HME 150W Series

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
- 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 medium quantities the devices can be equipped with a Safety-Interlock loop.

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.

<table>
<thead>
<tr>
<th>Output Voltage $V_{\text{nom}}$</th>
<th>Max. Output Current $I_{\text{nom}}$</th>
<th>Positive Polarity Output</th>
<th>Negative Polarity Output</th>
<th>Ripple / Noise $\Delta V_{\text{typ}}$ @$f&gt;10\text{Hz}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 1 000V</td>
<td>150mA</td>
<td>HME-1P150-24-#</td>
<td>HME-1N150-24-#</td>
<td>0.5VPP</td>
</tr>
<tr>
<td>0 – 2 000V</td>
<td>75mA</td>
<td>HME-2P75-24-#</td>
<td>HME-2N75-24-#</td>
<td>1VPP</td>
</tr>
<tr>
<td>0 – 4 000V</td>
<td>40mA</td>
<td>HME-4P40-24-#</td>
<td>HME-4N40-24-#</td>
<td>2VPP</td>
</tr>
<tr>
<td>0 – 8 000V</td>
<td>20mA</td>
<td>HME-8P20-24-#</td>
<td>HME-8N20-24-#</td>
<td>4VPP</td>
</tr>
<tr>
<td>0 – 12 000V</td>
<td>12.5mA</td>
<td>HME-12P12.5-24-#</td>
<td>HME-12N12.5-24-#</td>
<td>6VPP</td>
</tr>
<tr>
<td>0 – 15 000V</td>
<td>10mA</td>
<td>HME-15P10-24-#</td>
<td>HME-15N10-24-#</td>
<td>7.5VPP</td>
</tr>
<tr>
<td>0 – 20 000V</td>
<td>7.5mA</td>
<td>HME-20P7.5-24-#</td>
<td>HME-20N7.5-24-#</td>
<td>10VPP</td>
</tr>
<tr>
<td>0 – 30 000V</td>
<td>5mA</td>
<td>HME-30P5-24-#</td>
<td>HME-30N5-24-#</td>
<td>15VPP</td>
</tr>
</tbody>
</table>

#: set/monitor voltage range designator: “5” or “10” for 0-5V or 0-10V respectively

OPTIONS
- A protection against high-frequency arcs
- C capacitor charger with very low output voltage overshoot
**SPECIFICATIONS**

Input Supply Voltage ($V_{IN}$): +21V DC to +29VDC (max 9A)

Line Regulation: $< 1 \times 10^{-4} + V_{NOM}$ ($\Delta V_{OUT} / \Delta V_{IN}$ min to max supply voltage)

Load Regulation: $< 2 \times 10^{-4} + V_{NOM}$ ($\Delta V_{OUT} / \Delta LOAD$ no load to rated load)

Temperature Coefficient: $2 \times 10^{-4}/K$

Supply Connector: 2-pole screw terminal block, max. 2.5mm²

Control Connector: D-Sub 9 male

Output: shielded HV cable (600mm)

Control: analog control signals: VSET, ISET, VMON, IMON

5V control inputs: INH, ON

Reference Voltage ($V_{REF}$): 5V or 10V (model dependent).

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 $V_{NOM}$ ±1% (input impedance: 10MΩ)

Current Limit Setting (ISET): $V_{ISET} = 0$ to $V_{REF}$ results in $I_{OUT} = 0$ to $I_{NOM}$ ±1% (input impedance: 10MΩ)

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 $V_{REF}$

Remote ON (ON) active Low (10kΩ pullup to +5V)

Low (0V to 1V): $V_{OUT}$ according to $V_{VSET}$ with ramp ca. $V_{NOM}$/4s

High (3.5V to 10V) or open: $V_{OUT} = 0$ with ramp ca. $V_{NOM}$/4s

Inhibit (INH) active Low (10kΩ pullup to +5V)

Low (0V to 1V): $V_{OUT}$ off

High (3.5V to 10V) or open: $V_{OUT}$ according to $V_{VSET}$

Protection:

Supply overvoltage and undervoltage, overload, arc, output short circuit, output overvoltage, over-temperature.

*Only one short circuit or arc event per second allowed!*

In case of higher arc/S.C. frequency the RMS output current must be limited to $I_{NOM}$

Operating temperature: 0°C to +65°C

Cooling: Built-in fan (max 20m³/h)

Storage temperature: -25°C to +80°C

Dimensions (LxWxH): 188 x 185 x 59.5 mm³

Weight: 1.5kg to 1.75kg, depending on model

All voltages are referenced to GND

**PIN FUNCTION DESCRIPTIONS**

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND (0V)</td>
<td>Signal GND (conn. to pin 6)</td>
</tr>
<tr>
<td>2</td>
<td>IMON</td>
<td>Current Monitor Output</td>
</tr>
<tr>
<td>3</td>
<td>INH</td>
<td>Inhibit Input</td>
</tr>
<tr>
<td>4</td>
<td>ISET</td>
<td>Current Prog. Input</td>
</tr>
<tr>
<td>5</td>
<td>ON</td>
<td>Remote On Input</td>
</tr>
<tr>
<td>6</td>
<td>GND</td>
<td>Signal GND (conn. to pin 1)</td>
</tr>
<tr>
<td>7</td>
<td>VMON</td>
<td>Voltage Monitor Output</td>
</tr>
<tr>
<td>8</td>
<td>VSET</td>
<td>Voltage Prog. Input</td>
</tr>
<tr>
<td>9</td>
<td>REF</td>
<td>Reference Voltage Output</td>
</tr>
<tr>
<td></td>
<td>+VIN</td>
<td>Input Supply Voltage</td>
</tr>
<tr>
<td></td>
<td>-VIN</td>
<td>Supply Voltage Ground</td>
</tr>
</tbody>
</table>

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

Dimensions in mm, drawing not to scale

**ORDERING INFORMATION**

<table>
<thead>
<tr>
<th>HME</th>
<th>2</th>
<th>P</th>
<th>75</th>
<th>24</th>
<th>5</th>
<th>C</th>
</tr>
</thead>
</table>

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

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**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!