Industrial systems very often require 5V and 24V within one system. The dual-output DP257 can supply controls, sensors, actuators and other electronic equipment simultaneously. Both outputs are stable over the total load range, and have excellent ripple and noise values of <40mVpp. Even when the 24V output is short circuited the 5V output continues to operate without interruption.

The most important economic benefits of this unit include: replacement of two separate conventional supplies; low weight; small size; quick single-handed installation on DIN rails (TS35).

Changes of line voltage and other disturbances (according to EN 61000-4, and VDE 0160 pulses - class 2 for total load range!) are filtered and regulated by the power supply. It is also protected against over-voltage and short-circuits. Isolation is equivalent to safety transformers according to VDE 0551, and meets VBG 4.

### Power Supply DP257

#### Output

- **Voltage Vout1 adjustable** min. ±5% See page 2.
- **Accuracy** max. ±1%
- **Sense lines** None Not available.
- **Minimum load** None Not necessary.
- **Output power Pout** max.
  - Vout1 at Vout1 41W
  - Vout2 at Vout2 216W
- **Noise, Ripple Vout1/2** max. 40mVpp 20Hz...200kHz.
- **Over-voltage protection**
  - Vout1 typ. 6.25V By thyristor.
  - Vout2 typ. 30V By independent second regulator.
- **Derating** 5W/K +60° to +70°C Ta.
- **Operating indicator** 2 green LEDs On the front (Vout1/2).
- **Isolation Vout to Vin** SELV
- **Isolation Vout1 to Vout2** 500V AC

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

### Mechanical

- **Al/Mg alloy housing, snap-on mounting for DIN rail TS35/7.5 (EN 50 022), WxHxD = 225 x 130 x 100mm, the depth includes the DIN-rail mounting, see page 4.**

### Weight

- **App. 1340g**

### Screw terminals

- **Input 1 terminal, max. 2.5/4mm², output 2 terminals, each max. 2.5/4mm², see page 4.**

### Schematic:

- **LED green (Vout1) GND2**
- **LED green (Vout2) GND1**
- **Switching frequency typ. 50kHz**

### Input

- **Line input AC 1**
  - **Range** 100...127V AC
  - **Line spec.** 88...132V AC
  - **Derated, see page 2.**
  - **Line spec.** 80...88V AC
  - **Derated, see page 2.**
  - **Line spec.** 132...150V AC
  - **Derated, see page 2.**
  - **Switch position 230V.**
  - **Line spec.** 220...240V AC
  - **Switch position 230V.**
  - **Line spec.** 187...264V AC
  - **Derated, see page 2.**
  - **Line spec.** 150...187V AC
  - **Derated, see page 2.**
  - **Line spec.** 264...300V AC
  - **Derated, see page 2.**
- **Line frequency** 47...63Hz
- **Input current rms. max.** 6.0Aeff. / 2.8Aeff. @ 115 / 230V AC.
- **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)

Voltage regulation:
- Line regulation \( \max \% \) ± 0.1 ± 0.1
- Load regulation stat. \( \Delta U_{\text{stat}} \max \% \) ± 0.5 ± 0.25
- Load regulation dyn. \( \Delta U_{\text{dyn}} \max \% \) ± 8 ± 2

Response time \( t_s \) max. ms 2 0.8
- Temperature coefficient typ. \%/K ± 0.01 ± 0.01
Ripple incl. spikes max. mVpp 40 40
- incl. spikes max. mVpp 50 50

Current limitation
- Threshold min/max. A 8.5-12 9.5-11.5
- Characteristic max. A — 9.5-12.0
- Short-circuit max. A — 9.5-12.0

Start delay \( t_{\text{delay}} \) typ. ms 330 350
Vout rise-up time \( t_{\text{rise}} \) typ. ms 5 23
On and off characteristic
Power back immunity \( U_{\text{back}} \) max. V — 35

Input (continued)

AC input range 1 / 2 V AC 88...132 / 187...264 Full spec.
DC input range V DC 250...300 Full spec.
Derated AC range 1 / 2 V AC 80...88 / 150...187, 150 / 300 for 0.5s
Derated DC range V DC 176...250 Full spec.
Frequency range Hz 47...63 Full spec.
Derated frequency range Hz 63...400 Increased leakage currents.
In-rush current max. A 50 Cold-start, NAMUR standard met (Ta = +25° C).
Hold-up time min. ms 18 @ 88V AC,  Iout = 100%, see figure on page 3.
min. ms 25 @ 187V AC,  Iout = 100%, see figure on page 3.
Power factor \( \lambda \) typ. 0.63
Internal fuse 5x20mm T8A/250V (IEC127/2-5) To replace, see page 4.

Logic Functions

Vout adjustable min. % ± 5 ± 4 Position of trimmers see page 4.
If you adjust Vout1 downwards or Vout2 upwards you have to adjust the other output in the same direction.

Electromagnetic Compatibility

Emissions according to EN 50081-1
- Radio interference, EN 55011, EN 55022
- Electrostatic discharge ESD EN 61000-4-2
- Radiated fields, EN 61000-4-3
- Fast transients, EN 61000-4-4
- Surge transients, EN 61000-4-5
- Conducted disturbs., ENV 50141 (draft of IEC 801-6)

Immunity according to further standards
- Transient voltage, IEC 255
- NAMUR-prescription
- Transient resistance, VDE 0160 §5.3.1.1.2
- Over-voltage resistance (PULS standard)

Class B
No degradation of performance
8kV direct discharge (level 4)
15kV air discharge (level 4)
10V/m (level 3)
4kV (level 4)
2kV (level 3)
2kV
4kV (isolation class 4)
2kV (isolation class 4)
500V
10V (level 3)
5kV
Satisfied
750V / 1.3ms (class 2)
150 / 300V AC / 0.5s

EN 50081-2 is also satisfied.

EN 50082-1 is also satisfied.

80MHz...1000MHz, ACin, Vout and signal lines: l = 1m.
Coupled to ACin line.
Coupled to DCout line.
Coupled to Vout lines.
Common mode, unit on.
Differential mode, unit on.
Differential respectively common mode.
150kHz...80MHz.
Common mode, unit off.
Valid for total load range.
Switch position 115 / 230V AC.
2 Outputs ♦ DIN Rail Power Supply ♦ 230 Watt ♦ DP257

**Protection**

<table>
<thead>
<tr>
<th>Unit protection</th>
<th>Yes</th>
<th>See current limit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overload</td>
<td>Yes</td>
<td>Automatic voltage recovery.</td>
</tr>
<tr>
<td>Short-circuit proof</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Open-circuit Proof</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Over-temperature (OTP)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Reverse battery prot.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>ACIn range selection</td>
<td>Manual</td>
<td>Switch for 115/230V AC.</td>
</tr>
</tbody>
</table>

**Load protection**

| Over-voltage (DVP) | Yes   |                             |
| Threshold Vout1 typ. | 6.25V |                             |
| Vout2 typ. | 30V |                             |
| Accuracy Vout1 max. | ±4% | By thyristor. |
| Vout2 max. | ±4% | Independent second regulator. |

**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 | 8mm | Primary / secondary. |
| 4mm | Primary / PE. |
| 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. 0.75mA | EN 60 950 (47...63Hz line). |
| Safe low voltage | SELV | EN 60 950, VDE 0805, VDE 0160. |
| Over-voltage class | II | VDE 0110 part 1, IEC 664. |

**Touch safety**

| Finger test | VDE 100 §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). |
| Derated range | +60° ... +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 | 8mm | To neighbouring units. |
| 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**

| DP257.105 typ. | 85% / 40.5W | @ 230V ACin, Iout = 100%. |

**Reliability and Lifetime**

| MTBF according to Siemens standard SN29500 | typ. | To be discovered 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 = +60° C, on/off cycle. |

PULS Munich
Tel.: +49 (0)89 / 92 782-44

This technical information is valid for +25° C ambient temperature and 5 min. run in time, unless otherwise stated.
DP257 ◆ 2 Outputs ◆ DIN Rail Power Supply ◆ 230 Watt

Fuse

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) The height of the plastic studs is 3.5mm total for top and bottom.
2) Do not remove PE screw.
3) The height of this screw head is max. 2.5mm.

Screw terminals:
On the front side. These accept wire of up to 4mm² cross section (single-core cable) or 2.5mm² cross section (multi-core flex). Remove 9 to 15mm of insulation from wire.
Take care of standards which must be satisfied, e.g. VDE 0100 or EN 60950.

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

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