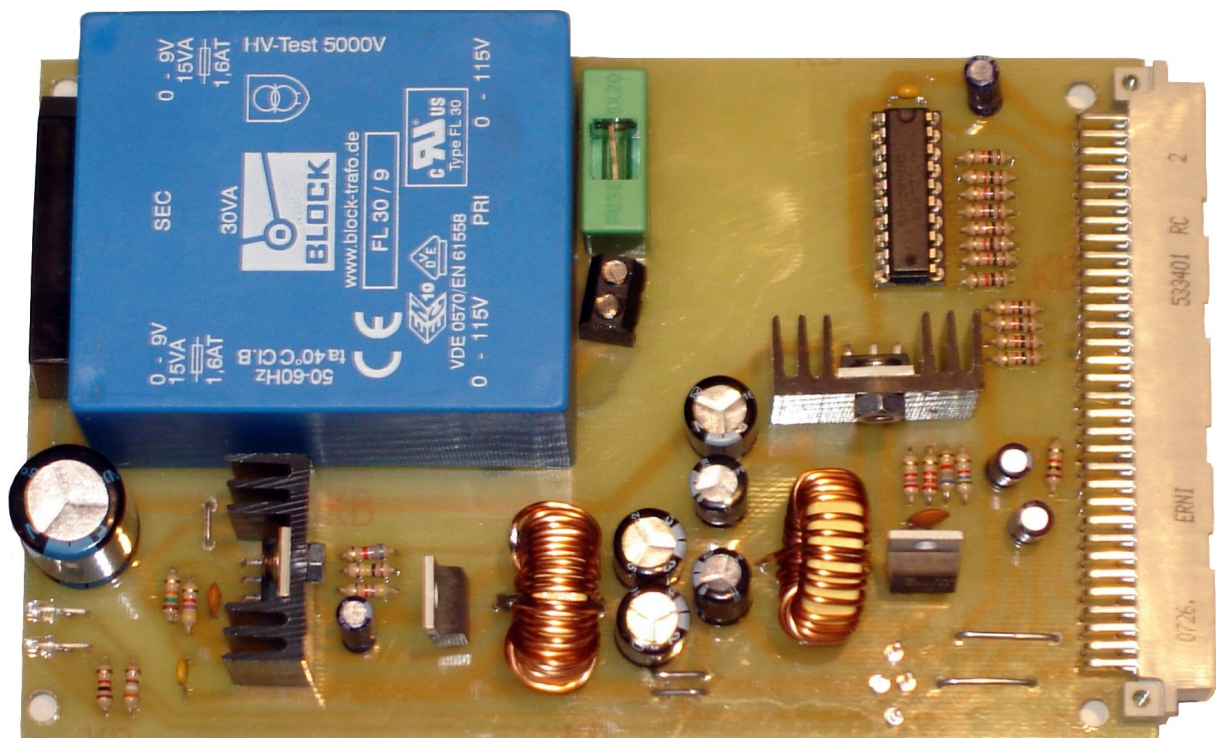


Power Supply Unit For the MyCPU

- Selfbuild Guide -

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Warning!

**This device is directly connected to mains power of 230V AC !
Only qualified personal is allowed to put the device into operation.**

Danger!

Risk of of electric shock. Disconnect power before servicing.

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1 Board

1.1 Power Supply Unit

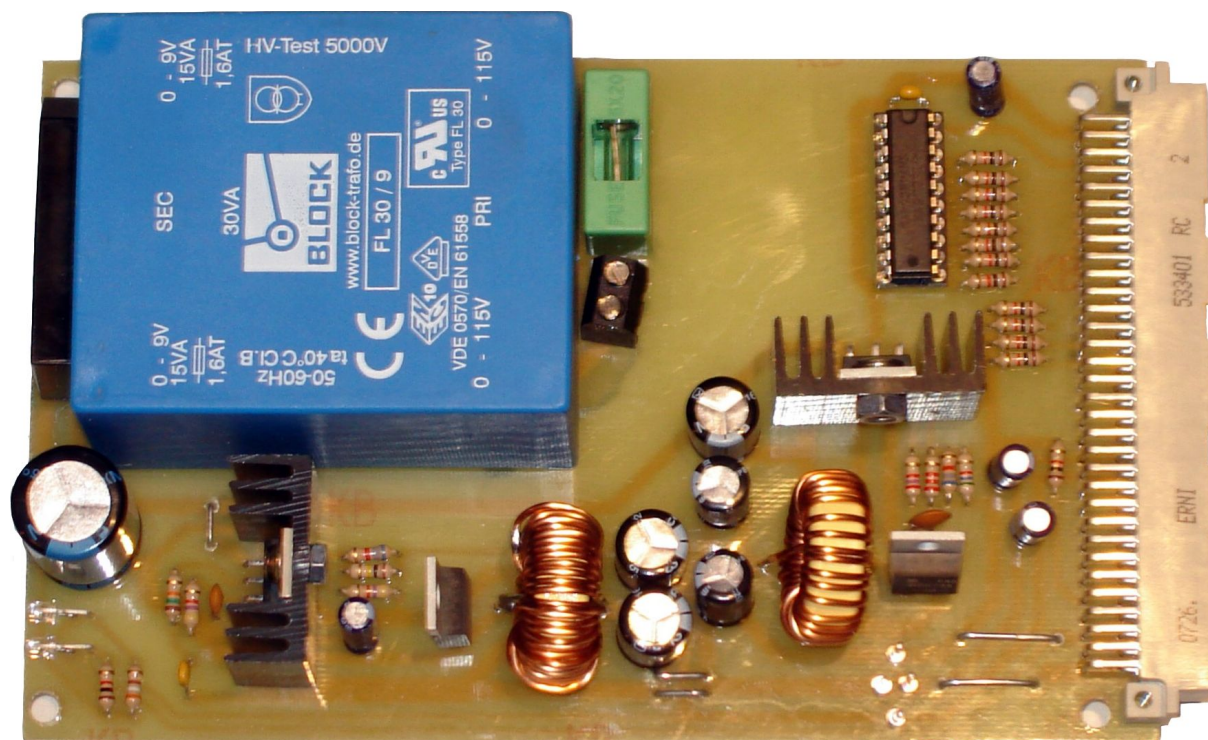


Fig. 1: Power Supply Unit - Board

1.1.1 Description

The Power Supply Unit supplies the MyCPU over the bus. It has two switching power supplies, one for 5V and one for 12V. The 5V line can source 5A (25W) with LT1074 and 2A (10W) with LT1076. The 12V line is limited to 2.5A (30W). But the whole power on both lines must not exceed 30W. So it is not possible to use the maximum allowed power on both lines together.

The Power Supply Unit has a secondary function. It is also used as a bus terminator. The data lines use a 74AC541 to hold the data on bus. The following pins have pull-up resistors: A9 (/RD), A10, C9 (/RD), C10 (/WR) and C28 (4.000MHz).

1.1.2 Selection of Components

There are two LEDs needed to show the status of the 12V and the 5V line. The colours of the LEDs can be chosen by the user.

The LT1074 can supply the 5V line with a maximum current of 5A. It is also possible to use a LT1076 if only 2A are needed. You won't need much current if you don't supply a hard disc drive with it.

The two switching power supplies need two different inductors. For example it is possible to use two modified 100 μ H choke coil inductors (Reichelt-Electronic "FED 100 μ "). You can take 10 turns from one inductor (\rightarrow 68 μ H) and add them to the other inductor (\rightarrow 150 μ H).

1.1.3 Placement of Components

Note: The blue lines are wire bridges.

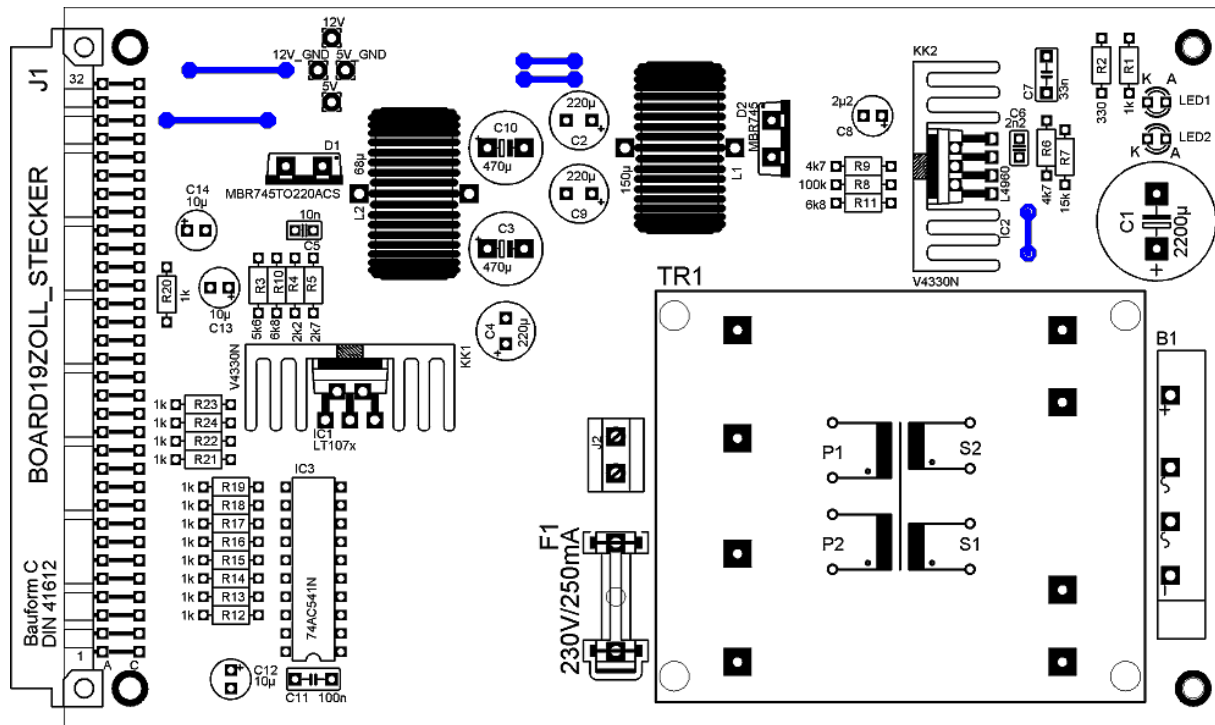


Fig. 2: Power Supply Unit - Placeplan

1.1.4 Partlist

LT1074	IC1	for 5A on 5V (or LT1074 for 2A max.)
L4960	IC2	(ST Microelectronics – www.st.com)
74AC541	IC3	(or 74HC541 alternatively)
MBR745	D1, D2	
150µH	L1	
68µH	L2	
LED 3mm	LED1, LED2	
330 Ohm	R2	
1 kOhm	R1, R12 – R24	
2.2 kOhm	R4	
2.7 kOhm	R5	
4.7 kOhm	R6, R9	
5.6 kOhm	R3	
6.8 kOhm	R10, R11	
15 kOhm	R7	
100 kOhm	R8	
2.2 nF ceramic capacitor	C6	
10 nF ceramic capacitor	C5	
33 nF ceramic capacitor	C7	
100 nF ceramic capacitor	C11	
2.2 µF / 16V	C8	
10 µF / 16V	C12, C13, C14	
220 µF / 35V	C2, C4, C9	
470 µF / 16V	C3, C10	
2200 µF / 35V	C1	

Block FL30/9	TR1	(30VA / 2x 9V)
B40C3700	B1	pins –WW+
Fuse 230V/250mA	F1	
Connector 101-02	J2	
DIN 41612 Connector	J1	
Heat sink V4330N		for IC1, IC2
Fuse holder 112.500		for F1

2 First Test

The power supply unit can be tested without a connection to the MyCPU. If you connect the power supply to 230V the two LEDs should be lit and you can measure approx. 5V and 12V at the four pins above D1 (see PCB layout).

If the voltages are correct, you can connect the power supply unit to the backplane-bus and source the MyCPU.

3 Technical Data

Input Voltage : 230 VAC, 50/60 Hz
Input Power : 30 W
Output Voltage 1 : 5 V / max. 5 A
Output Voltage 2 : 12 V / max. 2 A
Max. output power : 24 W

4 Schematics

On the following page you will find the schematics of the Power Supply Unit.
The PCB layouts can be found in a separate PDF file (see file `PowerSupply_Layout.pdf`).

Fig. 3: Schematic of the Power Supply Unit

5 Change Log

5.1 Changes in the Power-Supply design

Date	Name	Chapter	Description
2008-12-22	D.Kuschel	all	Document converted to OpenOffice format
2009-01-08	D.Kuschel	3	Technical Data added
2015-07-14	D.Kuschel		Document revised