SL20 with remote shut-down

**SL20.115**

- **Input**: AC 115/230V *auto select*
- **Output**: 24...28V / 480W (600W)
- **90% efficiency**
- Ideal for parallel operation
- Remote shut-down

**Datasheet**

**Input**

- **Input voltage**: AC 100-120V/220-240V, 47-63Hz, auto select
- **Rated tolerances**
  - Continuous operation
    - Input: AC 85...132V resp. AC 184...264V
  - Short-term (1 min)
    - Input: 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}$$<18A @ AC 264V (T_{amb} = +25°C, cold start)
  - $<37A @ AC 264V (T_{amb} = +50°C, cold start)
- **Fuse loading** $P_f$$<5A²s (T_{amb} = +25°C, cold start)
  - $<8A²s (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).

**Efficiency, Reliability**

- **Efficiency** typ. 90.5% (AC 230V, 24V/20A)
- **Losses** typ. 50W (AC 230V, 24V/20A)
- **MTBF** 519.000h acc. to Siemensnorm SN29500
- **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.

**Further information**

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

For detailed dimensions see SilverLine mechanics data sheet SL20.

**Output** (signal terminals see overleaf)

- **Output voltage**: DC 24...28V, adjustable by (covered) front panel potentiometer. Adjust. range guaranteed.
- **Output noise suppression**: Radiated EMI values below ENS0081-1, 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** 12WK  (at $T_{amb}$ = 60-70°C)
- **Voltage regulation** better than 2% over all

**Ripple**
- **Output charact. S** (<0.1%)
- **Output charact. P** (<0.4%Vpp (In: AC 230V, Out: 24V/20A))
- **<100mVpp (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 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 the output VII characteristic can be altered to be 'softer' (25V at 0.4A, 24V at 20A). This is done by repositioning an external bridge connection (without opening the unit).

**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
  - Weight 2.5kg

**Design advantages**:
- All connection blocks are easy to reach as mounted on 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>
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<tbody>
<tr>
<td>SL20.115</td>
<td>(wall mounting set; contains 2 pcs.)</td>
</tr>
<tr>
<td>SL202</td>
<td></td>
</tr>
</tbody>
</table>
Start / Overload Behaviour

Startup delay  typ. 0.55s
Rise time  appr. 20–80ms, depending on load

Overload behaviour  Puls Overload Design (see right-hand diagram)

Advantages:
- No disconnection/hiccup, thus overloading is possible also for a longer period of time (load start-up), ideal for parallel operation.
- High overloads/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’ can occur as, for example, with fold-back characteristics, and secondary fuses trigger more reliably.

Signal terminals

The remote On/off control is activated via the signal terminals ‘Remote Shutdown 1 and 2’. The unit is delivered with the signal terminals jumpered (control state is ‘On’ with the terminals jumpered).

a) Remote shut-down by switch:
Unit turns on when the signal terminals ‘Remote Shutdown 1 and 2’ are closed by a switch (R<10Ω).
- Connect the switch contact with the signal terminals Remote Shutdown 1 and 2, only! Ensure the switch contact is not connected to the output voltage or in contact with any separate voltages.
- Unit is in standby mode with open switch contact (R>100kΩ)

b) Remote shut-down by control voltage:
Positive voltage is applied to ‘Remote Shutdown 1’ against minus output (reference potential)
- Unit turns on, when positive voltage (3...30V, 0.3...2mA) is applied to ‘Remote Shutdown 1’ against the minus output
- Unit switches off at <0.6V
- Input voltages of 0.6...3V and negative voltages are not defined

Parallel operation / cascading of outputs:
- Use a multi-pole switch with one switch contact for each power supply unit (1 x On); connection of the signal terminals with one switch contact is not permissible when being used in parallel operation

Additional control features with parallel operation:

Unit turns on:
- positive voltage (4...30V) is applied to ‘Remote Shutdown 1’ against negative output voltage

Unit switches off:
- 0...0.5V in is applied to ‘Remote Shutdown 1’

Note:
- Connection of the terminals ‘Remote Shutdown 1’ is possible with parallel operation; do not use the terminals ‘Remote Shutdown 2’
- Only connect the signalling lines at one single point of the negative output voltage; a voltage drop between the connection point and the minus terminals must not exceed 0.5V, even at maximum load!

Additional data regarding remote shut-down:
- Output current  < 5mA (mean)
- Power consumption  < 2.5W
- Residual voltage at zero load  < 3V
- Startup delay  < 500ms
- Switching operations per min.  < 10

Efficiency (typ., at Vout=24V)

Hold-up time (min., at Vout=24V)

Output characteristic (typ.)

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.

Your partner in power supply:
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

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<td>SL20.115</td>
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<td>3 AC 400 V / 3 AC 480 V</td>
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Connections

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

Input terminals

- Screw terminals, connector size range: solid 0.5–6 mm² / flexible 0.5–4 mm²
- 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

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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.

Your partner in power supply: