Data sheet

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

c UL us UL508 LISTED IND. CONT. EQ. 18 WM, 60°C

c TÜV 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

Input

Input voltage	AC 100-120V/200-240V, 47-63Hz Auto Select
Rated tolerances • Continuous operation • Short-term (1 min) at 24V/20A	 AC 85-132V resp. AC 184-264V 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°C, cold start) <37A at AC 264V (T_{amb} = +50°C, cold start)
Fuse loading I^2t	<5A^{2}s (T_{amb} = +25°C, cold start) <8A^{2}s (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.*

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°C)	
Life cycle (electrolytics)	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 cabels
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 • Output charact. S • Output charact. P (S/P: **S**ingle/**P**arallel Mode)	(incl. spikes (20MHz bandw.), 50Ω measurem.) <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 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.

Order information

Order number	SL20.110 (without PFC) SL20.111 (including PFC)	**Description**	SLZ02 (wall mounting set; contains 2 pcs.)

Start / Overload Behaviour

Startup delay	typ. 0.55s
Rise time	appr. 20-80ms, depending on load
Overload behaviour (see characteristic on the right)	• Power Boost: Short-term (<30s) 125% output power without voltage drop. • Electronic current limiting, protects from overload and short-circuit. • High overload/short-circuit behaviour (V_{out} <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.

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.

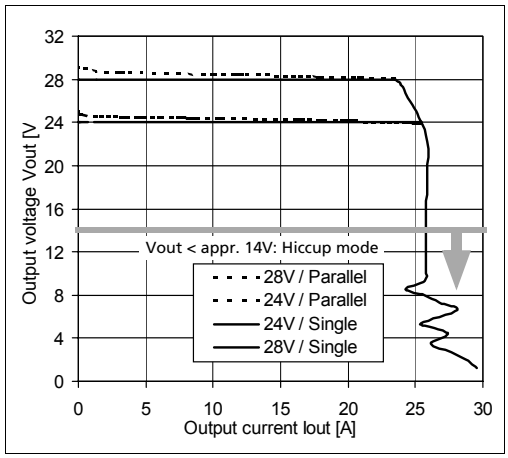
Hiccup mode:
- Unit switches off when high overload occurs (V_{out} < appr. 14V) with subsequent periodical switch-on attempts (hiccup mode):
  - Duration of switch-on attempts: appr. 0.1s at short-chircuit or appr. 1s at overload
  - Duration between switch-on attempts: appr. 1.5s
- V_{out} > appr. 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

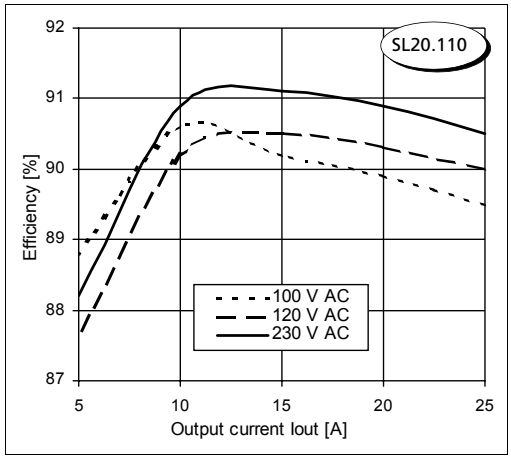
Further information, especially about
- EMC
- Connections
- Safety, Approvals
- Mechanics und Mounting,

see page 2 of the „The SilverLine“ data sheet
For detailed dimensions
see SilverLine mechanics data sheet SL20

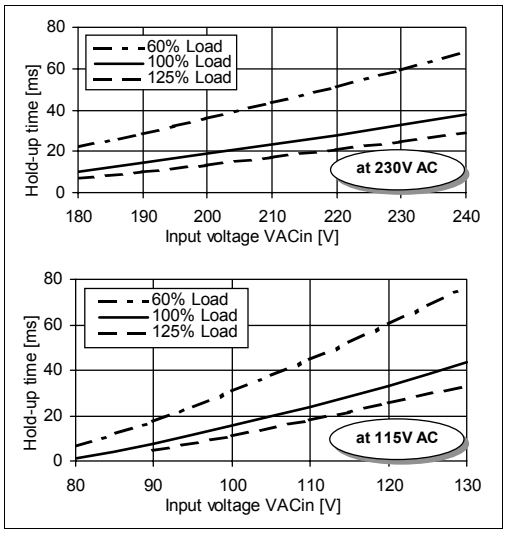
Output characteristic (typ.)



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:

ISO 9000:2000 certified

EPSMA European Power Supply Manufacturers Association

AWARDED Bayerns Best 50 Czech 100 Best Europe's 500

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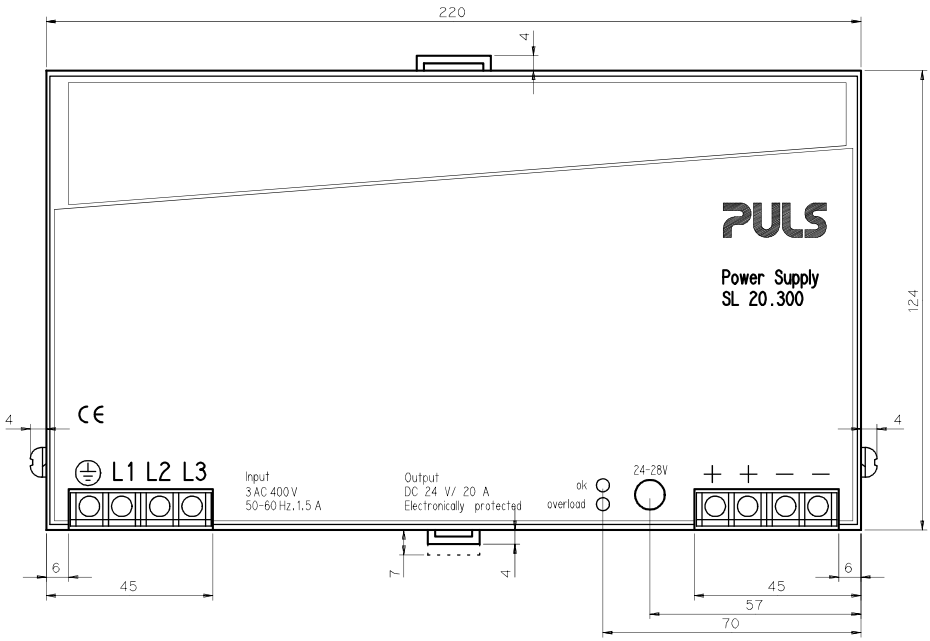
Data sheet

Mechanics

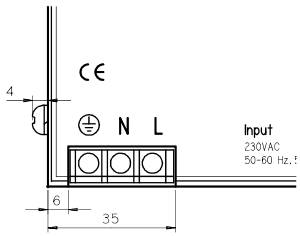
SL20

- 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

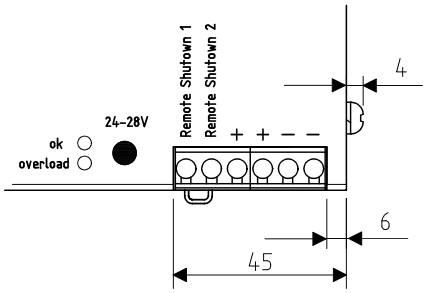
Front view SL20.300



Input terminals SL20.1xx



Output terminals SL20.115



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	above/below 70 mm recommended 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) therefore • 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	Screw terminals, connector size range:
• Input/Output	solid 0.5- 6 mm^2 / flexible 0.5 - 4 mm^2
• Current handling capacity	30 A per output
• Grid	Two connectors per output, 9 mm (SL20.115: 6 mm) distance between adjacent connectors

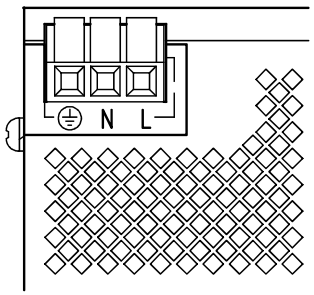
Design advantages:

- 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

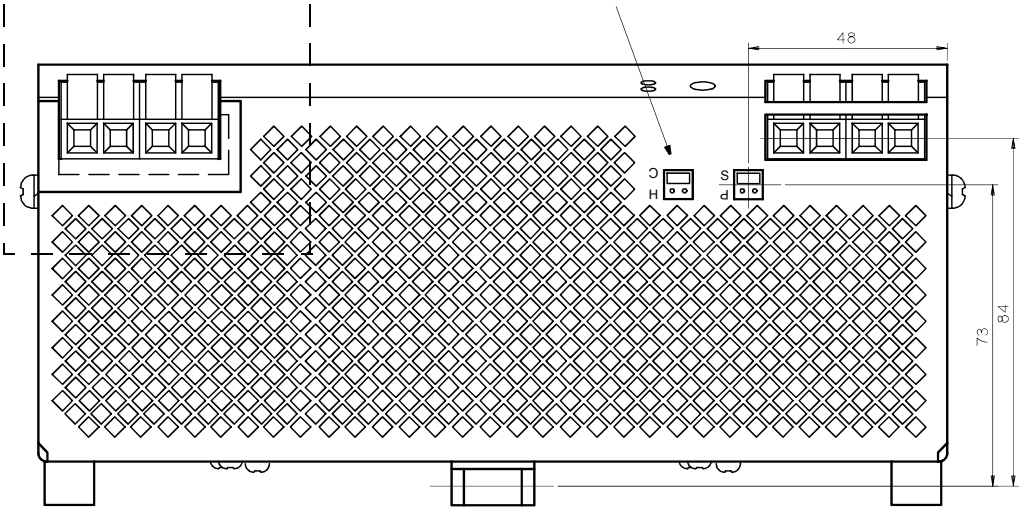
Input terminals
SL20.1xx bottom view



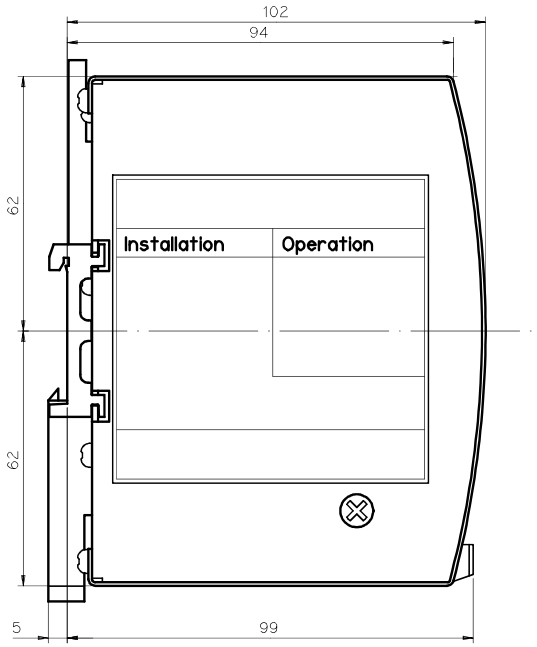
Input terminals
SL20.30x bottom view

only SL20.110/.111

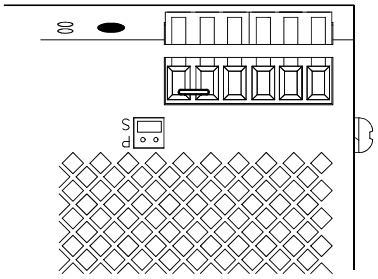
Bottom view SL20



Side view SL20



Output terminals
SL20.115 bottom view



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 data sheet is subject to change without prior notice

Your partner in power supply:

ISO 9000:2001 certified

EPSMA European Power Supply Manufacturers Association

AWARDED Bayerns Best 50 Czech 100 Best EuropeÖs 500

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