M-Power-Line –
Compact High-Voltage Power Supply Unit
The M-Power-Line impresses with its robust design, high efficiency, compact dimensions and outstanding price–performance ratio. Thanks to the use of a Power Factor Controller (PFC), the input voltage can vary from 100 to 254 V. This allows the device to be used anywhere in the world, regardless of the power supply system in the specific country. With its simple operation and easy readability of relevant parameters (set/actual/status), the devices are especially attractive for use in many branches of industry, as well as in research institutes.
<table>
<thead>
<tr>
<th>HIGHLIGHTS</th>
<th>TECHNICAL SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DEVICE CLASSES</strong></td>
<td><strong>Modern control unit with convenient menu navigation</strong></td>
</tr>
<tr>
<td>Voltage classes</td>
<td>The device has a high-quality and easy-to-operate control unit. The set values and actual values can be read off at any time during operation, and set value adjustment is possible even with the output locked. The current and voltage are adjusted using incremental encoders, and the control unit allows the user to set the IP address and also to read off information regarding the specific device, e.g. serial number, firmware version, operating hours, MAC address and internal status information.</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Power classes</td>
<td>All models have a Power Factor Controller (PFC) for the purposes of power-factor correction and are therefore also suitable for use around the world with mains voltages of 100 to 254 V. The mains frequency can vary between 47 and 63 Hz.</td>
</tr>
<tr>
<td>200</td>
<td>500</td>
</tr>
<tr>
<td>Input voltage</td>
<td>Models are available with DC output voltages of zero to 10, 30 or 50 kV and wattages of max. 200, 500 or 1000 W respectively. Voltage and current can be adjusted both manually and by remote control via the interfaces provided. All outputs are resistant to short circuits and flash-overs and allow unlimited operation in the event of a short circuit. They are suitable for both inductive and capacitive loads and for unlimited operation at both full and no load. The DC output is in an easily accessible position on the back of the unit.</td>
</tr>
<tr>
<td>100 – 254 V</td>
<td><strong>Fan controller (quiet running)</strong></td>
</tr>
<tr>
<td></td>
<td>The sensors of the temperature monitoring system regulate the speed of the fans. In this way, the device’s noise level is reduced to a minimum.</td>
</tr>
<tr>
<td><strong>PROTECTIVE FUNCTIONS (MAXIMUM SAFETY)</strong></td>
<td><strong>Protective functions (maximum safety)</strong></td>
</tr>
<tr>
<td></td>
<td>The device has numerous protective functions to protect connected loads from damage due to overvoltage and overcurrent. As soon as one of these values is reached, the DC output is switched off automatically. An alarm message is then appear on the display and via the interfaces. In addition, the device features temperature protection in the form of temperature sensors that monitor the power components. In the event of a fault, the power circuit is switched off automatically and a message is output via the display.</td>
</tr>
<tr>
<td></td>
<td><strong>Digital interfaces as standard</strong></td>
</tr>
<tr>
<td></td>
<td>All models have two digital interfaces – 1 x USB and 1 x Ethernet – on the back. (ASCII and binary commands are implemented for device control and monitoring.) This not only ensures that the equipment can be controlled and maintained remotely but also allows multichannel communication with the unit and checksum-protected data transmission.</td>
</tr>
<tr>
<td></td>
<td><strong>Other device features</strong></td>
</tr>
<tr>
<td></td>
<td>Operating hours counter, device history (fault memory), streaming of actual values and states with timestamp, flash-over counter, overtemperature device shutdown, and much more.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPICAL APPLICATIONS</th>
<th>LABORATORY POWER SUPPLIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH-VOLTAGE TEST RIGS</td>
<td>Capacitor chargers</td>
</tr>
<tr>
<td>ELECTROSTATIC APPLICATIONS</td>
<td>Electron beam applications</td>
</tr>
<tr>
<td>LABORATORY POWER SUPPLIES</td>
<td></td>
</tr>
<tr>
<td>HIGH-VOLTAGE TEST RIGS</td>
<td></td>
</tr>
<tr>
<td>ELECTROSTATIC APPLICATIONS</td>
<td></td>
</tr>
<tr>
<td>CAPACITOR CHARGERS</td>
<td></td>
</tr>
<tr>
<td>ELECTRON BEAM APPLICATIONS</td>
<td></td>
</tr>
</tbody>
</table>

1. HV ON/OFF switch
2. HV release LED
3. Push buttons
4. Display
5. Incremental encoder for current and voltage adjustment
6. Air inlet
7. Power switch
8. Interfaces
9. Grounding bolt
10. Device fuses
11. Power connector
12. Air outlet
13. Polarity indicator
14. HV output socket 10–30 kV
15. 0V output socket
16. HV output socket 50 kV
17. Device feet (unscrewable)
18. Adapter bracket for 19” rack
19. Output connector (accessory)
### TECHNICAL DATA

#### INPUT

<table>
<thead>
<tr>
<th>Voltage</th>
<th>100 ... 254 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>47 ... 63 Hz</td>
</tr>
<tr>
<td>Power factor</td>
<td>&gt;0,95</td>
</tr>
</tbody>
</table>

#### OUTPUT

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Up to 50,000 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>Up to 100 mA</td>
</tr>
<tr>
<td>Power</td>
<td>Up to 1000 W</td>
</tr>
<tr>
<td>Adjustment accuracy</td>
<td>&lt;0,1%</td>
</tr>
<tr>
<td>Efficiency</td>
<td>&gt; 90% at full load</td>
</tr>
</tbody>
</table>

Response time at rated load: from 10% rated output voltage to 90% or 90% rated output voltage to 10%: < 500 ms

#### STABILITY

- With ±10% mains voltage variation: ±0,01%
- With no load/full load: ±0,1%
- With temperature variations: ±0,1%/K
- Over 8 hours under constant conditions and with a ½ hour warm-up phase: ±0,1%
- Voltage ripple: 0,1%

#### Protective functions

- On overvoltage, overcurrent, overload, overtemperature
- Polarity: Positive or negative

#### Standards

- Safety: EN 61010-1
- EMC: EN 61000-6-1, EN 61000-6-3

#### Cooling

- Quiet fans with speed regulation

#### AMBIENT TEMPERATURE

- During operation: 0°C ... 40°C
- During storage: 0°C ... 60°C
- Humidity: 0 ... 85% non-condensing

#### Degree of pollution

- 1

#### Operating height

- < 2000 m above mean sea level

#### Protection class

- I

#### IP protection rating

- 20

#### Interfaces

- USB and Ethernet as standard

#### USB interface

- Virtual COM port on PC side, 115 kbps

#### Ethernet interface

- Fully integrated, based on Cortex-M4, full duplex, 5 simultaneous connections possible via Ethernet, IP address configuration via display, transfer speed of 10/100Mb/s, protocol is TCP/IPv4

#### Earthing

- One output pole is earthed

#### Use

- In enclosed rooms

#### Transport

- In operating state: cannot be transported

#### Dimensions (WxHxD) mm

- 19” housing – 2U – 443x86x454 mm | Rack adapter available

#### Weight

- 10kV: ~10 kg
- 30 kV and 50 kV: ~17 kg

---

<table>
<thead>
<tr>
<th>Designation</th>
<th>Power (W)</th>
<th>Voltage (kV)</th>
<th>Current (mA)</th>
<th>Max. stored energy (J)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPL 200 - 10000 P/N*</td>
<td>200</td>
<td>10</td>
<td>20</td>
<td>1,1</td>
</tr>
<tr>
<td>MPL 500 - 10000 P/N*</td>
<td>500</td>
<td>10</td>
<td>50</td>
<td>1,7</td>
</tr>
<tr>
<td>MPL 1000 - 10000 P/N*</td>
<td>1000</td>
<td>10</td>
<td>100</td>
<td>3,1</td>
</tr>
<tr>
<td>MPL 200 - 30000 P/N*</td>
<td>200</td>
<td>30</td>
<td>7</td>
<td>2,4</td>
</tr>
<tr>
<td>MPL 500 - 30000 P/N*</td>
<td>500</td>
<td>30</td>
<td>17</td>
<td>2,4</td>
</tr>
<tr>
<td>MPL 1000 - 30000 P/N*</td>
<td>1000</td>
<td>30</td>
<td>33</td>
<td>3,5</td>
</tr>
<tr>
<td>MPL 200 - 50000 P/N*</td>
<td>200</td>
<td>50</td>
<td>4</td>
<td>3,5</td>
</tr>
<tr>
<td>MPL 500 - 50000 P/N*</td>
<td>500</td>
<td>50</td>
<td>10</td>
<td>3,4</td>
</tr>
<tr>
<td>MPL 1000 - 50000 P/N*</td>
<td>1000</td>
<td>50</td>
<td>20</td>
<td>4,9</td>
</tr>
</tbody>
</table>

* P/N – Pointer/Negative