AP486
4 Outputs
19" Power Supply, 130 Watt

- High efficiency: 83%
- ACin wide range: 88...265V AC
- DCin wide range: 100...300V DC
- 12 HP plug in width
- H15 standard pinout
- Power rail sharing
- Over Temperature Protection (OTP)
- Meets EMC standards: VDE 0160/2, EN 61000-4, NAMUR, EN 50081-1 (EN 55022/B) and EN 50082-2

This 4-output power supply uses a two-step wide-range converter. It operates over a wide range (88 - 265V AC) without any switch over. Hold-up time is 210ms at 230V AC and load distribution is flexible.

EMC compatibility is a major feature. It has low spurious noise, and noise suppression meets VDE 0871 class B.

Noise immunity meets EN 61000-4 and VDE 0160 class 2, even at full load. Over-voltage and over-temperature protection avoid problems in extreme working environments.

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

Power Supply AP486

Vout [DC] | Iout | Pout | Features |
--- | --- | --- | --- |
5.15V | 10A | 51.5W | PF, OVP, OTP |
12V | 4A | 48W |
-12V | 4A | 48W |
24V | 5A | 120W |

Max. total power: 130W

Order-No. AP486.112

Vout1 5.15V 10A 51.5W PF, OVP, OTP AP486.112

2 +12V 4A 48W
3 -12V 4A 48W
4 24V 5A 120W

Max. total power: 130W

Order-No. AP486.122

Vout1 5.15V 10A 51.5W PF, OVP, OTP AP486.122

2 +15V 4A 60W
3 -15V 4A 60W
4 24V 5A 120W

Max. total power: 130W

Output

Voltage Vout1,2,3,4

Accuracy Vout1 max. ±2% Includes: production-adjustment, VDE 0871 class B.

Vout2/3 max. ±2% (.112/. +4%) line regulation,

Vout4 max. ±2% and load regulation.

Sense lines None Not available.

Minimum load 0.5A To reach the specified values.

Output power Pout max. 130W Total power.

Noise, Ripple Vout1/2/3/4 max. 20mVpp 20Hz...200kHz.

incl. spikes max. 30mVpp 20Hz...20MHz.

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

Derating 3 W/K +55° to +70°C Ta.

Operating indicator 4 green LED On the front, Vout1,2,3,4.

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

All outputs are protected against open-circuit, short-circuit, and overload.

Input

Line input AC

- Range 100...240V AC Wide-range converter.

Line input DC

- Range 88...265V AC Full spec.

Line frequency 275V DC Wide-range converter.

- Range 100...300V DC Full spec.

Input current rms. max. 2.6A / 1.4A 47...63Hz DC or 400Hz, see page 2.

Noise suppression max. 2.6A @ 115 / 230V AC.

EN 55 022/B 10kHz...30MHz.

Specifications are valid at 230V AC, unless otherwise stated. They are subject to change without prior notice.
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#### Output (continued)

<table>
<thead>
<tr>
<th>Voltage regulation:</th>
<th>AP486.112 5.15V</th>
<th>±12V</th>
<th>24V</th>
<th>AP486.122 5.15V</th>
<th>±15V</th>
<th>24V</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Line regulation</td>
<td>max. %</td>
<td>0.3</td>
<td>4 (0.2)</td>
<td>1</td>
<td>0.3</td>
<td>4 (0.2)</td>
</tr>
<tr>
<td>- Load regulation stat.</td>
<td>Δ Ustat max. %</td>
<td>±1</td>
<td>−0.5</td>
<td>−3</td>
<td>±1</td>
<td>−0.5</td>
</tr>
<tr>
<td>- Load regulation dyn.</td>
<td>Δ Udyn max. %</td>
<td>±7</td>
<td>±1</td>
<td>±1.5</td>
<td>±7</td>
<td>±1</td>
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<tr>
<td>Response time tR</td>
<td>max. ms</td>
<td>1</td>
<td>0.3</td>
<td>1</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Ripple</td>
<td>max. mVpp</td>
<td>15</td>
<td>3</td>
<td>30</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>- incl. spikes</td>
<td>max. mVpp</td>
<td>25</td>
<td>120 (3)</td>
<td>90</td>
<td>25</td>
<td>120 (3)</td>
</tr>
<tr>
<td>- incl. spikes</td>
<td>max. mVpp</td>
<td>35</td>
<td>10</td>
<td>35</td>
<td>10</td>
<td>35</td>
</tr>
<tr>
<td>- incl. spikes</td>
<td>max. mVpp</td>
<td>15</td>
<td>120 (10)</td>
<td>90</td>
<td>15</td>
<td>120 (10)</td>
</tr>
</tbody>
</table>

#### Current limitation

| - Threshold Vout1 | typ. A | 14 |
| - Threshold Vout1/2/3/4 | typ. W | 145 |
| - Current at overload | max. A | 18 |
| - Minimum load Vout1 | max. A | 0.5 |
| - Start delay tD | typ. ms | 750 |
| - Vout rise-up time tR | typ. ms | 10 |

#### Input (continued)

| AC input range | V AC | 88...265 |
| DC-input range | V DC | 100...300 |
| Derated AC range | V AC | 70...88 |
| Derated DC range | V DC | 85...100 |
| V DC | 300...380 |
| Frequency range | Hz | 47...63 |
| Derated frequency range | Hz | 63...400 |
| In-rush current | max. A | 70 |
| Hold-up time | min. ms | 15 |
| Power factor λ | typ. | 0.65 |
| Internal fuse | 5x20mm T4A/250V (IEC127/2-5) |
| Input range selection | Wide range |

#### Logic Functions

| Power Fail signal PF | 5ms before Vout1 < 4.75V |
| - PF low | ACin > 75V AC and Vout1 > 4.7V |
| - PF high, if Hold-up time | |
| - from power failure to PF-signal | min. ms | 7 |
| - from PF-signal | min. ms | 5 |

#### Electromagnetic Compatibility

| Emissions according to 50081-1 | Open-collector signal (Iout = 5mA), see pg. 3 |
| - Radio interference, EN 55 011, EN 55 022 | See diagram on page 3, Iout = 100%. |
| Immunity according to 50082-2 | @ 88V AC, Iout = 100%. |
| - Electrostatic discharge ESD, EN 61000-4-2 | @ 196V AC, Iout = 100%, see page 3. |
| - Radiated fields, EN 61000-4-3 | @ 98V AC, Iout = 100%. |
| - Fast transients, EN 61000-4-4 | To replace, see page 4. |
| - Surge transients, EN 61000-4-5 | EN 50081-2 is also satisfied |
| - Transient voltage, IEC 255 | Conducted 10kHz...30MHz. |
| - NAMUR-prescriptions | EN 50081-2 is also satisfied |
| - Over-voltage resistance (PULS standard) | AClout, Vout and signal lines: length = 1m. |

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**PULS Munich**

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Protection

Unit protection
- Overload Yes Total-power limit.
- Short-circuit proof Yes Auto restart.
- Open-circuit proof Yes Transformer temp, switch off.
- Over-temp. (OTP) typ. +105° C Transformer temp, switch on, (automatically).
- Reverse battery prot. Yes
- ACin range selection Wide range

Load protection
- Over-voltage (OVP) Yes Threshold typ. 6.2V Valid for Vout 1.
- Accuracy max. ± 8% By thyristor.

Safety

Electrical safety
- Test voltage (each unit) 3kV AC Primary / secondary.
- according to EN 60 950 500V AC Primary / PE.
- Air- and leakage distance 6.4 / 8mm Primary / secondary.
- 3.2 / 4mm Primary / PE.
- Isolation resistance min. 5MΩ VDE 0551.
- Protection class Ι VDE 0106 part 1, IEC 536.
- PE resistance < 0.1Ω VDE 0805.
- Protection system IP20 DIN 40050, IEC 529.
- Leakage current max. 0.45mA EN 60 950 (47-63 Hz line).
- Safe low voltage SELV EN 60 950, VDE 0805, VDE 0160.
- Over-voltage class ΙΙ VDE 0110 part 1, IEC 664.
- Touch safety Finger test VDE 0100 §6, EN 60 950, VBG4.
- Penetration protection > Ø 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.
Mechanical usage Vertical See page 4.
- Lateral spacing 1 HP Both sides of the unit.
Cooling Normal convection Do not 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

AP486.112 typ. 83% / 27W @ 230V ACin, lout = 100%.
AP486.122 typ. 83% / 27W As above.

Reliability and Lifetime

MTBF according to Siemens standard SN29500 typ. 200,000h 230VAC, lout = 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.

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

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.

Dimensions and Connections
19" board, with Al/Mg alloy cover on component side, and a plastic cover on the bottom side. 12HP plug in width. See figure below for dimensions.

Caution:
1) Do not remove any screws on box, as internal safety connections could be disconnected!
2) For medical use, install according to EN 60 601-1!
   This means for example:
   - double-pole-protection,
   - PE-resistance to case < 0.2Ω.

Modifications (contact supplier)
Other output voltages.
Lower cost versions.

Accessory ZP510
Installation set for mounting on DIN rail.

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