Data sheet

48-52V, 3-phase, 240W

SL10.305

- Input: 2 AC 400-500V
  3 AC 380-500V
- Output: 48-52V / 240W
- Switchable operating mode (single/ parallel)
- FUSE Mode / Continuous Mode

UL60950 E137006
CUL/CSA-C22.2
No 60950

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

EMC and
Low Volt.
Directive

This compact power supply unit is characterised by the variety of application possibilities and low system costs. The fact that the **external fuses are no longer necessary** is an advantage as it saves cost and space. The selectable **FUSE Mode** and the fully specified **2-phase operation** make the SL10.305 the unit of choice.

At a competitive price, it also offers **6A power boost**, 9-14A short circuit current, **output noise suppression**, selectable Single Mode or Parallel Mode, small dimensions and easy installation. Due to its wide range input the unit can be connected to 3-phase electricity networks worldwide **without switching**.

Input 3-phase operation

(Input 2 phase operation and DC operation see page 2)

Nominal input voltage	3xAC 380-500V
• Voltage range	3xAC 320...575V
• Short-term (1 min.)	3xAC 300...620V
Frequency	50-60Hz ±6% (47...63Hz)
Input current	0,8A (3xAC 400V) 0,7A (3xAC 480V)
Power faktor	0,5 (3xAC 400V) 0,47 (3xAC 480V)
Inrush peak current	electronically limited < 15,4A; < 0,26A^{2}s; < 3ms (3xAC 400V) < 15,4A; < 0,4A^{2}s; < 3ms (3xAC 480V)
Internal fused	3x T2A5 H.B.C
Compatible external fuse	6A< Si < 32A Char. B or C or similar tripping characteristic

Hold-up time

3xAC 400V	typ. 36ms; > 29ms (48V / 5A)
3xAC 480V	typ. 56ms; > 45ms (48V / 5A)

Efficiency and Power dissipation

Efficiency	93,8% (48V / 5A / 3xAC 400V) 93,9% (48V / 5A / 3xAC 480V)
Power dissipation	16,0W (48V / 5A / 3xAC 400V) 15,7W (48V / 5A / 3xAC 480V)
No-load-losses	2,3W / 3W (3xAC 400V / 3xAC 480V)

Output

Rated voltage	DC 48V
Rated voltage range	48...52V guaranteed 46...53V typ.
Preset	48V ±0,2V and "Parallel Use"
Rated current	0-5A (at 48V) 0-6A (< 1 minute per 10 minutes)
Short-circuit current	min. 9A; max. 14A
Overload behaviour	Continous Mode or FUSE Mode selectable (see Overload Behaviour)
Output power	240W
Peak power	288W (< 1 minute per 10 minutes)
Ripple/Noise	typ. 8mV$_{SS}$ / < 30mV$_{SS}$ (20MHz)
Static load regulation	< 100,0mV in single operation < 2,5V in parallel operation
Dynamic load regulation	typ. ±300mV 500 µs Load step10% - 90% - 10%
Power back immunity	max. 60V
Over volt protection	typ. 56V DC max. 60V DC
Parallel operation	Yes, up to five SL10.305
To achieve current sharing:	• Plug jumper into 'Output parallel use'. This alters the output V/I characteristic to be 'softer' (48V bei 0,5A, 46V bei 5A). The output voltage can still be adjusted. • Missing jumper = 'Single Use', i.e. 'hard' characteristic
• Protected against short-circuit, open circuit and overload.	

Order information

Order number	Description
SL10.305	Power supply unit
SLZ13	Adapter for S7-300rail
SLZ02	Wall mounting set, (two pcs. per package)

Input 2- phase operation

Random connection to L_1, L_2 or L_3	
Nominal input voltage	2xAC 400-500V (TN, IT, TT-networks)
Input voltage range	2xAC 340...575V
Short-term (1 min.)	2xAC 300...620V
Frequency	50-60Hz ±6% (47...63Hz)
Input current	1,2A (2xAC 400V) 1A (2xAC 480V)
Power factor	0,55 (2xAC 400V) 0,53 (2xAC 480V)
Inrush peak current	< 15,4A; < 0,26A^2s (2xAC 400V) < 15,4A; < 0,4A^2s (2xAC 480V)
Recommended external fuse	> 6A < 32A Char. B or C

Hold-up time 2 phase operation

2xAC 400V	typ. 32ms; > 26ms (48V / 5A)
2xAC 480V	typ. 52ms; > 42ms (48V / 5A)

Efficiency and Power dissipation 2 phase operation

Efficiency	93,0% (48V / 5A / 2xAC 400V) 93,2% (48V / 5A / 2xAC 480V)
Power dissipation	18,0W (48V / 5A / 2xAC 400V) 17,5W (48V / 5A / 2xAC 480V)
No-load-losses	2,3W / 3W (2xAC 400V / 2xAC 480V)

Input DC operation

Random connection, consider PE (protected earth) terminal.

For further details regarding DC-operation please check out our technical note #25 on our webpage: www.puls-power.com, navigation “know how” and “technical notes”.

Nominal input voltage	DC 600V
Input voltage range	DC 450...820V
Short-term (1 min.)	DC 400...890V
Threshold voltage:	
• turn-on	DC 350V (typ.)
• shut-down	DC 260V (typ.)
Input current	0,5A (DC 600V)
Inrush peak current	< 14A; < 0,3A^2s (DC 600V)
Recommended external fuse	6A Littlefuse KLKD

Hold-up time DC operation

DC 600V	typ. 43ms; > 35ms (48V/5A)

Efficiency and Power dissipation DC operation

Efficiency	94,2% (48V / 5A / DC 600V)
Power dissipation	14,8W (48V / 5A / DC 600V)
No-load-losses	2,5W (DC 600V)

Operation and environmental data

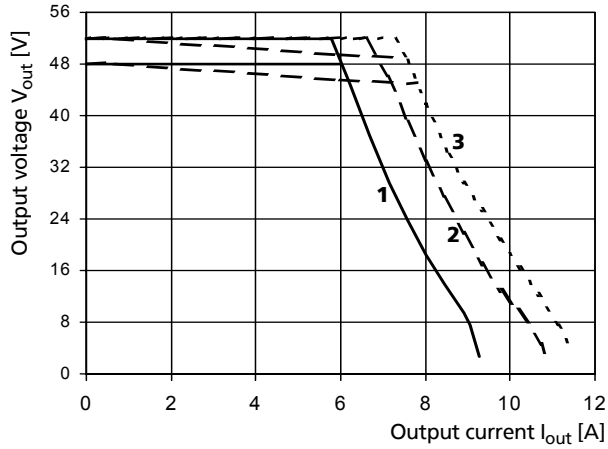
Cooling	natural convection, no forced air-cooling necessary
Operating temperature range	0 °C...+70 °C
Derating	> 60 °C: 6W/K
Guaranteed startup	-10 °C
Non-operating temperature range	-40 °C...+85 °C

Electromagnetic Compatibility (EMC)

Emissions	EN 61000-6-3 (also includes EN 61000-6-4) Class B (EN 55011, EN 55022) EN 61000-3-2 and EN 61000-3-3
Immunity Electrostatic Discharge (ESD)	EN 61000-6-2 (also includes EN 61000-6-1) EN 61000-4-2, Level 4 (withstands 8 kV direct discharge, 15 kV air discharge)
Electromagnetic radiated fields	EN 61000-4-3, Level 3 (10 V/m)
Burst, coupled to: ACin lines DCout lines	EN 61000-4-4 Level 4 (4 kV) Level 3 (2 kV)
Surge transients Differential mode (L→PE) Common mode ($L_1 \rightarrow L_2$, $L_2 \rightarrow L_3$; $L_3 \rightarrow L_1$)	EN 61000-4-5 Installation class 4 (4 kV) Installation class 4 (2 kV)
Conducted noise immunity	EN 61000-4-6 Level 3 (10V, 150 kHz-80 MHz)
Voltage dips	EN 61000-4-11
Transient immunity	Transient resistance acc. to VDE 0160 / W2 over entire load range

Diagramme

Output characteristic (min. at V_{0ut}=400V_{AC}3Ph)



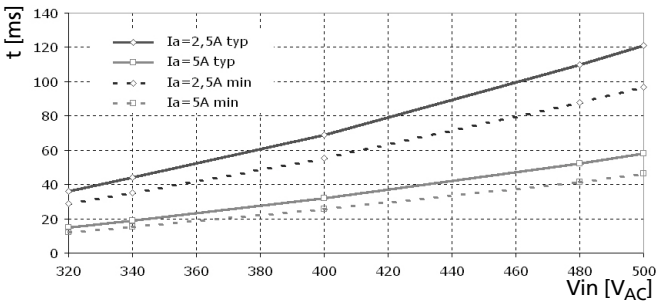
1 Jumper-setting "single use" (fixed characteristic)

2 Jumper-setting "parallel use" (inclined characteristic)

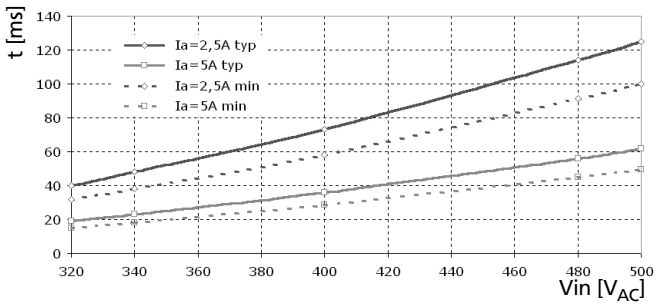
3 **Power Boost:**
Higher current for a short period of time (< 1 minute or even longer with forced ventilation) without voltage breaking down. Optimum fit to peak load requirements and oversizing of power supplies is not needed anymore.

Overload Design^{TM}:
Extended output characteristic curve with a high short current at a gradually reduced output voltage. Unit does not switch off, when the rated current is exeeded. The high short current reliably starts heavy loads such as DC-motors or capacitive loads and blows branch fuses.

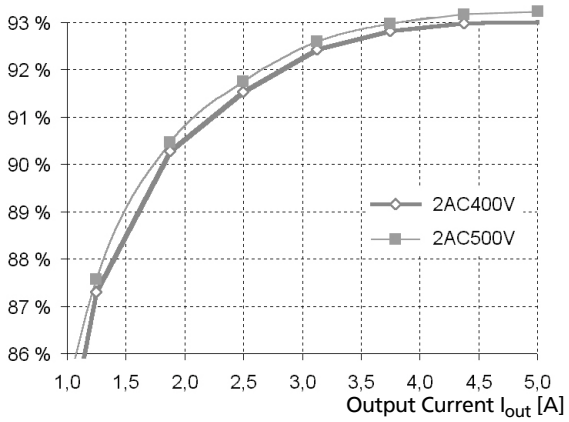
Hold-up time 2-phase



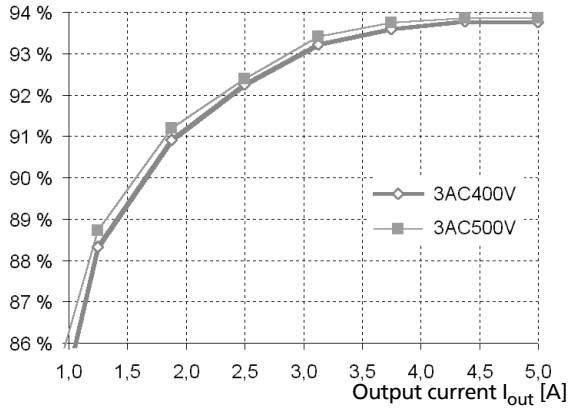
Hold-up time 3-phase



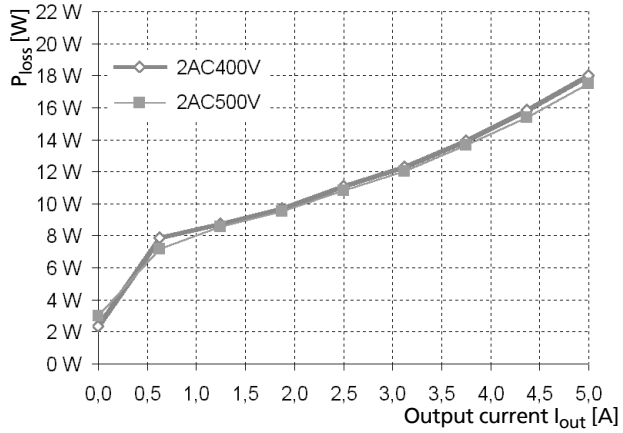
Efficiency 2xAC 400V & 2xAC 500V



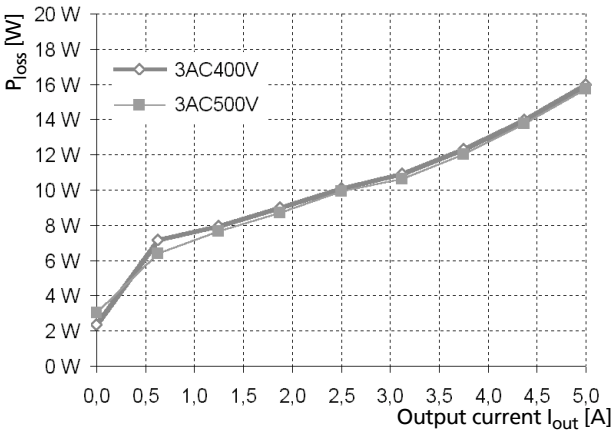
Efficiency 3xAC 400V & 3xAC 500V



Power dissipation 2xAC 400V & 2xAC 500V



Power dissipation 3xAC 400V & 3xAC 500V



Overload Behaviour

Two different operating mode options, switchable by plugging the front-panel jumper. If the jumper is missing, the unit is set to FUSE Mode. The unit is preset to Continuous Mode at shipment.

a) FUSE Mode (Switch-off after typ. 5s):
- Jumper is in the 'OVL FUSE mode' position.
- When overload or short-circuit occurs for more than typ. 5s, the unit switches off the output.
- Definition of overload or short-circuit: The set output voltage in each case can no longer be maintained.
- Power Boost and Overload Design™ remain unchanged during the typ. 5s delay time.
- **Red LED flashes** at switch-off.

b) Continuous Mode (continuous current):
- Jumper is in the 'OVL cont. mode' position.
- When overload or short-circuit occurs, the unit continuously supplies current (see. diag. 1), no Hiccup.

Re-start:
- by pushing the reset button on the unit's front panel
- by disconnection from mains and re-start of the unit after > 1 min. or as soon as the red LED stops flashing
- With some applications, the FUSE Mode can replace the usual fusing on the secondary side. The FUSE Mode has closer tolerances than thermal trips.The tripping delay time of typ. 5s enables heavy loads to start and thereby avoids unneccassary service activities.

Overtemperature Protection

Continuous Mode	Switch-off and automatic re-start after cooling.
FUSE Mode	Unit remains switched off after overheating until restart (also see 'Re-start' above).

Start Behaviour

Startup delay	typ. 200ms
Rise time	appr. 5-20ms, depending on load

Connectors and terminals

Terminals	Proofed terminals with captive screws for 5.5 mm slotted screwdriver or Philips cross-recessed screwdriver No. 2. Input terminals are equipped with an additional protection cover.
Position	Easy to reach terminals on the front panel; input and output clearly separate from each other
Tightening torque	0,8Nm
Wire gauge	
• flexible cable	0,5 - 4mm^2 (20-10 AWG)
• solid cable	0,5 - 6mm^2 (20-10 AWG)
Ferrules	admissible
Stripping length	7mm

Front elements

⏚	PE terminal
L1, L2, L3	Input phase 1 to 3. Random connection to L_1, L_2 or L_3 at DC-operation.

Construction / Mechanics

Degree of protection	IP20
Dimensions	
Width	89 mm
Height	124 mm
Depth	117 mm (without DIN rail)
Weight	1040g

Installation notes

External fusing	• not necessary (internal fuse) • observe national regulations • "external" fusing recommended, please refer to input section, page 1.
Mounting position	vertical; input below, output above
Free space for cooling	above / below 25mm recommended left / right 15mm recommended

Specifications valid for 3 x AC 400V input voltage, +25°C ambient temperature, and 5 min run-in time, unless otherwise stated. They are subject to change without prior notice.
This datasheet and other documents regarding this power supply are available online through our webpage: www.puls-power.com/SL10.305

Your partner in power supply:

ISO 9000:2000 certified

EPSMA European Power Supply Manufacturers Association

AWARDED Bayerns Best 50 Czech 100 Best EuropeÖs 500

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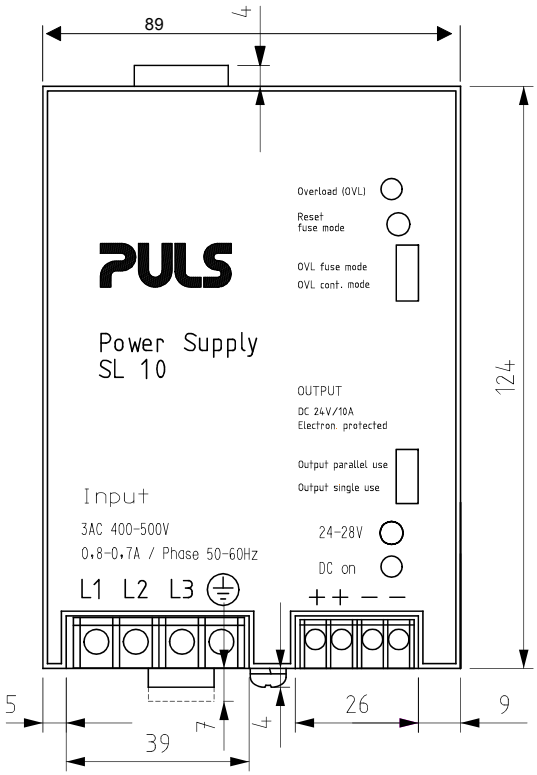
Data sheet

Mechanics

SL10.300

- 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 SL10.300



Construction / Mechanics

Housing dimensions and Weight

• W x H x D	89 mm x 124 mm x 117 mm (+ DIN rail)
• Free space for convection cooling	above/below 25 mm recommended
• Weight	980 g

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 Two connectors per output
• Grid	Primary side: 9,52 mm between adjacent connectors Secondary side: 6,35 mm between adjacent connectors

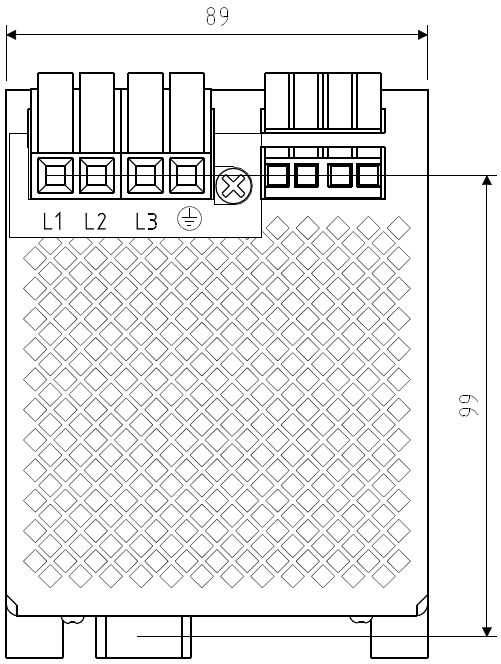
Design advantages:

- All connection blocks are easy to reach as mounted at the front panel. Input and output are strictly apart from each other and so cannot be mixed up
- PVC insulated cable can be used for all connections, no thermal protection is needed

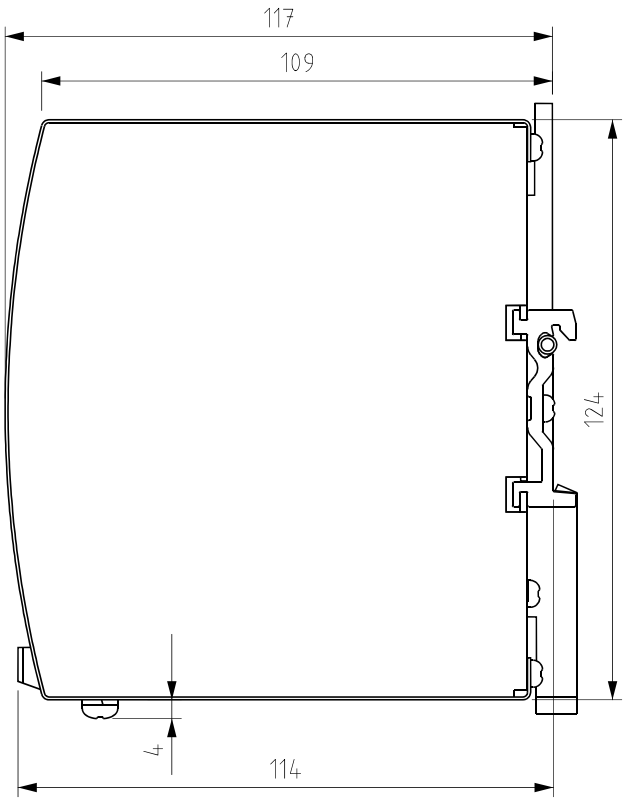
Order information

Order number	Description
SL10.300	
SLZ01	Screw mounting set, two needed per unit

Bottom view SL10.300



Side view SL10.300



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 SL10.300 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

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