



Figure 1. Physical Photo of AHV24V5KV10MAW

**FEATURES**

- Low Power Consumption
- High precision
- High Stability
- Overload and Short Circuit Protection
- Easy Control and Installation
- Full Modulation Range on Output Voltage
- Shutdown
- Customizable

**APPLICATIONS**

This power module, AHV24V5KV10MAW is designed for achieving DC-DC conversion from low voltage to high 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**

Draw a clear distinction between input lead and output lead: input 24V (red lead), ground electrodes (black lead),

regulation wire (white lead), reference voltage 5V (yellow lead), shutdown (blue lead), and output high-tension cable (thick brown lead).

While regulating the potentiometer, connect the intermediate tap of the potentiometer with white lead, and connect the other two ends to ground (black lead) and reference voltage (yellow lead) respectively. Switch on the power, and regulate the potentiometer to have the required output voltage.

**SHUTDOWN MODE OPERATION**

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 or left unconnected, the product is working well.

**SAFETY PRECAUTIONS**

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.  $T_A = 25^\circ\text{C}$ , unless otherwise noted

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit/Note
Input Voltage	VPS		23	24	25	V
Quiescent Input Current	$I_{INQQ}$	$I_{OUT} = 0\text{mA}$	350	400	450	mA
Full Load Input Current	$I_{INFLD}$	$I_{OUT} = 10\text{mA}$	2.8	3	3.2	A
Input Voltage Regulation Ratio	$\Delta V_{OUT}/\Delta V_{PS}$	VPS = 23V ~ 25V		0.1		%
Output Voltage	$V_{OUT}$	$I_{OUT} = 0 \sim 10\text{mA}$	0		5000	V
Maximum Output Current	$I_{OUTMAX}$	VPS = 23V ~ 25V			10	mA
Stability of Reference Voltage	$V_{REF}$	$-20 \sim 50^\circ\text{C}$	4.95	5	5.05	V
Load				500		k $\Omega$
Regulation Mode			0 ~ 5V or 10k potentiometer			
Output Voltage Ripple	$V_{OUT\_RP}$			<0.05		% $V_{P-P}$
Control Input vs. Output Linearity	$\Delta V_{REF}/\Delta V_{OUT}$			<0.2		%
Load Regulation Rate		$I_{OUT} = 0 \sim 10\text{mA}$		$\leq 0.05$		%
Instantaneous Short Circuit Current	$I_{SC}$			<150		mA
Shutdown Supply Current	$I_{SHDN}$				15	mA
Shutdown Logic Input Current	$I_{LOGIC}$				3	$\mu\text{A}$
Shutdown Logic Low	$V_{INL}$				0.8	V
Shutdown Logic High	$V_{INH}$		1.2			V
Full Load Efficiency	$\eta$			$\geq 70$		%
Temperature Coefficient	$TCV_O$	$-20 \sim 50^\circ\text{C}$		<0.1		%/ $^\circ\text{C}$
Time Drift	Short Time Drift			<0.3		%/min
	Long Time Drift			<0.5		%/h
Output Voltage Temperature Stability		$-20 \sim 50^\circ\text{C}$		$<\pm 0.5$		%
Operating Temperature Range	$T_{opr}$		-20		55	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$		-55		85	$^\circ\text{C}$
External Dimensions			140×100×55			mm
Weight				1000		g
				2.21		lbs
				35.27		Oz



TESTING DATA

I. DC Testing

High voltage power supply testing data (Test condition: the load is 500kΩ)

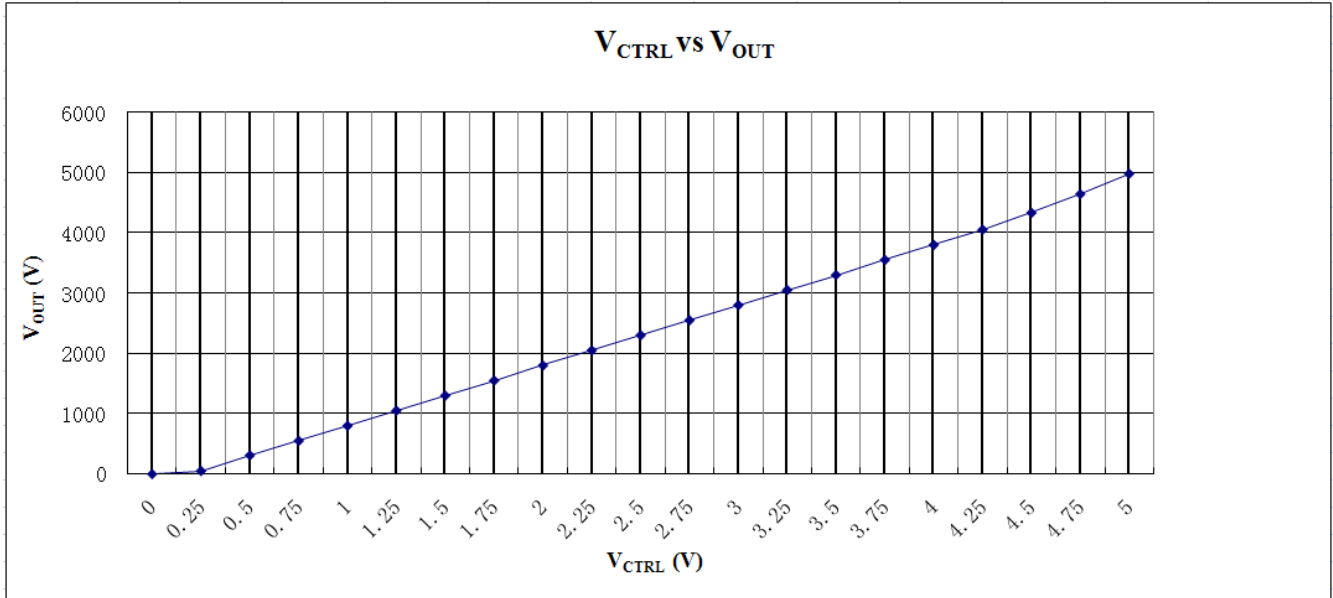


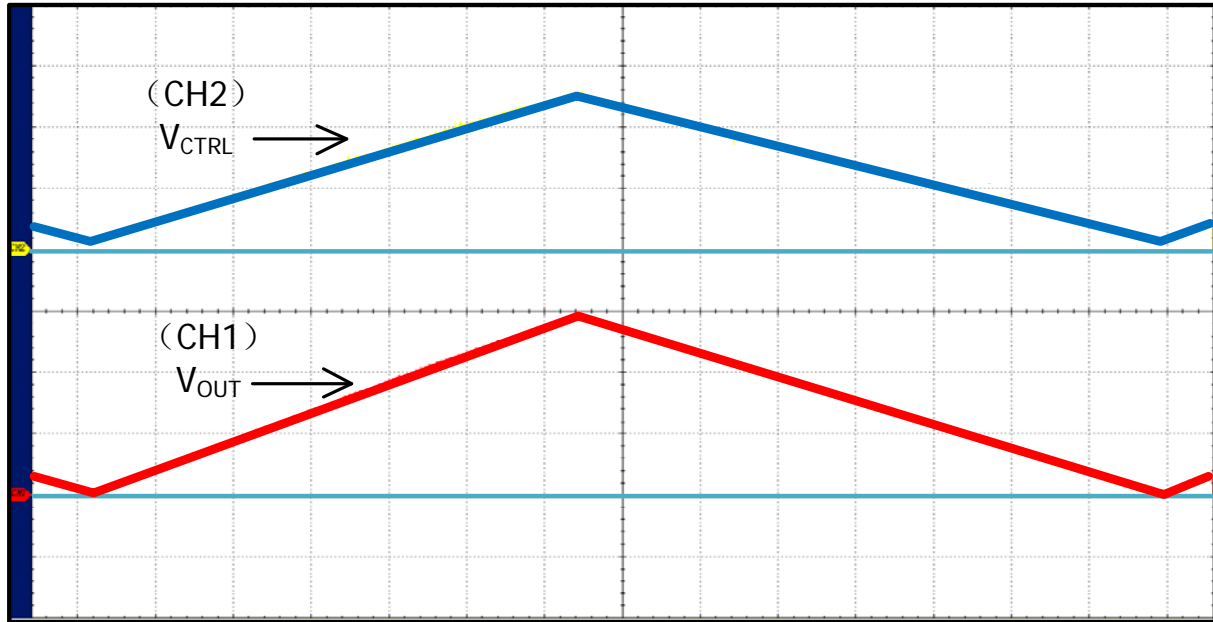
Figure 2. V\_CTRL vs. V\_OUT

II. AC Testing

Waveform curve and rise & fall time are tested by using the control voltage supplied by signal generator.

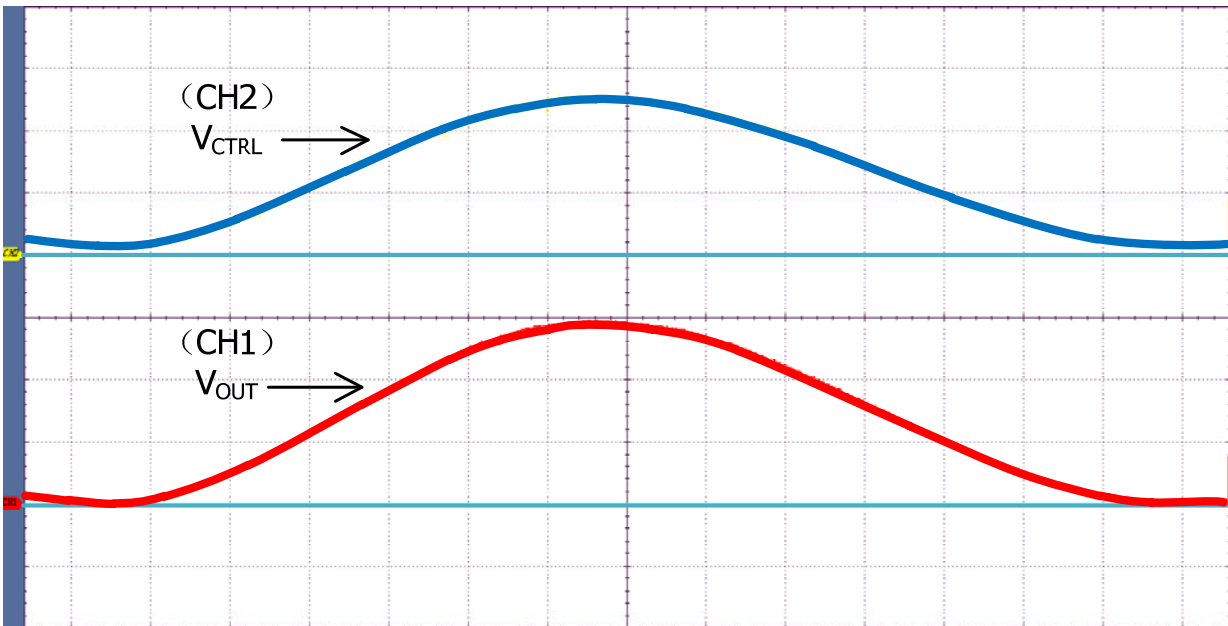
Under the testing condition of modulation frequency 0.1Hz, control voltage 0.25 ~ 5V, and 500kΩ load, the output voltage is 40 ~ 5000V.

Note: as shown in the figures below, the output voltage is represented by yellow line and the control voltage by red line.



CH1: 1666V/Div CH2: 2V/Div M: 500ms/Div  
V\_CTRL: 0.25V ~ 5V V\_OUT: 40V ~ 5000V

Figure 3. Input vs. Output Waveforms for Triangle Wave Control



CH1: 1666V/Div CH2: 2V/Div M: 500ms/Div  
V\_CTRL: 0.25V ~ 5V V\_OUT: 40V ~ 5000V

Figure 4. Input vs. Output Waveforms for Sine Wave Control

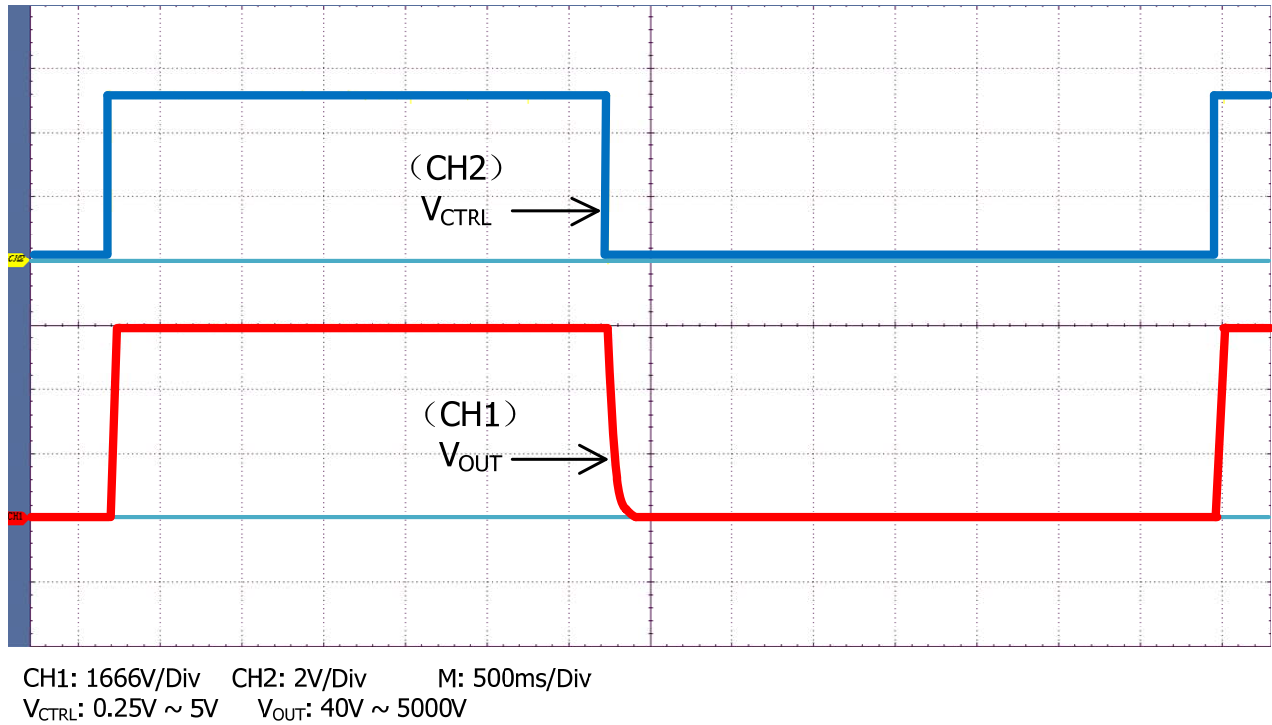


Figure 5. Input vs. Output Waveforms for Square Wave Control

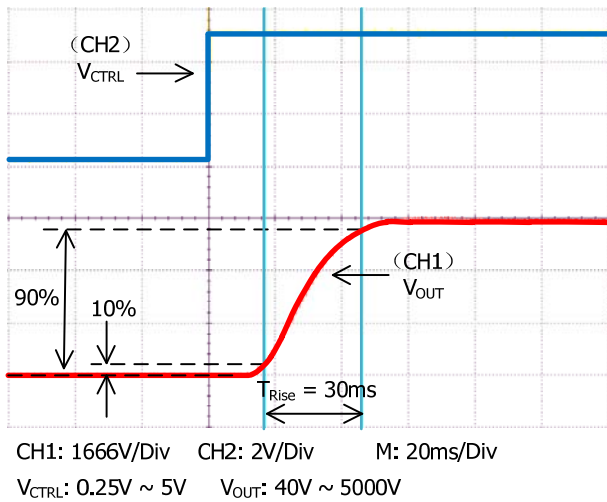


Figure 6. Output Waveform to a Large Rising Step

Signal at Input

As shown in Figure 6, when a square wave of 0.25V ~ 5V, F=0.10Hz is applied to Control, measure the waveform. The rise time is about 30ms.

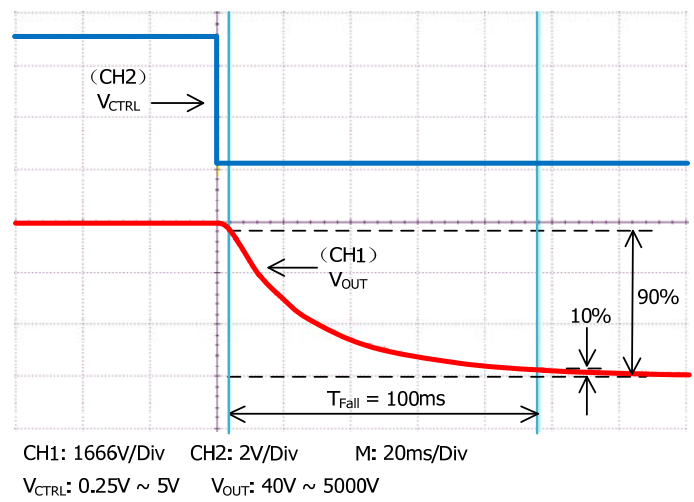


Figure 7. Output Waveform to a Large Falling Step

Signal at Input

As shown in Figure 7, when a square wave of 0.25V ~ 5V, F=0.10Hz is applied to Control, measure the waveform. The fall time is about 100ms.



THE CONNECTION DIAGRAM OF MODULE' S PERIPHERAL CIRCUIT

The leads colors in the figures below are identical with those in the physical AHV24V5KV10MAW.

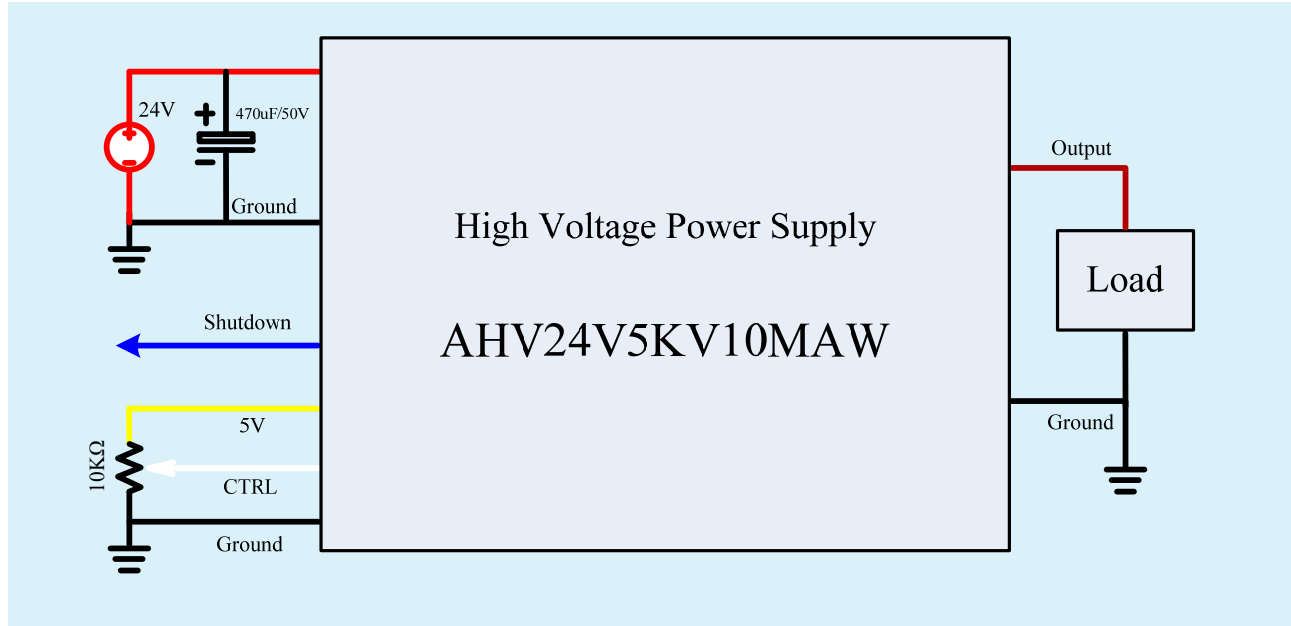


Figure 3. Control by External Signal Source

NAMING INSTRUCTIONS

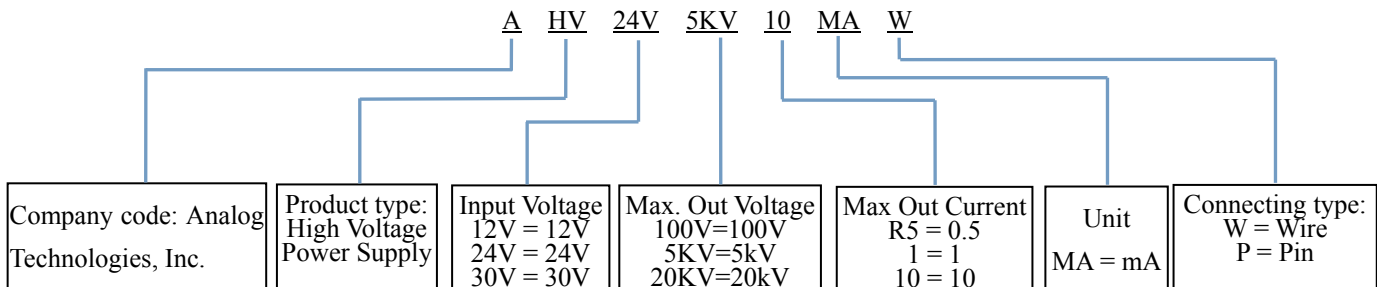


Figure 4. Naming Rules of AHV24V5KV10MAW



**DIMENSIONS**

I. Dimension of the leads.



Figure 5. Leads of AHV24V5KV10MAW

Leads	Diameter (mm)	Length (mm)
Thick brown lead	4.5	26
Yellow, red, blue, black and white leads	1.5	23

II. Dimension of AHV24V5KV10MAW.

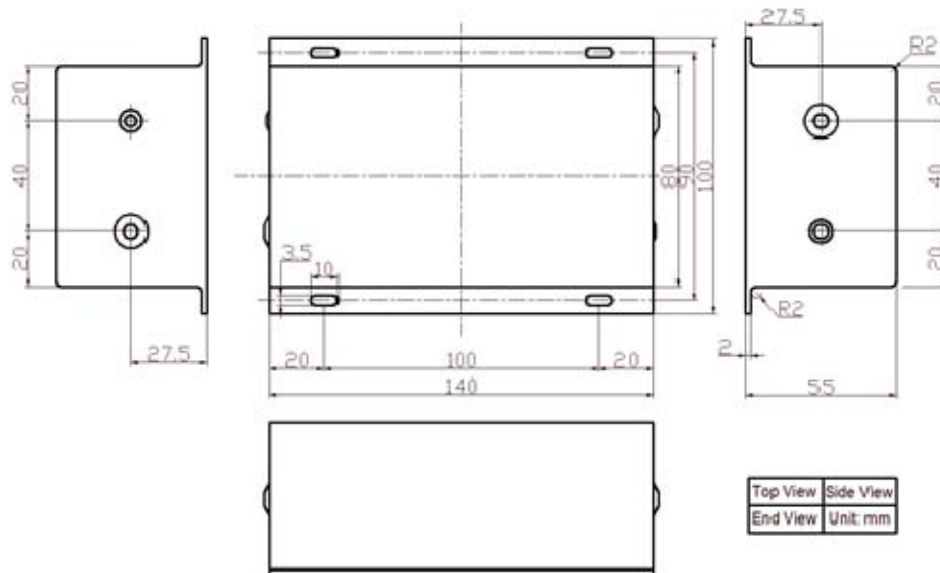


Figure 6. Dimensions for AHV24V5KV10MAW



PRICES

Quantity	1~9pcs	10~49pcs	50~99pcs	≥100
AHV24V5KV10MAW	\$279	\$269	\$259	\$249

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