

Figure 1.1. Back View of A1UHVACP1KV50MARM and Its Accessories



Figure 1.2. Front View of A1UHVACP1KV50MARM



Figure 1.3. Front View and Side View of A1UHVACP1KV50MARM

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Figure 1.4. Back View and Side View of A1UHVACP1KV50MARM

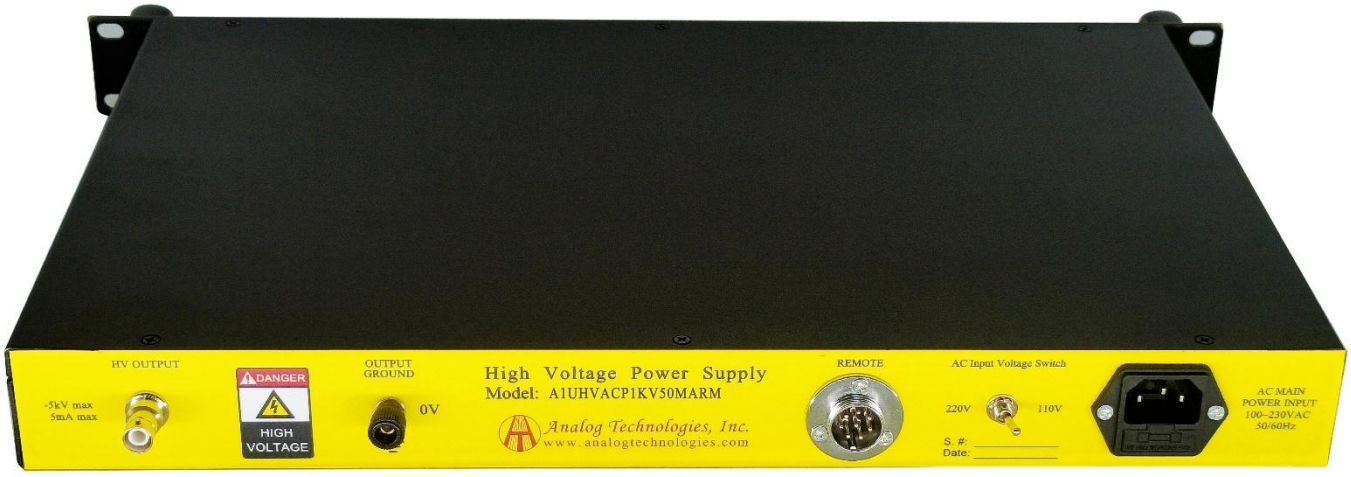

Figure 1.5. Back View of A1UHVACP1KV50MARM

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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

A1UHVACP1KV50MARM, 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} = 0mA V_{VPS} = 110 V_{AC}	100	150	200	mA
			I_{OUT} = 0mA V_{VPS} = 220V_{AC}	65	75	85	mA
Full Load Input Current		I_{INFLD}	I_{OUT} = 50mA V_{VPS} = 110V_{AC}	0.5	0.6	0.7	A
			I_{OUT} = 50mA V_{VPS} = 220V_{AC}	0.2	0.3	0.4	A
Output Voltage		V_{OUT}	I_{OUT} = 0 ~ 50mA	0		1000	V
Maximum Output Current		I_{OUTMAX}	Full load			50	mA
Ripple			Bandwidth = 1MHz		<0.1		$\%V_{P-P}$
Load					20		KΩ
Potentiometer Adjustment				10k potentiometer or remote control 0 ~ +5V			
Output Modulation Linearity					<0.1		%
Voltage Regulation	Load		I_{OUT} = 0 ~ 50mA		<0.1		%
	Input		V_{VPS} = 110V ~ 130V		<±0.1		%
Current Regulation	Load		I_{OUT} = 0 ~ 50mA		<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

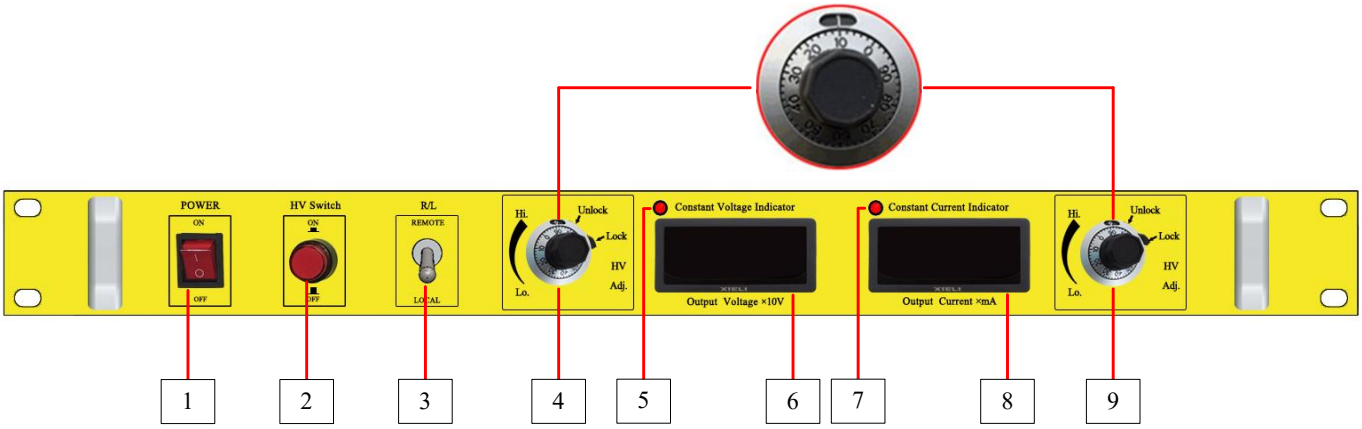

Figure 2. Front Panel

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. HV output: 1.5m long connection wire outputs 1kV.
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 × 10V.
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. HV output: 1.5m long connection wire outputs 50mA.

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Back Panel

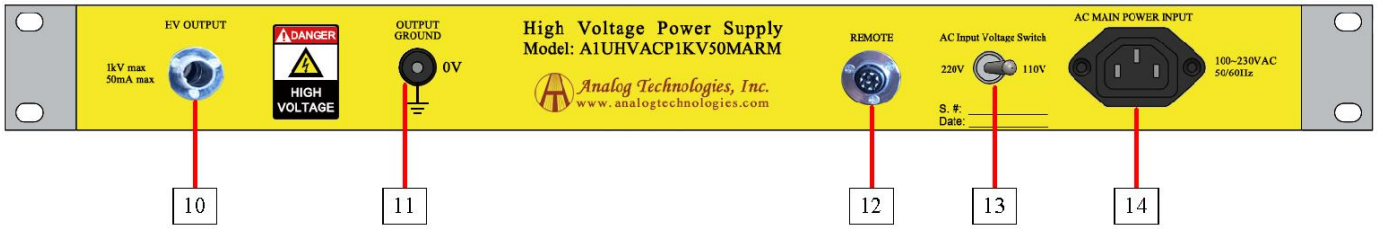

Figure 3. Front Panel

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 1kV and 50mA.
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.

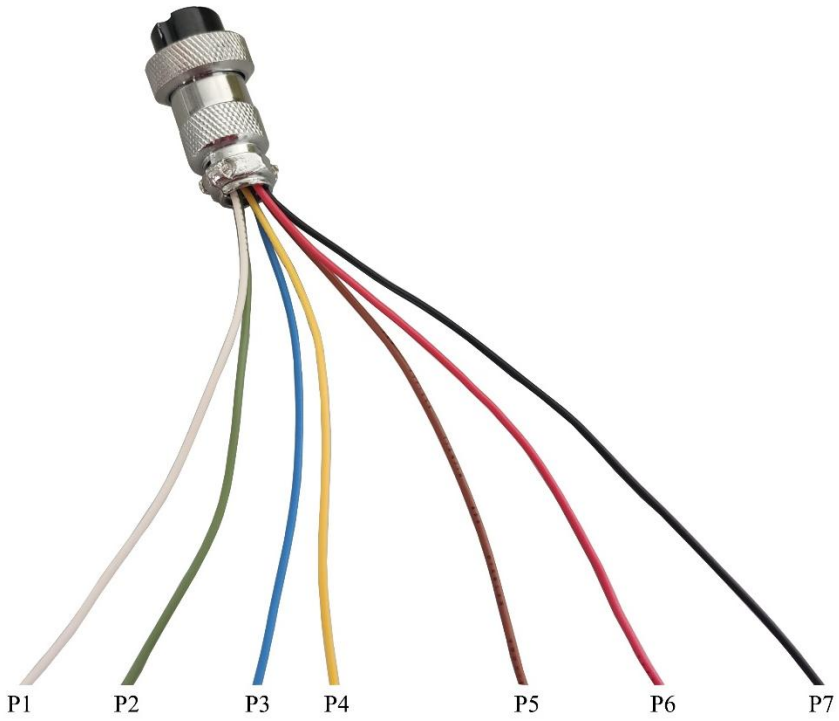

Figure 4. 8-pin Connector

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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 20KΩ).

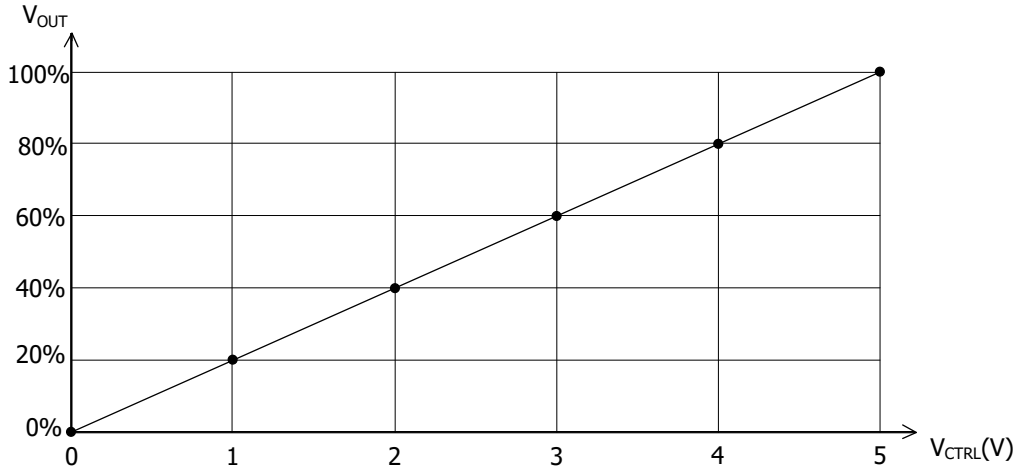

Figure 5. V_{CTRL} vs. V_{OUT}

NAMING INSTRUCTIONS

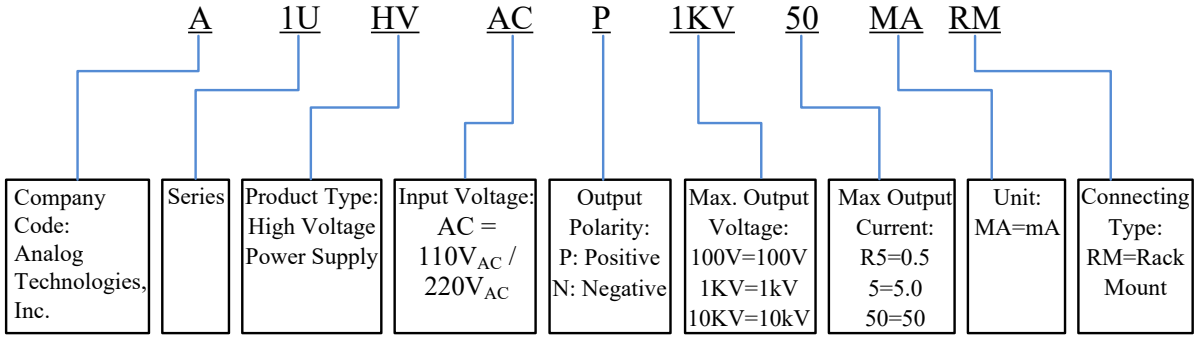

Figure 6. Naming Rules of A1UHVACP1KV50MARM

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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 A1UHVACP1KV50MARM.

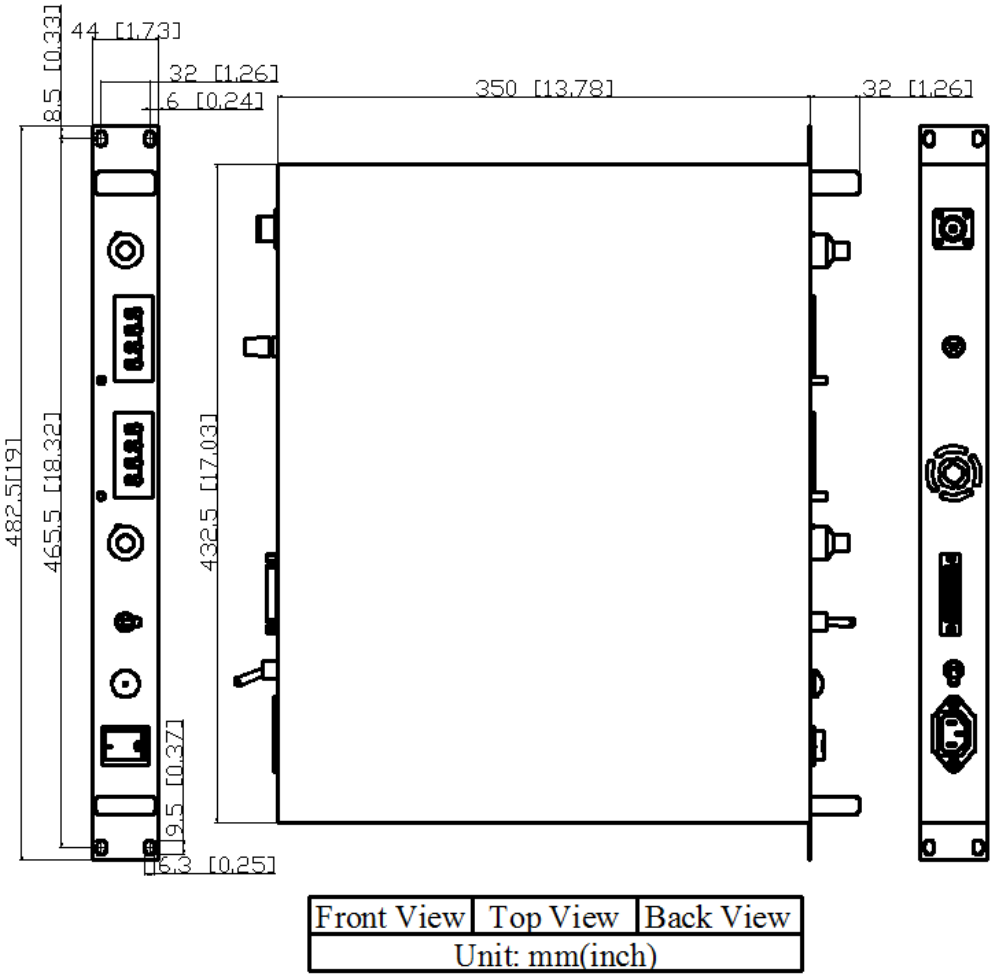

Figure 7. Dimensions for A1UHVACP1KV50MARM

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