X-Ray High Voltage Power Supply

AXHV24VP20KV1MABT

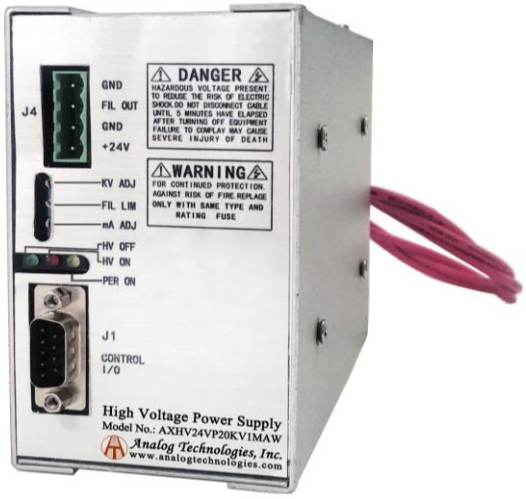

Figure 1A. Physical Photo of AXHV24VP20KV1MABT

Figure 1B. Physical Photo of AXHV24VP20KV1MABT

FEATURES

- High precision
- High efficiency
- High output voltage stability
- Adjustable Integrated Filament Supply
- Local and Remote Emission Control
- Voltage & Current Programming
- Overcurrent voltage protection
- Arc and Short circuit protection
- Safety Interlock
- OEM Customization Available

APPLICATIONS

AXHV24VP20KV1MABT is a high stability high voltage power supply, which is widely used in scientific research and other fields including: X-ray Tube, Thickness Gauge, Nondestructive Detection, X-ray Fluorescence, X-ray Fluoroscopy, Density Measurement, ROHS testing, Plating Measurement, Radiography, X-ray Imaging, PCB Inspection, Density Measurement, Process Control, X-ray Spectroscopy, Mineral Analysis, Life Science.

DESCRIPTION

AXHV24VP20KV1MABT is a high voltage power supply for X-ray tubes with high stability. It is designed to drive a ground filament X-ray tube with an integrated X-ray tube filament power supply. The ground filament power supply voltage is adjustable from 0 to 5.5VDC and the current is adjustable from 0 to 3.5A.

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
Input Voltage		V_{VPS}		23	24	25	V_{DC}
Input Current		I_{INFLD}	I_{OUT} = 1mA			3	A
Output Voltage		V_{OUT}	I_{OUT} = 0 ~ 1mA	0		20000	V
Output Current		I_{OUT}	Full load	0		1	mA
Ripple			Bandwidth = 1MHz R_{LOAD} = 20 MΩ		<0.1		$\%V_{P-P}$
Load				20		∞	MΩ
Output Control Mode				Local control 10k potentiometer or remote control 0 ~ +10V			
Monitor Voltage Out Impedance		Z_{VMON}			10		kΩ
Monitor Voltage		V_{MON}	V_{OUT} = 0 ~ 20kV	0		10	V
Monitor Current Out Impedance		Z_{VMON}			10		kΩ
Monitor Current		V_{MON}	I_{OUT} = 0 ~ 1mA	0		10	V
Output Voltage Display Accuracy					±1		%
Output Current Display Accuracy					±1		%
Remote Control Voltage			V_{CTRL}= 0 ~ 10V Z_{IN}= 10MΩ	0		20	kV
Local Control Voltage			R_P = 0 ~ 10kΩ	0		20	kV
Remote Control Current			V_{CTRL}= 0 ~ 10V Z_{IN}= 10MΩ	0		1	mA
Local Control Current			R_P = 0 ~ 10kΩ	0		1	mA
Voltage Relative Load Adjustment Ratio			R_{LOAD} = 0 ~ 20MΩ		0.01		%
Voltage Relative Input Adjustment Rate			V_{VPS} = 23V ~ 25V		<0.01		%
Current Relative Load Adjustment Ratio			R_{LOAD} = 0 ~ 20MΩ		0.01		%
Current Relative Input Adjustment Rate			V_{VPS} = 23V ~ 25V		<0.01		%
Filament Voltage				0		5.5	V
Filament Current				0		3.5	A
Instantaneous Short Circuit Current		I_{SC}			<100		mA
Full Load Efficiency		η			≥70		%
Temperature Coefficient		TCV_O	0 ~ 50°C		≤25		ppm/°C
Time Drift	Short Time Drift		After 30 minute warm up		<0.01		%/ h
	Long Time Drift				<0.02		%/8h
Output Voltage Temperature Stability			0 ~ 50°C		<±0.01		%

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Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit/Note
Operating Temperature Range	T_{opr}		0		50	°C
Storage Temperature Range	T_{stg}		−40		85	°C
Cooling		0~60W：Natural cooling；60~100W：Air cooling				
Humidity			20%-85% relative humidity non-condensing			
External Dimensions			150×115×65			mm
			5.91×4.53×2.56			inch
Weight				1.55		kg
				3.42		lbs
				54.67		Oz

PANEL INSTRUCTIONS

Front Panel

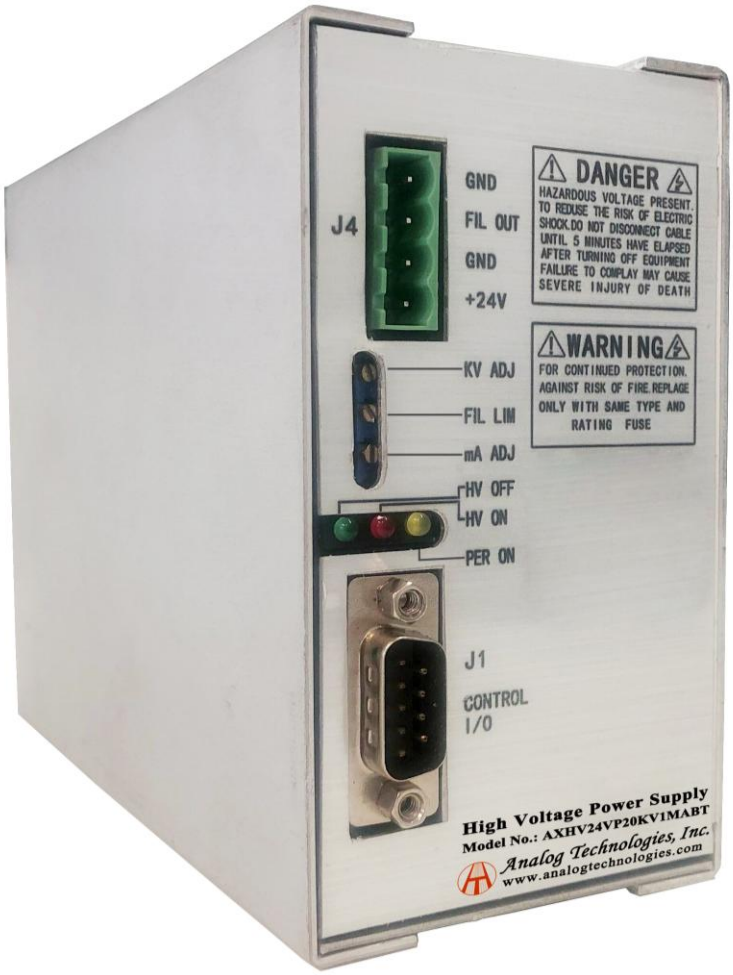

Figure 2. Front Panel

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Table 2. J4 Simulate Port

No.	Name	Description
1	+24V	+24Vdc±1V，Maximum current 5A..
2	GND	Power Ground.
3	FIL OUT	Filament voltage is controlled by adjusting the FIL LIM potentiometer to the FIL OUT output, +5.5V@3.5A, maximum.
4	GND	Filament Ground.

Figure 3. Local Potentiometer Control

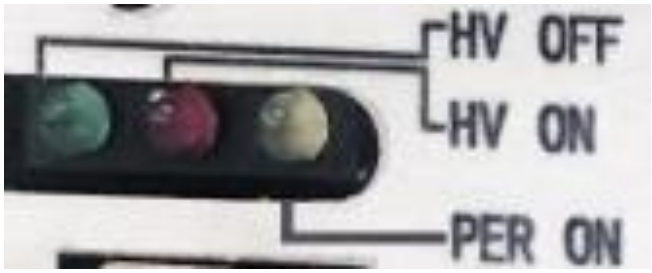

Figure 4. Indicator Light

Table 3. Local Control

Name	Description
KV ADJ	Local potentiometer controls voltage output.
FIL LIM	Filament controls the output.
mA ADJ	Local potentiometer controls current output.

Table 4. Indicator Light

Name	Description
HV OFF	Green light ON, HV OFF.
HV ON	Red light ON, HV ON.
PER ON	Filament power indicator.

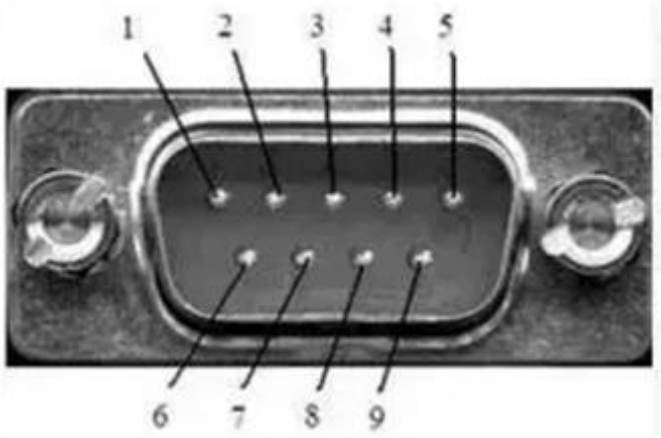

Figure 5. 9 Pin Type D Connector

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Table 5. 9 Pin Type D Connector

No.	Name	Description
1	Reference Voltage	+10Vdc reference voltage.
2	Voltage Monitor	0 to 10V = 0 to 100% rated output，Z_{OUT} = 10kΩ.
3	Remote Voltage Program In	0 to 10V = 0 to 100% rated output，Z_{IN} = 10MΩ.
4	Local Voltage Control Output	Connect 3 and 4, control voltage from 0 to 10V = 0 to 100% rated output voltage by KV ADJ potentiometer.
5	Current Monitor	0 to 10V = 0 to 100% rated output，Z_{OUT} = 10kΩ.
6	Remote Current Program In	0 to 10V = 0 to 100% rated output，Z_{IN} =10MΩ.
7	Local Current Control Output	Connect 6 and 7, control voltage from 0 to 10V = 0 to 100% rated output voltage by mA ADJ potentiometer.
8	External Interlock	Connected to ground, HV ON.
9	GND	Interlocking returns to ground.

Back Panel

Figure 6. Back Panel

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TESTING DATA

High voltage power supply testing data (Test condition: the load is 20MΩ).

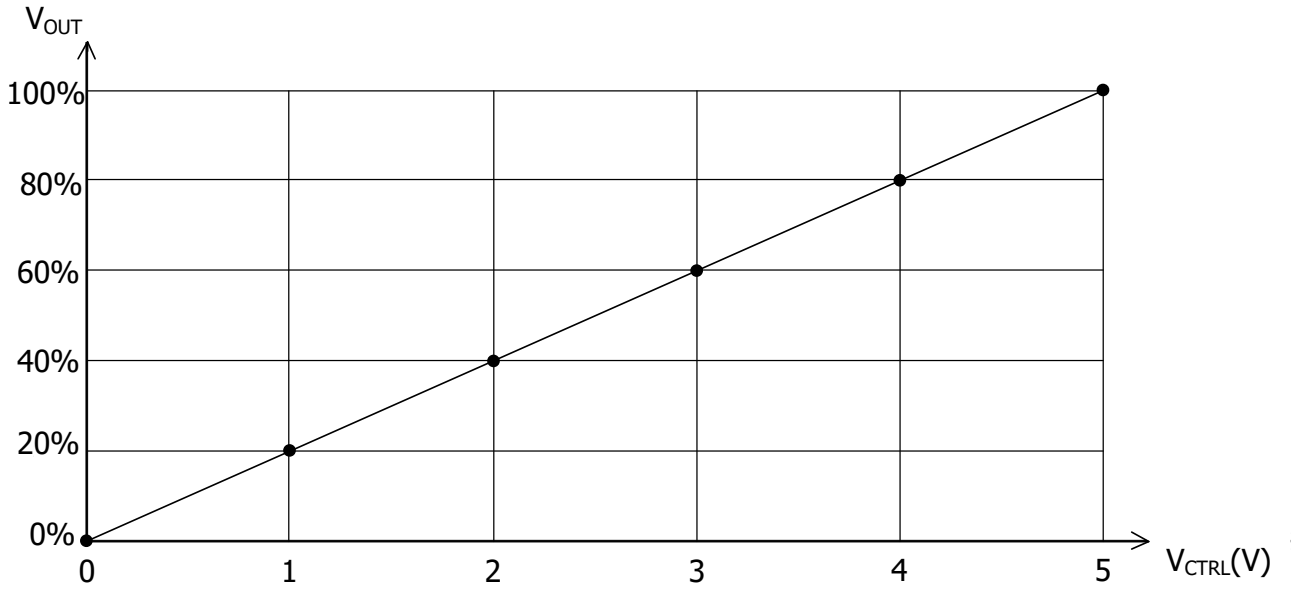

Figure 7. V_{CTRL} vs. V_{OUT}

NAMING INSTRUCTIONS

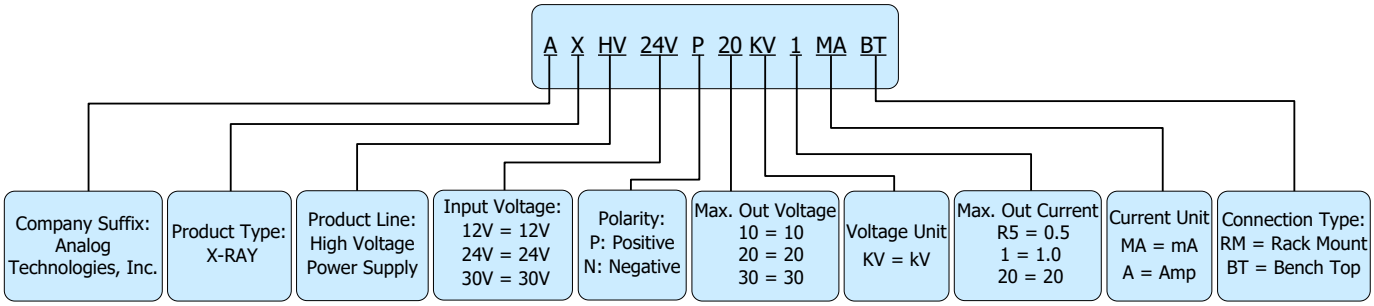

Figure 8. Naming Rules of AXHV24VP20KV1MABT

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DIMENSIONS

Dimension of AXHV24VP20KV1MABT.

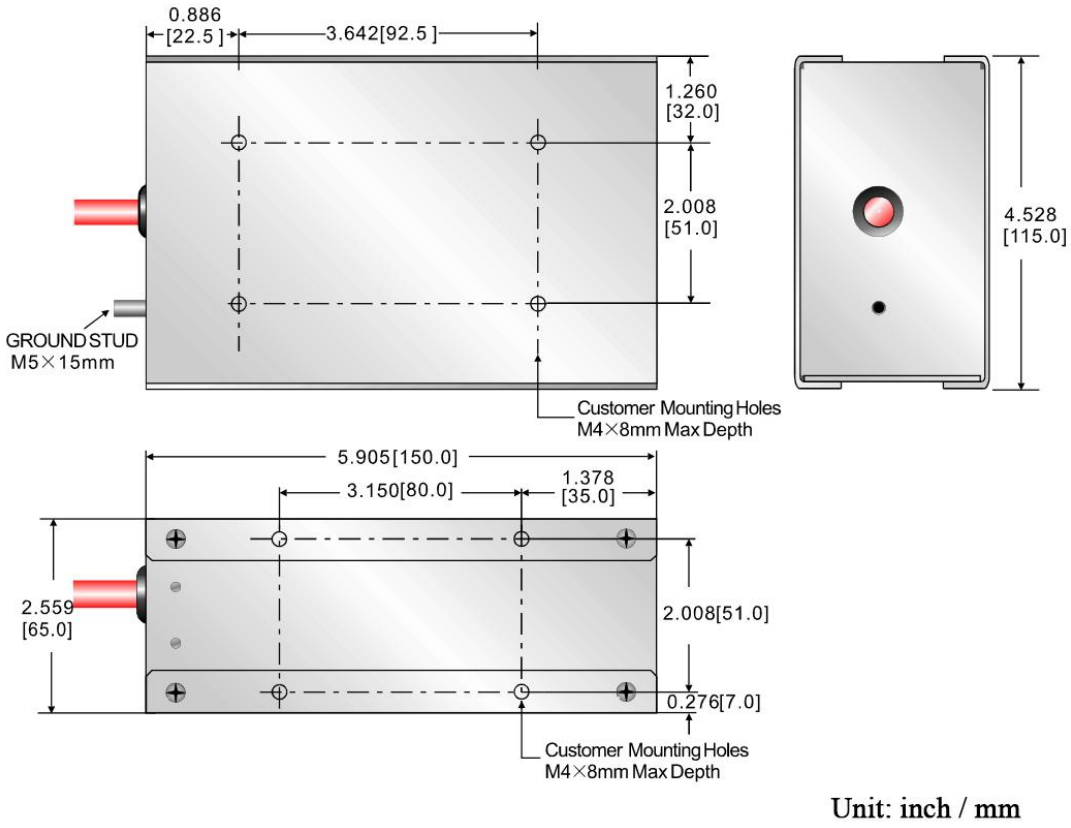

Figure 9. Dimensions for AXHV24VP20KV1MABT

ORDERING INFORMATION

Part Number	Buy Now
AXHV24VP20KV1MABT	* *

*: both and are our online store icons. Our products can be ordered from either one of them with the same pricing and delivery time.

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