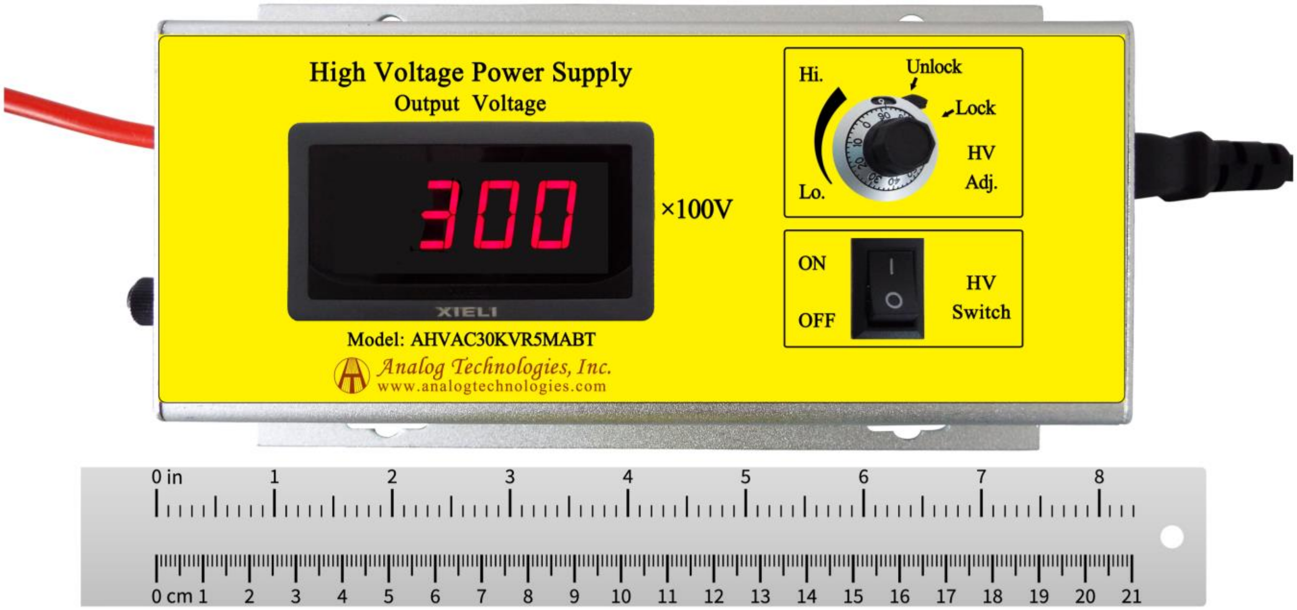

Figure 1. The Top View of AHVAC30KVR5MABT

Figure 2. The Left Side View of AHVAC30KVR5MABT

Figure 3. The Right Side View of AHVAC30KVR5MABT

FEATURES

High Precision

High Efficiency

High Output Voltage Stability

Linear Modulation of Output Voltage

Over Current Protection

Short Circuit Protection

Digital Display for Output Voltage

Low Cost

APPLICATIONS

The AHVAC30KVR5MABT is specifically designed for AC-DC conversion, transforming AC voltage into high DC voltage. It can be used for:

- X-ray Machine
- Spectral Analysis
- Nondestructive Inspection
- Semiconductor Manufacturing Equipment
- Particle Accelerator
- Capillary Electrophoresis
- Particles Injection

- Physical Vapor Phase Deposition
- Electrospinning Preparation of Nanofiber
- Glass/ Fabric Coating
- DC Reactive Magnetron Sputtering

DESCRIPTION

To operate the high voltage power supply, first connect the AC 90~230V input, and then turn on the power. Ensure the potentiometer is set to "0" before opening the high voltage switch. Next, adjust the potentiometer in a clockwise direction while observing the digital display value. The output voltage = (the display value × 100)V. When the required voltage is reached, rotate the potentiometer lock in a clockwise direction to lock the potentiometer. This will prevent accidental adjustments to the potentiometer, which could alter the output voltage. High voltage connection wire is used for high voltage output.

SAFETY PRECAUTIONS

To ensure safe operation, the high voltage power supply must be reliably grounded. Under no circumstances should the high voltage wire be touched unless the power supply is switched off and the load and internal capacitors are fully discharged. After switching off the power supply, it is recommended to wait for at least 5 minutes to allow all capacitors to fully discharge.

The power supply should not be operated in a humid environment, and the operator should not be connected to ground. Although the power supply includes internal protection circuits, high voltage short circuits must be avoided.

It is important to ensure that the circuit is properly insulated, particularly between the high voltage output and the surrounding environment, to prevent electric shock.

SPECIFICATIONS

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
AC Input Power Supply Voltage	V_{VPS}		90	110	230	V_{AC}
Input Power Supply Quiescent Current	I_{VPS_QC}	I_{VOUT} = 0mA	140	150	160	mA
Input Power Supply Current at Full Load	I_{VPS_FL}	I_{VOUT} = 0.5mA	350	400	450	mA
Input Voltage Regulation Ratio	$\Delta V_{OUT}/\Delta VPS$	VPS = 90V ~ 230V		0.05		%
Output Voltage Range	V_{VOUT}	I_{VOUT} = 0 ~ 0.5mA	0		30000	V
Output Current Range	$I_{VOUTMAX}$	V_{VPS} = 90V ~ 230V	0		0.5	mA
Output Load Resistance Range			$\frac{V_{VOUT}}{I_{VOUT}}$		∞	MΩ
Output Modulation Linearity			≤0.1			%
Output Voltage Temperature Coefficient	TC_{VOUT}	V_{VPS} = 90V ~ 230V V_{VOUT} = 30kV I_{VOUT} = 0.5mA T_A = −20°C ~ 55°C		≤0.01		%/°C

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage Range v.s. Temperature		$V_{VOUT}(T)$	V_{VPS} = 90V ~ 230V V_{VOUT} = 30kV I_{VOUT} = 0.5mA T_A = −20°C ~ 55°C	$0.99V_{VOUT}$	V_{VOUT}	$1.01V_{VOUT}$	V
Output Voltage Drift	Short Term Drift	$\frac{\lvert\Delta V_{VOUT}/V_{VOUT}\rvert}{\Delta t\ (min)}$	V_{VPS} = 90V ~ 230V V_{VOUT} = 30kV I_{VOUT} = 0.5mA T_A = −20°C ~ 55°C		≤0.05		%/min
	Long Term Drift	$\frac{\lvert\Delta V_{VOUT}/V_{VOUT}\rvert}{\Delta t\ (h)}$			≤0.05		%/h
Mean Time Between Failure		MTBF			1M		h
Instantaneous Short Circuit Current at the Output		I_{VOUT_SC}			≤0.1		mA
Load Regulation		$\frac{\lvert\Delta V_{VOUT}/V_{VOUT}\rvert}{\Delta I_{VOUT}}$	V_{VOUT} = 30kV I_{VOUT} = 0 ~ 0.5mA		≤0.05		%/mA
Full Load Efficiency		η	V_{VPS} = 90V ~ 230V V_{VOUT} = 30kV I_{VOUT} = 0.5mA		≥70		%
Operating Temperature Range		T_{opr}		−20		55	°C
Storage Temperature Range		T_{stg}		−20		80	°C
External Dimensions				210×120×50			mm
				8.27×4.72×1.97			inch
Weight					1192		g
					2.63		lbs
					42.05		Oz

PANEL INSTRUCTIONS

Left Panel

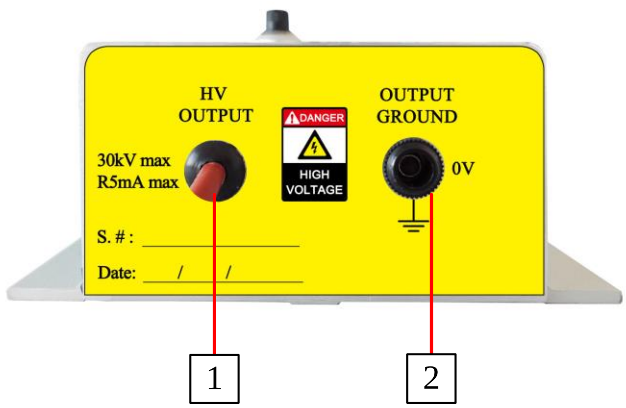

Figure 4. Left Panel

1. HV Output: 1m long connection wire outputs 30kV 0.5mA.
2. Output Ground: high voltage power supply output ground terminal.

Top Panel

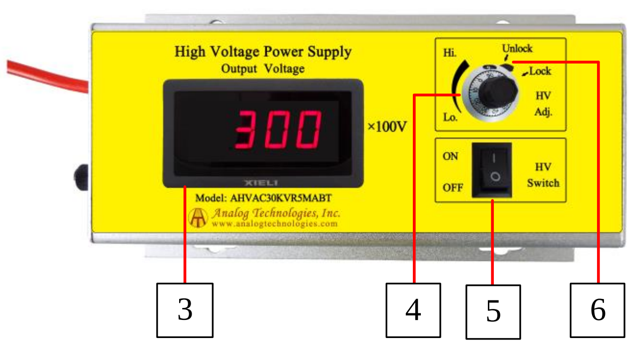

Figure 5. Top Panel

3. Output Display: Digital display for output voltage. The actual output voltage = display reading × 100V.
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, as Figure 4 shows, 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.

Figure 6. 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

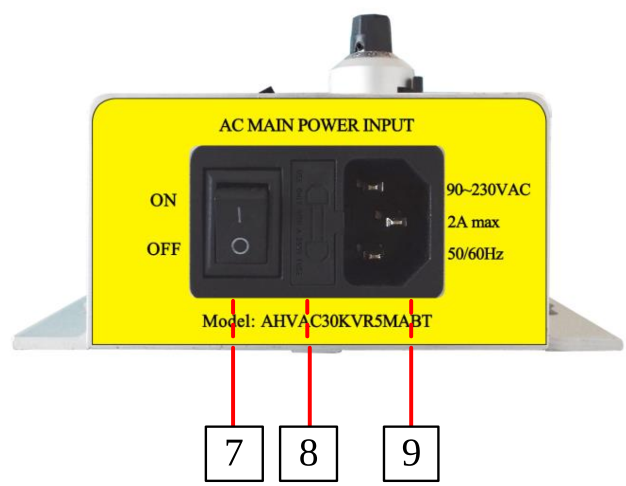

Figure 7. Right Panel

7. Main Power ON/OFF Switch
8. Fuse: 250V/2A
9. Input Connector: AC input 90 ~ 230V 50/60Hz connector.

TESTING DATA

High voltage power supply testing data (Test condition: the load is 60 MΩ)

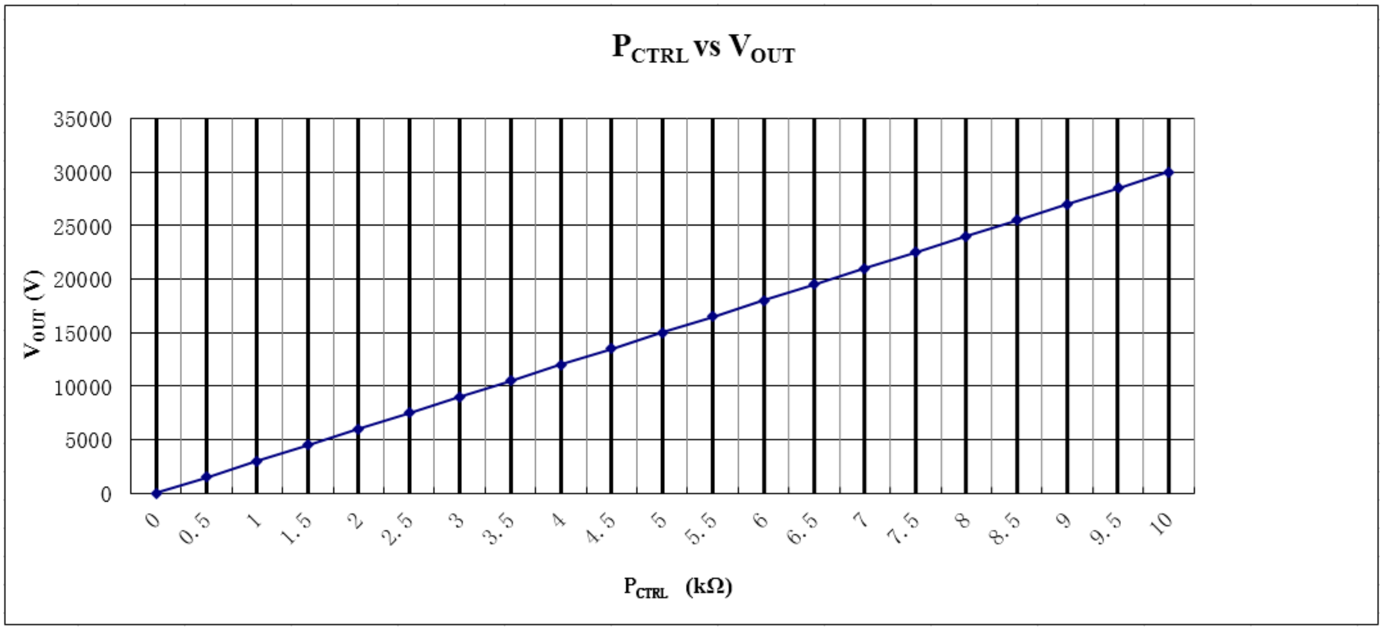

Figure 8. P_{CTRL} vs. V_{OUT}

NAMING CONVENTIONS

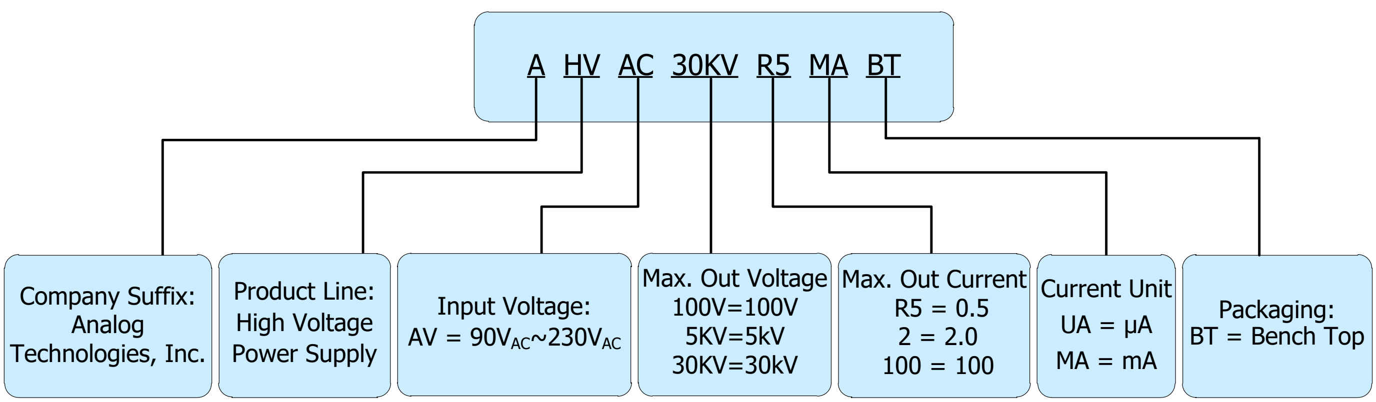

Figure 9. Naming Conventions of AHVAC30KVR5MABT

DIMENSIONS

I. Dimension of the leads.

Figure 10. Leads of AHVAC30KVR5MABT

Leads	Diameter		Length	
	mm	inch	m	inch
Thick brown lead	4.5	0.18	1.0	39.4
Power cord	6.5	0.26	1.8	70.9

II. Dimension of AHVAC30KVR5MABT.

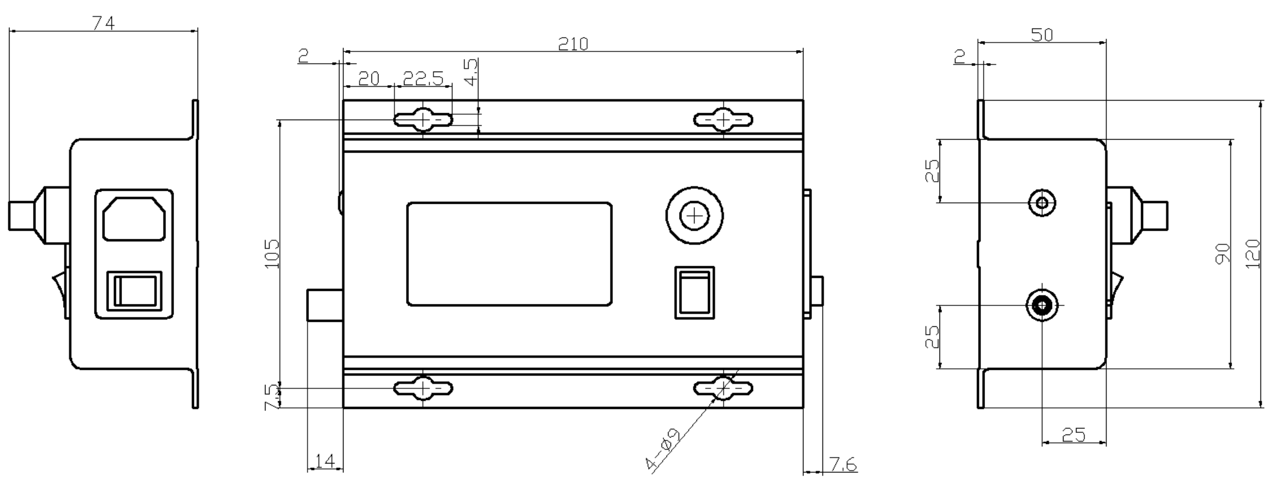

Figure 11. Outline Dimensions

ORDERING INFORMATION

Part Number	Buy Now
AHVAC30KVR5MABT	* *

NOTICE

1. It is important to carefully read and follow the warnings, cautions, and product specific notes provided with electronic components. These instructions are designed to ensure the safe and proper use of the component and to prevent damage to the component or surrounding equipment. Failure to follow these instructions could result in malfunction or failure of the component, damage to surrounding equipment, or even injury or harm to individuals. Always take the necessary precautions and seek professional assistance if unsure about proper use or handling of electronic components.
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10. Despite operating the electronic modules as specified, malfunctions or failures may occur before the end of their usual service life due to the current state of technology. Therefore, it is crucial for customer applications that require a high level of operational safety, especially in accident prevention or life-saving systems where the malfunction or failure of electronic modules could pose a risk to human life or health, to ensure that suitable measures are taken. The customer should design their application or implement protective circuitry or redundancy to prevent injury or damage to third parties in the event of an electronic module malfunction or failure.