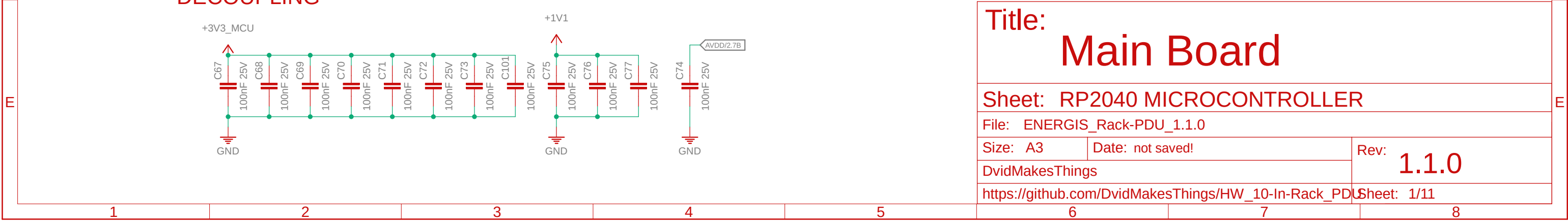


RP2040 MICROCONTROLLER

[illegible]

Title: <h1>Main Board</h1>		
Sheet: RP2040 MICROCONTROLLER		
File: ENERGIS_Rack-PDU_1.1.0		
Size: A3	Date: not saved!	Rev: <h1>1.1.0</h1>
DvidMakesThings		
<a href="https://github.com/DvidMakesThings/HW_10-In-Rack_PDU">https://github.com/DvidMakesThings/HW_10-In-Rack_PDU</a>		Sheet: 1/11
6	7	8

## A

## B



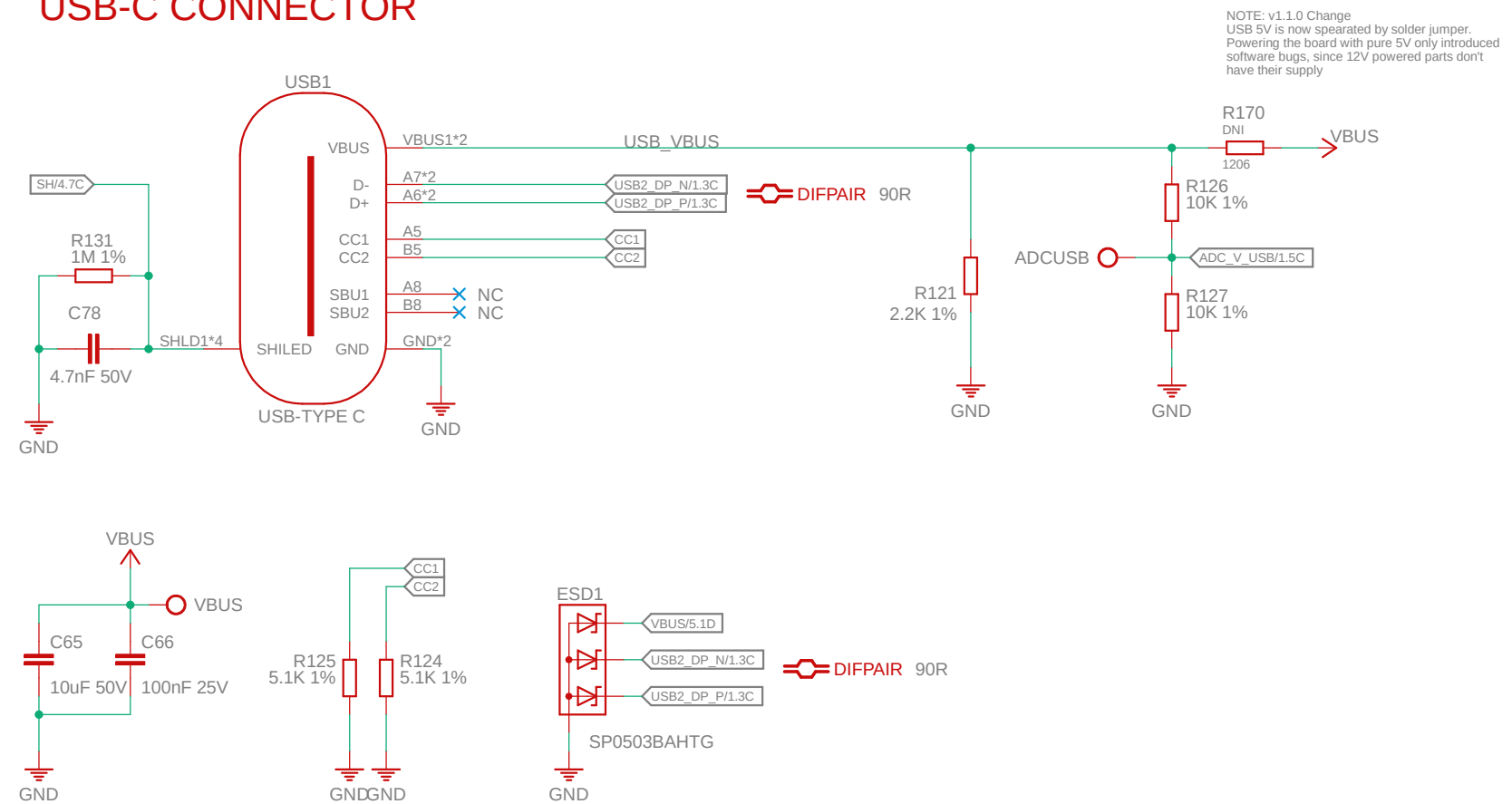
## D



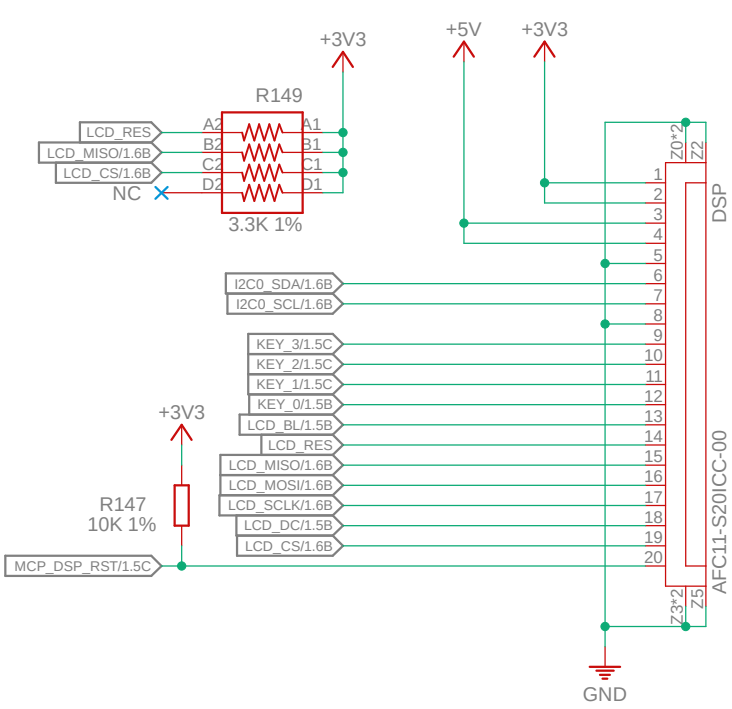
## Sheet: 2/11

# CONNECTORS

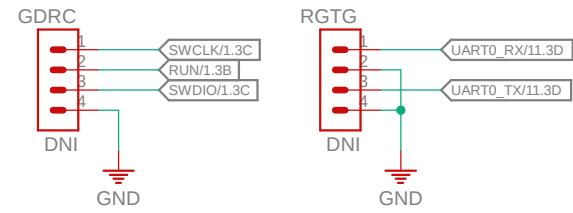
## USB-C CONNECTOR



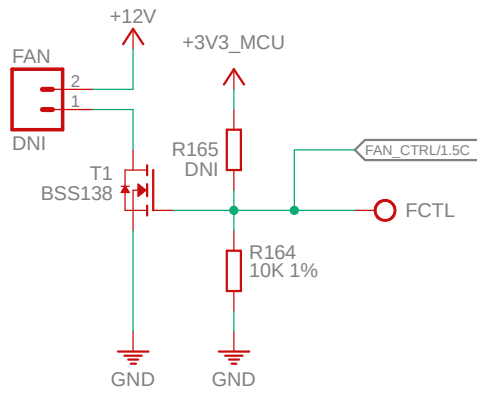
## BOARD CONNECTOR



## DEBUG CONNECTOR



## FAN CONNECTOR



Title: Main Board

Sheet: CONNECTORS

File: ENERGIS\_Rack-PDU\_1.1.0

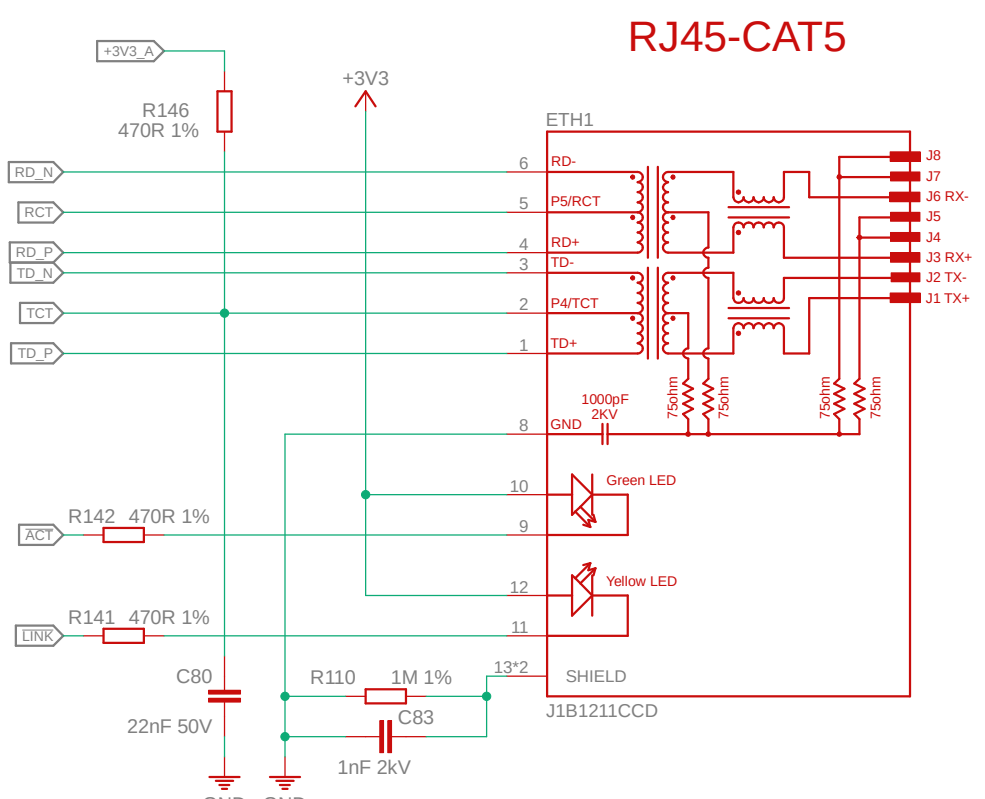
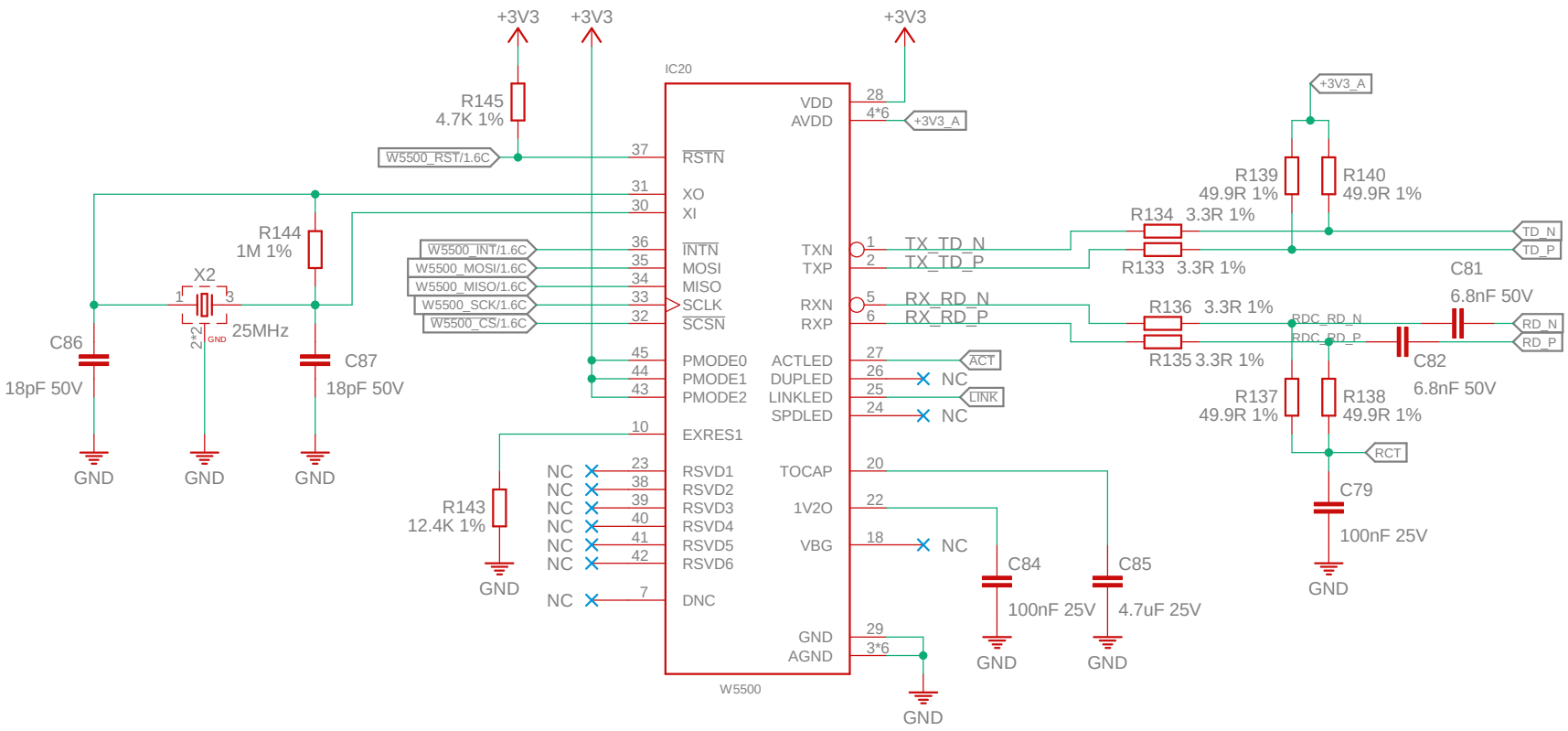
Size: A3 Date: not saved!

DvidMakesThings

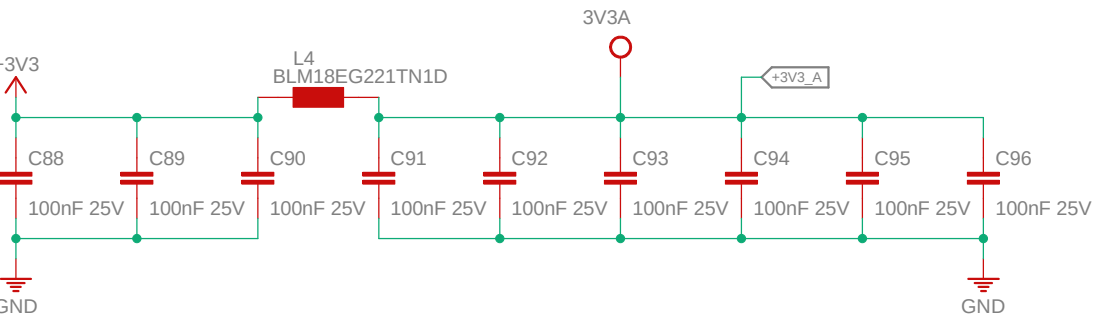
[https://github.com/DvidMakesThings/HW\\_10-In-Rack\\_PDU](https://github.com/DvidMakesThings/HW_10-In-Rack_PDU) Sheet: 3/11

Rev: 1.1.0

# W5500 ETHERNET CONTROLLER



## DECOUPLING



Title:  

# Main Board

Sheet: W5500 ETHERNET CONTROLLER

File: ENERGIS\_Rack-PDU\_1.1.0

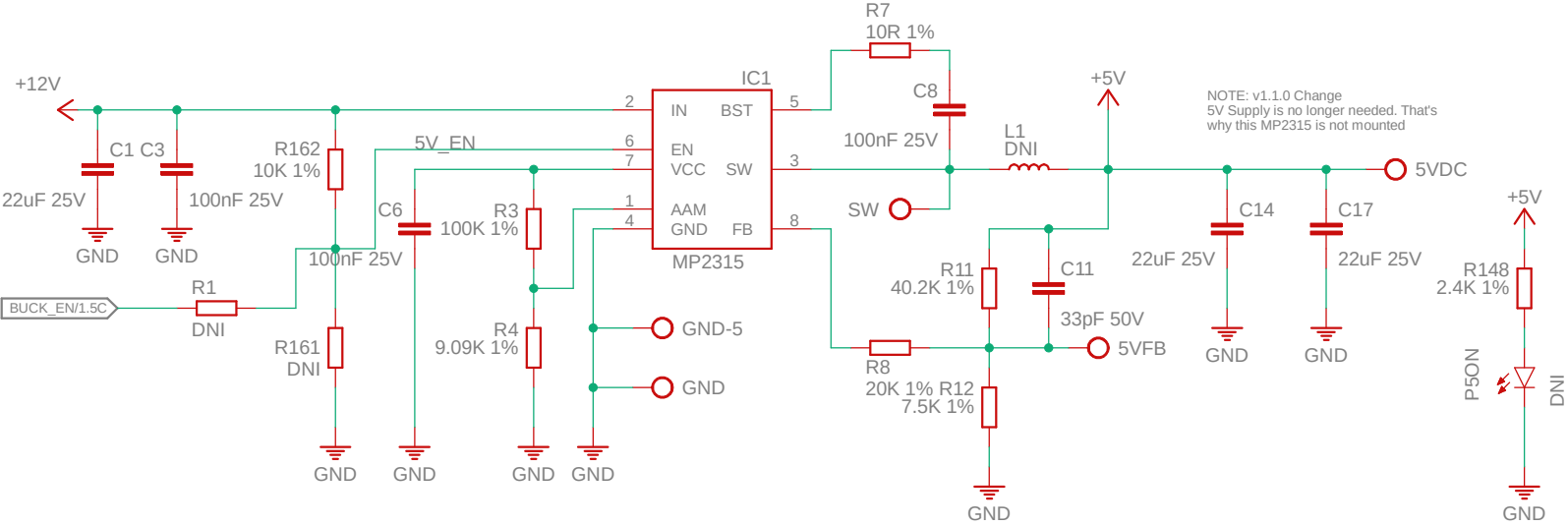
Size: A3Date: not saved!

DvidMakesThingsRev: 1.1.0

[https://github.com/DvidMakesThings/HW\\_10-In-Rack\\_PDU](https://github.com/DvidMakesThings/HW_10-In-Rack_PDU)Sheet: 4/11

POWER

5V DC-DC CONVERTER

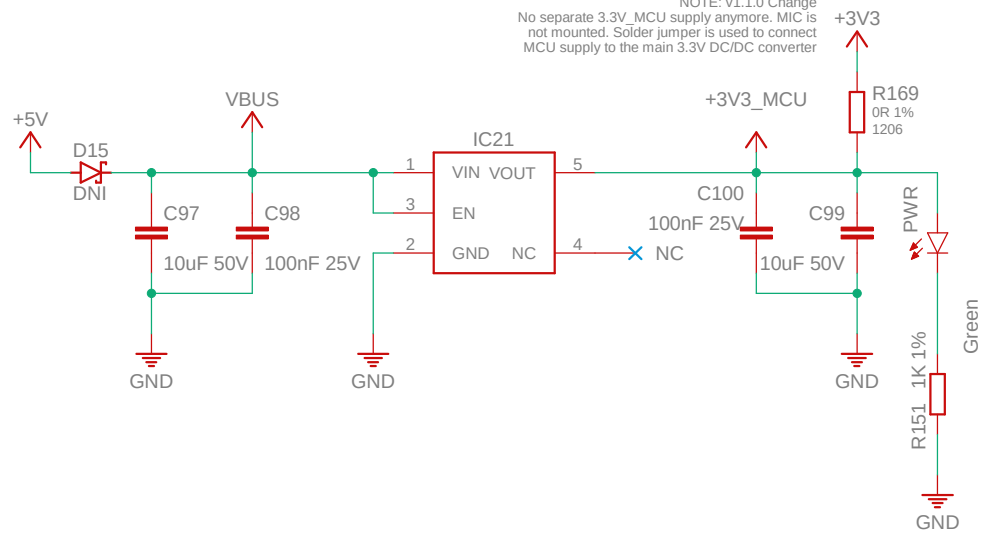


230VAC

12VDC

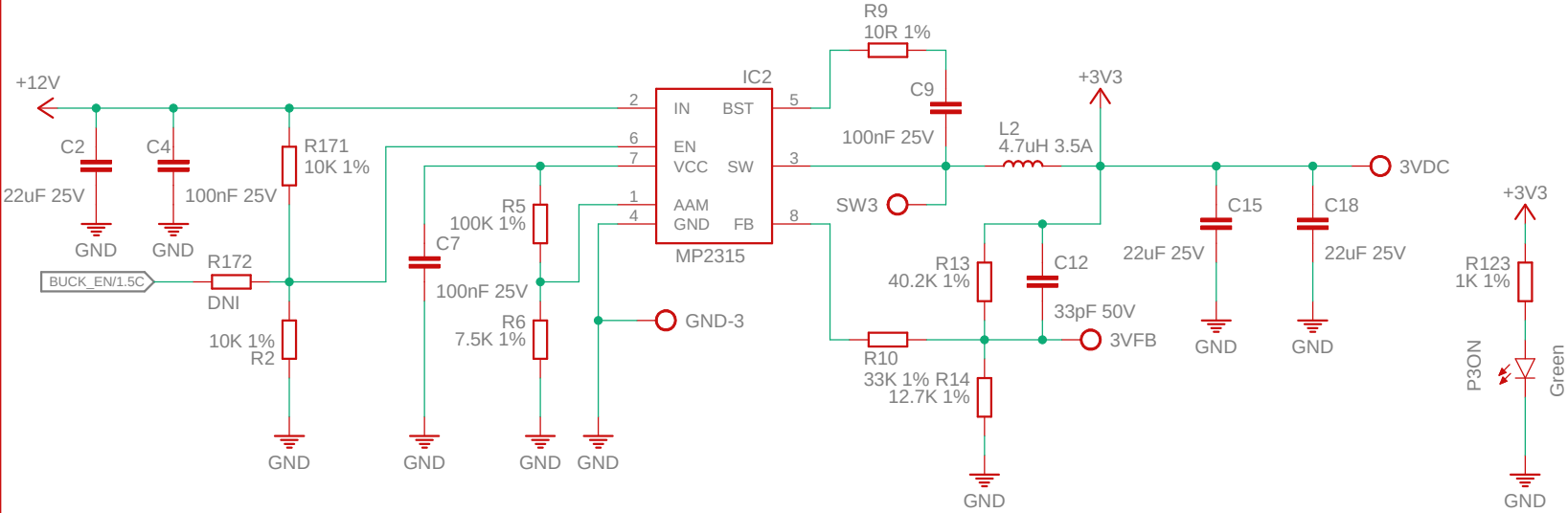
MCU

3.3 VBUS-LDO



USB-C 5VDC

3.3V DC-DC CONVERTER



ENABLE/DISABLE

PERIPHERALS

MCU

Title: Main Board

Sheet: POWER

File: ENERGIS\_Rack-PDU\_1.1.0

Size: A3 Date: not saved!

DvidMakesThings

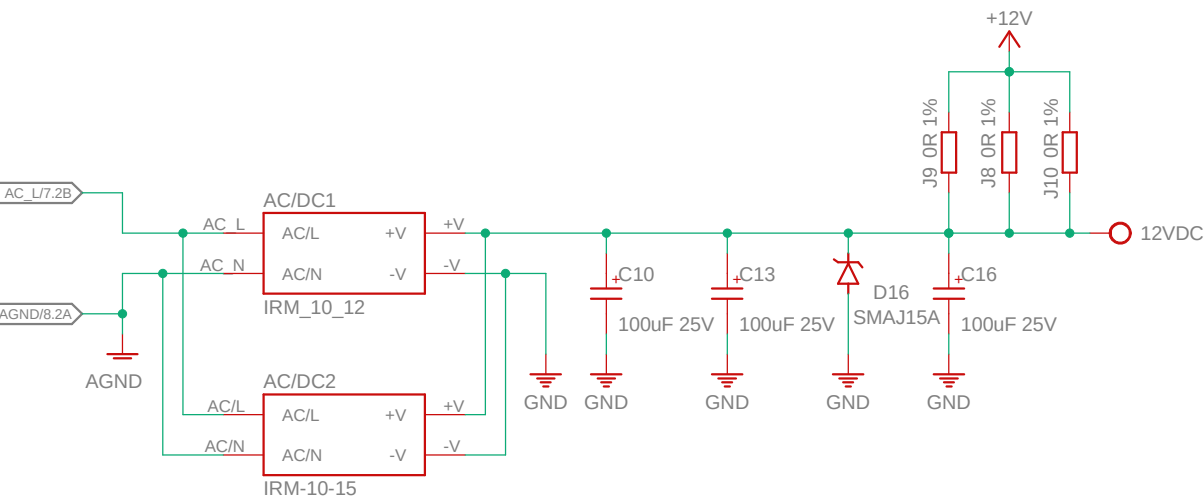
https://github.com/DvidMakesThings/HW\_10-In-Rack\_PDU

Rev: 1.1.0

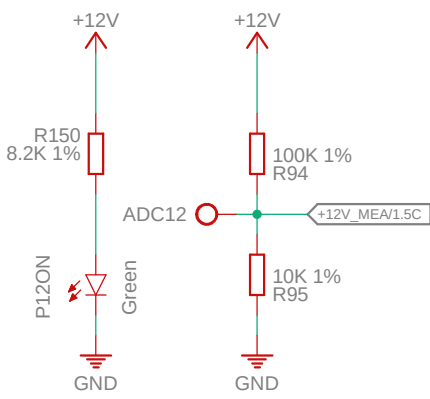
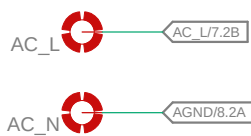
Sheet: 5/11

AC-POWER

12V - 10W FLYBACK CONVERTER



AC-INPUT



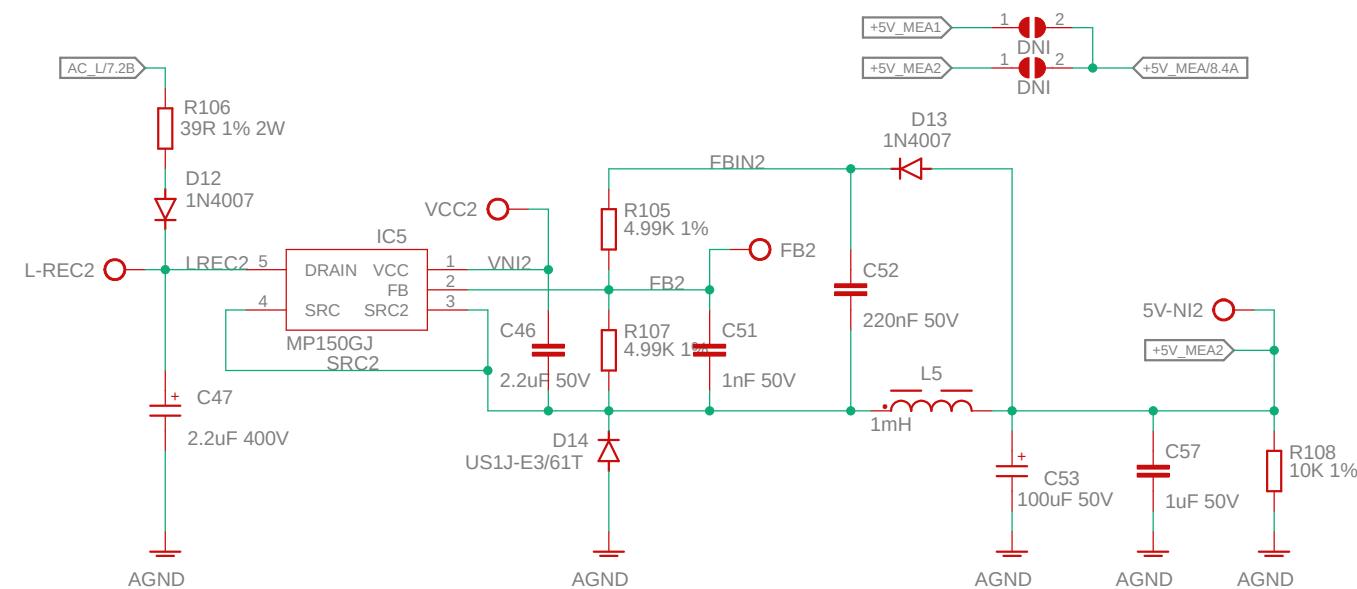
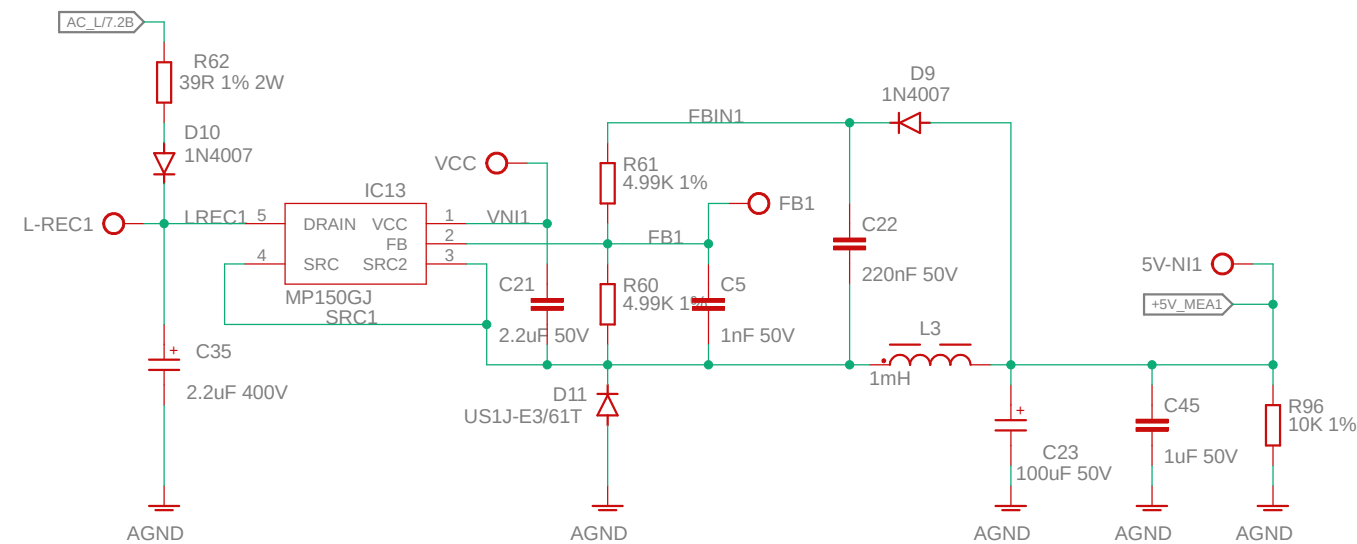
Design Note — 12 V supply (Mean Well IRM-10 series), universal 110 V/230 V AC

This schematic uses the Mean Well IRM-10 encapsulated AC-DC module (e.g., IRM-10-12) to produce 12 VDC. The IRM-10 series is specified for a wide input range of 85–305 VAC (47–440 Hz) and 120–430 VDC, meaning it operates from both ~115 VAC and ~230 VAC mains with no selector or changes to the circuit. Safety approvals (IEC/UL/EN 62368-1), Class II construction, and built-in EMI/EMC compliance are provided by the module.

Design Note — 5 V / 200 mA non-isolated supply (MP150), universal 110 V/230 V AC

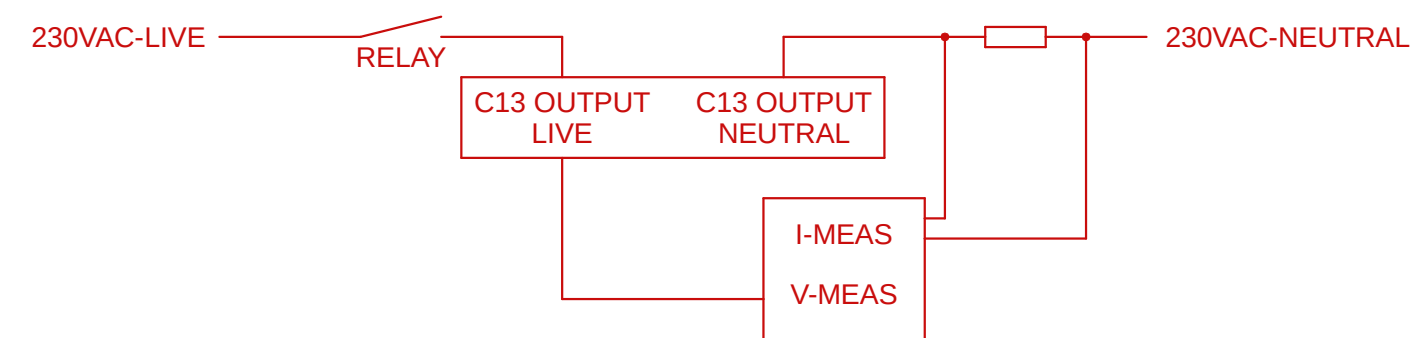
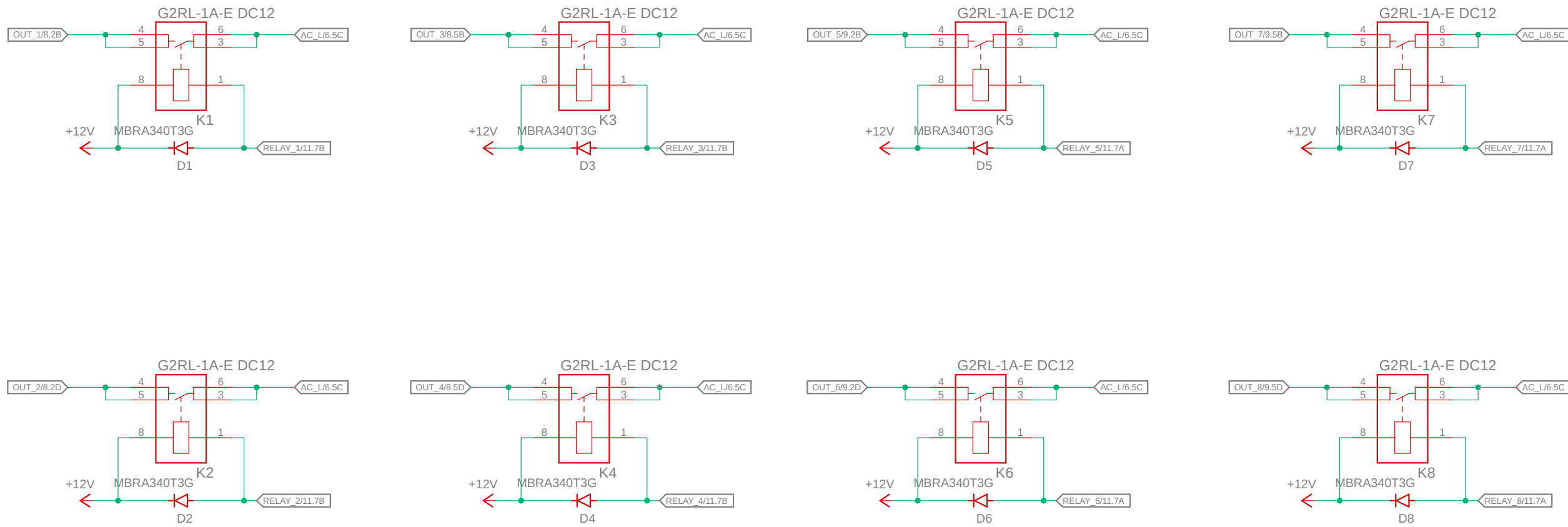
This design uses MPS MP150 in high-side buck to generate 5 V/200 mA directly from rectified mains. MP150 integrates a 500 V MOSFET (Drain-to-Source rating 500 V), covering the ~325 VDC peak from 230 VAC and ~155 VDC from 115 VAC, so the circuit from 85–265 VAC (“universal input”).

5V 200MA NON-ISOLATED POWER SUPPLY



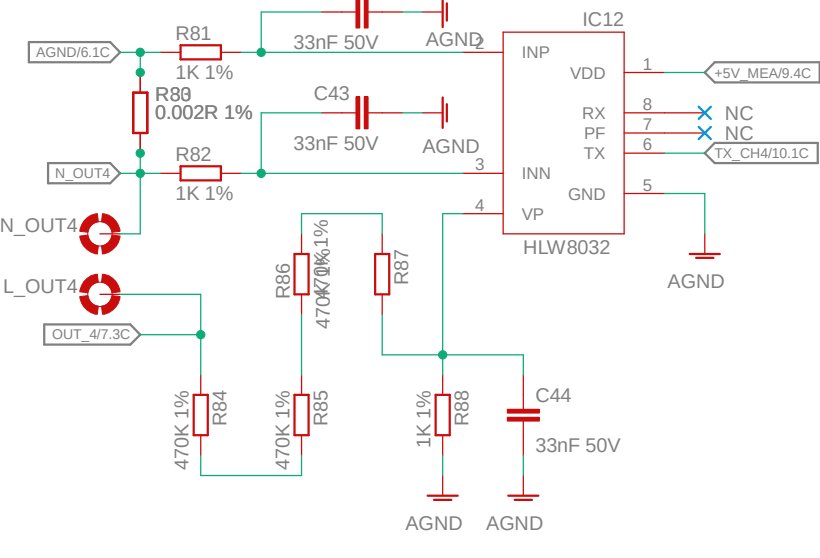
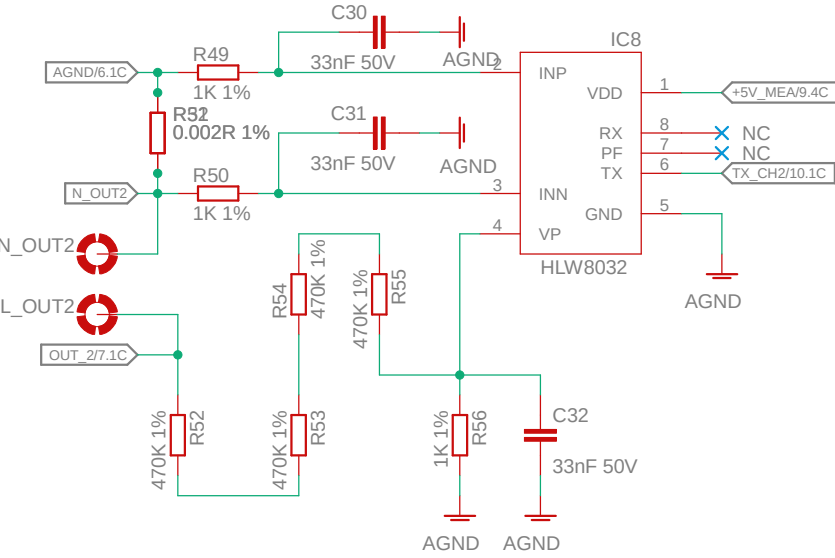
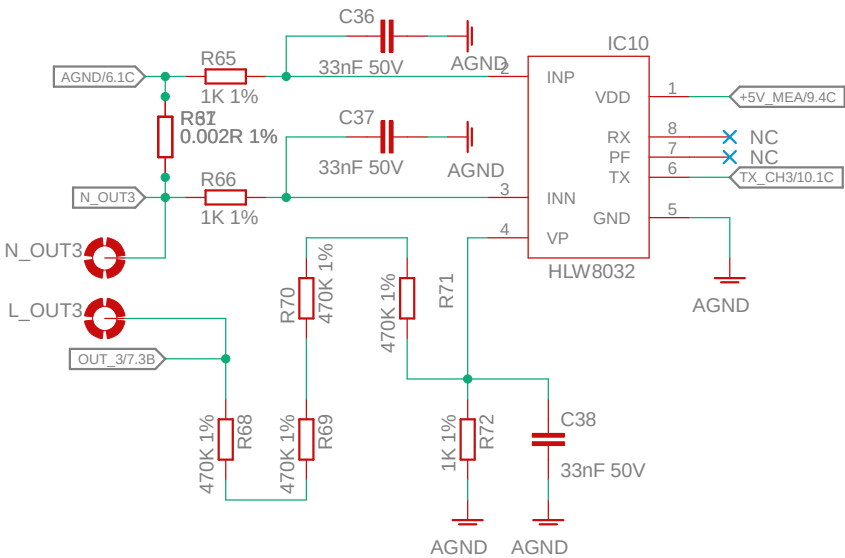
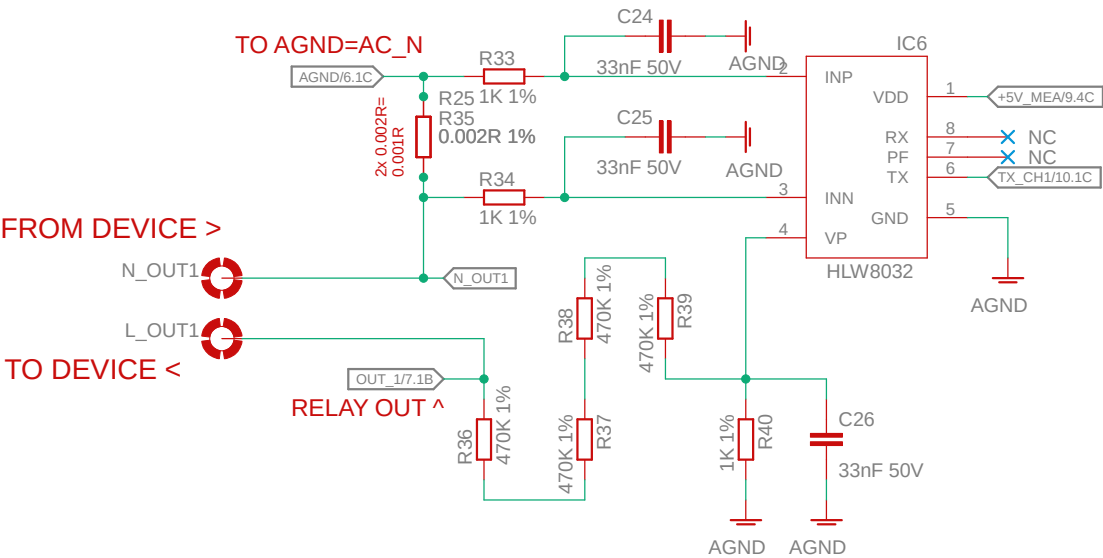
Title:		Main Board	
Sheet: AC-POWER			
File: ENERGIS_Rack-PDU_1.1.0			
Size: A3	Date: not saved!	Rev: 1.1.0	
DvidMakesThings			
https://github.com/DvidMakesThings/HW_10-In-Rack_PDU		Sheet: 6/11	

OUTPUT RELAYS



Title:			
Main Board			
Sheet: OUTPUT RELAYS			
File: ENERGIS_Rack-PDU_1.1.0			
Size: A3		Date: not saved!	Rev: 1.1.0
DvidMakesThings			
https://github.com/DvidMakesThings/HW_10-In-Rack_PDU		Sheet: 7/11	

# AC CHANNEL MEASUREMENT I.



Title:  
Main Board

Sheet: AC CHANNEL MEASUREMENT I.

File: ENERGIS\_Rack-PDU\_1.1.0

Size: A3

Date: not saved!

Rev:

1.1.0

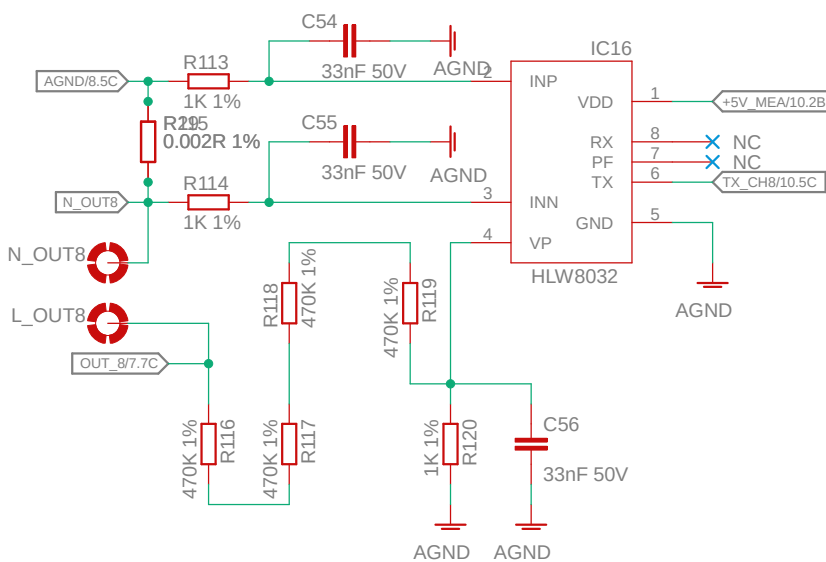
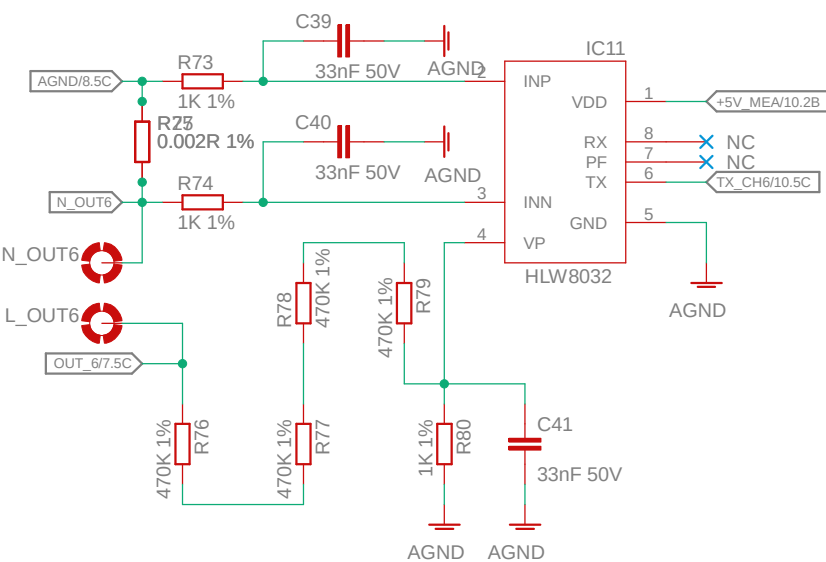
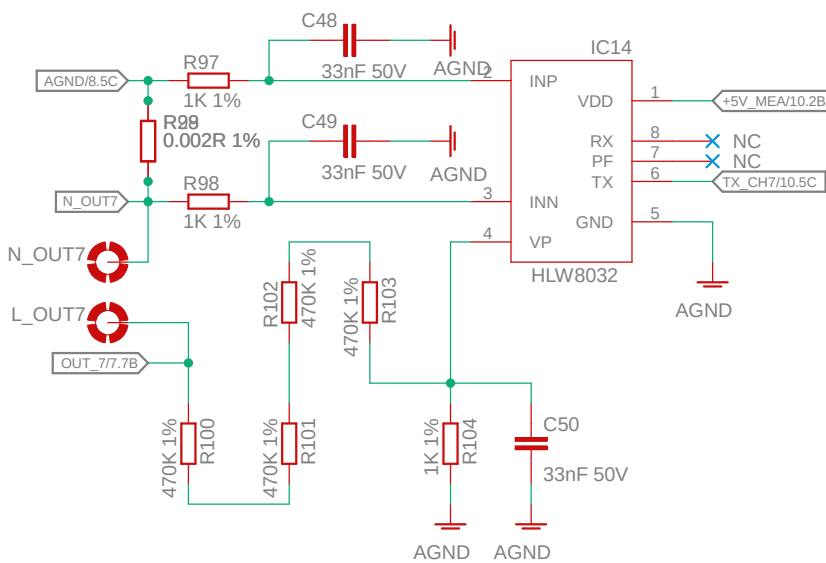
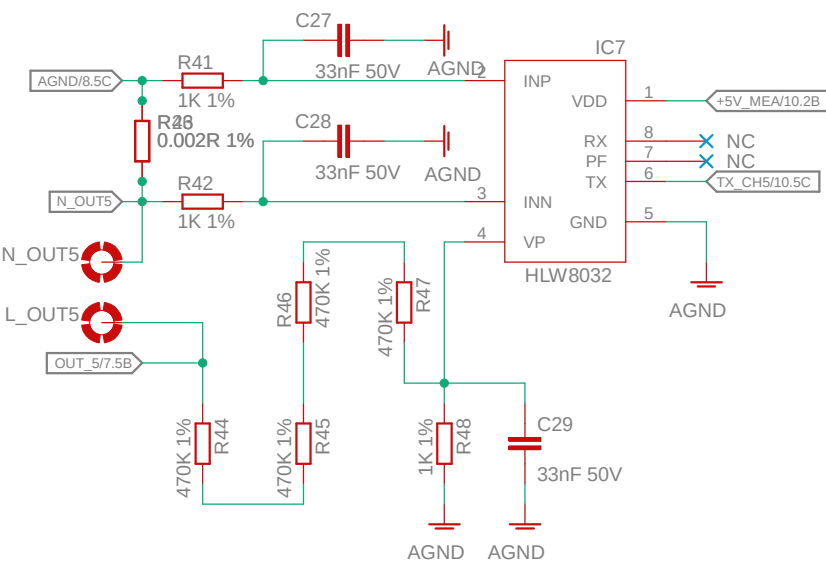
DvidMakesThings

[https://github.com/DvidMakesThings/HW\\_10-In-Rack\\_PDU](https://github.com/DvidMakesThings/HW_10-In-Rack_PDU)

Sheet: 8/11



AC CHANNEL MEASUREMENT II.



Title:  
Main Board

Sheet: AC CHANNEL MEASUREMENT II.

File: ENERGIS\_Rack-PDU\_1.1.0

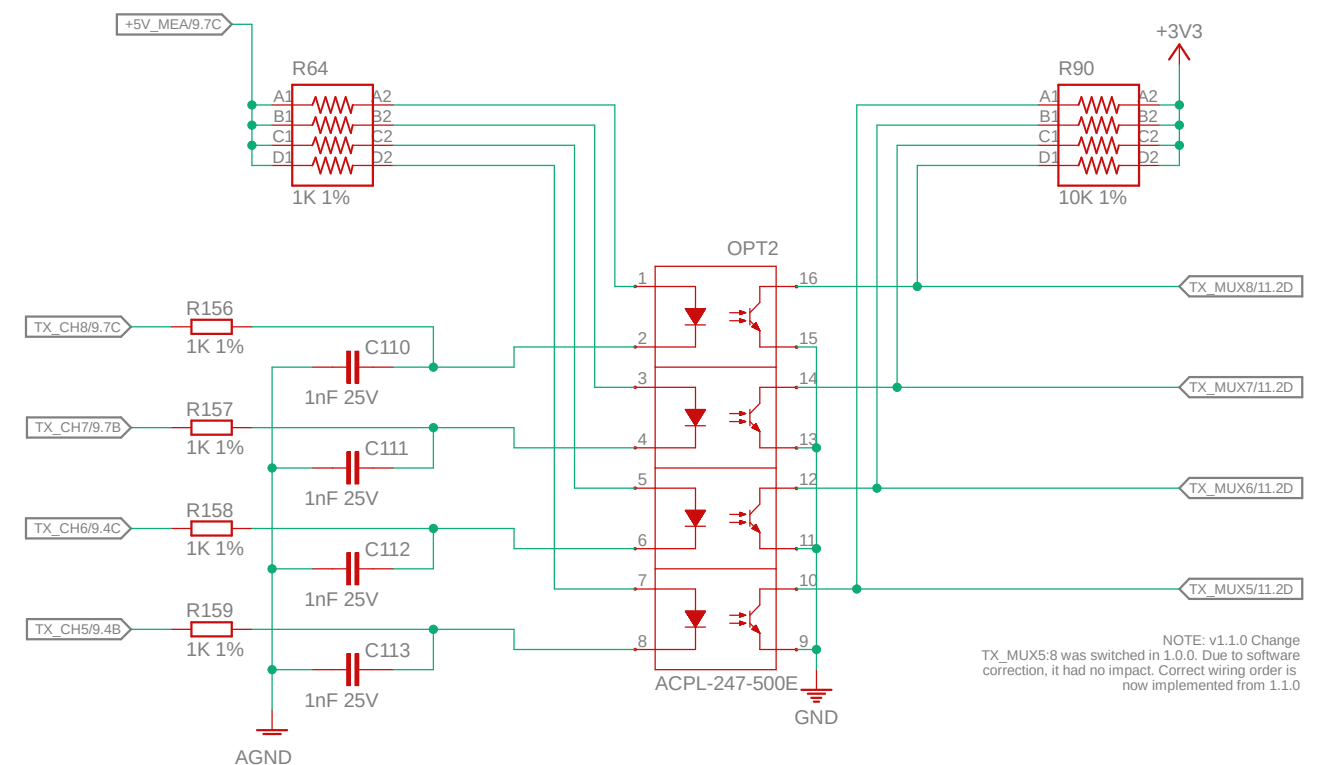
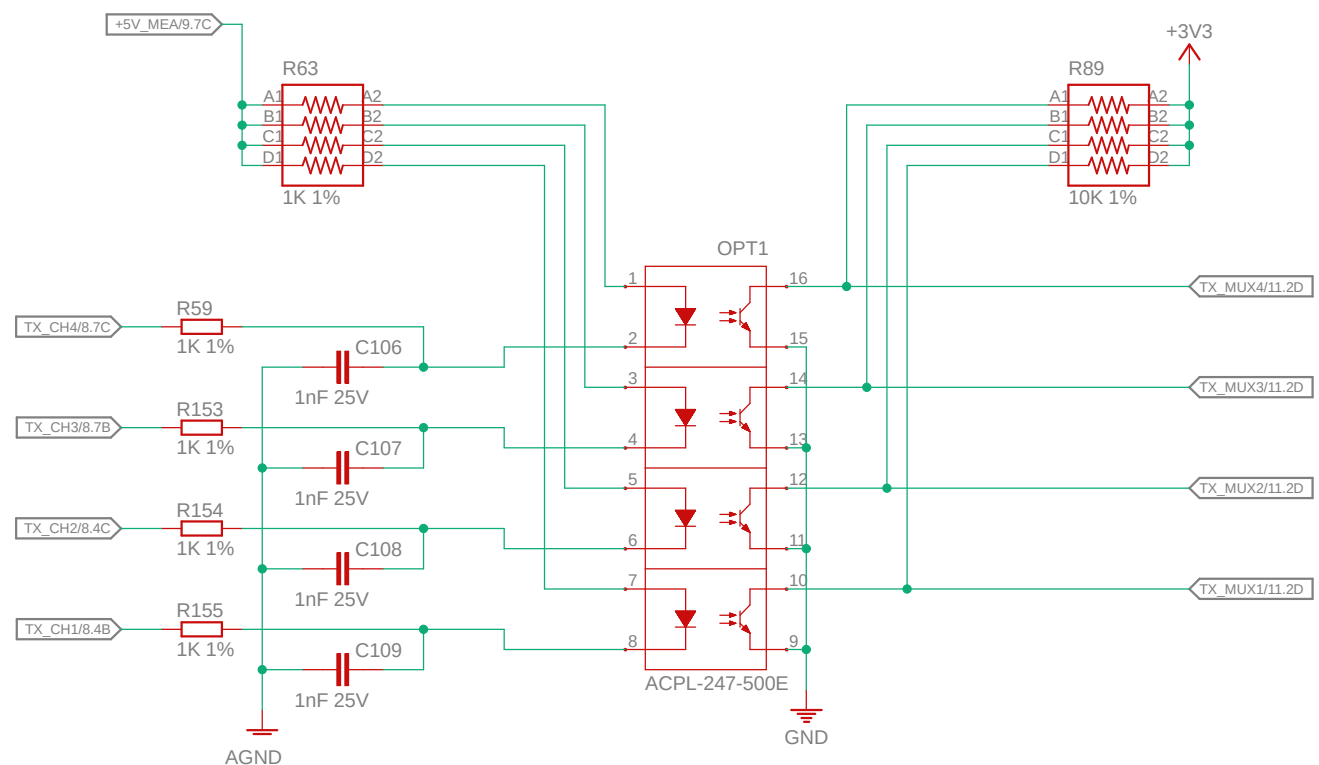
Size: A3 Date: not saved!

Rev: 1.1.0

DvidMakesThings

[https://github.com/DvidMakesThings/HW\\_10-In-Rack\\_PDU](https://github.com/DvidMakesThings/HW_10-In-Rack_PDU) Sheet: 9/11

# SERIAL OPTOISOLATOR

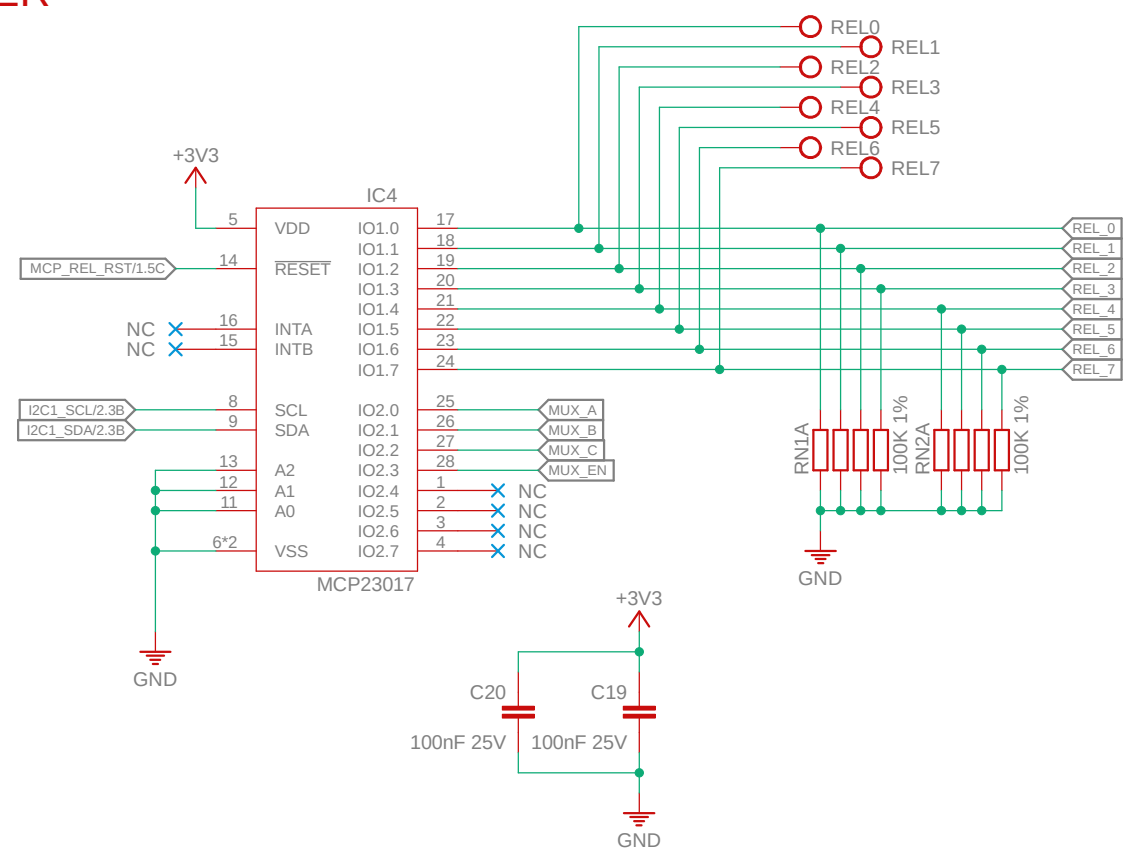


NOTE: v1.1.0 Change  
TX\_MUX5/8 was switched in 1.0.0. Due to software  
correction, it had no impact. Correct wiring order is  
now implemented from 1.1.0

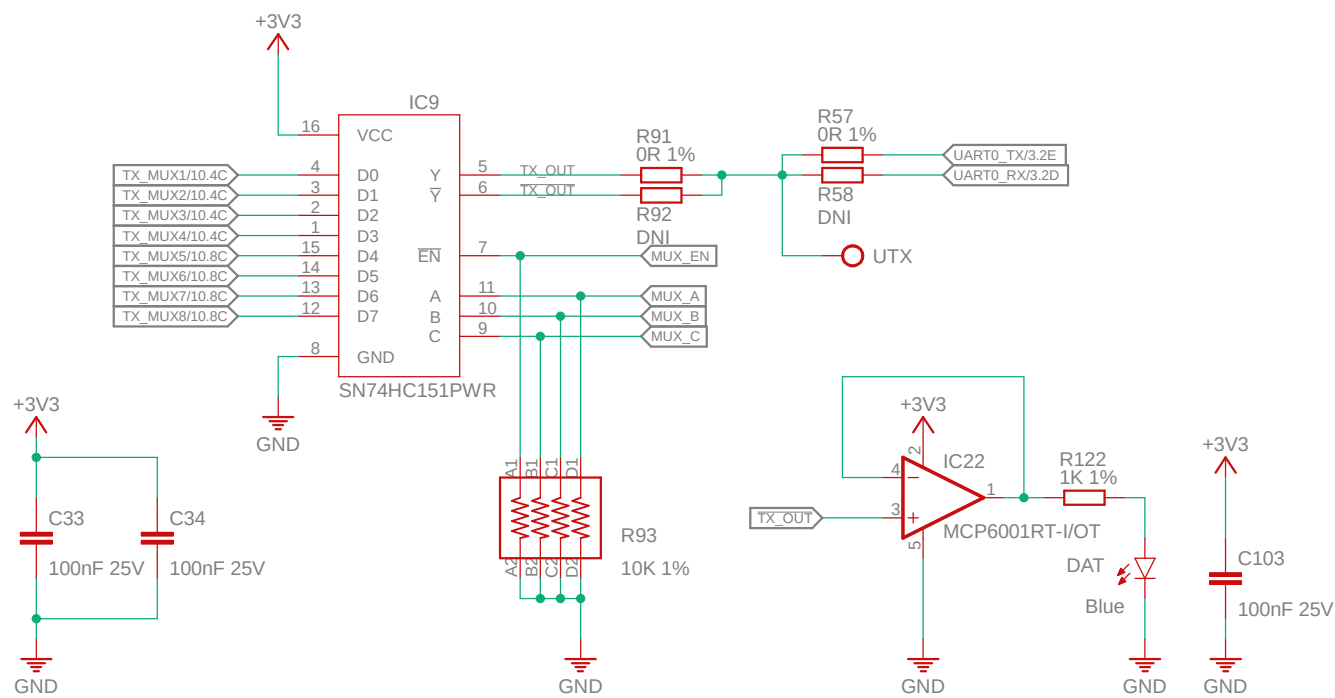
Title:		Main Board	
Sheet: SERIAL OPTOISOLATOR			
File: ENERGIS_Rack-PDU_1.1.0			
Size: A3	Date: not saved!	Rev: 1.1.0	
DvidMakesThings			
<a href="https://github.com/DvidMakesThings/HW_10-In-Rack_PDU">https://github.com/DvidMakesThings/HW_10-In-Rack_PDU</a>		Sheet: 10/11	

# AC-MEASUREMENT SIGNAL PATH

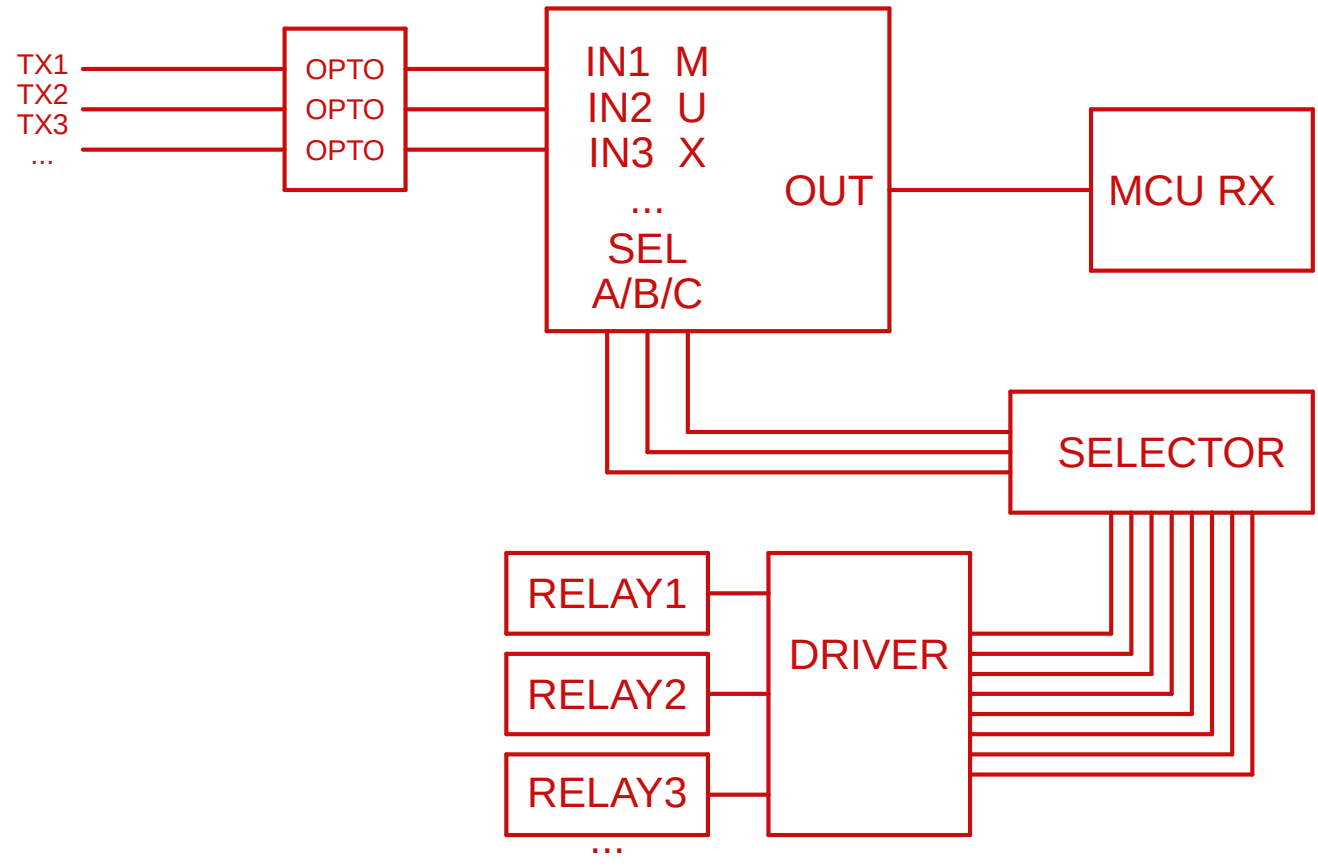
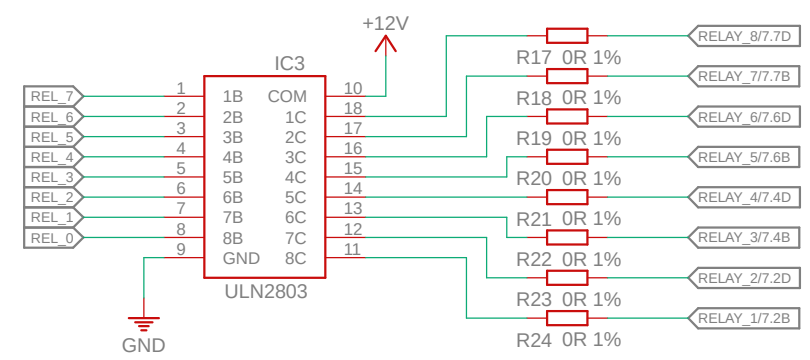
## IO DRIVER



## SERIAL MUX



## ULN2803 RELAY DRIVER



Title:			Main Board		
Sheet: AC-MEASUREMENT SIGNAL PATH					
File: ENERGIS_Rack-PDU_1.1.0					
Size: A3		Date: not saved!		Rev: 1.1.0	
DvidMakesThings					
https://github.com/DvidMakesThings/HW_10-In-Rack_PDU				Sheet: 11/11	