

PSACDC18

General Purpose Linear Power Supply



General Description

The PSACDC18 is an AC/DC power supply, which comes with an ultrafast bridge rectifier and heavy duty filter capacitors for the main DC output voltage, plus the circuitry to provide regulated auxiliary DC output voltages (+/- 12V).

With an appropriate mains transformer, the PSACDC18 is perfectly suited for end products including one or two audio amplifier module(s) CLDP500. Optionally, the inrush current limiter IRCLIM10 may be used to limit the inrush current of the mains transformer.

Typical Applications

- Mono or stereo power amplifiers with up to 1000W continuous output power

Key Specifications

- Main AC input voltage: 28VAC to 55VAC (50Hz ... 60Hz)
- Main DC output voltage: Rectified, filtered and fused main AC input voltage
- Main DC output current: 18ADC max.
- Auxiliary AC input voltages: 2 x 12VAC to 17VAC (50Hz ... 60Hz)
- Auxiliary DC output voltages: +/-12VDC ($\pm 5\%$)
- Auxiliary DC output currents: +350mADC / -100mADC max.
- Outline dimensions: 110 x 82 x 55mm (w x d x h)

Main Features

- Ultrafast bridge rectifier with soft recovery
- Heavy duty aluminum electrolytic capacitors
- Regulated auxiliary output voltages (+/-12VDC)
- Two separate terminal blocks for straight wiring of two amplifier modules
- Customized designs available, contact Primelec for further information

Block Diagram

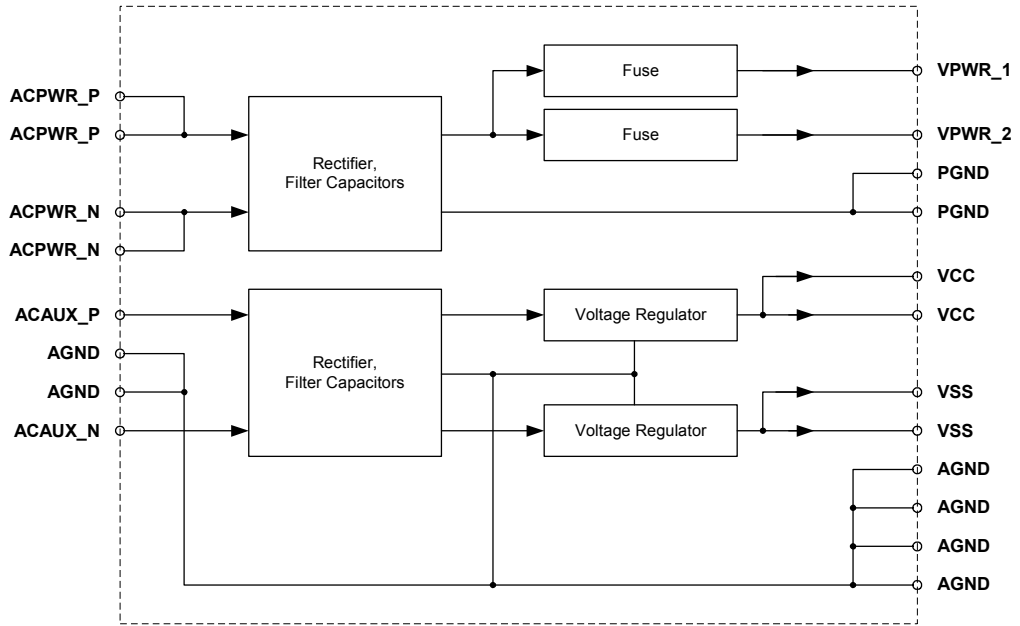


Figure 1: Block diagram

Connection Diagram and Fuses

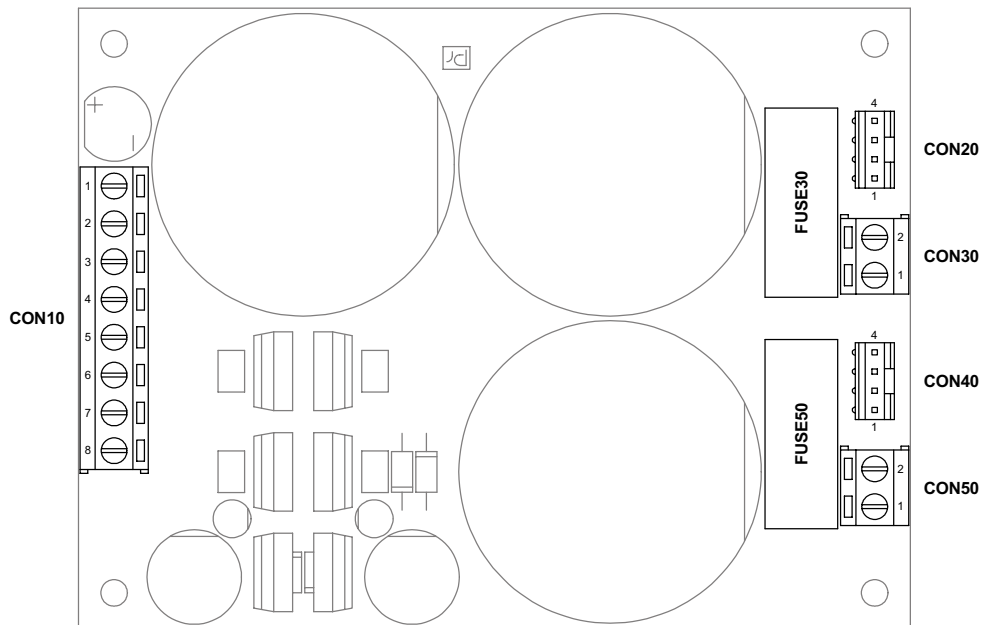


Figure 2: Connection diagram and fuses

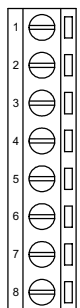
Connector Descriptions

CON10 (AC Input Voltages)

Type: Printed circuit terminal block, 8 positions

Specifications: Pitch 5mm, screw connection, conductor cross section 1.5mm² max.

Pinout:



Pin	Signal	Function
1	ACAUX_P	Auxiliary AC input voltage, transformer winding AUX_P
2	AGND	Ground terminal for the auxiliary section, transformer winding AUX center tap
3	AGND	Ground terminal for the auxiliary section, transformer winding AUX center tap
4	ACAUX_N	Auxiliary AC input voltage, transformer winding AUX_N
5	ACPWR_P	Main AC input voltage, transformer winding PWR_2P (optional)
6	ACPWR_P	Main AC input voltage, transformer winding PWR_P
7	ACPWR_N	Main AC input voltage, transformer winding PWR_N
8	ACPWR_N	Main AC input voltage, transformer winding PWR_2N (optional)

CON20, CON40 (Auxiliary Output Voltages)

Type: Rectangular shrouded header, 4 positions, male pins, 1 row (FCI 69167-104HLF)

Specifications: Pitch 2.54mm, mates with rectangular housing FCI 78211-004LF and housings without polarizing key

Pinout:



Pin	Signal	Function
1	VSS	Negative auxiliary output voltage
2	AGND	Ground terminal for the auxiliary section
3	VCC	Positive auxiliary output voltage
4	AGND	Ground terminal for the auxiliary section

CON30, CON50 (Main Output Voltage)

Type: Printed circuit terminal block, 2 positions

Specifications: Pitch 5mm, screw connection, conductor cross section 1.5mm² max.

Pinout:



Pin	Signal	Function
1	VPWR_1 VPWR_2	Main output voltage (CON30: fused by FUSE30) Main output voltage (CON50: fused by FUSE50)
2	PGND	Ground terminal for the main section

Fuse Description

FUSE30, FUSE50 (Main Output Voltage)

Type: Non resetable miniature fuse

Specifications: 5 x 20mm, 250VAC, 10A, quick-acting (F), high breaking capacity (1500A@250VAC, ceramic tube)

The main voltage outputs at the terminal blocks are separately fused (FUSE30 for CON30, FUSE50 for CON50).

Caution: Disconnect mains before changing a fuse and replace the fuse only with the same type and rating.

Electrical Characteristics

Absolute Maximum Ratings

Stresses above these ratings may cause permanent damage

Symbol	Parameter	Value	Unit
V_{ACPWR}	Main AC Input Voltage on Pins ACPWR_P and ACPWR_N	55	V
V_{ACAUX}	Auxiliary AC Input Voltage on Pins ACAUX_P / ACAUX_N and AGND	2 x 17	V
I_{VPWR}	DC Output Current on Pins VPWR_1 and VPWR_2 (per pin)	9	A
I_{VCC}	DC Output Current on Pins VCC (overall)	350	mA
I_{VSS}	DC Output Current on Pins VSS (overall)	-100	mA
T_A	Ambient Temperature	10 to 60	°C

Recommended Operating Conditions

Symbol	Parameter	Value	Unit
V_{ACPWR}	Main AC Input Voltage on Pins ACPWR_P and ACPWR_N	28 to 52	V
V_{ACAUX}	Auxiliary AC Input Voltage on Pins ACAUX_P / ACAUX_N and AGND	2 x 12 to 14	V
f_{AC}	Frequency Range of the AC Input Voltages	50 to 60	Hz

Electrical Specifications

The following specifications apply for $T_A = 25^\circ\text{C}$, $V_{ACPWR} = 50\text{V} / 50\text{Hz}$, $V_{ACAUX} = 2 \times 13\text{V} / 50\text{Hz}$

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{PWR}	Main Output Voltage	$I_{VPWR} = 100\text{mA}$		69		V
V_{PWR_RIP}	Main Output Voltage AC-Ripple (100Hz)	$I_{VPWR} = 6.5\text{A}$			2	V_{PP}
V_{CC}	Positive Auxiliary Output Voltage	$0\text{mA} < I_{VCC} < 260\text{mA}$	11.4	12.0	12.6	V
V_{SS}	Negative Auxiliary Output Voltage	$-80\text{mA} < I_{VSS} < 0\text{mA}$	-12.6	-12.0	-11.4	V

Ordering Information

PSACDC18 General purpose linear power supply

Application Information

The PSACDC18 is perfectly suited for end products including one or two of Primelec's audio amplifier module(s) CLDP500. The CLDP500 is available in two versions, differing in the power supply requirements.

Wiring Diagrams (CLDP500-DCDC)

The CLDP500-DCDC works with a single supply voltage (V_{PWR}) and needs no auxiliary voltages for operation. Thus, the auxiliary voltages section of the PSACDC18 is not used for applications using the CLDP500-DCDC.

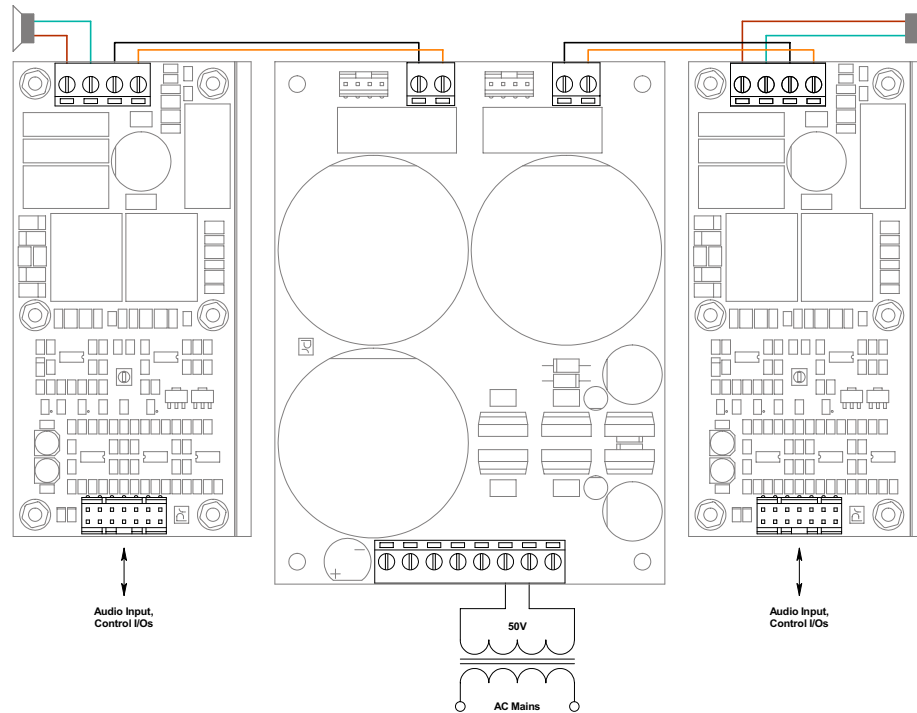


Figure 3: Wiring diagram, 2 x CLDP500-DCDC

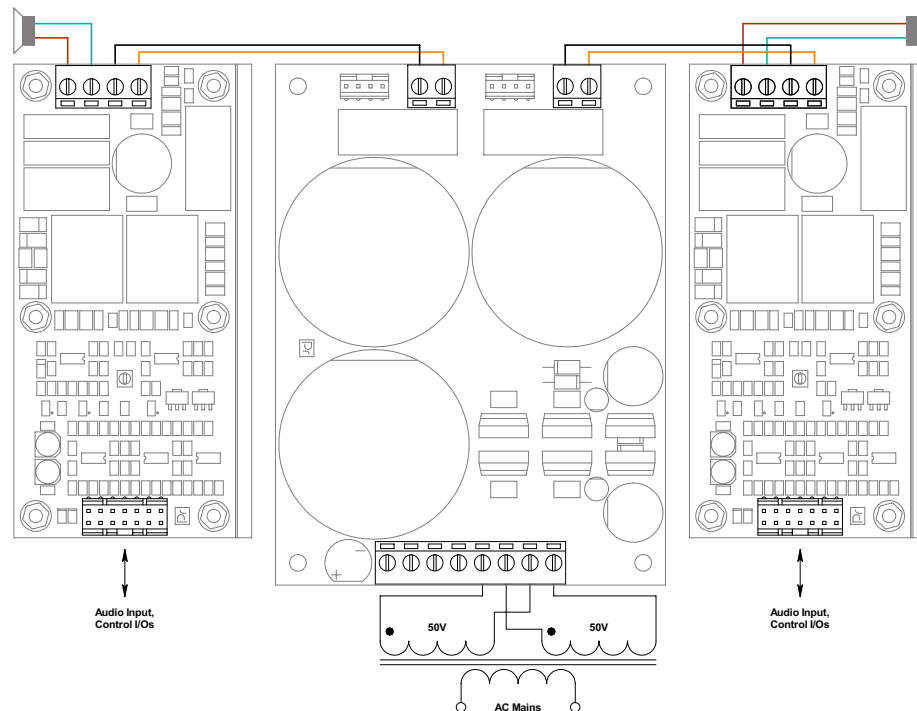


Figure 4: Wiring diagram, 2 x CLDP500-DCDC (alternative transformer, two secondary windings connected in parallel)

Wiring Diagrams (CLDP500-AUXV)

The CLDP500-AUXV requires auxiliary supply voltages (+/-12V) for operation, which are provided by the auxiliary voltages section of the PSACDC18.

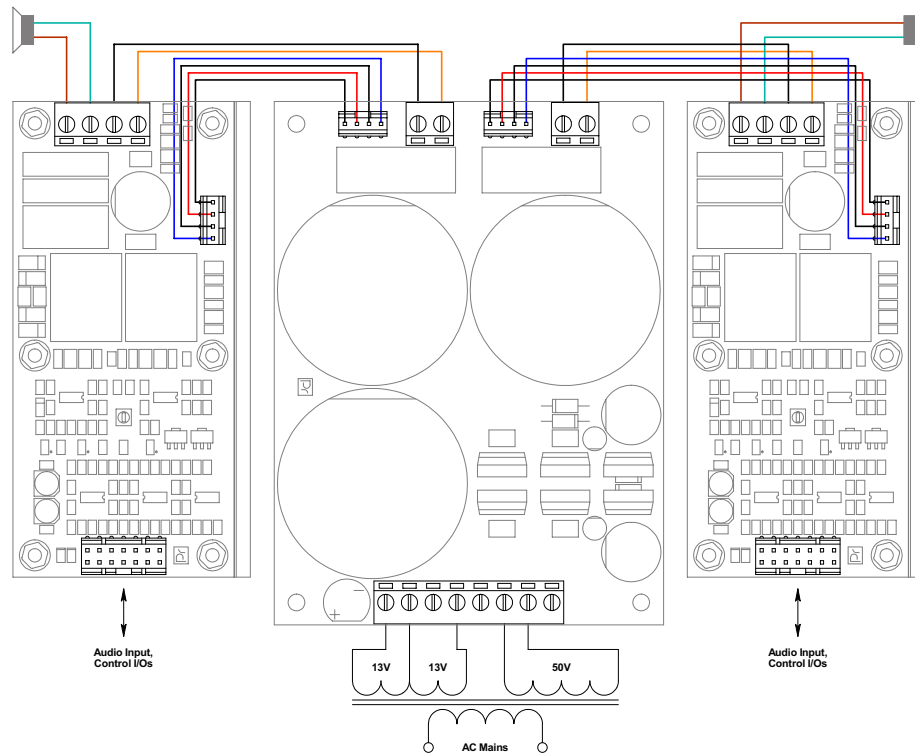


Figure 5: Wiring diagram, 2 x CLDP500-AUXV

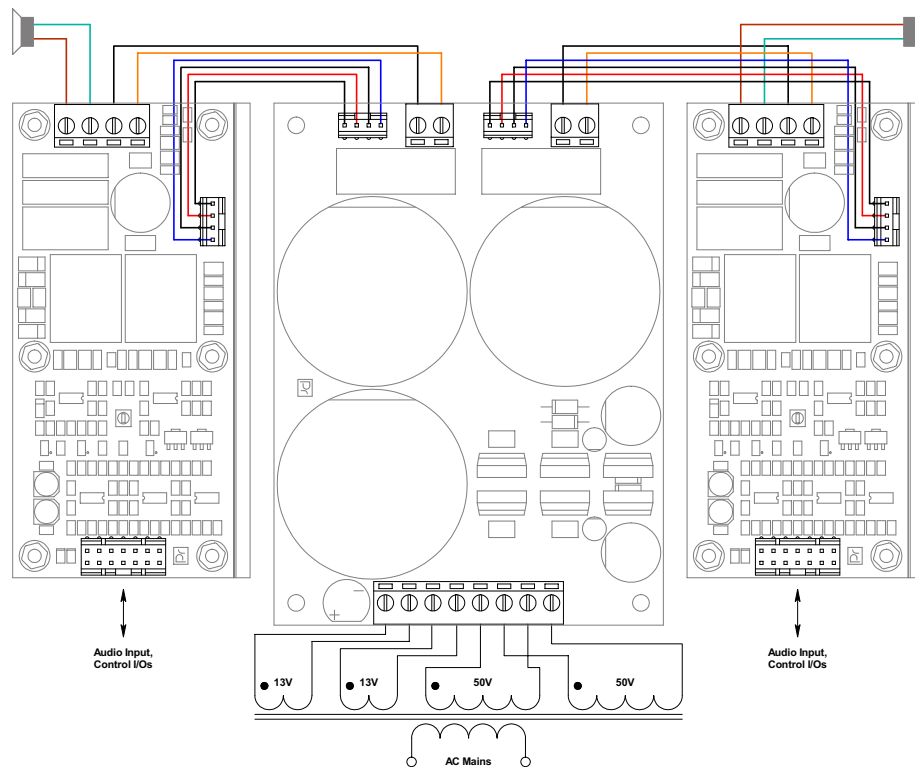


Figure 6: Wiring diagram, 2 x CLDP500-AUXV (alternative transformer)

Physical Dimensions

All dimensions in mm, tolerance is $\pm 0.2\text{mm}$ unless otherwise noted

