Data sheet

Single-Phase Power

SL20.100

- Input: AC 230V
- Output: 24-28V / 480W (600W)
- 91% efficiency
- Ideal for parallel operation
- Simple fusing

CB Scheme IEC60950

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

c UL us UL60950 E137006 CUL/CSA-C22.2 No 60950

CE EMC and Low Volt. Directive

Input

Input voltage	AC 230V, +15%, – 20% 47...63Hz (SL20.300/.301: 3 AC 400/480V, see separate data sheet)
Rated Tolerances	
• Continuous operation	AC 184...264V resp. DC 270...370V
• Short term (1 min) at 24 V/20 A	AC 170...280V resp. DC 250...400V
Input current	5A
Inrush current	typ. 33A at AC 264V

Inrush current limiting done with a fixed 15R resistor (not a thermistor) which is bridged after the unit is running, so losses are minimised. That means no reset time even at a warm-start.

Fuse loading <10A^{2}s

Unit is internally fused (fuse not accessible). For external fusing of unit and for input line protection, use circuit breaker with B-characteristic 10A or slower action, or alternatively T10A HBC fuse.

Harmonic current emissions (PFC)	SL20.100 on request SL20.101 acc. to EN61000-3-2
Transient handling	Active transient filter incorporated, so transient resistance acc.to VDE 0160 / W2 (750V/ 1.3ms), for *all* load conditions.
Hold up time	>20ms at AC 230V, 24V/20A

Efficiency, Reliability etc.*

Efficiency	typ. 91% (AC 230V, 24V/20A)
Losses	typ. 48W (AC 230V, 24V/20A)
MTBF	310.000h acc. to Siemensnorm SN 29500 (24V/20A, AC 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 four 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, preset: 24.0V ±0.5% Adjustment range guaranteed
Output noise suppression	Radiated EMI values below EN61000-6-3, 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 (480W) resp. 28V/18A (504W)
• T_{amb}=0°C - 45°C	24V/25A (600W) resp. 28V/22A (616W) short-term also at 60°C
Derating	typ. 12W/K (at T_{amb}= +60°C...+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 33V ±10%: switch to hiccup mode
Front panel indicators:	• Green LED on, when $V_{out} > U_T$, where U_T is ca. 2 V below Vout adjusted (24V...28V) • Red LED on, when 14V < V_{out}< U_T • Red LED flashes, when 0V < V_{out} < 14V
Parallel operation	Yes, up to ten SL20 units

To achieve current sharing the output V/I characteristic can be altered to be 'softer' (25V at 0.4A, 24V at 20A). This is done by repositioning a bridge connection (without opening the unit).

Power Back Immunity >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	SL20.100: 1800g SL20.101: 2400g

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	Description
SL20.100 (Basic version*), SLS20.100 (Safety Cover*), SLZ01	including PFC: SL20.101 including PFC: SLS20.101 Screw mounting set,two needed per unit

Start / Overload Behaviour

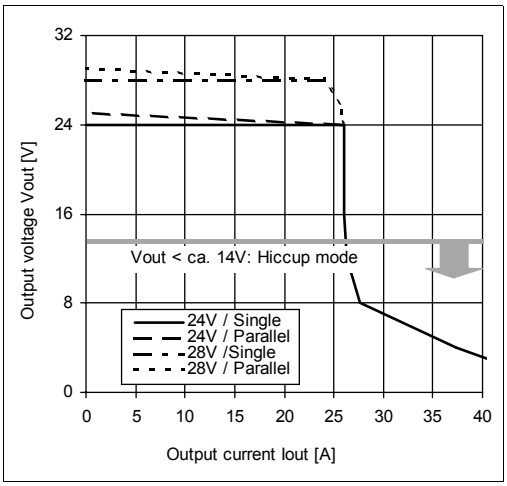
Startup delay	typ. 0.5s
Rise time	ca. 20-80ms, depending on load
Duration of switch-on attempts at	
• Initial application on mains	ca. 1.4s
• Subsequent attempts	ca. 0.5s
Hiccup operation at	V_{out} < ca. 14V
Duration between switch-on attempts	ca. 4s

Electronic current limiting, protects against overload and short circuit:
- V_{out} < ca. 14V: Periodical switch-on attempts (hiccup-mode).

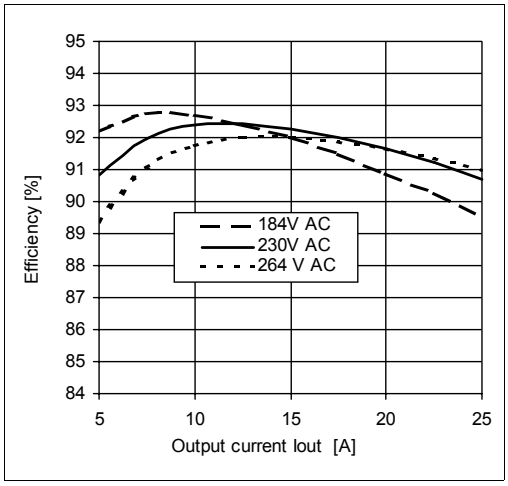
Advantages of the switch-on/overload behaviour:
- Safer switch-on into highly non-linear loads with large starting currents
- Short-term overloads result in current limiting and not in an immediate shut-down.
- Parallel operation of several units possible. Proper switch-on performance is obtained.

Functional diagrams

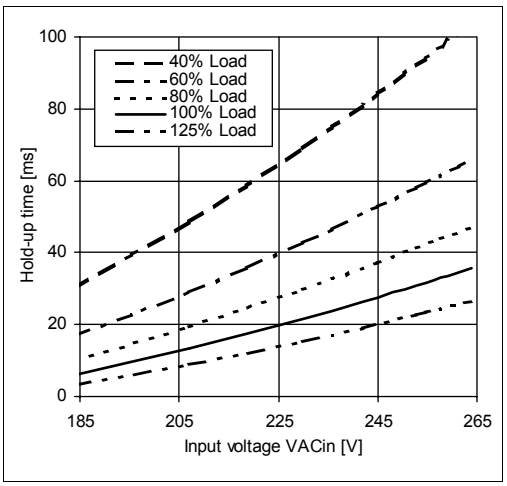
Output characteristic (typ.)



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



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



Further information

For 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

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 SL20.100. Regarding the SL20.101 (including PFC) some values may differ.

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

PULS GmbH
Arabellastraße 15
D-81925 München
Tel.: +49 89 9278-0
Fax: +49 89 9278-199
www.puls-power.com

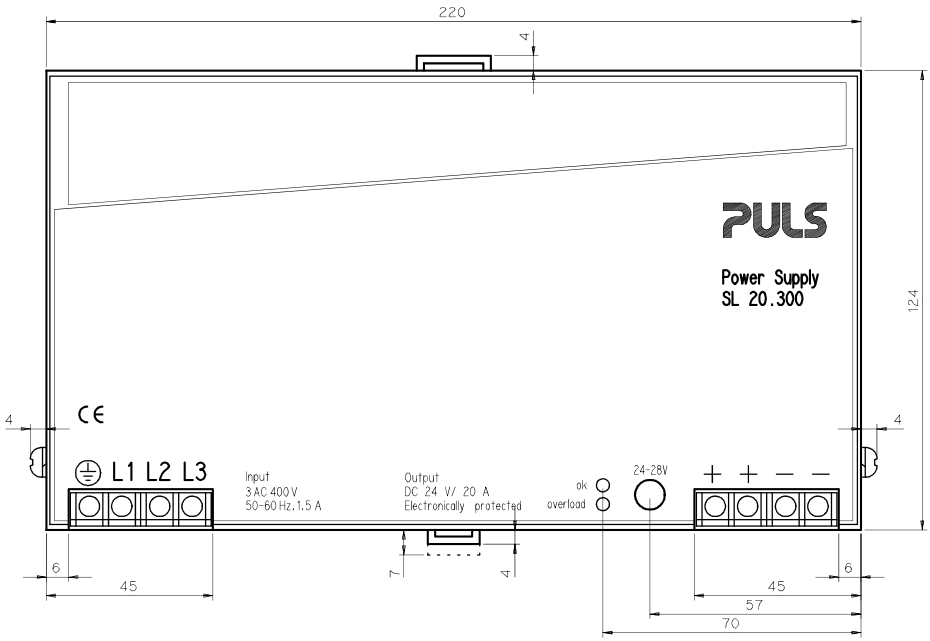
Data sheet

Mechanics

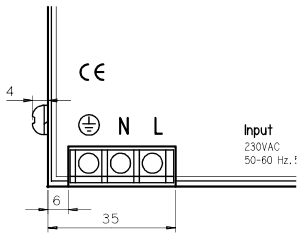
SL20

- 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

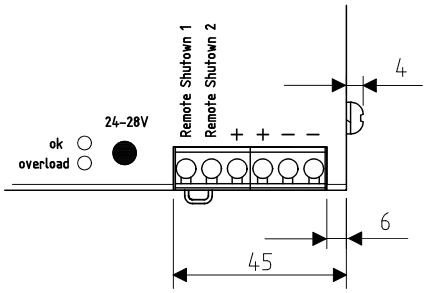
Front view SL20.300



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

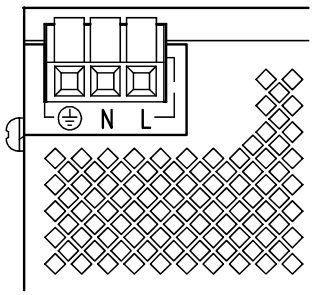
Design advantages:

- 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

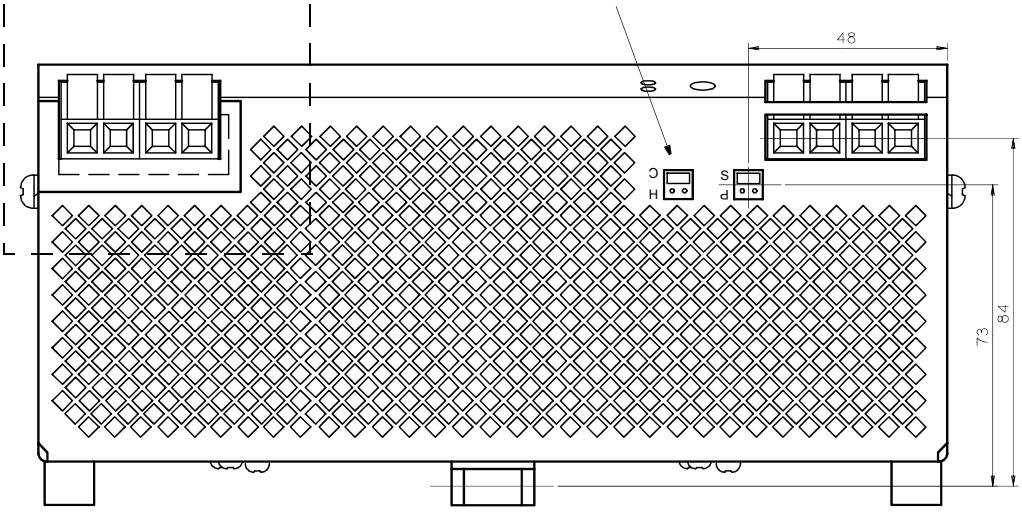
Input terminals
SL20.1xx bottom view



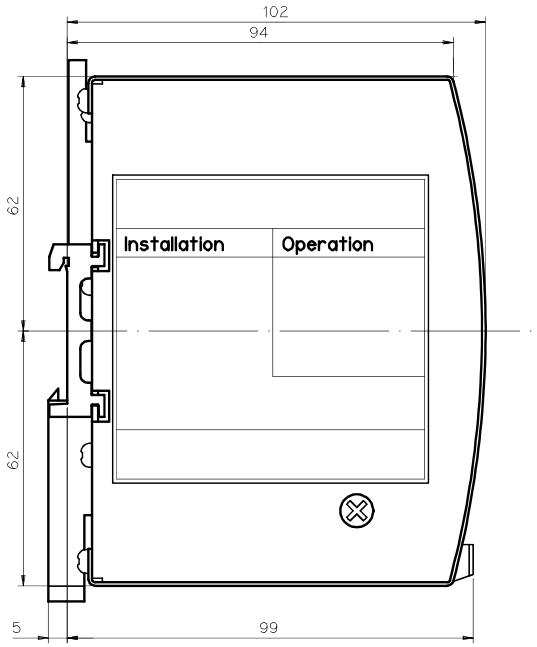
Input terminals
SL20.30x bottom view

only SL20.110/.111

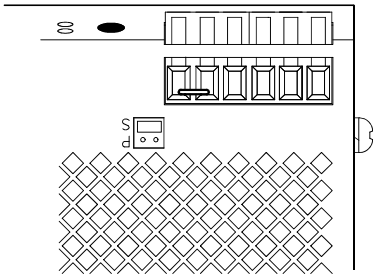
Bottom view SL20



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

PULS GmbH
Arabellastraße 15
D-81925 München
Tel.: +49 89 9278-0
Fax: +49 89 9278-199
www.puls-power.com