

## Mini High Voltage Modules HV1000-Series

### Description

The HV series of DC/DC converters has been designed for optimum photomultiplier (PMT) performance. It is also suitable for avalanche photodiodes (APD), solid state detectors, piezo devices and other applications requiring precision, low noise, high voltage in a compact shielding housing. The output voltage is precisely adjustable and highly stable. The output current is limited to a safe level so that the detector is protected against overload.

Improvements in stability and ripple, along with an on board precision reference, a voltage monitor and increased protection, enable these modules to replace much larger, more expensive power supplies in many applications. The output voltage can be adjusted either with a simple potential divider or with an external control voltage.



### Features

- Negative output voltage up to 1025 V
- High accuracy < 0.2%
- High stability < 0.01 %
- Short-circuit proof
- Low ripple
- Compact shielded housing

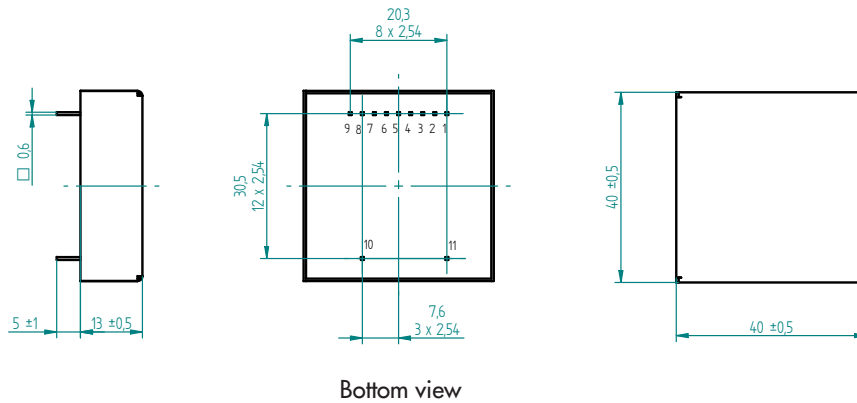
### Applications

- Photomultiplier Tubes
- Avalanche Photodiodes
- Solid State Detectors
- Electrophoresis
- Piezo Devices
- Capacitor Charging

### Technical Specifications (Overview)

HV-Series	HV 1000
Operating voltage	+11 ... +15 VDC
Setting of amplifier	0 ... +5.0 VDC
Control voltage	0 ... +5.0 VDC
Reference voltage	+5.050 VDC
Output voltage	-10 ... -1025 V
Output current	max. 1.8 mA
Measures	40 x 40 x 13 mm
Weight	48 g

## Package Drawing



## Connection Configuration

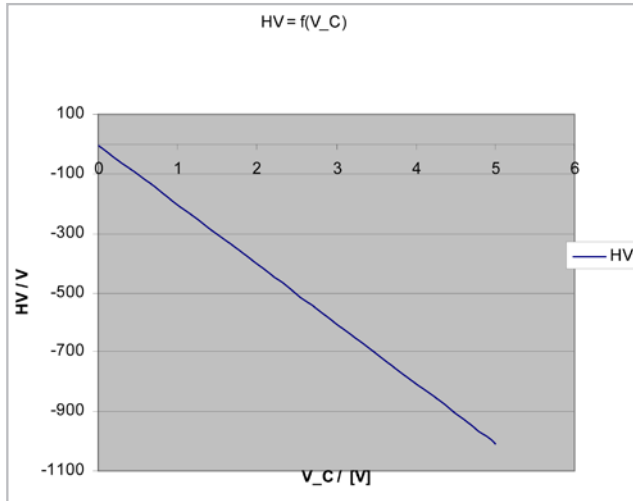
Pin	Name	Function	Characteristic
1	+VB_Int	Supply voltage	12 VDC (typ.)
2	I_TEST	Current monitor	0 ... 5 VDC
3	HV_TEST	Voltage monitor	0 ... 5 VDC
4	+VB	Supply voltage	12 VDC (typ.)
5	P_GND	Ground	
6	ON_OFF	HV on/off*	0 ... 5 VDC
7	A_GND	Ground	
8	V_C	Control voltage	0 ... 5 VDC
9	V_REF	Reference voltage	5 ... 5.1 VDC
10	HV_GND	HV ground	
11	HV	HV output	-10 ... -1024 VDC

\*HV is off when > 0.9 V

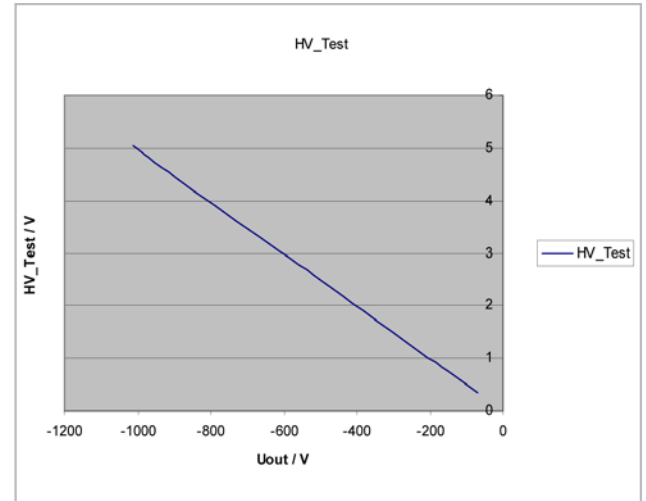
## Detailed Technical Specifications

Operating voltage	+VB / +VB_INT (pins 1,4)
Voltage range Absolute limits	[11.5..15] VDC [-0.5..16] VDC
Current consumption: No load Current consumption: Full load (I <sub>out</sub> = 1.8 mA)	ca. [20..25] mA ca. [230 ..250] mA
Current consumption: Overload	ca. [60..65] mA
Reference voltage	V_REF (pin 9)
Voltage range Output impedance	[4.99 ..5.05] VDC ca. 200 Ohm
Max. output current	20 mA
Control voltage	V_C (pin 8)
Voltage range Absolute limits Input impedance	[0..5] VDC [-1..1.5] VDC 10 kOhm
Amplification	[-199 ..-201] V/V
Voltage monitor	HV_TEST (pin 3)
Voltage range Transfer function	[0..5] VDC Typ. 5 mV/V [4.95 ...5.1] mV/V
Output impedance	ca. 10 kOhm
Current monitor	I_TEST (pin 2)
Sensitivity	Typ. 5 mA/V -[4.9 ...5.1] mA/V
Output impedance	ca. 10 kOhm
Inhibit input	ON/OFF (pin 6)
Voltage range	[-0.5... 1.5] VDC > 0,9 V → OFF
Input impedance	1000 Ohm
Output voltage	HV (pin 11)
Linear range	[-5 ...-1025] V
Voltage limit	[-1005 ...-1025] V
Max. output current Current limit	ca. 1.8 mA ca. 1.8 mA
Temperature range	
Operation Storage	[0...40] °C [-10°....70°] C
Dimensions Weight	40 x 40 x 13 mm ca. 48 g

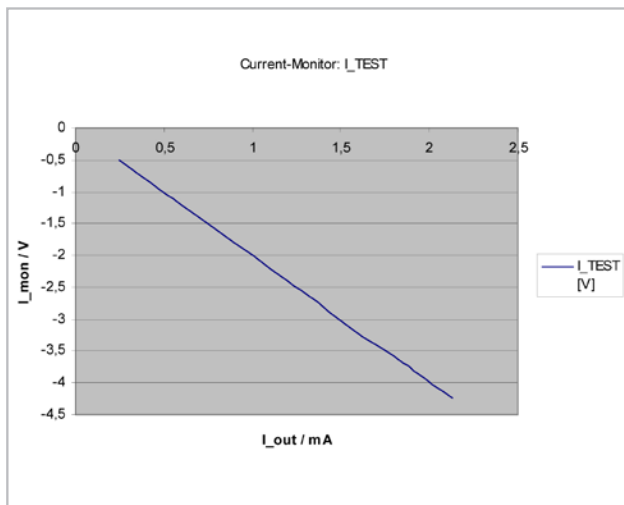
$HV = f(V_C)$



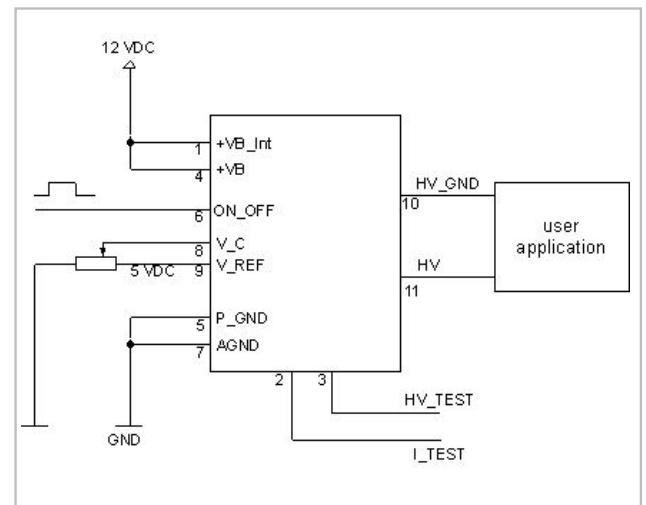
$HV\_TEST = f(HV)$



$T\_TEST = f(I_{out})$



Schematic diagram HV1000



For optimum performance both +VB\_Int and +VB should be connected to the voltage supply.

+VB\_Int supplies the HV output stage and is internally filtered.

+VB\_Int must never be connected to ground. This will cause damage to the module.

### Danger!

Do not connect additional capacitors to the HV output, this will cause the output current to increase to dangerous levels.

Vorsicht Lebensgefahr!

Werden zusätzliche Kondensatoren am HV-Ausgang angeschlossen erhöht sich der max. mögliche Kurzschluss-Strom.

### Product Changes

LASER COMPONENTS reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

### Ordering Information

Products can be ordered directly from LASER COMPONENTS or its representatives. For a complete listing of representatives, visit our website [www.lasercomponents.com](http://www.lasercomponents.com)

Custom designed products are available on request.