

**1kV - 30kV; 150W**  
**VERSATILE, PRECISION REGULATED**  
**HIGH VOLTAGE POWER SUPPLIES**

▪ **FEATURES**

- Precise high voltages up to 30kV at max. 150W
- Positive or negative polarity
- Output voltage and current control
- Internal reference voltage
- Stable output voltage
- Low ripple and noise
- Low EMI
- Inhibit and ON inputs
- Capacitor charger and arc management options
- Patented resonance converter technology
- Metal case
- Modified versions available on request
- Made in Germany



HME modules are versatile, precise and stable analog controlled high voltage power supplies with multiple options. The HME series covers output voltages of up to 30kV in a compact metal box. The maximum output power is 150W. The HV output is brought out via an HV cable. The control voltages and analog I/O are connected via a D-Sub 9 connector. The control of output voltage and current is achieved by means of control voltages or potentiometers (internal reference voltage). Remote ON and Inhibit inputs, as well as output voltage and output current monitoring outputs, are provided.

The HME modules can be equipped as capacitor charger with very low output voltage overshoot (option C). They also can be protected against high-frequency arcs (option A).

For production quantities the devices can be equipped with a Safety-Interlock circuit.

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

The HME modules can be used as standalone DC/DC converters or combined into THQ series multichannel AC/DC HV power supplies.

Output Voltage $V_{NOM}$	Max. Output Current $I_{NOM}$	Model	Ripple / Noise $@f > 10\text{Hz}$ typ.	Internal Capacitance nominal	Damping Resistor	Discharge Resistor
				Basic Model		
				Capacitor Charger (option C)		
0 – 1 000V	150mA	<b>HME-1x150-24-#</b>	0.2V <sub>PP</sub>	1100nF 220nF	0.1kΩ 0.1kΩ	8.5MΩ 8.5MΩ
0 – 2 000V	75mA	<b>HME-2x75-24-#</b>	1V <sub>PP</sub>	600nF 200nF	0.4kΩ 0.1kΩ	8.5MΩ 8.5MΩ
0 – 4 000V	40mA	<b>HME-4x40-24-#</b>	2V <sub>PP</sub>	55.0nF 14.0nF	1.0kΩ 0.3kΩ	25MΩ 25MΩ
0 – 8 000V	20mA	<b>HME-8x20-24-#</b>	1V <sub>PP</sub>	45.0nF 7.5nF	4.0kΩ 1.0kΩ	250MΩ 250MΩ
0 – 12 000V	12.5mA	<b>HME-12x12.5-24-#</b>	2V <sub>PP</sub>	20.0nF 3.5nF	4.0kΩ 6.0kΩ	330MΩ 330MΩ
0 – 15 000V	10mA	<b>HME-15x10-24-#</b>	1V <sub>PP</sub>	20.0nF 3.5nF	4.0kΩ 6.0kΩ	330MΩ 330MΩ
0 – 20 000V	7.5mA	<b>HME-20x7.5-24-#</b>	2V <sub>PP</sub>	9.5nF 2.8nF	10kΩ 10kΩ	330MΩ 330MΩ
0 – 30 000V	5mA	<b>HME-30x5-24-#</b>	3V <sub>PP</sub>	2.6nF 1.1nF	10kΩ 10kΩ	330MΩ 330MΩ

**x:** output voltage polarity designator: "P" (positive) or "N" (negative)

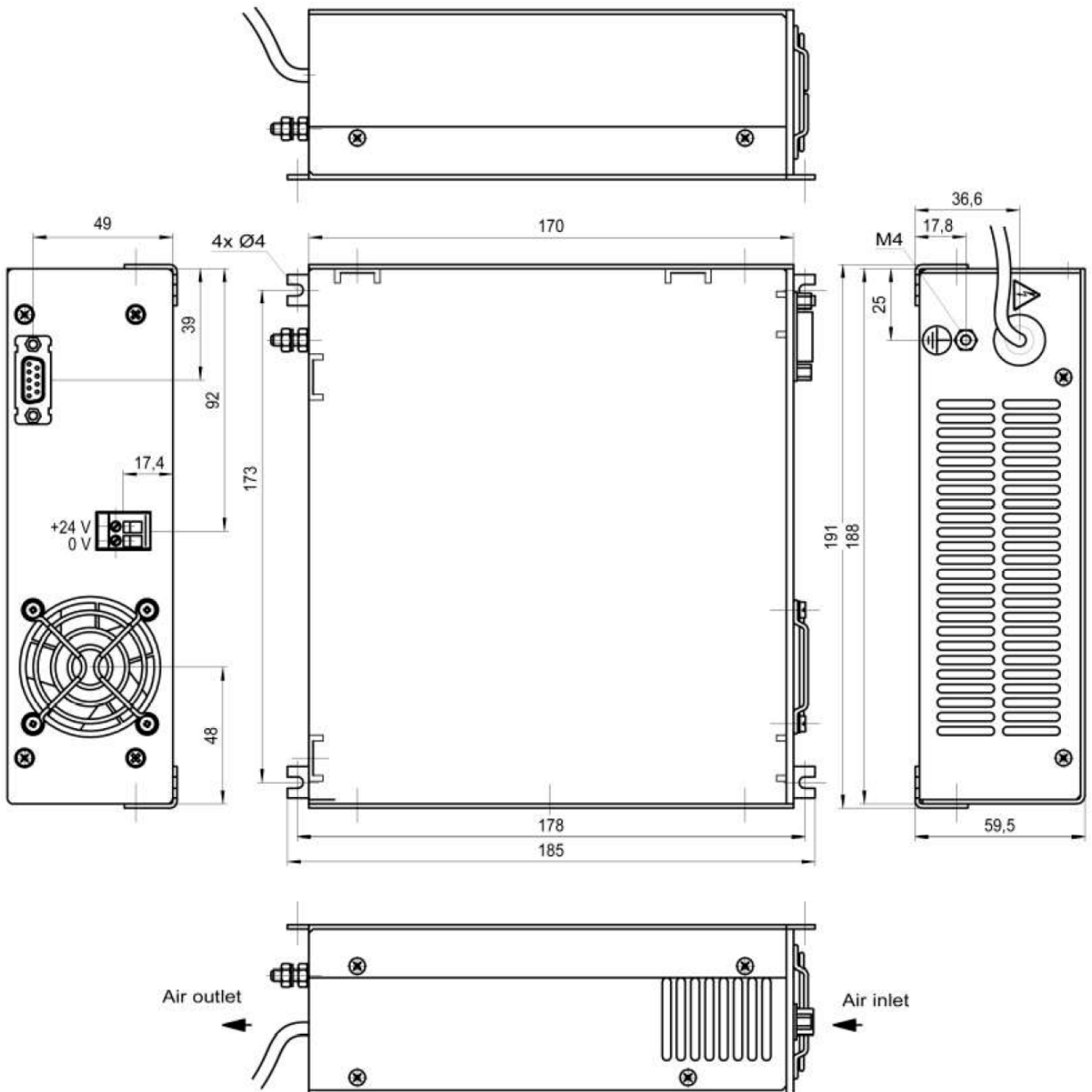
**#:** set/monitor voltage range designator: "5" (standard) or "10" (optional) for 0-5V or 0-10V respectively

## ■ SPECIFICATIONS

Input Supply Voltage ( $V_{IN}$ ):	+21V <sub>DC</sub> to +29V <sub>DC</sub> (max 9A)	
Output Polarity:	positive or negative; factory fixed	
Line Regulation:	standard: $< 1 * 10^{-4} * V_{NOM}$ option C: $< 2 * 10^{-4} * V_{NOM}$	( $\Delta V_{OUT}$ vs. $\Delta V_{IN}$ - min to max supply voltage)
Load Regulation:	$< 2 * 10^{-4} * V_{NOM}$	( $\Delta V_{OUT}$ vs. $\Delta R_{LOAD}$ - no load to rated load)
Temperature Coefficient:	$2 * 10^{-4}/K$	
Control:	analog control signals: VSET, ISET, VMON, IMON 5V control inputs: INH, ON	
Reference Voltage (REF):	$V_{REF}=5V$ (standard) or $V_{REF}=10V$ (optional, not with option A) both at 10k $\Omega$ load. This reference voltage is intended for external potentiometers to program the output voltage and/or current (connect wiper to VSET, ISET)	
Voltage Setting (VSET):	$V_{VSET}=0$ to $V_{REF}$ results in $V_{OUT}=0$ to $V_{NOM} \pm 1\%$	( $R_i$ : 10M $\Omega$ pull-down)
Voltage Ramp Up/Down:	standard: capacitor charger models (C):	ca. $0.25 * V_{NOM}/s$ $< 50ms$ to $V_{NOM}$
Current Limit Setting (ISET):	$V_{ISET}=0$ to $V_{REF}$ results in $I_{OUT}=0$ to $I_{NOM} \pm 1\%$	( $R_i$ : 10M $\Omega$ pull-up against $V_{REF}$ )
Voltage Monitor (VMON):	$V_{OUT}=0$ to $V_{NOM}$ results in $V_{VMON}=0$ to $V_{REF}$	
Current Monitor (IMON):	$I_{OUT}=0$ to $I_{NOM}$ results in $V_{IMON}=0$ to $V_{REF}$	
Repeatability:	$< 1\% * V_{NOM}$	(capacitor charger models)
Efficiency:	$> 80\%$	(at rated output power)
Remote ON (ON):	active Low Low (0V to 1V): High (3.5V to 10V) or open:	(10k $\Omega$ pullup to +5V) $V_{OUT}$ according to $V_{VSET}$ $V_{OUT}=0$ The output voltage ramps up/down at ramp speed given above.
Inhibit (INH):	active Low Low (0V to 1V): High (3.5V to 10V) or open:	(10k $\Omega$ pullup to +5V) $V_{OUT}$ off $V_{OUT}$ according to $V_{VSET}$ The output will be shut off immediately without ramp by INH=Low. After power-on or shutdown due to an error condition (input voltage out of range, over-temperature, output overvoltage) INH must be held Low for >300ms to re-establish normal operation.
Arc Indicator (ARC):	(option A models only) active Low Low (0V to 1V) for some ms: High (3.5V to 5V):	(20k $\Omega$ pullup to +5V plus 22k $\Omega$ series resistance) Arc occurred normal operation
Protection:	Overload, output short circuit, output over-voltage, over-temperature, supply voltage, (Interlock), arc (-A models) <b>Only one short circuit or arc event per second allowed for units without option A!</b> In case of higher S.C. or arc frequency the RMS output current must be limited to $I_{NOM}$	
Input Supply Connector:	2-pole screw terminal block, max. 2.5mm <sup>2</sup>	
Control Connector:	D-Sub 9 male	
Output Connection:	shielded HV cable (ca. 600mm); other lengths on request	
Temperature Range:	Operating: $-20^{\circ}C$ to $+65^{\circ}C$ Storage: $-20^{\circ}C$ to $+85^{\circ}C$	
Cooling:	Built-in fan (max 20m <sup>3</sup> /h)	
Humidity:	20% to 90% non-condensing	
Dimensions (LxWxH, overall):	185mm x 191mm x 59.5mm	
Weight:	1.5kg to 1.75kg, depending on model	

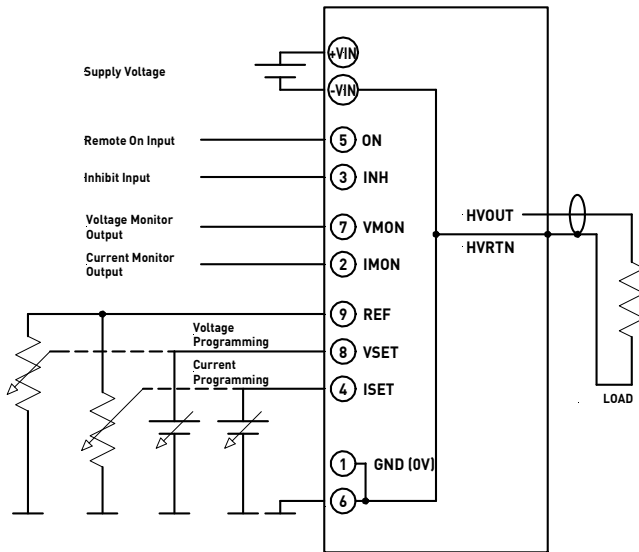
All voltages are referenced to GND

## ▪ DIMENSIONS



Dimensions in mm, drawing not to scale

## CONNECTION DIAGRAM (STANDARD MODELS)



## PIN FUNCTION DESCRIPTIONS

Pin No.	Designation	Function
1	GND (0V)	Signal GND (conn. to pin 6)
2	IMON	Current Monitor Output
3	INH	Inhibit Input
4	ISET	Current Progr. Input
5	ON	HV ON Input
6	GND	Signal GND (conn. to pin 1)
	ARC	On models with option A: Arc Indicator Output
7	VMON	Voltage Monitor Output
8	VSET	Voltage Progr. Input
9	REF	Reference Voltage Output
	+VIN	Input Supply Voltage
	-VIN	Supply Voltage Ground

GND, -VIN and HVRTN are internally connected; the case is connected to GND.

## OPTIONS

- A protection against high-frequency arcs (for set/monitor voltage 5V only)
- C capacitor charger with very low output voltage overshoot

## ORDERING INFORMATION

HME	-	2	P	75	-	24	-	5	-	C
Base Part Designation		Output Voltage [kV <sub>DC</sub> ]	Output Polarity	Output Current [mA]		Input Supply Voltage [V <sub>DC</sub> ]		Set/Monitor Voltage Range [V <sub>DC</sub> ]		Options (if applicable)

Examples: HME-2P75-24-5 (HME series, 2kV, positive polarity, 30mA, 24V supply, 5V reference)

HME-2P75-24-10-C (HME series, 2kV, positive polarity, 30mA, 24V supply, 10V reference, capacitor charger option)

### 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!