

# Redundancy with boost

**PULS**

## SLR5.100

- Input: AC 230V/115V, DC 210-375V
- Output: 24V/5A
- High overload current, no switch-off
- Quasi-Wide-Range Input
- N+1 redundancy, RDY relay contact



The Redundant Variant

CB scheme IEC60950

UL US  
UL508 LISTED IND. CONT. EQ. 18 WIM, 60°C

UL US  
UL60950 E127006 CUJ/CSA-C22.2 No 950-M90

CE  
EMC and Low Volt. Directive

Data sheet

### Input

|   |   |
|---|---|
| Input voltage   | AC100-120/220-240 V (switchable), 47-63 Hz (85-132 VAC / 176-264 VAC, 210-375 VDC, see also „Output: Continuous Loading“)   |
| Quasi-Wide-Range Input:                                 | With the switch in the 230V position the power supply unit operates at low and moderate loads (until 3 A) at any input voltage between 95 and 264 V AC.<br>Note: At DC input, always leave the switch in the 230V position. |
| Input current   | < 2.6 A (switch in 115V position)<br>< 1.4 A (switch in 230V position)  |
| • DCin at open output                                   | typ. 5 mA (preserves battery sources)   |
| Inrush current  | typ. < 15 A at 264 V AC and cold start  |
| To be fused with a 10A, B-type 'circuit-breaker' switch | based on the usual thermomagn. overload sensing principle (used anyway to fuse the input lines). In addition, the unit contains an internal fuse (not accessible).  |
| Harmonic current emissions                              | acc. to EN 61000-3-2  |
| Transient handling                                      | Transient resistance acc. to VDE 0160 / W2 (750 V / 1.3 ms), for all load conditions.   |
| Hold-up time  | > 37 ms at 196 VAC, 24 V / 5 A (see diagram overleaf)   |

### Efficiency, Reliability etc.\*

|                            |   |
|----------------------------|---|
| Efficiency                 | typ. 89 % (230 VAC, 24 V / 5 A)   |
| Losses                     | typ. 14.8 W (230 VAC, 24 V / 5 A)   |
| MTBF                       | 480.000 h acc. to Siemensnorm SN 29500 (24 V/5 A, 230 VAC, T <sub>amb</sub> = +40 °C)               |
| Life cycle (electrolytics) | The unit exclusively uses longlife electrolytics, specified for +105°C (cf. 'The SilverLine', p.2). |

### Construction / Mechanics\*

|                               |   |
|-------------------------------|---|
| Housing dimensions and Weight |   |
| • W x H x D                   | 64 mm x 124 mm x 102 mm (+ DIN rail)                          |
| • Free space for ventilation  | above/below 25 mm recommended<br>left/right 15 mm recommended |
| • Weight                      | 620 g   |

#### Design advantages:

- Input and output pluggable by means of Combicon® plug connector.
- Ensure strain relief of the plug connectors when installing the unit.
- Input and output are strictly apart from each other and so cannot be mixed up (input below, output above).



### Output

| Rated output voltage   | 24 V DC  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
|--|--|------------------------------|---------|------|------|-----------|------------------------------|--|-----------|------------------------------|--|-----------|----------|--|-----------|----------|------|----------|------------------|
| For balanced current sharing during parallel operation:  | Soft characteristic (25.2 V DC ±2% at no-load, 24 V DC ±0.5% at nominal load, almost linear characteristic curve)  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Output noise suppression   | Radiated EMI values below EN50081-1, even when using long, unscreened output cables.   |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Ambient temperature range T <sub>amb</sub>   | Operation: -10°C...+70°C (>60°C: Derating)<br>Storage: -25°C...+85°C   |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Continuous loading (at T <sub>amb</sub> = -10°C...+60°C, convection cooling), see also diagram overleaf. For start at T <sub>amb</sub> < 0°C and low input voltage, please contact PULS. | <table border="1"> <thead> <tr> <th>Switch</th> <th>AC/DCin</th> <th>lout</th> </tr> </thead> <tbody> <tr> <td>230V</td> <td>176-264 V</td> <td>ACin 5 A / 6 A *<br/>ACin 3 A</td> </tr> <tr> <td></td> <td>210-375 V</td> <td>DCin 5 A / 6 A *<br/>DCin 3 A</td> </tr> <tr> <td></td> <td>150-210 V</td> <td>DCin 3 A</td> </tr> <tr> <td></td> <td>100-150 V</td> <td>DCin 2 A</td> </tr> <tr> <td>115V</td> <td>85-132 V</td> <td>ACin 5 A / 6 A *</td> </tr> </tbody> </table> | Switch                       | AC/DCin | lout | 230V | 176-264 V | ACin 5 A / 6 A *<br>ACin 3 A |  | 210-375 V | DCin 5 A / 6 A *<br>DCin 3 A |  | 150-210 V | DCin 3 A |  | 100-150 V | DCin 2 A | 115V | 85-132 V | ACin 5 A / 6 A * |
| Switch   | AC/DCin  | lout                         |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| 230V   | 176-264 V  | ACin 5 A / 6 A *<br>ACin 3 A |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
|  | 210-375 V  | DCin 5 A / 6 A *<br>DCin 3 A |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
|  | 150-210 V  | DCin 3 A                     |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
|  | 100-150 V  | DCin 2 A                     |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| 115V   | 85-132 V   | ACin 5 A / 6 A *             |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Output is protected against short circuit, open circuit and overload   | * short-term 6 A (< 1 min), at 45°C or forced cooling even continuous  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Derating   | typ. 3 W/K (at T <sub>amb</sub> = +60°C...+70°C)   |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Voltage regulation   | better than 2% V <sub>out</sub> overall  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Ripple / Noise   | < 30 mV <sub>pp</sub> , (20 MHz bandw., 50 Ω measurement)  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Overvolt. protection   | typ. 29 V  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Parallel operation   | yes, current sharing via soft characteristic (see diagram)   |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| Front panel indicator  | Green LED  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| RDY relay contact  |  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| • Type   | normally open contact  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| • closes   | when output voltage > 22.1V ±4%  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| • opens  | when output voltage < 19.8V ±4%  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| • Electrical isolation   | 500V DC to output voltage  |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |
| • Contact rating   | 1A at 28V DC   |                              |         |      |      |           |                              |  |           |                              |  |           |          |  |           |          |      |          |                  |

\* For further information see data sheets „The SilverLine“, „SilverLine Family Branches“ and mechanics data sheet

### Order information

| Order number | Description                             |
|--------------|---|
| SLR5.100     | N+1 redundancy*                         |
| SL5.100      | Basic version without redundancy*       |
| SL55.100     | Safety Cover*                           |
| SLZ01        | Screw mounting set, two needed per unit |

**Start / Overload Behaviour**

|                |                                |
|----------------|--------------------------------|
| Start-up delay | typ. 0.1 s                     |
| Rise time      | ca. 5-20 ms, depending on load |

**Overload Behaviour**

- Special PULS Overload Design (see right diagram)
  - no disconnection, no hiccup if overloaded
  - high overload current (up to 1.9 I<sub>Nom</sub>), V<sub>out</sub> is gradually reduced with increasing current.
- 20% power boost
  - 6A short-term, at 45°C or forced cooling even continuous

**Advantages:**

- High short-circuit current, giving large 'start-up window': unit starts reliably even with awkward loads (DC-DC converters, motors).
- No 'sticking' such as can occur with fold-back characteristics
- Secondary fuses operate reliably

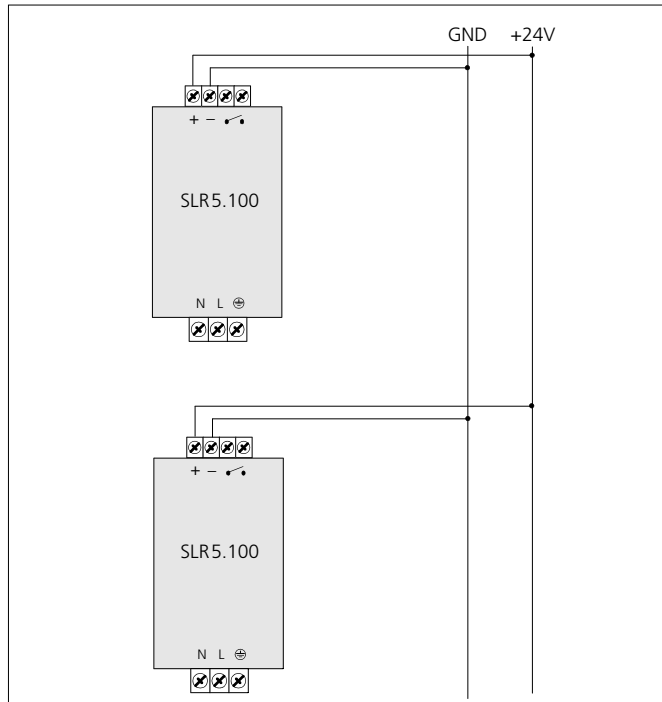
**Further information**

- Further information, especially about
- EMC
  - Connections
  - Safety, Approvals
  - Mechanics and Mounting
- see page 2 of „The SilverLine“ data sheet.

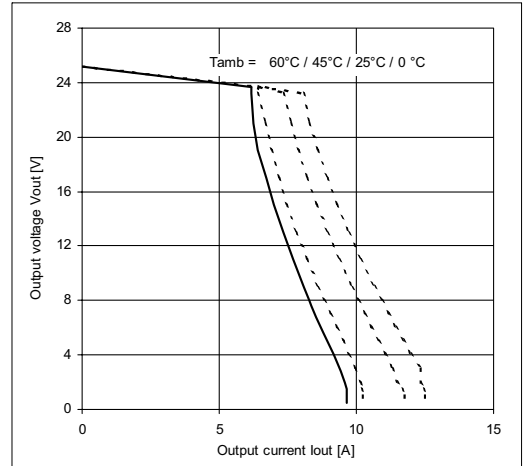
**For detailed dimensions**

see SilverLine mechanics data sheet SLR2.5/ 5/ 10

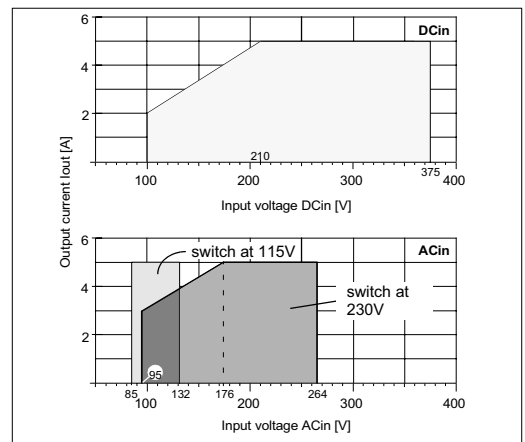
**Power wiring**



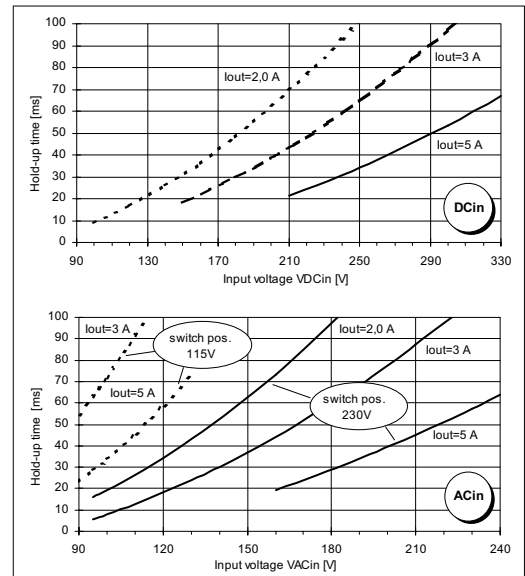
**Output characteristic (min.)**



**Output Current over Input Voltage (min.)**



**Hold-up time (min.)**



Unless otherwise stated, specifications are valid for AC 230V input voltage, +25°C ambient temperature, and 5 min. run-in time. They are subject to change without prior notice.