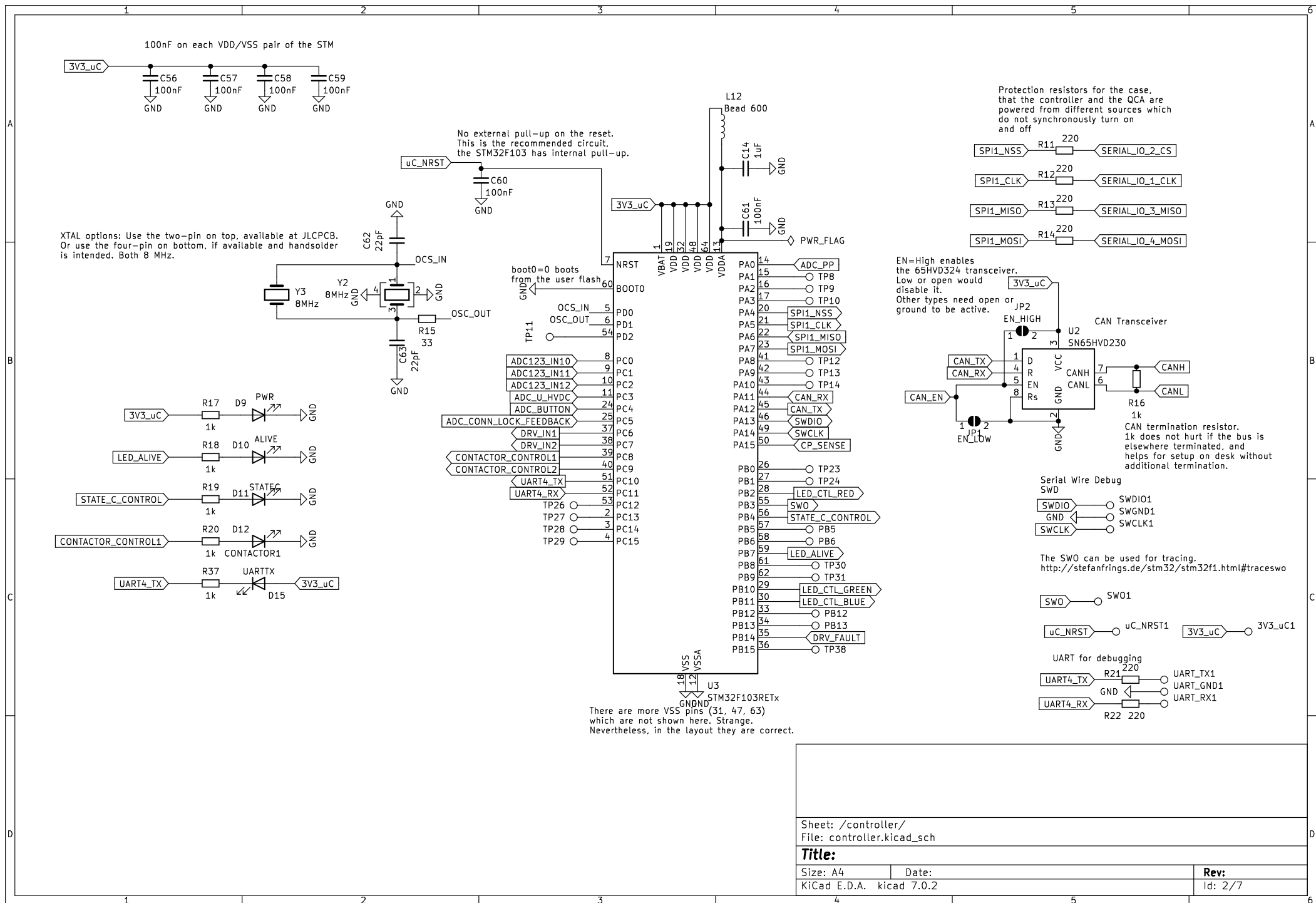
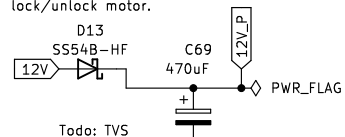


Reused by uhi22 (<https://github.com/uhi22/QCA7000board>)  
Originally designed by Sergey Kostyanov

Sheet: /		
File: qca7000.kicad_sch		
<b>Title: QCA7000 modem board</b>		
Size: A3	Date: 2022-03-03	Rev: 2
KiCad E.D.A. kicad 7.0.2		Id: 1/7

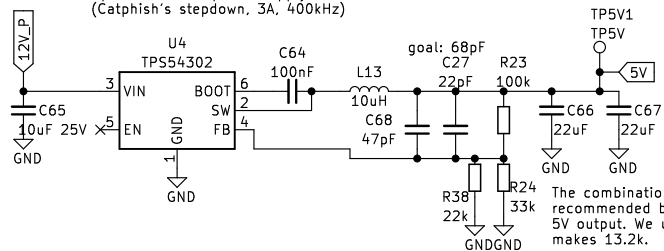


SS54B is rated for 5A.  
This is at the border,  
if we drive 6A in the  
lock/unlock motor.

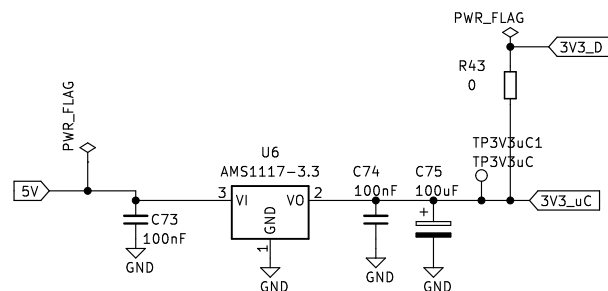


The bulk capacitor is especially  
important when switching high  
currents, see DRV8874 data  
sheet.

Option 3 of the power supply  
(Catphish's stepdown, 3A, 400kHz)



The combination 100k and 13.3k is  
recommended by the data sheet for  
5V output. We use 22k || 33k, this  
makes 13.2k.

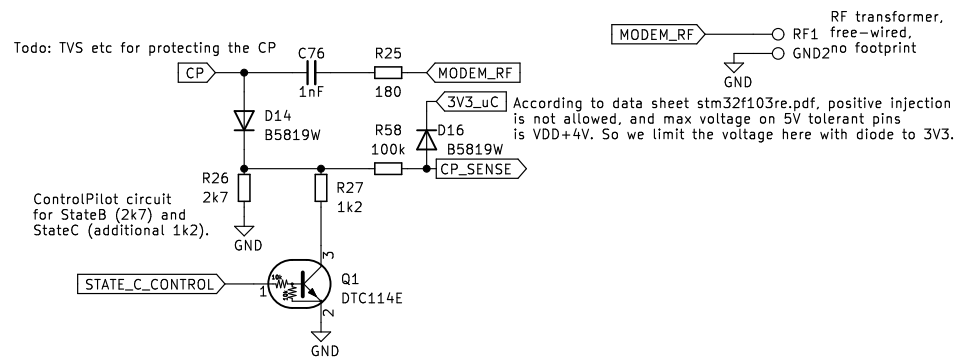


Sheet: /powersupply/  
File: powersupply.kicad\_sch

**Title: Power Supply**

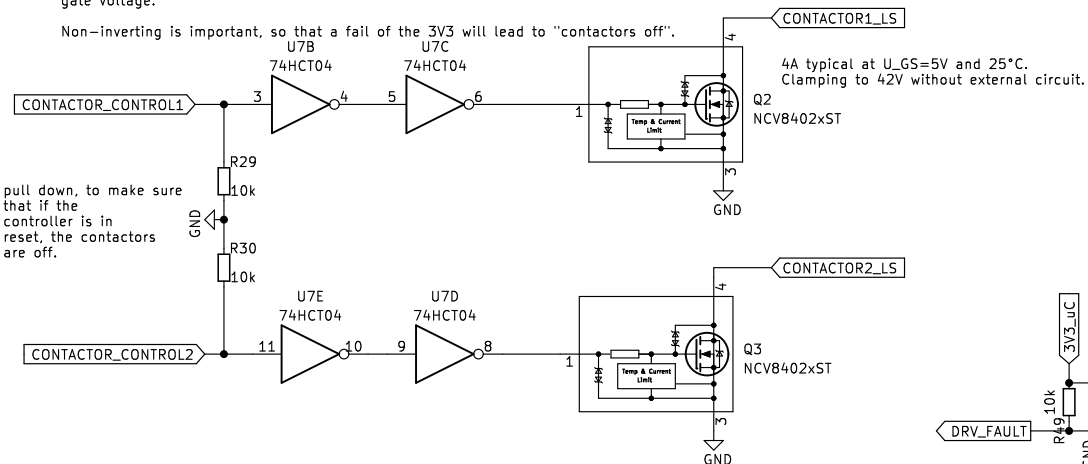
Size: A4 Date:  
KiCad E.D.A. kicad 7.0.2

Rev:  
Id: 3/7

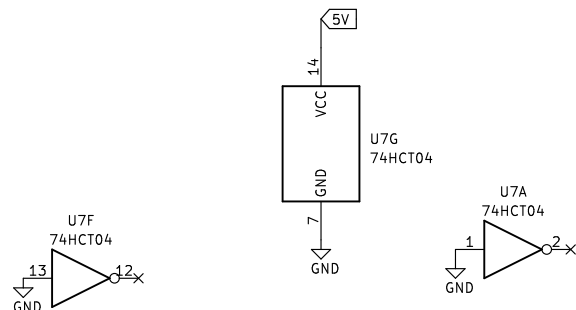


HCT as level shifter from 3.3V to 5V, because the NCV needs at least 5V gate voltage.

Non-inverting is important, so that a fail of the 3V3 will lead to "contactors off".



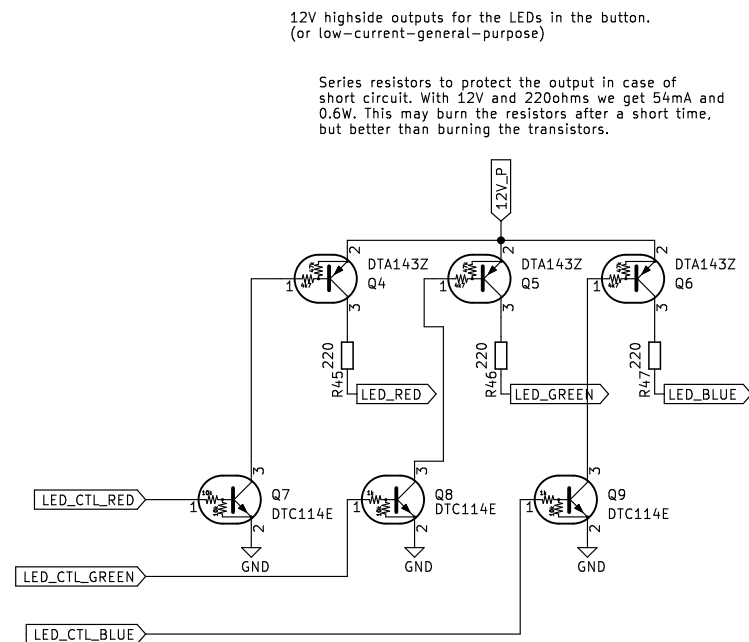
pull down, to make sure that if the controller is in reset, the contactors are off.



IPROPI is  $450\mu\text{A/A}$ .  
With 6A peak output this is 2.7mA.  
With  $R=1\text{k}$  we get 2.7V for the 6A.

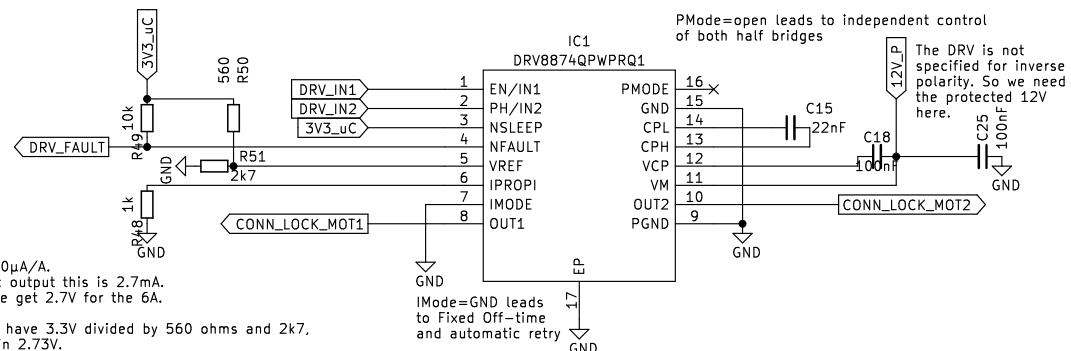
On VREF, we have 3.3V divided by 560 ohms and 2k7, this results in 2.73V.

This means, the current limitation will jump in when the output current is above 6A.



12V highside outputs for the LEDs in the button.  
(or low-current-general-purpose)

Series resistors to protect the output in case of short circuit. With 12V and 220ohms we get 54mA and 0.6W. This may burn the resistors after a short time, but better than burning the transistors.

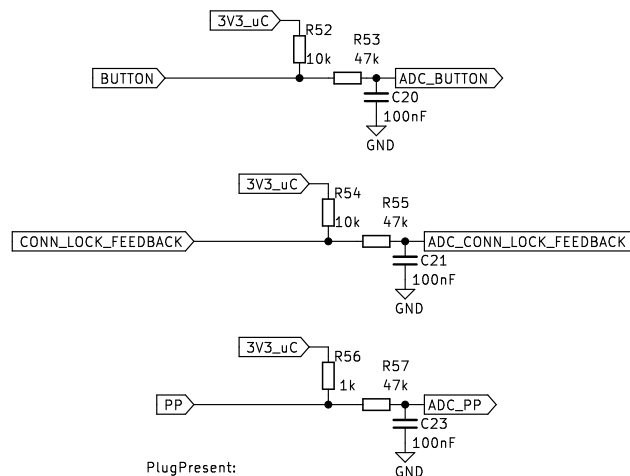
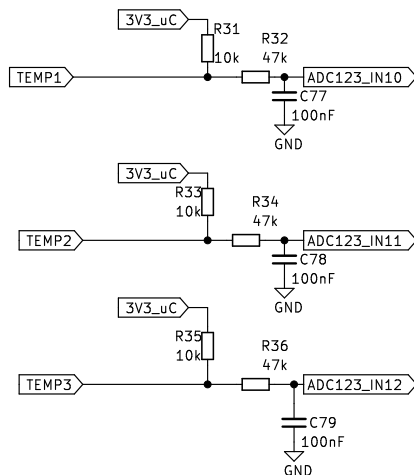


PMode=open leads to independent control of both half bridges ☐

The DRV is not specified for inverse polarity. So we need the protected 12V here.

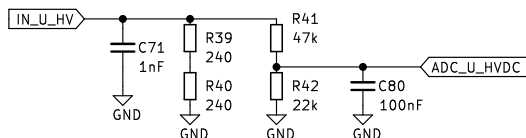
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File: outputdrivers.kicad_sch		
<b>Title:</b>		
Size: A4	Date:	<b>Rev:</b>
KiCad E.D.A. kicad 7.0.2		Id: 4/7

Analog inputs, e.g. for use with NTCs to ground  
for temperature measurement  
or analog feedback contacts or switches.



PlugPresent:  
- 1k5 to ground for CCS2  
- 100 ohm to 1k5 for AC (current limit of the cable)  
- 150 ohm (button idle) or 480 ohm (button pressed) for CCS1

Current input for HV DC voltage  
measurement as done in LIM, see  
<https://openinverter.org/forum/viewtopic.php?p=58839#p58839>



Sheet: /inputs/  
File: Inputs.kicad\_sch

**Title:**

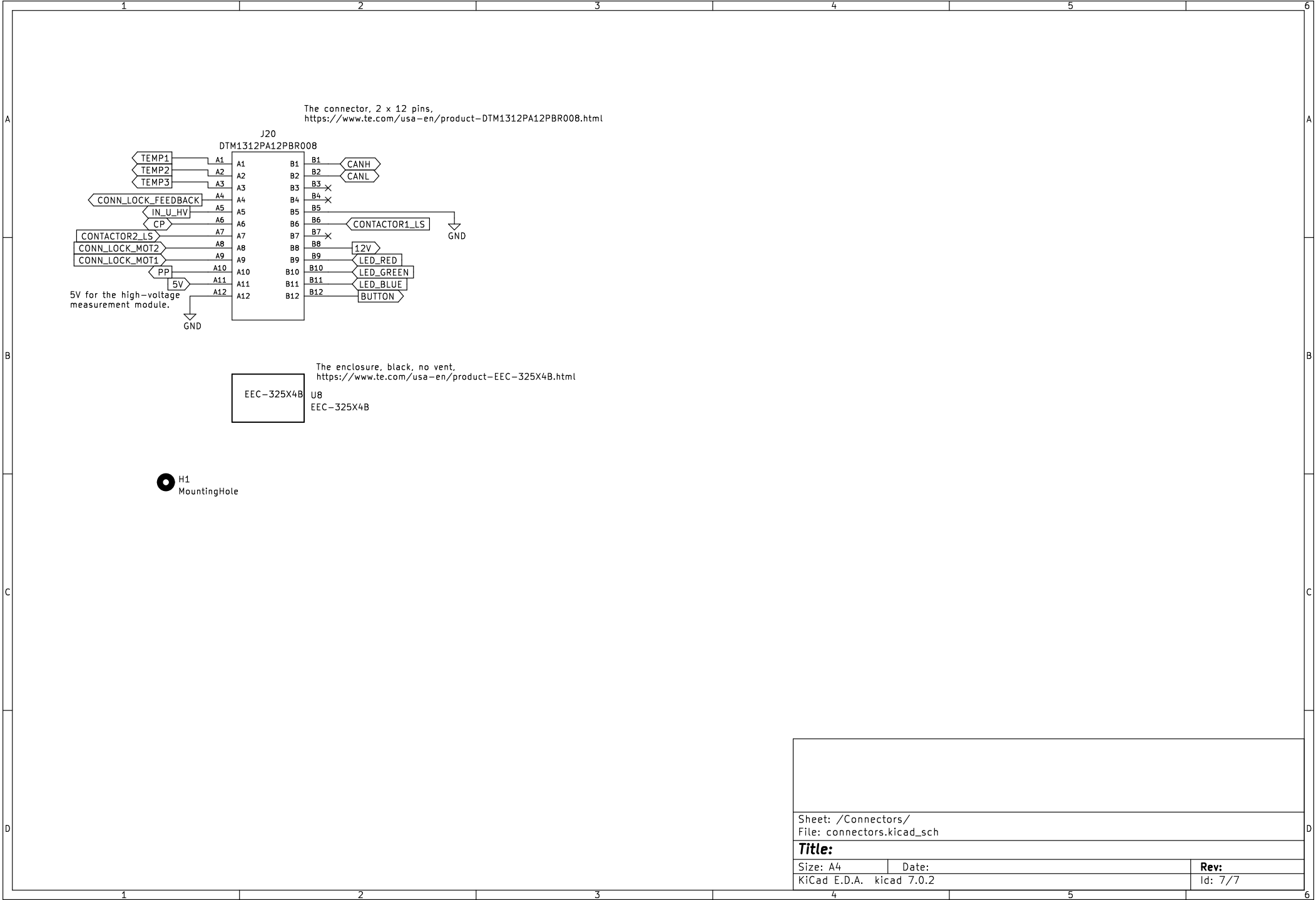
Size: A4  
KiCad E.D.A. kicad 7.0.2

Date:

Rev:  
Id: 5/7



Sheet: /spareArea/ File: spareArea.kicad_sch		
<b>Title:</b>		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 7.0.2	Id: 6/7	



Sheet: /Connectors/ File: connectors.kicad_sch		
Title:		
Size: A4	Date:	Rev:
KiCad E.D.A. kicad 7.0.2		Id: 7/7