This single-output power supply uses a bridge-mode wide-range converter. It operates with high efficiency over the total input and output range.

It can handle a wide input range (100 - 240V AC) without switch over. Hold-up time is >200ms at 230V AC.

EMC compatibility is a major feature. It has low spurious noise with noise suppression class B. Noise immunity meets EN 61000-4 and VDE 0160 class 1, even at full load.

Over-voltage and over-temperature protection avoid problems even in extreme working environments.

### Data sheet

<table>
<thead>
<tr>
<th>Vout</th>
<th>Iout</th>
<th>Pout</th>
<th>Features</th>
<th>Order-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.15V</td>
<td>10A</td>
<td>50W</td>
<td>Wide input range, PF, OVP</td>
<td>AP136.105</td>
</tr>
</tbody>
</table>

*F* appended to Order-No. means: 8HP front panel included and fitted.

Accessories:  
- H15 connector, 6.3mm flat contacts: ZP100  
- H15 connector with soldering pins: ZP120

Warranty: 2 years from date of delivery.

### Output

- **Voltage Vout**  
  - **Accuracy** max. ±0.5% Tuning tolerance.  
  - **Sense lines** None Not available.  
  - **Minimum load** None Not necessary.

- **Output power Pout** max. 50W  
  - **Noise, Ripple** max. 20mVpp 20Hz...200kHz.  
  - **Including spikes** max. 20mVpp 20Hz...20MHz.

- **Over-voltage protection** typ. 6.2V for Vout  
  - **Threshold accuracy** ±8%

- **Derating**  
  - **1.2W/K** +55°C to +70°C Ta.

- **Operating indicator**  
  - **1 green LED** On the front.

- **Isolation Vout to Vin** SELV  
  - **EN 60 950, VDE 0805.**

The output is protected against open-circuit, short-circuit, and overload.

### Input

- **Line input AC**  
  - **Range** 100...240V AC
data spec.  
  - **Line input DC**  
    - **Range** 88...265V AC  
    - **Line frequency** 47...63Hz  
    - **Input current** max. 1.5A  
    - **Noise suppression** EN 55 022/B 10kHz...30MHz, conducted.

Specifications are valid at 230V AC, unless otherwise stated. They are subject to change without prior notice.

---

**Mechanical:**  
- 8HP/3U board (DIN 41494),  
- Al/Mg alloy cover for component side, plastic cover for bottom side,  
- LxWxH = 171.93 x 40.64 x 110mm (100), the length includes the connector, see page 4.

**Weight:** App. 400g

**Connector:** H15 (DIN 41612), coding option, max. load per pin 11A @70°C.
Output (continued)

<table>
<thead>
<tr>
<th>Voltage regulation:</th>
<th>5.15V</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Line regulation</td>
<td>max. %</td>
</tr>
<tr>
<td>· Load regulation</td>
<td>max. %</td>
</tr>
<tr>
<td>· Temperature</td>
<td>typ. %/K</td>
</tr>
<tr>
<td>· Load regulation</td>
<td>stat. Δ Ustat max.</td>
</tr>
<tr>
<td>· Load regulation</td>
<td>dyn. Δ Udyn max.</td>
</tr>
<tr>
<td>Response time</td>
<td>tR max. ms</td>
</tr>
<tr>
<td>Ripple</td>
<td>max. mVpp</td>
</tr>
<tr>
<td>· incl. spikes</td>
<td>max. mVpp</td>
</tr>
<tr>
<td>Current limitation</td>
<td>- Threshold typ. W</td>
</tr>
<tr>
<td>- Short-circuit max. A</td>
<td>22</td>
</tr>
<tr>
<td>Start delay</td>
<td>tDelay typ. s</td>
</tr>
<tr>
<td>Vout rise-up time</td>
<td>tRise typ. ms</td>
</tr>
<tr>
<td>On and off characteristic</td>
<td>No overshoot</td>
</tr>
<tr>
<td>Load capacity</td>
<td>max. µF</td>
</tr>
</tbody>
</table>

Input (continued)

| AC input range      | V AC | 88...265 |
| DC input range      | V DC | 88...265 |
| Derated DC range    | V DC | Full spec. |
| Frequency range     | Hz | 47...63 |
| Derated frequency range | Hz | 63...400 |
| In-rush current     | max. A | 20 |
| Hold-up time        | min. ms | 200 |
| Internal fuse       | 5x20mm T3.15A/250V |
| Input range selection | Wide range |

Logic Functions

<table>
<thead>
<tr>
<th>Power Fail signal PF</th>
<th>Power fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>· PF high if</td>
<td>ACin &gt; 70V AC</td>
</tr>
<tr>
<td>Hold-up time</td>
<td>power fail signal (Umax = 30V, Imax = 5mA).</td>
</tr>
<tr>
<td>· from Power failure to PF-signal</td>
<td>Open-collector signal.</td>
</tr>
<tr>
<td></td>
<td>@ 230V AC.</td>
</tr>
<tr>
<td></td>
<td>@ 110V AC.</td>
</tr>
<tr>
<td></td>
<td>@ 88V AC.</td>
</tr>
<tr>
<td></td>
<td>Iout = 10A, Vout ≥ 4.75V.</td>
</tr>
</tbody>
</table>

Electromagnetic Compatibility

| Emissions according to EN 50081-1 | 8kV direct discharge (level 4) |
| Immunity according to EN 50082-2 | 15kV air discharge (level 4) |
| · Electrostatic discharge ESD, EN 61000-4-2 | 10V/m (level 3) |
| · Radiated fields, EN 61000-4-3 | 4kV (level 4) |
| · Fast transients, EN 61000-4-4 | 2kV (level 3) |
| · Surge transients, EN 61000-4-5 | 2kV (level 4) cap. coupling |
| · Transient voltage, IEC 255 | 4kV (Isolation class 4) |
| · NAM UR-prescription | 2kV (Isolation class 4) |
| · Transient resistance, VDE 0160 §5.3.1.1.2 | 5kV |
| · Over-voltage resistance (PULS standard) | Satisfied |

Class B

EN 50081-2 is also fulfilled

Conducted 10kHz...30MHz.

EN 50082-2 is also fulfilled

8kV direct discharge (level 4)
15kV air discharge (level 4)
10V/m (level 3)
4kV (level 4)
2kV (level 3)
2kV (level 4) cap. coupling
4kV (Isolation class 4)
2kV (Isolation class 4)
5kV
Satisfied
750V / 0.3ms (class 1)
300V AC / 0.5s

Valid for total load range.
**Protection**

Unit protection
- Overload: Yes
- Short-circuit proof: Yes
- Open-circuit proof: Yes
- Over-temperature (OTP) typ.: +90°C Switch off.
- (internal temperature) typ.: +88°C Switch on.
- Reverse battery protect: Yes
- ACin range selection: Wide range

Load protection
- Over-voltage (OVP): Yes Switch off.
- Threshold typ.: 6.2V
- Accuracy max.: ±8%
- Restart: Periodic.

**Safety**

Electrical safety
- Test voltage (each unit): 3kV AC Primary / secondary.
- according to EN 60 950 2.5kV AC Primary / PE.
- for t = 2sec 500V AC Secondary / PE.
- Air- and leakage distance: 6.4 / 8mm Primary / secondary.
- Isolation resistance min.: 5MΩ VDE 0551.
- Protection class: I VDE 0106 part 1, IEC 536.
- PE resistance < 0.1Ω VDE 0805.
- Protection system: IP20 DIN 40050, IEC 529.
- Leakage current max.: 0.2mA EN 60 950 (47...63Hz line).
- Touch safety: Finger test VDE 0100 §6, EN 60 950, VBG4.
- Penetration protection: > ∅3mm e.g. screws, small parts etc.

**Operation and Ambient Area**

Application class: KSF DIN 40040.
Operation temperature max.: 0°...+70°C Ta (measured at 1cm distance).
- Derating range: +55°...+70°C Derating, see diagram.
- Storage temperature typ.: -20°...+100°C Ta.
- Humidity max.: 95% Non-condensing.
- Lateral spacing: None No gap needed.
- Cooling: Normal convection Don’t obstruct air flow.
- Dirt protection level max.: 2 VDE 0110 part 1.
- Vibration: 0.075mm IEC 68-2-6 (10...60Hz).
- Shock: 11ms / 15g IEC 68-2-27 (3 shocks).
- Operation height max.: 2,000m Above sea level.

**Efficiency and Power Loss**

AP136.105 typ.: 80% / 13W @ 230V ACin, Pout = 100%.

**Reliability and Lifetime**

M TBF according to Siemens standard SN29500 typ.: 300,000 h 230VAC, Iout = 100%, +40°C Ta.
Only long life (>2,000h @105°C) electrolytic capacitors are used.
Function test: 100% Test certificate enclosed.
In-circuit test: Yes
Run-in (burn-in): 24h Full load, Ta = +55°C, on/off cycle.

PULS Munich
Tel.: +49 (0)89 / 92 78-2 44
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This technical information is valid for+25°C ambient temperature and 5 min. run in time, unless otherwise stated.
Dimensions and Connections

19" board, with Al/Mg alloy cover on component side, and a plastic cover on the bottom side. 8HP plug in width. See figure below for dimensions.

Caution:
Do not remove any screws on box, as internal safety connections could be disconnected!

Installation for Operating

The unit is constructed for 19" systems:
Ensure that pin 4 of H15 connector is on top. For other installation considerations consult your representative. Ensure free air flow.

Fuse

The PSU has electronic protection against external short-circuits. In case of an internal defect, a fuse disconnects the unit. It can only be replaced by opening the unit which should be done by the supplier.

Schematic

H15 pinout (DIN 41612)
NC = No Connection - Do not use!

Modifications (contact supplier)

Other output voltages.
Lower cost versions.

Accessory ZP510

Installation set for mounting on DIN rail.

PULS Munich
Tel.: +49 (0)89 / 92 78-2 44
Page 4 / AP136_06.Mar.98
Fax: +49 (0)89 / 92 78-1 99
Arabellastraße 15
D- 81925 München