

±3000V, ±3mA / ±5mA_P

PRECISION HIGH SPEED HIGH VOLTAGE AMPLIFIER MODULE

▪ **FEATURES**

- ±3000V / ±3mA
- High Precision, High Stability
- Low Noise
- High Speed
- Differential Mode
- Inhibit Input
- V/I Monitor Outputs
- Local High Voltage Generation
- Interlock Input

▪ **APPLICATIONS**

- Electrostatic Deflection
- Mirror Deflection / Deforming
- Electrophoresis
- Ion Beam Deflection
- Electro Optics
- MEMS
- Mass Spectrometry
- High Voltage Testing

The **HA3B3-S** is a high precision high voltage amplifier 3U / 8HP / 220mm plug-in card. It provides output voltages between -3000V and +3000V at ±3mA. The amplifier output is available via an SHV connector located on the front panel.

Signal gain is 300, the input voltage range is ±10V. The amplifier features high precision, very high DC stability, high speed as well as very low ripple and noise. The amplifier output is driven by a linear four quadrant high voltage power stage featuring very low distortion. It easily drives capacitive and resistive/capacitive loads.

Optionally the amplifier modules are available with even lower noise at reduced bandwidth and slew rate.

Two amplifier modules can be configured to provide differential output voltages. In this case the input signal is fed to the master channel only. The slave channel provides the identical magnitude of the output voltage at inverse polarity.

The output voltage is controlled by means of a differential setpoint input . The amplifier is equipped with voltage and current monitor outputs and a TTL compatible INHIBIT input.

The amplifier output is protected against overcurrent, short circuit, overvoltage and high voltage flashover / arc.

External supply voltage is +24V. The high voltage generator is part of the module.

A safety interlock circuit is provided to integrate the unit into an emergency shutdown circuit. When the interlock loop is open, the internal high voltage sources are being shut down.

Mainframes / subracks are available to accommodate several amplifier plug-in cards.

Customized and full custom models of the high voltage amplifier modules and mainframes are available on request.



■ SPECIFICATIONS

Output Voltage:	-3000V ... +3000V, bipolar
Output Current:	±3mA / ±5mA _P
Full Power Bandwidth (THD ≤1%):	DC ... >2.5kHz @ C _L =0 *
	DC ... >1kHz @ C _L =100pF *
Small Signal Bandwidth (-3dB):	DC ... >20kHz @ C _L =100pF *
Slew Rate:	typ. 25V/μs @ C _L =100pF *
Control Input:	±10V (10V ≅ 3000V), BNC, R _i = 25kΩ
DC Gain:	200 ±0.2%
Temperature Coefficient:	typ. 25ppm/K
Load Regulation:	< 50ppm
Ripple / Noise:	< 20mV _{RMS} @ C _L =200pF *
Monitor Output (V):	±10V (10V ≅ 3000V), BNC
Monitor Output (I):	±10V (10V ≅ 10mA), BNC
INHIBIT Input:	TTL compatible, via rear connector
Output Connector:	SHV
Supply Voltage:	+24V _{DC} ±10%
Ambient Temperature:	Operation: -10 - +40°C Storage: -25 - +70°C
Dimensions:	3U x 8HP x 220mm

- * Bandwidth, slew rate and output noise are depending on the size of the capacitive load. The coaxial output cable is part of the capacitive load and will reduce slew rates and large signal bandwidth. A typical coaxial cable has a capacitance of approx. 100pF/m.
Increasing the load capacitance reduces output noise.

■ MAINFRAME HAR42-4

Model HAR42-4 is a 4U / 42HP subrack to accommodate up to four amplifier modules. It is equipped with internal power supplies, speed controlled cooling fans, a common Interlock input for all channels, and a HV OFF button.



■ SPECIFICATIONS HAR42-4

Line Voltage:	100 - 240V AC ±10% 50/60Hz
Input Current:	1,3A RMS at V Line =115V AC , nominal load 0,65A RMS at V Line =230V AC , nominal load
Line Fuses F1, F2:	T6.3A, 250V, IEC127-2/V
External Fuse:	16A
Protection Class:	I
Dimensions (h x w x d):	ca. 177 x 249 x 382 mm ³
Weight:	ca. 4kg without amplifier modules