

Figure 1. Physical Photo of AHV12VPN10KV1MAW

**FEATURES**

- High precision
- Full modulation range on output voltage
- Positive and negative voltage output
- Linear regulation
- Shutdown

**APPLICATIONS**

This power module, AHV12VPN10KV1MAW, is designed for achieving DC-DC conversion from low voltage to high voltage. High voltage power supply is widely used in industry, agriculture, national defense, scientific research and other fields including: X-ray machine high voltage power supply, laser high voltage power supply, spectral analysis high voltage power supply, etc. They are widely applied in ion beam deposition, ion beam assisted deposition, electron beam evaporation, electron beam welding, ion source, DC reactive magnetron sputtering, glass / fabric coating, glow discharge, microwave treatment high voltage capacitance test, CRT monitor test, high voltage cable fault test (PD testing), TWT test, and H-POT test. Particle accelerator, free electron laser, neutron source, cyclotron accelerator, capacitor and inductance pulse generator, Marx high voltage pulse generator, and capacitor charger. Microwave heating, radio frequency amplification, nanotechnology application, electrostatic technology application, electrospinning

preparation of nanofiber, high voltage power supply for nuclear power and other products.

**DESCRIPTION**

Draw a clear distinction between input lead and output lead: input 12V (red lead), ground electrodes (black lead), regulation wire (white lead), reference voltage 5V (yellow lead), shutdown (blue lead), voltage polarity selection (thin brown 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.

A 2V or higher input voltage is applied to voltage polarity selection, the output voltage is positive; when a 1V or lower input voltage is applied to voltage polarity selection, the output voltage is negative.



#### 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.

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
Input Voltage	VPS		11	12	13	V
Quiescent Input Current	I <sub>INQQ</sub>	I <sub>OUT</sub> = 0mA	250	300	350	mA
Full Load Input Current	I <sub>INFLD</sub>	I <sub>OUT</sub> = 1.0mA	1.2	1.3	1.4	A
Input Voltage Regulation Ratio	$\Delta V_{OUT}/\Delta V_{VPS}$	V <sub>VPS</sub> = 11V ~ 13V		0.1		%
Output Voltage	V <sub>OUT</sub>	I <sub>OUT</sub> = 0 ~ 1.0mA	-10000	0	10000	V
Maximum Output Current	I <sub>OUTMAX</sub>	V <sub>VPS</sub> = 11V ~ 13V			1.0	mA
Stability of Reference Voltage	V <sub>REF</sub>	-20 ~ 50°C	4.95	5	5.05	V
Load				10		MΩ
Regulation Mode			0 ~ 5V or 10k potentiometer			
Control Input vs. Output Linearity	$\Delta V_{REF}/\Delta V_{OUT}$			<0.2		%
Load Regulation Rate		I <sub>OUT</sub> = 0 ~ 1.0mA		≤0.05		%
Instantaneous Short Circuit Current	I <sub>SC</sub>			<500		mA
Shutdown Supply Current	I <sub>SHDN</sub>				15	mA
Shutdown Logic Input Current	I <sub>LOGIC</sub>				3	uA
Shutdown Logic Low	V <sub>INL</sub>				0.8	V
Shutdown Logic High	V <sub>INH</sub>		1.2			V
Full Load Efficiency	η			≥70		%
Temperature Coefficient	TCV <sub>O</sub>	-20 ~ 50°C		<0.01		%/°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>		-20		50	°C
Storage Temperature Range	T <sub>stg</sub>		-55		100	°C
External Dimensions			140×100×55			mm
Weight				800		g
				1.77		lbs
				28.22		Oz



TESTING DATA

High voltage power supply testing data (Test condition: the load is 10MΩ)

I. A 2V or higher input voltage is applied to voltage polarity selection, the output voltage is positive.

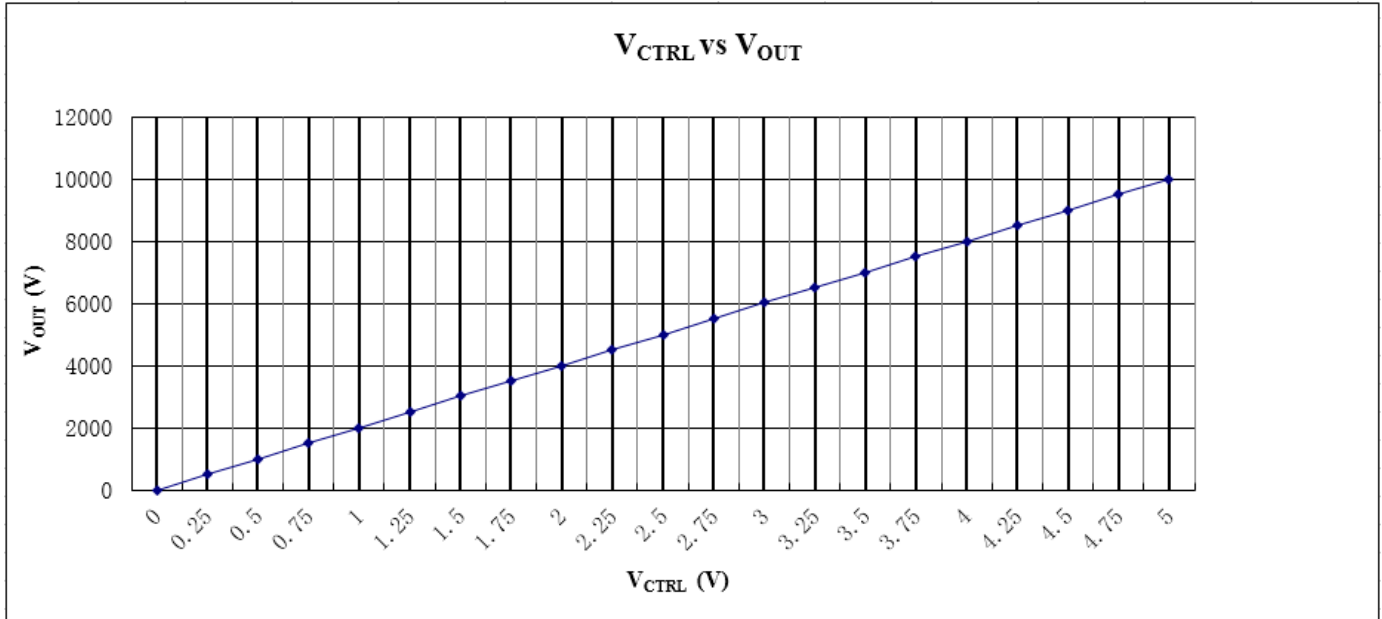


Figure 2. V<sub>CTRL</sub> vs. V<sub>OUT</sub>

II. When a 1V or lower input voltage is applied to voltage polarity selection, the output voltage is negative.

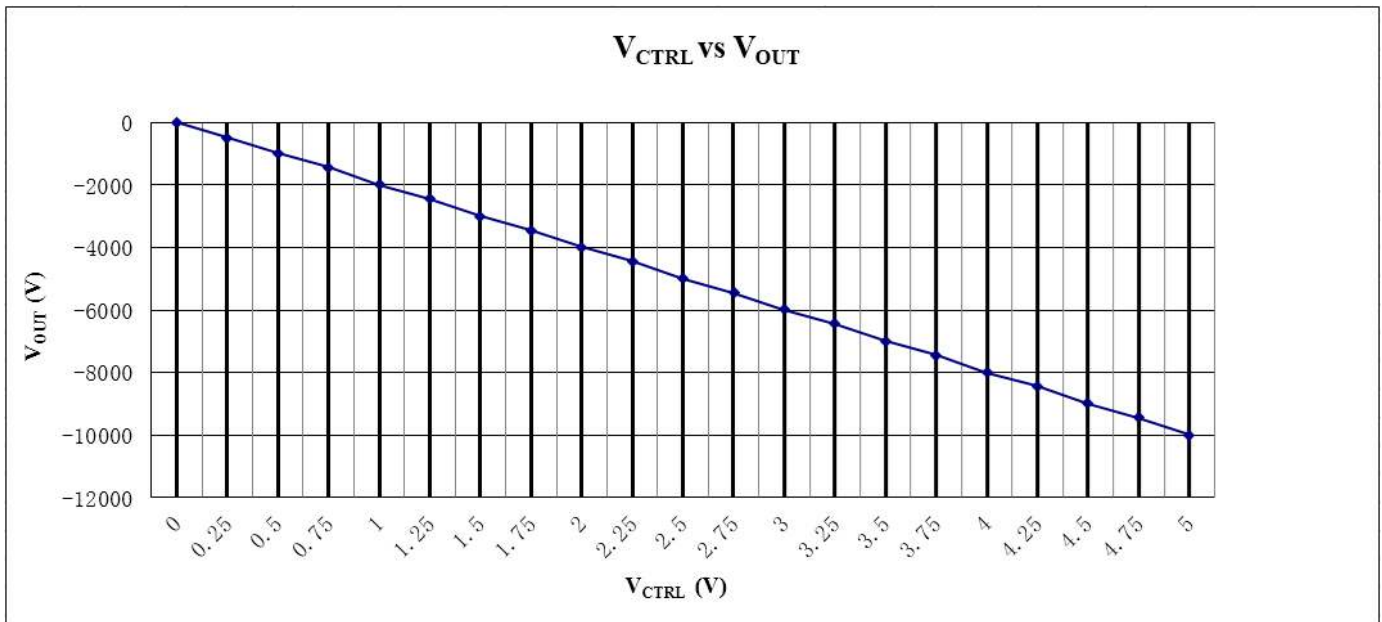


Figure 3. V<sub>CTRL</sub> vs. V<sub>OUT</sub>



THE CONNECTION DIAGRAM OF MODULE'S PERIPHERAL CIRCUIT

The leads colors in the figures below are identical with those in the physical AHV12VPN10KV1MAW.

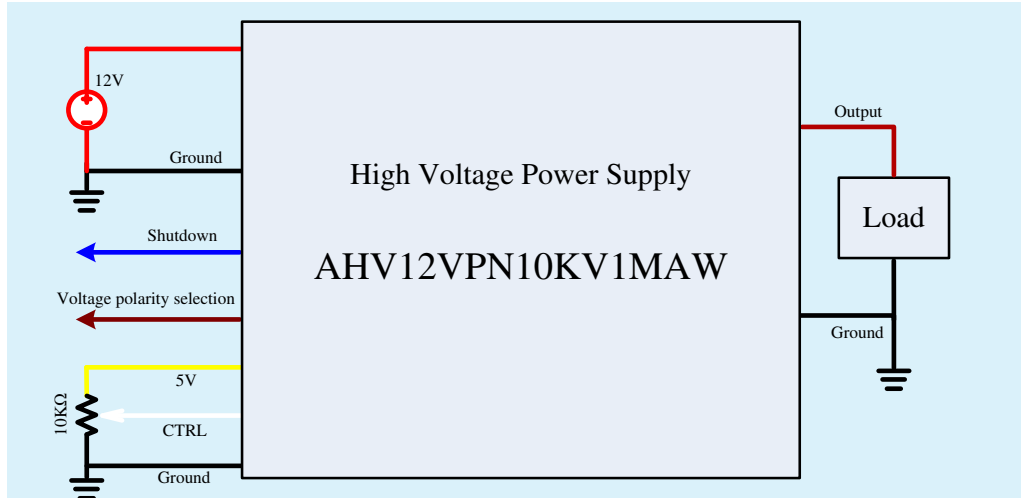


Figure 4. Control by External Signal Source

A 2V or higher input voltage is applied to voltage polarity selection, the output voltage is positive; when a 1V or lower input voltage is applied to voltage polarity selection, the output voltage is negative.

NAMING INSTRUCTIONS

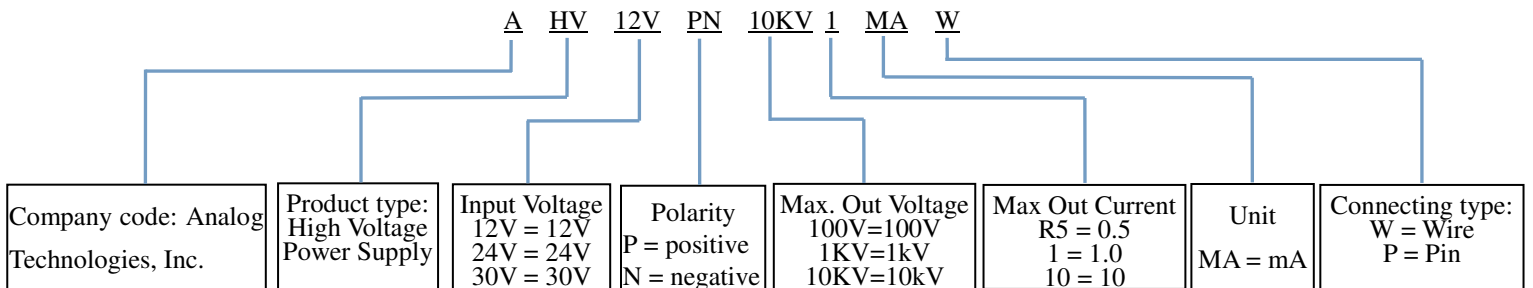


Figure 5. Naming Rules of AHV12VPN10KV1MAW



**DIMENSIONS**

I. Dimension of the leads.



Figure 6. Leads of AHV24V10KV1MAW

Leads	Diameter (mm)	Length (mm)
Thick brown lead	4.5	120
Yellow, red, blue, black and white leads	1.5	23

II. Dimension of AHV12VPN10KV1MAW.

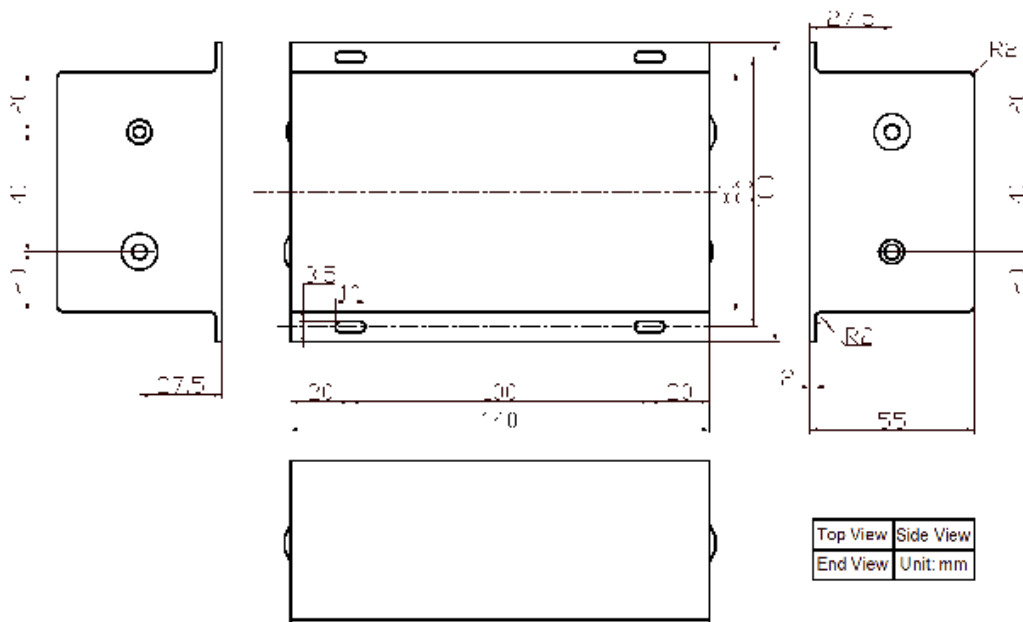


Figure 7. Dimensions for AHV12VPN10KV1MAW



PRICES

Quantity (pcs)	1~9	10~49	50~99	≥100
AHV12VPN10KV1MAW	\$389	\$379	\$369	\$359

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