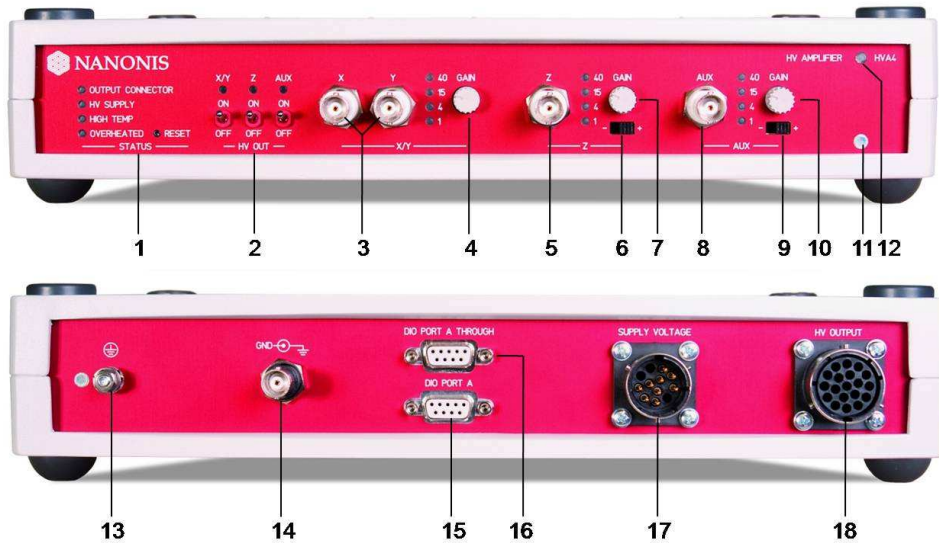


Six Channel Bipolar High Voltage Amplifier

NANONIS LOW NOISE AMPLIFIER HVA4

The HVA4 is a high voltage amplifier specifically designed for nano-positioning applications with piezo elements such as tube scanners. It requires the HVS4 module for power supply. The HVA4 excels in atomic resolution Scanning Probe Microscopy (SPM) with its ultra low noise outputs. It features six amplifier channels, of which two pairs have opposite polarity and are used for the x and y channel. The z and aux channel have switchable polarities. Each input channel has selectable gain of 1, 4, 15 and 40 with corresponding LED indicator. Gain settings can be read back digitally by the Nanonis software. Its outputs are short-circuit proof and can drive a load capacitance of up to 20 nF per channel. The HVA4 can deliver up to 50 W of power and has an excellent thermal stability. It has a bandwidth of 2 kHz as it is optimal for SPM applications.



1) Status LEDs: Check for Input/Output connections of 17) and 18) (Green), high-temperature (Orange) and overheated (Red) with reset button, 2) Switches for high-voltage outputs with LED indicator, 3) BNC inputs for x and y axis, 4) Gain selector for x/y with corresponding status LED, 5) BNC input for z axis, 6) Inverter switch for z axis, 7) Gain selector for z axis with corresponding status LED, 8) BNC input for aux axis, 9) Inverter switch for aux, 10) Gain selector for aux with corresponding status LED, 11) Ground shield, 12) Power status LED, 13) Chassis ground, 14) BNC for analog ground, 15) DIO port for SC4 (digital read-out of gains), 16) Direct DIO port, 17) Power supply input (from HVS4), 18) High Voltage Output.

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GENERAL

• casing	Wavetronic, stackable
• power	by Nanonis HVS4 (high-voltage power supply)
• outputs	6 (+x, -x, +y, -y, z, aux)
• inputs	4 (x, y, z, aux)
• gain selector	for x/y, z and aux, manual selector, digital read-back
• gain	±40, ±15, ±4, ±1, off (LED indicator)
• operating temperature	+5° to +45°C
• dimensions	33.0 x 26.8 x 5.4 cm (Width x Depth x Height)
• weight	ca. 6 kg
• compliance	CE

ANALOG INPUT

• channels	4 (x, y, z, aux)
• connector	BNC
• coupling	differential, DC
• diff. input voltage range	±10 V
• maximum input voltage	±10 V
• analog bandwidth	2 kHz
• analog filter type	3 rd order Butterworth
• diff. input resistance	1 MΩ @ DC, 100 kΩ @ 2 kHz
• EMC-Protection	according to EN61326-1, Table-1

HIGH VOLTAGE OUTPUT

• channels	6 (+x, -x, +y, -y, z, aux)
• connector	Souriau/TRIM TRIO – UTG6 16 19PN + accessories
• coupling	DC, referenced to HVGND
• range	±400 V
• analog bandwidth	2 kHz (optional 10kHz)
• offset	20 mV max
• max current	20 mA
• max slew rate	1800 V/ms @ C _{load} = 10 nF
• output resistance	200 Ω
• EMC-Protection	according to EN61326-1, Table-1

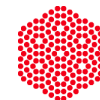
Output Noise (input shorted, gain 40)

• noise rms (10Hz-10kHz)	< 80 μV
• noise peak-peak (10Hz-10kHz)	< 500 μV

Output Noise (input from SC4, gain 40):

• noise rms (10Hz-10kHz)	< 0.5 mV
• noise peak-peak (10Hz-10kHz)	< 3.0 mV

Product specifications and descriptions in this document subject to change without notice.



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