

PSU DCN II

Power Supply Unit for DCN23 / DCN24

Features

- Supply for DCN23/24 digital crossover module
- 230Vac or 115Vac mains input
- Mains filter
- Linear LDO regulated 3,3V digital supply
- Linear LDO regulated 5V analogue supply
- Linear regulated op-amp supply
- Delayed unmute by relays
- Fast muting by relays
- On LED
- 4 pcs 2200 μ F capacitors

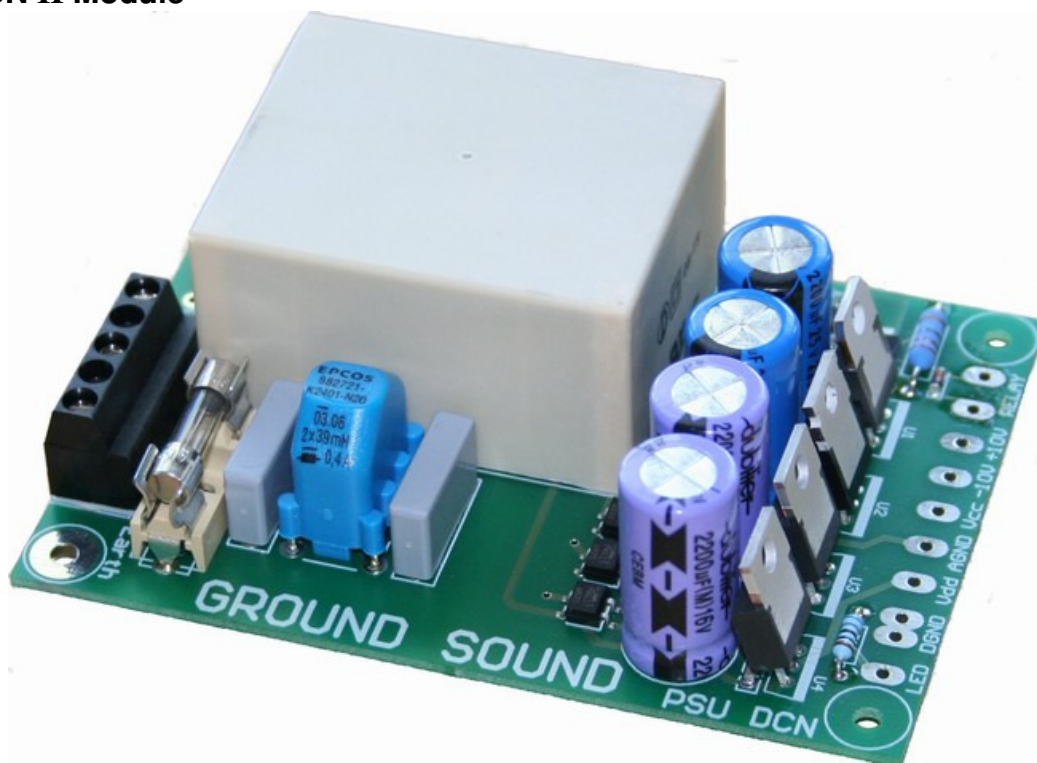
Applications

- Active Crossover

Description

PSU DCN II is a power supply unit with the necessary features to supply **one** DCN23 or **one** DCN24. PSU DCN II has separate voltage supplies: A 3,3V digital voltage with a linear LDO (low drop out) regulated, a 5V analogue voltage (converters) with a linear LDO regulated and +/-12V linear regulated for the op-amps. The construction of PSU DCN II and DCN23 / DCN24 has been made to avoid ground loops to minimize hum and noise. All supply voltages are separated at the secondary side of the transformer. This ensures that the digital supply voltage will not interfere with the converter supply voltage and the OP-AMP supply. 4 pcs 2200 μ F filter capacitors take care of energy storage.

PSU DCN II Module

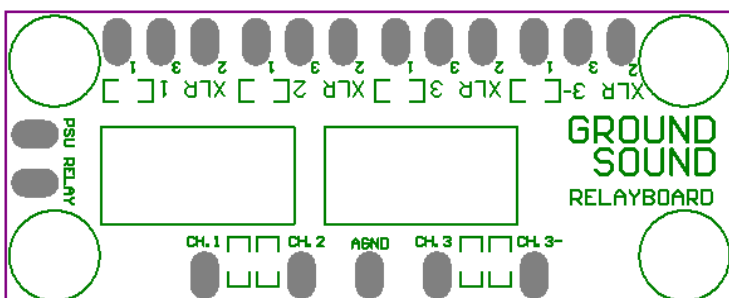
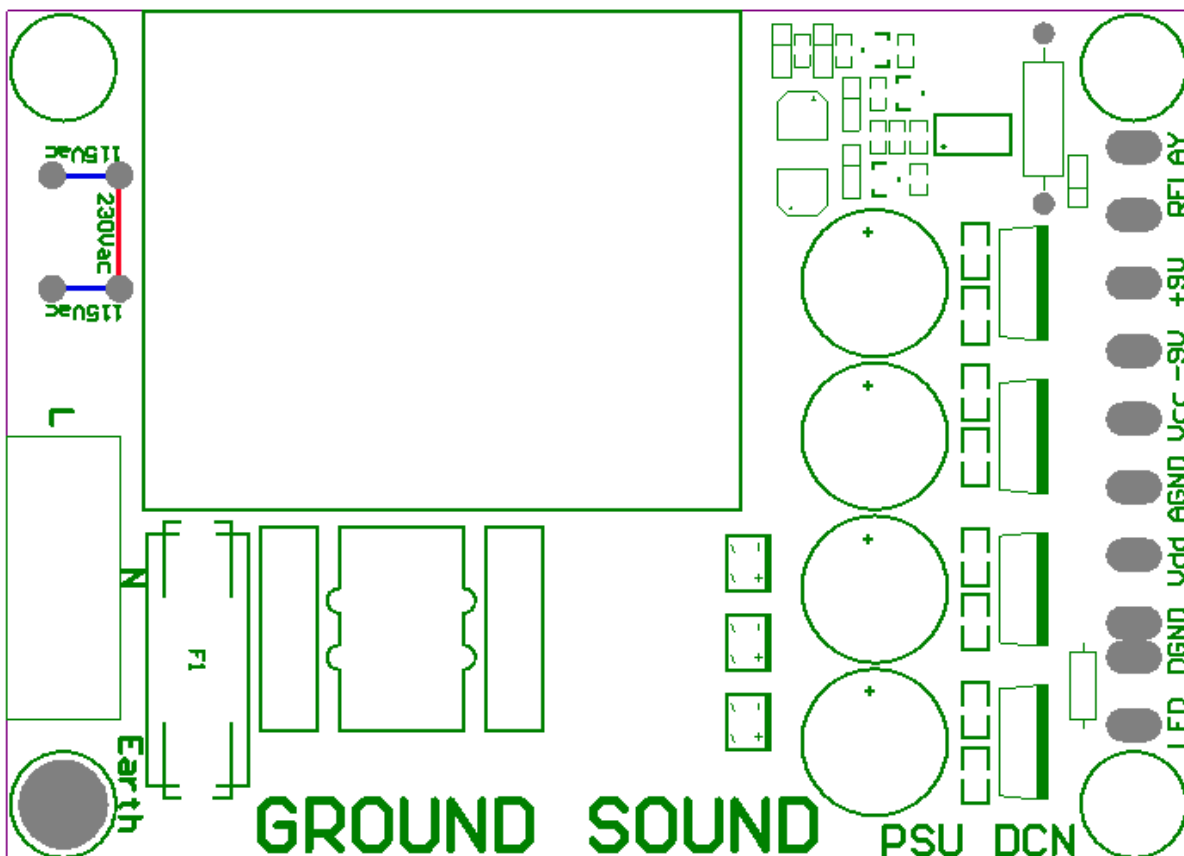


Operating Conditions

	Min	Typ	Max	Units
Mains voltage supply	210	230	240	Vac
Mains voltage supply	105	115	120	
Mains frequency	50		60	Hz
Mains fuse		T200		mA

Technical Specifications

	Min	Typ	Max	Units
Linear regulated supply Vdd (150mA) Dgnd	3,2	3,3	3,4	V
Linear regulated supply Vcc (150mA) GND	4,9	5	5,1	V
Linear regulated supply +Vs (100mA) GND	+11,9	+12	+12,1	V
Linear regulated supply -Vs (100mA) GND	-12,1	-12	-11,9	V
Total capacity		8.800		µF
Relay delayed switch ON		2		S
Relay switch OFF time		10		mS
Muting Relay voltage (24Vdc type)	20		25	V



Connection pads DCN23

Label	Type	Description
EARTH	Mains Power	Connects mains earth to chassis through screw/metal distance
L	Mains Power	Live mains input, 230Vac / 115Vac
N	Mains Power	Neutral mains input
230Vac	Select option	The two pads shall be shorted with 230Vac mains voltage (red line)
115Vac	Select option	The four pads shall be shorted with 115Vac mains voltage (blue lines)
LED	Output	LED anode(+) connection (LED cathode(-) refer to DGND)
DGND	Output	Digital ground
Vdd	Output	Linear regulated 3,3V refer DGND, digital circuit supply
AGND	Output	Analogue ground
Vcc	Output	Linear regulated 5V refer AGND, AD/DA converter supply
-Vs	Output	Linear regulated -12V refer AGND, OP-AMP negative supply
+Vs	Output	Linear regulated +12V refer AGND, OP-AMP positive supply
Relay	Output	Relay pads connects to pads at the relay board (no polarity)

Connection pads Relay Board

Label	Type	Description
PSU Relay	Input	Control power for relays - no polarity
CH.1	Input	Connects to the output Channel 1 of DCN23/DCN24
CH.2	Input	Connects to the output Channel 2 of DCN23/DCN24
CH.3	Input	Connects to the output Channel 3 of DCN23/DCN24
CH.3-	Input	Connects to the inverted output Channel 3- of DCN23 or DCN24 – Channel4
AGND	Input	Connects common analogue ground of DCN23
XLR1,1	Output	Ground output pad for Channel 1
XLR1,2	Output	Non inverted signal (hot) for Channel 1
XLR1,3	Output	Inverted output (cold) for Channel 1 – No actual signal, but connected to AGND through 100R resistor
XLR2,x	Output	See explanation for XLR1
XLR2,x	Output	See explanation for XLR1
XLR2,x	Output	See explanation for XLR1

Relay circuit

The relay circuitry will operate the included relay board to minimize turn on and off thumps. At turn on a capacitor charging will delay the powering of the relays and delaying unmute. At turn off the capacitor will rapidly discharge through a resistor and block the signal at the relay board.

Wiring

The **mains** power wiring can be done in two ways, either three separate wires with an additional isolation hose/heat-shrinkable tube or simply a three lead mains cable. Connect blue to N pad, yellow/green to Earth pad and the last to L pad probably black or brown. The mains wires should be 0,75mm². It has to be emphasized that the mains wiring has to be double isolated.

The **LED** wire will be sufficiently wired with 0,2mm². There is no need for twisting the wires for LED, but it helps to keep them together. This is a low current wire and it's no problem with 1m wires, if it is desired. Example: Mounting on front panel.

The **relay** wires will also be sufficiently wired with 0,2mm². There is no need for twisting the wires for the relay board either, but it helps to keep them together. Because the mandatory reverse diode is placed at the PSU DCN II board there is no polarity of the wiring.

The **AGND** wire should be wired with white 0,5-0,75mm² wire. This wire also connects the star ground to chassis metal at the input signal connector through ground lift on DCN23 / DCN24 via CH pad. This ensures very low noise and hum injected from mains power connection and avoids ground loops.

The **regulated supplies** (-Vs, +Vs, Vcc, Vdd and DGND) for DCN23 /DCN24 will sufficiently be wired with 0,2mm². It is recommended to twist the -Vs/+Vs pair and Vdd/DGND pair.

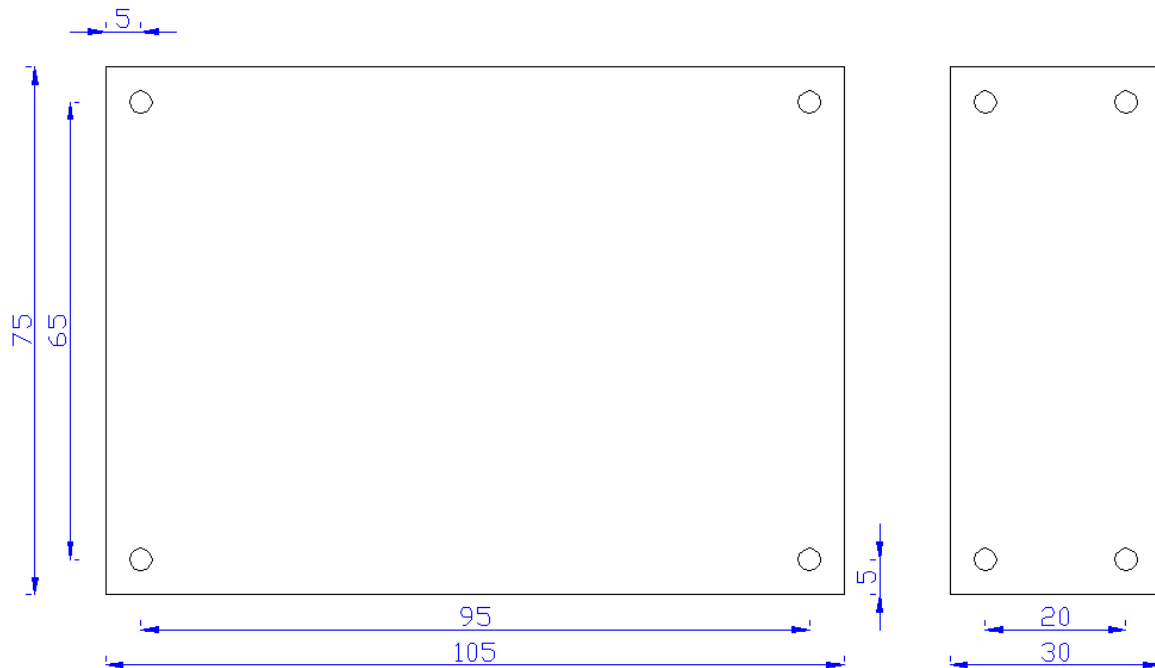
Mechanical dimensions

The mounting of PSU DCN II and Relay Board requires:

8 pcs M3 x 16mm screws

8 pcs M3 x 10mm distances

8 pcs 3mm spring washers



Ground Sound reserves the rights to make alterations without prior notice.

Please notice that Ground Sound will not be held responsible for any property damage. It's assumed that the customer is aware of the danger of high voltage and takes the necessary precautions to avoid personal injury and fully understands the consequence of dealing with high voltage.

Revision A: 2008-05-14

Revision B: 2008-07-26

Revision C: 2009-05-20

Revision D: 2010-07-30

OP-amp supply voltage changed +/-9V -> +/-12V

Relay board overview and pad connection table added

Dimension drawing updated