The DPA144 is a very compact power supply designed for fieldbus applications in which power and data share the same twisted-pair.

The unit supplies power, decouples data from the power supply, and makes the two cables symmetrical with respect to the shield terminal. The decoupling allows the use of unshielded cables.

The PELV output circuit has electronic protection against overload and short-circuit. Isolation is equivalent to safety transformers as specified in VDE 0551.

### Output

- **Voltage Vout**: 30.55V Fixed.
- **Accuracy**: max. ±3% includes: production-adjustment, line regulation, and load regulation.
- **Minimum load**: None Not necessary.
- **Output power Pout max.**: 85W Mounting side by side possible.
- **Noise, Ripple max.**: 50mVpp 0...20MHz, constant current or R-load.
- **Modulation voltage max.**: 5.6Vrms Analogous 16Vpp sine.
- **Over-voltage protection typ.**: 35V Threshold accuracy ±4%.
- **Derating**: 2W/K +60°C bis +70°C Ta.
- **Operating indicator**: 1 green LED On the front.
- **Output circuit PELV**: VDE 0106

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

### Input

- **Line input 1**
  - Range: 100...127V AC
  - Derated, see page 2.
- **Line input 2**
  - Range: 88...132V AC
  - Switch position 230V.
- **Line frequency**: 47...63Hz
- **Input current max.**: 1.8Aeff. / 1.1Aeff.
- **Noise suppression**: EN 55 022/B

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage regulation:</td>
<td></td>
</tr>
<tr>
<td>- Line regulation</td>
<td>± 0.2</td>
</tr>
<tr>
<td>- Load regulation stat. Δ</td>
<td>± 0.5</td>
</tr>
<tr>
<td>- Temperature coefficient</td>
<td>± 0.02</td>
</tr>
<tr>
<td>Ripple max. mVpp</td>
<td>50</td>
</tr>
<tr>
<td>Current limitation:</td>
<td></td>
</tr>
<tr>
<td>- Threshold min. A</td>
<td>2.85 / 3.85</td>
</tr>
<tr>
<td>- Characteristic max. A</td>
<td>6.5</td>
</tr>
<tr>
<td>Start delay t&lt;sub&gt;delay&lt;/sub&gt;</td>
<td>20 ms</td>
</tr>
<tr>
<td>Vout rise-up time t&lt;sub&gt;rise&lt;/sub&gt;</td>
<td>350 ms</td>
</tr>
</tbody>
</table>

#### Data Decoupling / Earth Symmetrization

- Output inductance: 100µH ± 10%
- 2 x 39Ω ± 1%
- ± 1%
- 500V

#### Logic Functions

- LED for output voltage: If Vout < 29.5V or Iout > threshold of the current limitation the LED is off.

#### Electromagnetic Compatibility

- Emissions according to EN 50081-1: EN 50081-2 is also satisfied.
- Immunity according to EN 50082-2: EN 50082-1 is also satisfied.
- Conducted disturbances: EN 61000-4-6: Over-voltage resistance (PULS standard)
- Transient voltage, IEC 255: Satisfied
- NAMUR-preservation: 5kV Satisfied
- Transient resistance, VDE 0160 §5.3.1.1.2: 750V / 1.3ms (class 2)
- Over-voltage resistance (PULS standard): 150 / 300V AC / 0.5s

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**DPA144 ● 1 Output ● DIN Rail Power Supply ● 85 Watt**

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**Input (continued)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC input range 1 / 2 V AC</td>
<td>88...132V AC / 187...264</td>
</tr>
<tr>
<td>DC input range V DC</td>
<td>250...300</td>
</tr>
<tr>
<td>Derated AC range 1 / 2 V AC</td>
<td>80...88 / 150...187, 150 / 300 for 0.5s</td>
</tr>
<tr>
<td>Derated DC range V DC</td>
<td>176...250</td>
</tr>
<tr>
<td>Frequency range Hz</td>
<td>47...63</td>
</tr>
<tr>
<td>Derated frequency range Hz</td>
<td>63...400</td>
</tr>
<tr>
<td>In-rush current max. A</td>
<td>24</td>
</tr>
<tr>
<td>Hold-up time min. ms</td>
<td>30</td>
</tr>
<tr>
<td>Power factor λ typ.</td>
<td>0.7</td>
</tr>
<tr>
<td>Internal fuse</td>
<td>5x20mm T2.5A/250V (IEC127/2-5)</td>
</tr>
<tr>
<td>Manual (230V AC set at factory)</td>
<td></td>
</tr>
</tbody>
</table>

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**Electromagnetic Compatibility**

- Emissions according to EN 50081-1: EN 50081-2 is also satisfied.
- Immunity according to EN 50082-2: EN 50082-1 is also satisfied.
- Conducted disturbances: EN 61000-4-6: Over-voltage resistance (PULS standard)
- Transient voltage, IEC 255: Satisfied
- NAMUR-preservation: 5kV Satisfied
- Transient resistance, VDE 0160 §5.3.1.1.2: 750V / 1.3ms (class 2)
- Over-voltage resistance (PULS standard): 150 / 300V AC / 0.5s

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**Data Decoupling / Earth Symmetrization**

- Output inductance: 100µH ± 10%
- 2 x 39Ω ± 1%
- ± 1%
- 500V

---

**Logic Functions**

- LED for output voltage: If Vout < 29.5V or Iout > threshold of the current limitation the LED is off.
1 Output ♦ DIN Rail Power Supply ♦ 85 Watt ♦ DPA144

**Protection**

**Unit protection**
- Overload: Yes
- Short-circuit proof: Yes
- Open-circuit proof: Yes
- Over-temperature (OTP): No
- Reverse battery protection: Yes
- ACin range selection: Manual

**Load protection**
- Over-voltage (OVP): Yes
- Threshold typ.: 35V
- Accuracy: ±4%

**Safety**

**Electrical safety**
- Test voltage: 3kV AC primary / secondary.
  according to EN 60 950: 2.5kV AC primary / PE.
- Air- and leakage distance: 6.4 / 8mm primary / secondary.
  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.
- Leaking current: max. 0.75mA EN 60 950 (50Hz line frequency).
- Over-voltage class: ΙΙ VDE 0110 part 1, IEC 664.
- Touch safety: Finger test VDE 0100 §6, EN 60 950, VBG4.
- Penetration protection: > ∅3mm e.g. screws, small parts etc.

**Typ. Output Characteristic**

![Typ. Output Characteristic](image)

**Typ. Derating over Temperature**

![Typ. Derating over Temperature](image)

**Operation and Ambient Area**

**Application class**: KSF DIN 40040.
**Operation temperature**:
- max. -10°C ... +70°C Ta (measured at 1cm distance).
- derated range: +60°C ... +70°C derating, see diagram.
**Storage temperature**:
- typ. -20°C ... +100°C Ta.
**Humidity**:
- max. 95% Non-condensing.
**Mechanical usage**:
- 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**

- 2.8A load typ.: 89% @ 230V ACin, Iout = 100%.
- 2A load typ.: 89% As above.
- 1A load typ.: 86% As above.

**Reliability and Lifetime**

MTBF according to Siemens standard SN29500:
- typ.: 300,000h 230VAC, Iout = 100%, +40°C Ta.
- Only long life (> 2,000h @105° C) electrolytic capacitors are used.
- Function test: 100%
- Run-in (burn-in): 24h Full load, Ta = +60° C, on/off cycle.

This technical information is valid for +25° C ambient temperature and 5 min. run-in time, unless otherwise stated.
**DPA144 • 1 Output • DIN Rail Power Supply • 85 Watt**

**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**
Install DIN rail TS35/7.5 horizontally, ensuring correct orientation.
For other installation considerations consult your representative. Ensure free air flow.

**Dimensions and Connections**
Fully enclosed Al/Mg alloy housing. All mechanical dimensions are in mm.

1) Do not remove PE screw.
The shield terminal should be connected to earth or to the shield of the load cable.

**Schematic**

**Operation without AS-Interface**
When operating without AS-Interface (e.g. in a lab. test) you should connect a 470µF capacitor between AS-i + and AS-i −, because commercial lab-loads often tend to oscillate. They may resonate with the data decoupling, and the oscillations may exceed the permitted modulation voltage.

** Modifications (contact supplier)**
Other output voltages,
OEM-versions.