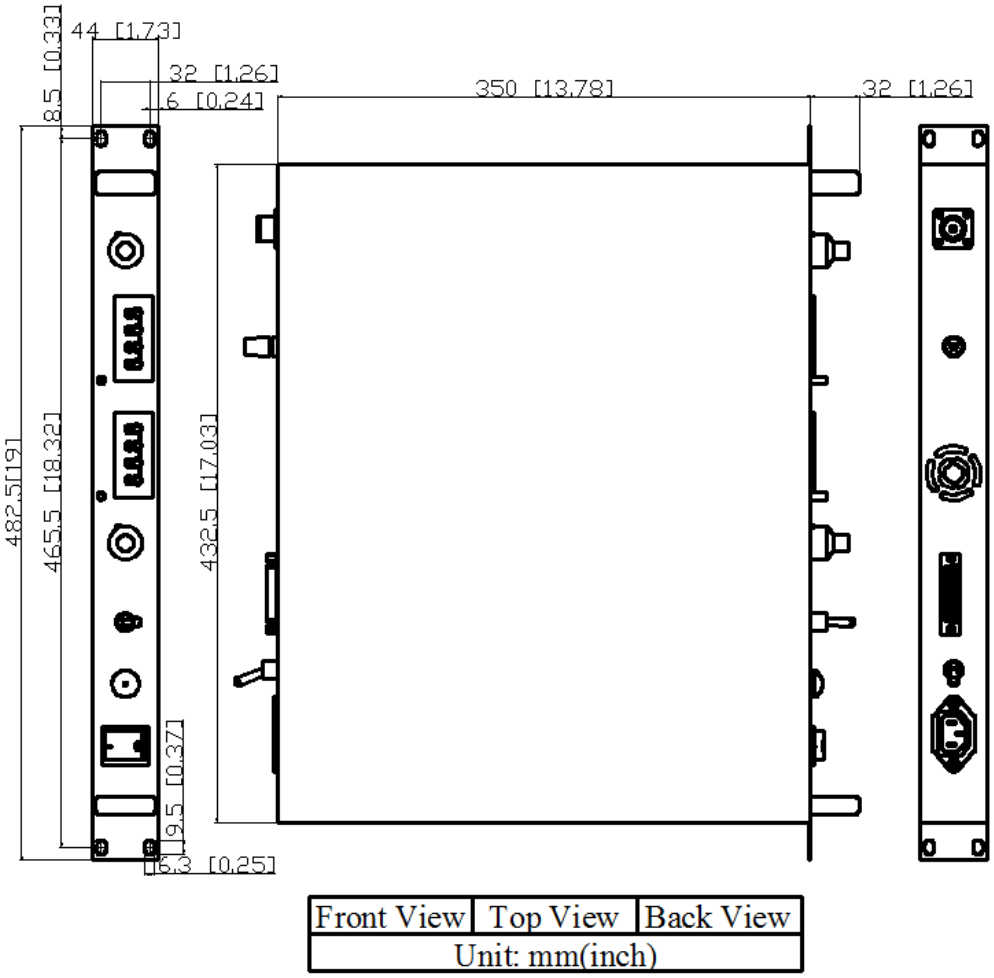



Figure 7. Dimensions for A1UHVACP10KV5MARM


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