The DPA154 is a very compact DC/DC Converter designed for fieldbus applications in which power and data share the same twisted-pair.

The unit supplies power, decouples data from the DC/DC Converter, 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.

### Data sheet

**DC/DC Converter DPA154**

<table>
<thead>
<tr>
<th>Vout</th>
<th>Iout</th>
<th>Pout</th>
<th>Features</th>
<th>Order-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>30.55V</td>
<td>3A</td>
<td>92W</td>
<td>OVP</td>
<td>DPA154.141</td>
</tr>
</tbody>
</table>

Warranty: 2 years from date of delivery.

#### Output

- **Voltage Vout**: 30.55V
- **Accuracy**: max. ±1.05V includes: production-adjustment, line regulation, and load regulation.
- **Minimum load**: None
- **Output power Pout**: max. 92W
- **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**: 3W/K Vin=18VDC, 2W/K Vin=24...32VDC
- **Operating indicator**: 1 green LED On the front.
- **Output circuit**: PELV EN 50178
- **Safety**: SELV EN 60950-1

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

#### Input

- **Line input DC**: 24V DC
- **Range**: 18...32V DC 16...40V DC
- **DC-Input current**: max. 6A

Specifications are subject to change without prior notice.

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**High efficiency**: 88%
**DCin Wide Range**: 18...32V DC
**WxHxD**: 49x134x120mm
**Meets EMV standards**: EN 61000-6-3, EN 61000-6-2, EN 61000-4-x

See the web for current data sheet version: [www.puls.power.de](http://www.puls.power.de)
DPA154 ♦ 1 Output ♦ DIN Rail DC/DC Converter ♦ 92 Watt

Output (continued)

Voltage regulation:
- Line regulation max. % ± 0.2 @ 18...40V DC, ilout = 3A
- Load regulation stat. Δ Ustat max. % ± 0.5 ilout = 50%
- Temperature coefficient typ. %/K ± 0.02

Ripple max. mVpp 50 0...20MHz, DCnom, ilout = 100%, R or I-load.

Current limitation
- Threshold min/max. 1.05...1.2 x ilout See graph on page 3
- Characteristic max. 1.67 ilout

Start delay tdelay acc. to AS-i specification
Vout rise-up time tRise acc. to AS-i specification
On and off characteristic

Input (continued)

DC input range V DC 18...32 Hysteresis: Uon=18V, Uoff=16V
- short term V DC 16...40

In-rush current max. A 8 @ Vin = 32V
Hold-up time min. ms 5.2 @ Vin = 24 V
Internal fuse 5x20mm T10A/250V (IEC127/2-5) To replace, see page 4.

Data Decoupling / Earth Symmetrization

Output inductance 100µH ± 10%
Terminating impedance 2 x 39Ω ± 1%
Symmetry tolerance ± 1%
Electric strength 500V

According to AS-Interface-specifications

Measured between AS-i + und AS-i − . As above.
AS-i + / AS-i − to shield. As above.

Logic Functions

LED for output voltage

If Vout < 29.5V or ilout > threshold of the current limitation the LED is off.

Electromagnetic Compatibility

Emissions according to EN 61000-6-3
- Radio interference, EN 55011, EN 55022
Immunity according to EN 61000-6-2
- 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 disturb., EN 61000-4-6

Class B
No degradation of performance 8kV direct discharge (level 4)
15kV air discharge (level 4)
10kVf (level 3)
4kV (level 4)
2kV (level 3)
2kV (isolation class 3)
1kV (isolation class 3)
10V (level 3)

EN 61000-6-4 is also satisfied.
EN 61000-6-1 is also satisfied.
80MHz...1000MHz, DCin and Vout lines: l = 1m.
Coupled to DCin line.
Coupled to DCout line.
Common mode, unit on.
Differential mode, unit on.
150kHz...80MHz.
1 Output ♦ DIN Rail DC/DC Converter ♦ 92 Watt ♦ DPA154

**Protection**

**Unit protection**
- Overload: Yes, See current limit.
- Short-circuit proof: Yes, Automatic voltage recovery.
- Short-circuit proof: Yes, Automatic voltage recovery.
- Over-temperature (OTP): —
- Reverse battery: Yes, serial diode.

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

**Typ. Output Characteristic**

![Typ. Output Characteristic graph]

**Safety**

**Electrical safety**
- Test voltage: 1.5kV AC
- according to EN 60 950
- for t = 2sec
- Air- and leakage distance: 4mm
- Primary / secondary.
- Isolation resistance: min. 5MΩ
- Protection class: I
- PE resistance: < 0.1Ω
- Primary / secondary.

**Typ. Derating over Temperature**

![Typ. Derating over Temperature graph]

**Touch safety**
- Finger test: EN 60950-1.

**Penetration protection**
- > Ø 3mm e.g. screws, small parts etc.

**Typ. Efficiency**

![Typ. Efficiency graph]

**Operation and Ambient Area**

**Application class**
- KSF

**Operation temperature**
- max. +10°C...+70°C
- Ta (measured at 1cm distance).

**Derated range**
- +55°C...+70°C
- Derating, see diagram.

**Storage temperature**
- typ. +20°C...+60°C
- Ta.

**Humidity**
- max. 95%
- Non-condensing.

**Mechanical usage**
- Vertical:
- See page 4.

**Cooling**
- Normal convection:
- Don’t obstruct air flow.

**Dirt protection level**
- max. 2
- EN 60950-1.

**Vibration**
- 0.075mm
- IEC 60068-2-6 (10...60Hz).

**Shock**
- 11ms / 15g
- IEC 60068-2-27 (3 shocks).

**Operation height**
- max. 2,000m
- Above sea level.

**Efficiency**

**Efficiency**
- typ. 88%

**Loss**
- typ. 13W

**Reliability and Lifetime**

**MTBF according to Siemens standard SN29500**
- typ. 250,000h
- +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.: 089 / 92 78-0
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This technical information is valid for +25°C ambient temperature and 5 min. run in time, unless otherwise stated.
**Fuse**

The DC/DC converter 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 AVMg 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.

**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 60 950.

**Caution:**

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

**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.