



Figure 1. Physical Photos of AHVAHS2KV2X20MA

MAIN FEATURES

- Built-in High Voltage Converter
- High Slew Rate: 800V/ μ s
- Bandwidth: Up to 100kHz
- High Current Capability: Up to 20mA
- Offset Voltage Range: 10V
- Wide Output Voltage Range: $V_{OUT} = 10V \sim 2kV @ V_{IN} = 24V$
- Compact Size: 176.5(L) \times 147.0(W) \times 41.2(H) mm
- Weight: 2.2lb (1.0kg)

APPLICATIONS

High voltage amplifications for driving piezos and other high voltage loads.

DESCRIPTION

The AHVAHS2KV2X20MA is an electronic module for amplifying an analog input voltage into a high voltage output. Figure 1 shows its physical photo. It comes with a high voltage DC-DC converter, which converts the 24V input voltage into a 10V to 2kV output voltage. The analog output voltage can swing almost from 10V to 2kV when it is powered by a 24V power supply. There is three LEDs indicating if the amplifier works properly.

Table 1. Descriptions of Terminal Block Pin Functions

Pin #	Name	Type	Description
1	VPS	Power Input	Power supply 24V.
2	PGND	Power Ground	Power ground pin.
3	SBDN	Digital Input	This is a duplex pin. It sets the amplifier into Off, Standby or On mode.
4	AGND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.
5	10VR	Analog Output	10V voltage reference.
6	IHVMON	Analog Input	Output current indication. When going from 0.05V to 10V, it indicates the output current is from 0 to 20mA.
7	HVMON	Analog Output	Output voltage indication. When going from 0.05V to 10V, it indicates the output voltage is from 10V to 2kV.
8	OFFSO	Analog Output	Output voltage setting. When going from 0.05V to 10V, it indicates the output voltage is from 10V to 2kV. The pin is controlled by a potentiometer.
9	GND	Signal Ground	Signal ground pin. Connect ADC and DAC grounds to here.



Pin #	Name	Type	Description
BNC 1	Input	Analog Input	Output voltage setting. When going from 0.05V to 10V, it indicates the output voltage is from 10V to 2kV.
BNC 2	Input+Offset	Analog Output	Input+Offset input control signal indication.
BNC 3	HVOUT	Analog Output	Output voltage for driving the load.
	OGND	Output Ground	Connect this pin to the load return terminal.

SPECIFICATIONS

Table 2. Characteristics (Test ambient temperature $T_A = 25^\circ\text{C}$)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Power Supply Input (Pin 1)						
Input Range	V_{VPS}		23	24	25	V
Input Current	I_{IN}		0		4	A
Voltage Output (BNC 3)						
Output Voltage	V_{OUT}		0		2000	V
Output Current	I_{OUT}		0		20	mA
SBDN Pin (Pin 3)						
Off State	$V_{SBDN-OFF}$		0		0.4	V
	$V_{SBDN-OFF-HI}$ Going up from Off to Standby threshold				2.1	V
	$V_{SBDN-OFF-LOW}$ Going down from Standby to Off threshold		0.4			V
SBDN State	$V_{SBDN-STANDBY}$		2.1		2.51	V
	$V_{SBDN-SB-HI}$ Going up from Standby to On threshold				2.64	V
	$V_{SBDN-SB-LOW}$ Going down from On to Standby threshold		2.51			V
On State	$V_{SBDN-ON}$		2.64		V_{VPS}	V
SBDN Current	I_{SBDN}			10	20	μA
10VR Pin (Pin 5)						
Voltage Reference	V_{REF}			10		V
Maximum Input Power				80		W
Maximum Slew Rate				800		V/ μs

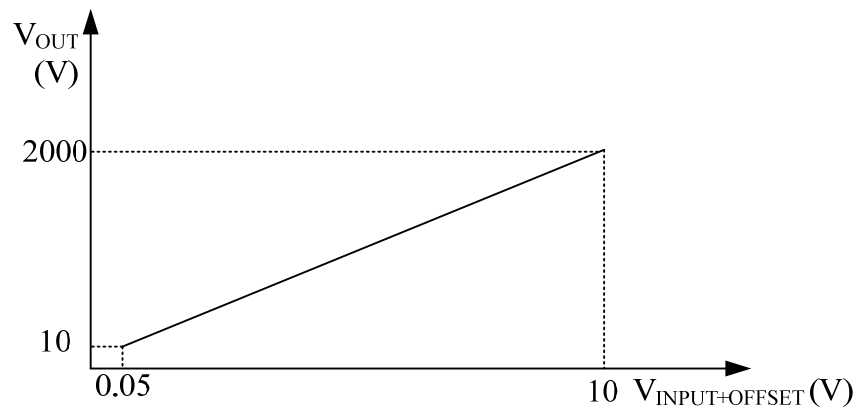


Figure 2. V_{INPUT+OFFSET} vs. V_{OUT}

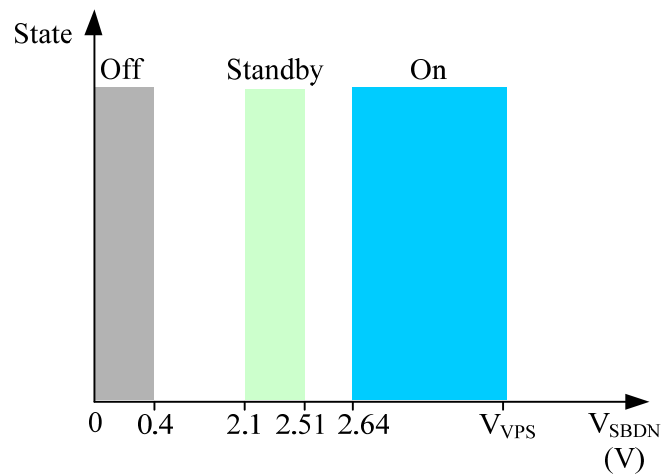
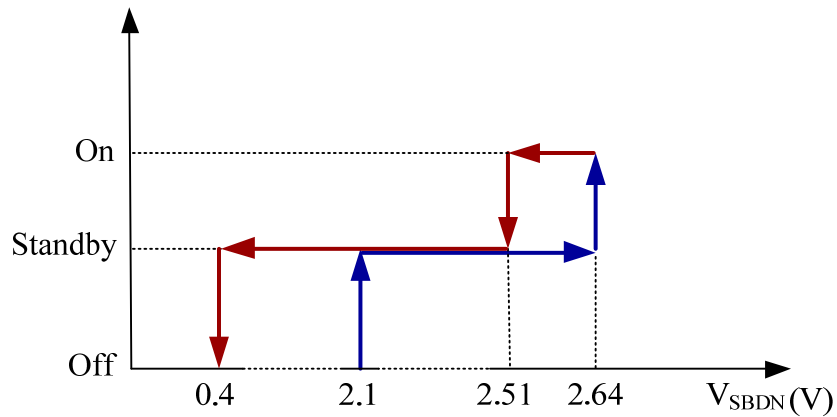


Figure 3. V_{SBDN} vs. Amplifier States

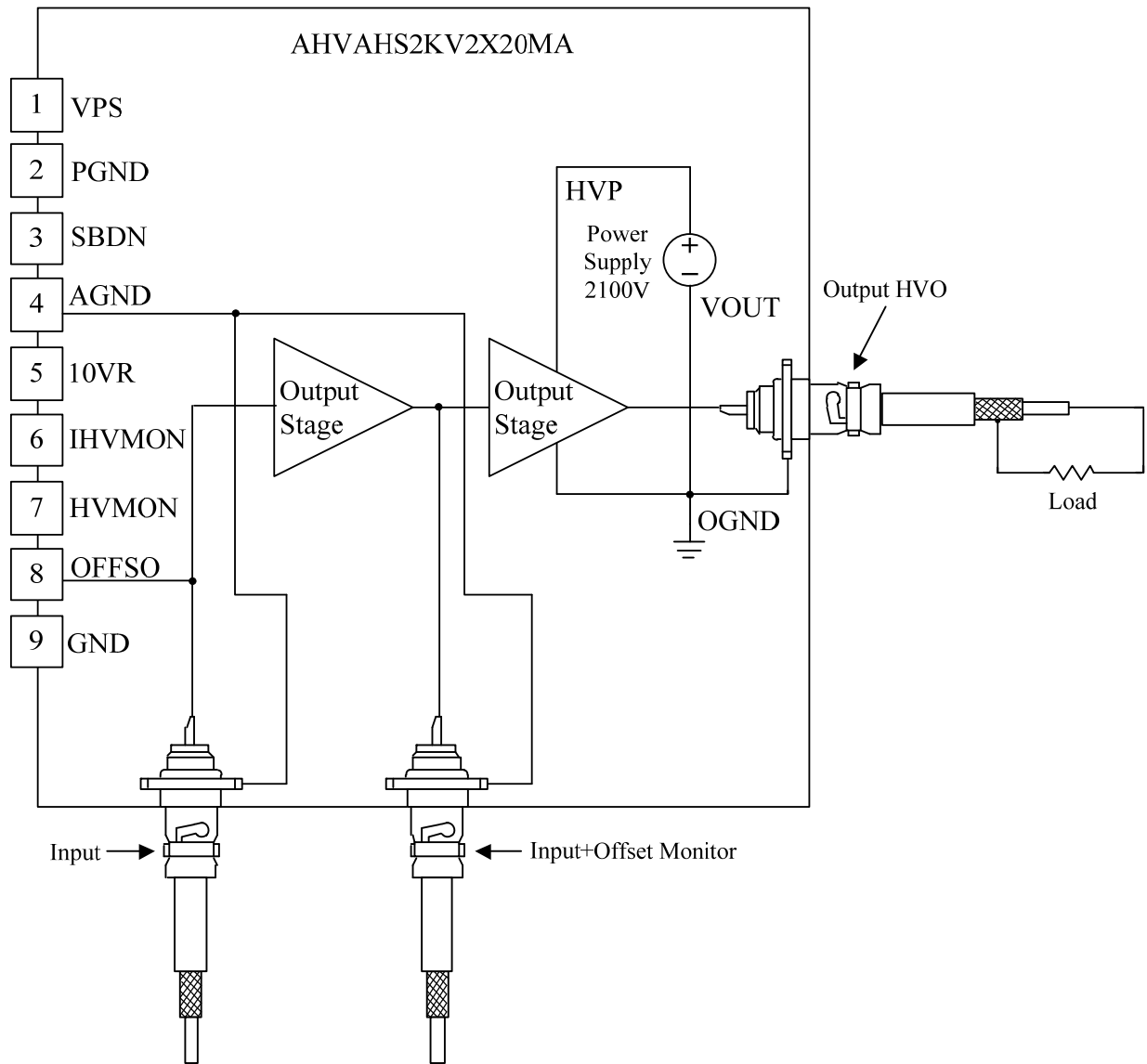


Figure 4. Schematic for Driving the Load



DIMENSIONS

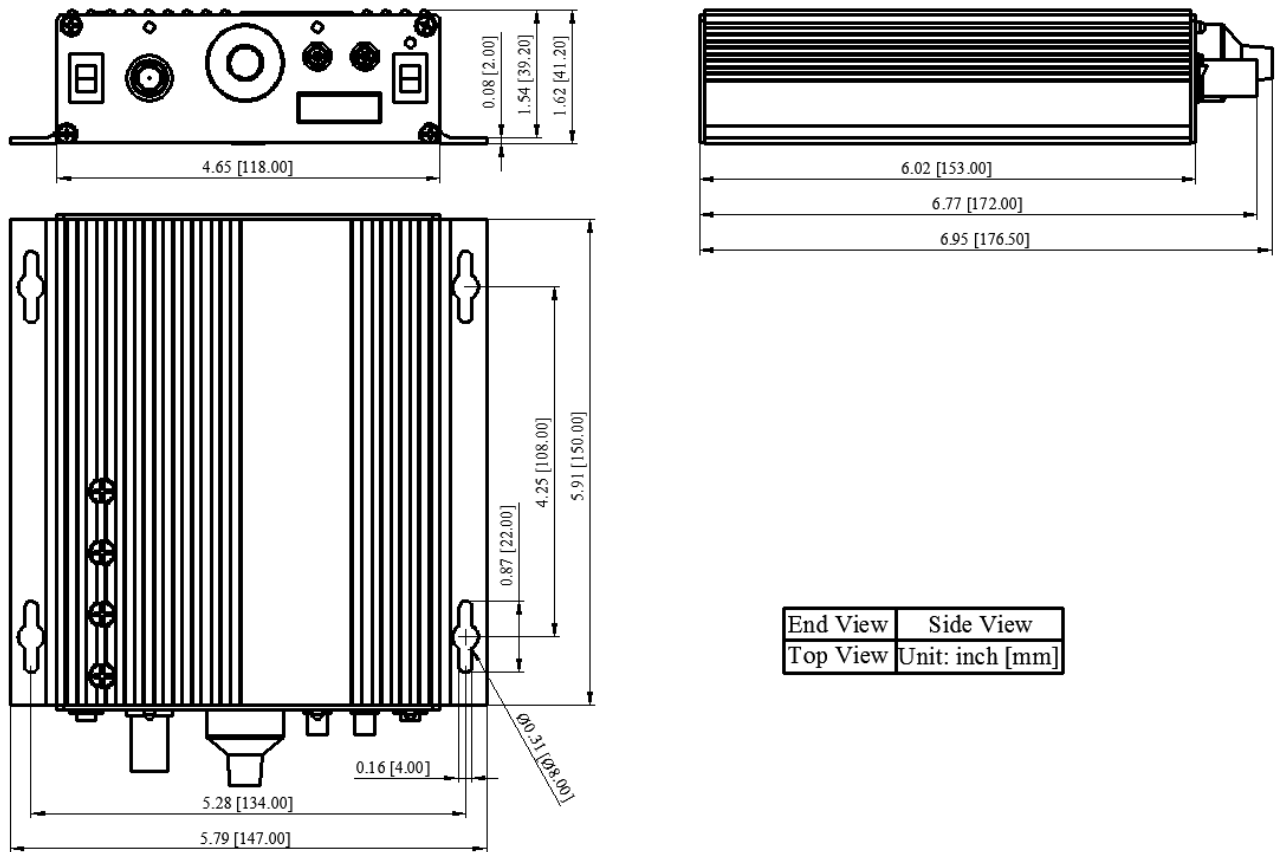


Figure 5. Dimensions of AHVAHS2KV2X20MA

ORDERING INFORMATION

Table 3. Part Number

Part Number	Description
AHVAHS2KV2X20MA	2kV high voltage high speed amplifier



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.
2. Please note that the products and specifications described in this publication are subject to change without prior notice as we continuously improve our products. Therefore, we recommend checking the product descriptions and specifications before placing an order to ensure that they are still applicable. We also reserve the right to discontinue the production and delivery of certain products, which means that not all products named in this publication may always be available.
3. This means that while ATI may provide information about the typical requirements and applications of their products, they cannot guarantee that their products will be suitable for all customer applications. It is the responsibility of the customer to evaluate whether an ATI product with the specified properties is appropriate for their particular application.
4. ATI warrants its products to perform according to specifications for one year from the date of sale, except when damaged due to excessive abuse. If a product fails to meet specifications within one year of the sale, it can be exchanged free of charge.
5. ATI reserves the right to make changes or discontinue products or services without notice. Customers are advised to obtain the latest information before placing orders.
6. All products are sold subject to terms and conditions of sale, including those pertaining to warranty, patent infringement, and limitation of liability. Customers are responsible for their applications using ATI products, and ATI assumes no liability for applications assistance or customer product design.
7. ATI does not grant any license, either express or implied, under any patent right, copyright, mask work right, or other intellectual property right of ATI.
8. ATI's publication of information regarding third-party products or services does not constitute approval, warranty, or endorsement.
9. ATI retains ownership of all rights for special technologies, techniques, and designs for its products and projects, as well as any modifications, improvements, and inventions made by ATI.
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.