

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)



**PULS**

CB  
Scheme  
IEC60950

cUL<sup>®</sup>US  
UL508 LISTED  
IND. CONT. EQ.  
18 WM, 60°C

C<sup>®</sup>UL<sup>®</sup>US  
UL60950 E137006  
CUL/CSA-C22.2  
No 60950

Type approval  
acc. to:  
• IEC / EN60950  
• EN50178  
• Overvolt. cat. III  
• EN60204

CE  
EMC and  
Low Volt.  
Directive

Data sheet

## 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) at 24V/20A	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).	
Inrush current $I_{pk}$	<18A at AC 264V ( $T_{amb} = +25^\circ\text{C}$ , cold start) <37A at AC 264V ( $T_{amb} = +50^\circ\text{C}$ , cold start)
Fuse loading $I^2t$	<5A <sup>2</sup> s ( $T_{amb} = +25^\circ\text{C}$ , cold start) <8A <sup>2</sup> s ( $T_{amb} = +50^\circ\text{C}$ , 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.\*

Efficiency	typ. 90% (AC 230V, 24V/20A)
Losses	typ. 53W (AC 230V, 24V/20A)
MTBF	519.000h acc. to Siemensnorm SN29500 (24V/20A, 230V, $T_{amb} = 40^\circ\text{C}$ )
Life cycle (electrolytics)	The unit exclusively uses longlife electrolytics, specified for +105°C (cf. 'The SilverLine', p.2). High reliability, as <ul style="list-style-type: none"> <li>• only five aluminium electrolytics and</li> <li>• no small aluminium electrolytics are used.</li> </ul>

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

## Order information

<b>Order number</b>	SL20.110 (without PFC) SL20.111 (including PFC)	<b>Description</b>	SLZ02 (wall mounting set; contains 2 pcs.)
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## 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, unshielded 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:	
• $T_{amb}=0^\circ\text{C} - 60^\circ\text{C}$	24V/20A resp. 28V/18A short-term (<30s) 24V/25A resp. 28V/22A
Derating	12W/K (at $T_{amb} = 60-70^\circ\text{C}$ )
Voltage regulation	better than 2% over all
Ripple	(incl. spikes (20MHz bandw.), 50Ω measurem.)
• Output charact. S	<20mV <sub>pp</sub> (<0.1%)
• Output charact. P	<40mV <sub>pp</sub> (In: AC 230V, Out: 24V/20A)
(S/P: Single/Parallel Mode)	<100mV <sub>pp</sub> (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 x H x 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.

**Start / Overload Behaviour**

Startup delay	typ. 0.55s
Rise time	appr. 20-80ms, depending on load
Overload behaviour (see characteristic on the right)	<ul style="list-style-type: none"> <li>• Power Boost: Short-term (&lt;30s) 125% output power without voltage drop.</li> <li>• Electronic current limiting, protects from overload and short-circuit.</li> <li>• High overload/short-circuit behaviour (<math>V_{out} &lt; 14V</math>) 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.</li> </ul>

**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.

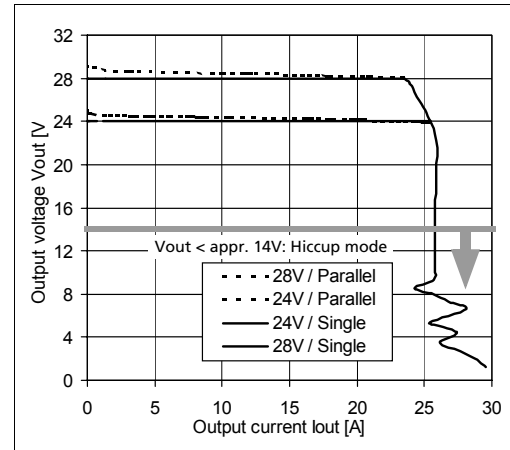
**Hiccup mode:**

- Unit switches off when high overload occurs ( $V_{out} < \text{appr. } 14V$ ) 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
- $V_{out} > \text{appr. } 14V$ : 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.

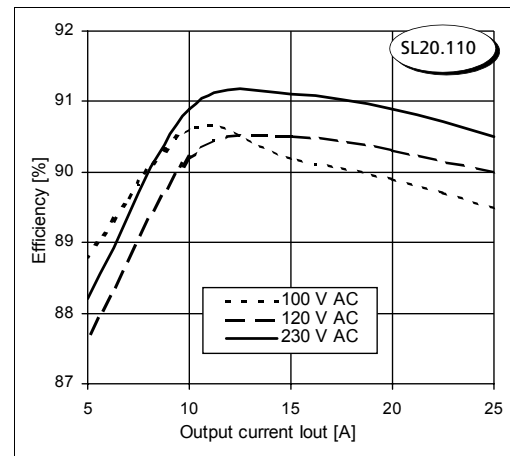
**Further information**

- 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

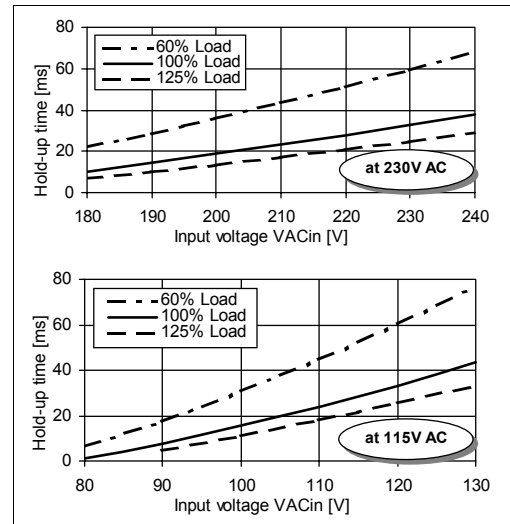
**Output characteristic (typ.)**



**Efficiency (typ., at  $V_{out}=24V$ )**



**Hold-up time (min., at  $V_{out}=24V$ )**



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).

**Your partner in power supply:**



European Power Supply Manufacturers Association



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