

**0.5kV - 10kV; 5W - 9W**  
**COMPACT, PRECISION REGULATED**  
**HIGH VOLTAGE POWER SUPPLIES**

▪ **FEATURES**

- Precise high voltages up to 10kV at max. 9W
- Very compact metal case
- Very low ripple and noise
- Very low EMI
- Patented resonance converter technology
- Modified versions available on request
- Made in Germany



The HMM modules are highly precise and highly stable, analog controlled high voltage power supplies with fixed output polarity. The HMM series covers output voltages of up to 10kV in a very compact metal box. The maximum output power is 9W.

The HV output is brought out either via an HV cable or via a high voltage connector. The supply and control voltages are connected via a D-Sub 9 connector.

Analog I/O is provided for remote monitoring and control of output voltage and current by means of analog control voltages or potentiometers (internal reference voltage). To protect the connected load an INHIBIT input is provided.

The patented resonant converter technology and the metal box shielding guarantee high efficiency and low EMI.

Output Voltage $V_{NOM}$	Max. Output Current $I_{NOM}$	Model		Ripple / Noise $(f > 10\text{Hz})$ typ.
		Positive Polarity Output	Negative Polarity Output	
0 - 500V	15mA	HMM-0.5P15-24-#	HMM-0.5N15-24-#	10mV <sub>PP</sub>
0 - 1 000V	8mA	HMM-1P8-24-#	HMM-1N8-24-#	10mV <sub>PP</sub>
0 - 2 000V	4mA	HMM-2P4-24-#	HMM-2N4-24-#	10mV <sub>PP</sub>
0 - 3 000V	3mA	HMM-3P3-24-#	HMM-3N3-24-#	10mV <sub>PP</sub>
0 - 4 000V	2mA	HMM-4P2-24-#	HMM-4N2-24-#	10mV <sub>PP</sub>
0 - 6 000V	1mA	HMM-6P1-24-#	HMM-6N1-24-#	30mV <sub>PP</sub>
0 - 8 000V	1mA	HMM-8P1-24-#	HMM-8N1-24-#	30mV <sub>PP</sub>
0 - 10 000V	0.5mA	HMM-10P0.5-24-#	HMM-10N0.5-24-#	30mV <sub>PP</sub>

#: output implementation designator: "W" or "R" for cable or connector respectively

The standard output implementation for 0.5kV – 6kV units is a SHV connector, the 8kV and 10kV units are equipped with a shielded HV cable. Other versions are available on request; minimum order quantity may apply.

## ▪ SPECIFICATIONS

Input Supply Voltage (V <sub>IN</sub> ):	24V <sub>DC</sub> ± 5% (max 0.6A)
Line Regulation:	$< 1 * 10^{-5} * V_{NOM}$ ( $\Delta V_{OUT} / \Delta V_{IN}$ min to max supply voltage)
Load Regulation:	$< 1 * 10^{-5} * V_{NOM}$ ( $\Delta V_{OUT} / \Delta R_{LOAD}$ no load to rated load)
Temperature Coefficient:	$< 5 * 10^{-5}/K$
Supply / Control Connector:	D-Sub 9 male
Output option "W":	shielded HV cable
option "R":	0.5kV to 8kV models: SHV connector
	10kV model: KINGS 1064-1 connector
Control:	analog control signals: VSET, ISET, VMON, IMON 5V control inputs: INH
Reference Voltage (V <sub>REF</sub> ):	5.0V ±1% (max 1mA) This reference voltage is intended for external potentiometers to program the output voltage and/or current (connect wipers to VSET, ISET respectively)
Voltage Setting (VSET):	V <sub>VSET</sub> = 0 to V <sub>REF</sub> results in V <sub>OUT</sub> = 0 to V <sub>NOM</sub> ±1% (input impedance: 1MΩ)
Current Limit Setting (ISET):	V <sub>ISET</sub> = 0 to V <sub>REF</sub> results in I <sub>LIMIT</sub> = 0 to I <sub>NOM</sub> ±1%
Voltage Monitor (VMON):	V <sub>OUT</sub> = 0 to V <sub>NOM</sub> results in V <sub>VMON</sub> = 0 to V <sub>REF</sub> ±1% (output impedance: 10kΩ)
Current Monitor (IMON):	I <sub>OUT</sub> = 0 to I <sub>NOM</sub> results in V <sub>IMON</sub> = 0 to V <sub>REF</sub> ±1% (output impedance: 10kΩ)
Inhibit (INH):	5V level, active Low Low: V <sub>OUT</sub> = 0 High or open: V <sub>OUT</sub> according to V <sub>VSET</sub> with ramp
Protection:	Overload, arc and output short circuit. <b>Only one short circuit or arc event per second allowed!</b> In case of higher arc/S.C. frequency the RMS output current must be limited to I <sub>NOM</sub>
Operating temperature:	0°C to +40°C
Storage temperature:	-20°C to +85°C
Dimensions:	see drawing

All voltages are referenced to GND

## ▪ ORDERING INFORMATION

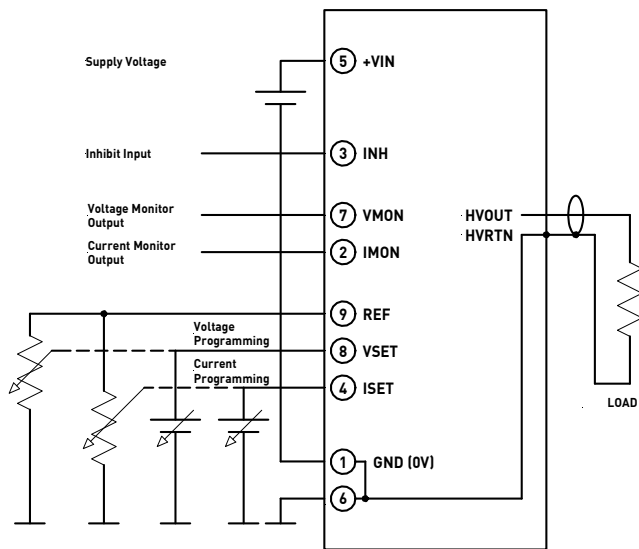
<b>HMM</b>	-	<b>0.5</b>		<b>P</b>		<b>15</b>	-	<b>24</b>	-	<b>W</b>
Base Part Designation		Output Voltage [kV <sub>DC</sub> ]		Output Polarity		Output Current [mA]		Input Supply Voltage [V <sub>DC</sub> ]		Output Implementation Designator

Examples: HMM-0.5P15-24-W (HMM series, 500V, positive, 15mA, 24V supply, cable output)  
 HMM-0.5P15-24-R (HMM series, 500V, positive, 15mA, 24V supply, SHV connector)  
 HMM-10P0.5-24-R (HMM series, 10kV, positive, 0.5mA, 24V supply, KINGS connector)

## ▪ MOUNTING INSTRUCTION

The module can be mounted by two screws M3 (screw-in depth max. 4mm) in horizontal or upright position. The power loss is dissipated via the base surface of the module (62.5mm or 74mm wide). If the module is mounted on this surface, low thermal resistance between the module and the assembling plane must be ensured!

## CONNECTION DIAGRAM (OPTION W)

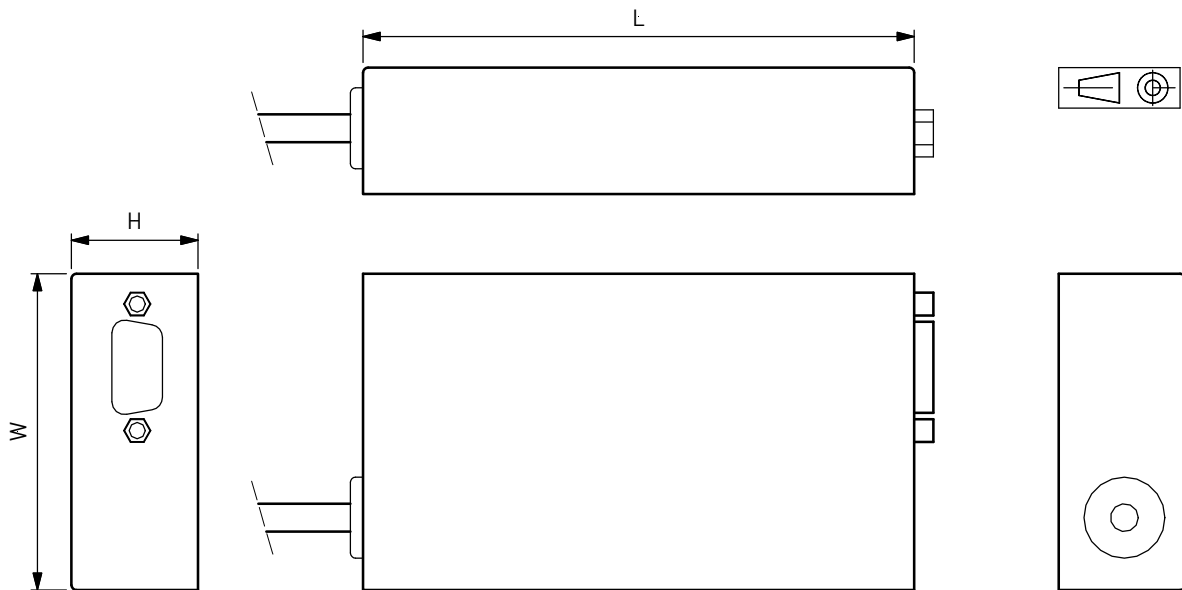


## PIN FUNCTION DESCRIPTIONS

Pin No.	Designation	Function
1	GND (0V)	Power 0V (connected to pin 6)
2	IMON	Current Monitor Output
3	INH	Inhibit Input
4	ISET	Current Programming Input
5	+VIN	Input Supply Voltage
6	GND	Signal GND (connected to pin 1)
7	VMON	Voltage Monitor Output
8	VSET	Voltage Programming Input
9	REF	Reference Voltage Output

GND and HVRTN are internally connected.  
The case is connected to GND.

## DIMENSIONS



Dimensions in mm

Drawing not to scale

	500V-6kV models	HMM-8... HMM-10...-W	HMM-10...-R
L	109	98	103
W	62.5	74	74
H	25	22	25

### Disclaimer

The information given in this data sheet is technical data, not assured product characteristics. It has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. The user has to ensure by adequate tests that the product is suitable for his application regarding safety and technical aspects. hivolt.de GmbH & Co. KG does not assume any liability arising out of the application or use of any product described.

### Safety Advice

Design, installation and inspection of machinery and devices carrying high voltage require accordingly trained and qualified personnel. Appropriate safety rules and directives must be complied with. Improper handling of high voltage can mean severe injuries or death and may cause serious collateral damage!