20A single phase

SL20.110/.111

- Input: AC 115/230V Auto Select
- Output: 24...28V / 480W (600W)
- 90% Efficiency
- Ideal for parallel operation
- Overload behaviour adjustable!
  (Continuous current / Hiccup)

**Input**

- **Input voltage**: AC 100-120V/200-240V, 47-63Hz
- **Auto Select**

**Rated tolerances**

- **Continuous operation**: AC 85-132V resp. AC 184-264V
- **Short-term (1 min)**: AC 85-140V resp. AC 170-280V

**Input current** \( I_n \)

- \(<10A\) (115V range)
- \(<5A\) (230V range)

**Inrush current limiting with active bypass of the limiting resistor (NTC).**

- \( I_{pk} <18A\) at AC 264V (\( T_{amb} = +25°C\), cold start)
- \( <37A\) at AC 264V (\( T_{amb} = +50°C\), cold start)

**Fuse loading** \( I^2t \)

- \(<5A\) \( \times 2s\) (\( T_{amb} = +25°C\), cold start)
- \(<8A\) \( \times 2s\) (\( T_{amb} = +50°C\), cold start)

**To be fused with a 16A, B-type ‘circuit-breaker’ switch based on the usual thermomagnetic overload sensing principle (used anyway to fuse the input lines).**

**Harmonic current emissions (PFC)**

- SL20.110: no
- SL20.111: acc. to EN 61000-3-2

**Transient handling**

- Transient resistance acc. to VDE 0160 / W2 (750V / 1.3ms), for all load conditions.

**Hold-up time**

- 30ms at 24V/20A, AC 230Vin
- 30ms at 24V/20A, AC 120Vin
- 15ms at 24V/20A, AC 100Vin

**Efficiency, Reliability etc.*

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>typ. 90%</th>
<th>(AC 230V, 24V/20A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Losses</td>
<td>typ. 53W</td>
<td>(AC 230V, 24V/20A)</td>
</tr>
<tr>
<td>MTBF</td>
<td>519.000h acc. to Siemensnorm SN29500 (24V/20A, 230V, ( T_{amb} = 40°C))</td>
<td></td>
</tr>
</tbody>
</table>
| Life cycle (electrolitics) | The unit exclusively uses longlife electrolytics, specified for \(<-105°C\) (cf. ‘The SilverLine’, p.2). High reliability, as:
- only five aluminium electrolytics and
- no small aluminium electrolytics are used.

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

**Output**

- **Output voltage**: DC 24...28V, adjustable by (covered) front panel potentiometer. Adjust. range guaranteed

**Output noise suppression**

- EN 61000-6-3 (class B) is fulfilled even when using long, unscreened output cables

**Ambient temperature range** \( T_{amb} \)

- Operation: 0°C...+70°C (>60°C: Derating)
- Storage: -25°C...+85°C

**Rated continuous loading with convection cooling:**

- \( T_{amb}=0°C - 60°C\)
  - 24V/20A resp. 28V/18A
- short-term (<30s) 24V/25A resp. 28V/22A
- Derating 12W/K (at \( T_{amb} = 60-70°C\))

**Voltage regulation**

- better than 2% over all

**Ripple**

- \(<20mV_{pp} (<0.1%))\)
- \(<40mV_{pp}\) (In: AC 230V, Out: 24V/20A)
- \(<100mV_{pp}\) (In: AC 184V, Out: 24V/20A)

**Over-voltage protection**

- At 31V ± 3%: switch to hiccup mode

**Front panel indicators:**

- Green LED on, when \( V_{out} > U_T \), where \( U_T \) is appr. 2V below \( V_{out} \) adjusted (24V...28V)
- Red LED on, when \( V_{out} < U_T \)

**Parallel operation**

- Yes, up to ten SL20

To achieve current sharing:
- Plug jumper into pos. ‘Output parallel use’. This alters the output V/I characteristic to be ‘softer’ (25V at 0.4A, 24V at 20A). The output voltage can still be adjusted.
- Missing jumper = ‘parallel use’, i.e. ‘soft’ characteristic

**Power back immunity**

- max. 30V

**Construction / Mechanics**

**Housing dimensions and Weight**

- \( W \times H \times D \) 220mm x 124mm x 102mm (+ DIN rail)
- Free space for ventilation above/below 70mm recommended
- Left/right 25mm recommended
- Weight 1.8kg (SL20.110) resp. 2.5kg (SL20.111)

**Design advantages:**

- All connection blocks are easy to reach as mounted at the front panel.
- PVC insulated cable can be used for all connections, as the connection blocks are mounted in the cooler area on the underside of the unit.

**Order information**

<table>
<thead>
<tr>
<th>Order number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SL20.110</td>
<td>(without PFC)</td>
</tr>
<tr>
<td>SL20.111</td>
<td>(including PFC)</td>
</tr>
<tr>
<td>SL202</td>
<td>(wall mounting set; contains 2 pcs.)</td>
</tr>
</tbody>
</table>
Start / Overload Behaviour

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Startup delay</td>
<td>typ. 0.55s</td>
</tr>
<tr>
<td>Rise time</td>
<td>appr. 20-80ms, depending on load</td>
</tr>
<tr>
<td>Overload behaviour</td>
<td>Power Boost: Short-term (&lt;30s) 125% output power without voltage drop.</td>
</tr>
<tr>
<td></td>
<td>Electronic current limiting, protects from overload and short-circuit.</td>
</tr>
<tr>
<td></td>
<td>High overload/short-circuit behaviour (V&lt;sub&gt;out&lt;/sub&gt; &lt;14V) switchable between PULS Overload Design and hiccup mode. Switching by jumper on bottom of the unit; it is not necessary to open the unit for this purpose.</td>
</tr>
</tbody>
</table>

PULS Overload Design™ (continuous current):

- No disconnection/hiccup, thus overloading is possible also for a longer period of time (load start-up), ideal for parallel operation.
- High overload/short-circuit current due to straight characteristic; each bias point of the V/I characteristic extends 20A.

Advantage: Due to the high and continuously supplied overload current the unit starts reliably even with awkward loads (DC-DC converters, motors). No ‘sticking’ such as can occur with fold-back characteristics, and secondary fuses trigger more reliably.

Hiccup mode:

- Unit switches off when high overload occurs (V<sub>out</sub> < appr. 14V) with subsequent periodical switch-on attempts (hiccup mode):
  - Duration of switch-on attempts: appr. 0.1s at short-circuit or appr. 1s at overload
  - Duration between switch-on attempts: appr. 1.5s
- V<sub>out</sub> > appr. 14V: The output current is continuous. The V/I characteristic equals that of the PULS Overload Design™; each bias point of the V/I characteristic extends 20A.

Further information

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

For detailed dimensions:
see SilverLine mechanics data sheet SL20

Output characteristic (typ.)

Efficiency (typ., at V<sub>out</sub>=24V)

Hold-up time (min., at V<sub>out</sub>=24V)

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.

All data is valid for the SL20.110. Regarding the SL20.111 (including PFC) some values may differ (please contact us if necessary).
Mechanics

SL20

- Innovative DIN-Rail mount, unit holds even at vibration or lateral pressure
- Clearly arranged and user oriented
- Large, robust screw terminals
- Sealed metal housing
- Fine ventilating grid

Construction / Mechanics

Housing dimensions and Weight
- W x H x D: 220 mm x 124 mm x 102 mm (+ DIN rail)
- Free space for ventilation: left/right 25 mm recommended
- Weight: 1.5 kg (SL20.100) / 1.8 kg (SL20.110, SL20.300) / 2.5 kg (SL20.111, SL20.115)

Robust metal housing with fine ventilat. grid (3,5 mm, IP20), to keep out small parts (e.g. screws)

Mounting:
- on DIN-Rail (TS35/7.5 or TS35/15, 1...1.5 mm thick)
- Simple snap-on system
- Sits safely and firmly on the DIN-Rail
- No tools required to remove
- or backplane-mounted
  (two optional screw mounting sets SLZ01 required)

Connections

Connections
- Input/Output
- Current handling capacity: 30 A per output
- Grid

Screw terminals, connector size range:
- solid 0.5-6 mm² / flexible 0.5-4 mm²
- 9 mm (SL20.115: 6 mm) distance between adjacent connectors

Design advantages:
- All connection blocks are easy to reach as mounted at the front panel.
- Input/output strictly apart from each other, thus no mixing up
- PVC insulated cable can be used for all connections, no thermal protection is needed

Order information

Order number | Description
-------------|-----------------|
SL20.100 / .101 | AC 230 V, no PFC / incl. PFC
SL20.110 / .111 | Auto select, no PFC / incl. PFC
SL20.115 | Auto select, remote switch-off
SL20.300 / .301 | 3 AC 400 V / 3 AC 480 V
SLZ01 | Screw mounting set, two needed per unit
This ‘mechanics data sheet’ exclusively deals with the mechanical properties of the product. For further information (especially concerning electrical properties), please refer to the generic data sheet of the SL20 and to the basic data sheet „The SilverLine” dealing with common features of all SilverLine units. This datasheet is subject to change without prior notice.

**Side view SL20**

**Output terminals**

SL20.115 bottom view

**Your partner in power supply:**