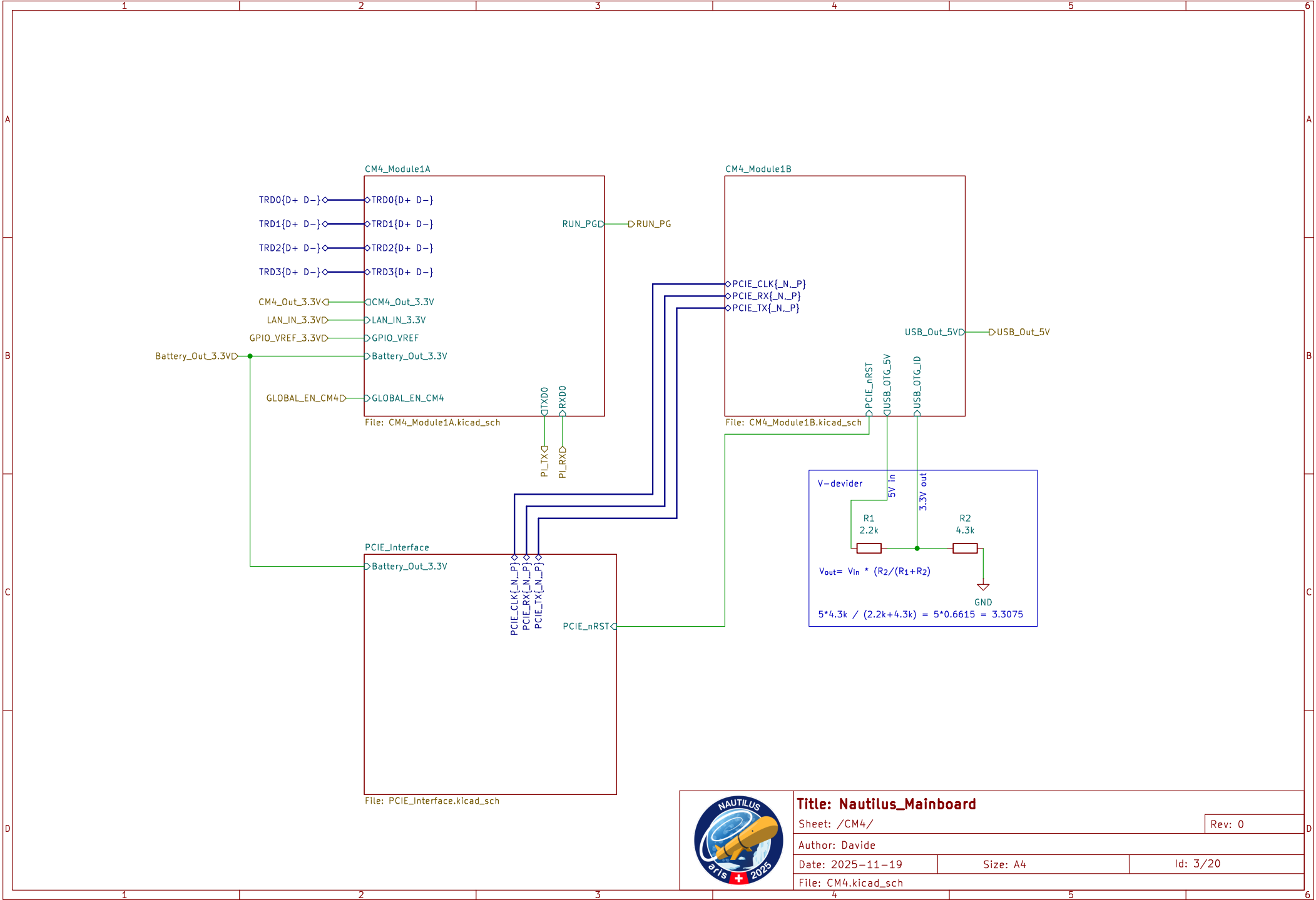
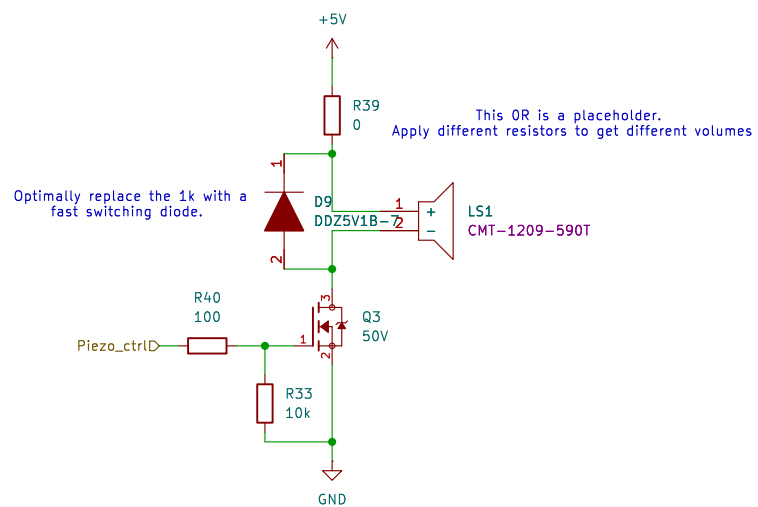


<b>Title: Nautilus_Mainboard</b>		
Sheet: /STM/		Rev: 0
Author: Evan		
Date: 2025-11-19	Size: A4	Id: 2/20
File: STM.kicad_sch		



Title: Nautilus_Mainboard		
Sheet: /CM4/		Rev: 0
Author: Davide		
Date: 2025-11-19	Size: A4	Id: 3/20
File: CM4.kicad_sch		

Not in the PCB yet as we dont know if we actually need it.



# Title: Nautilus\_Mainboard

Sheet: /Piezzo/

Rev: 0

Author: Evan

Date: 2025-11-19

Size: A4

Id: 4/20

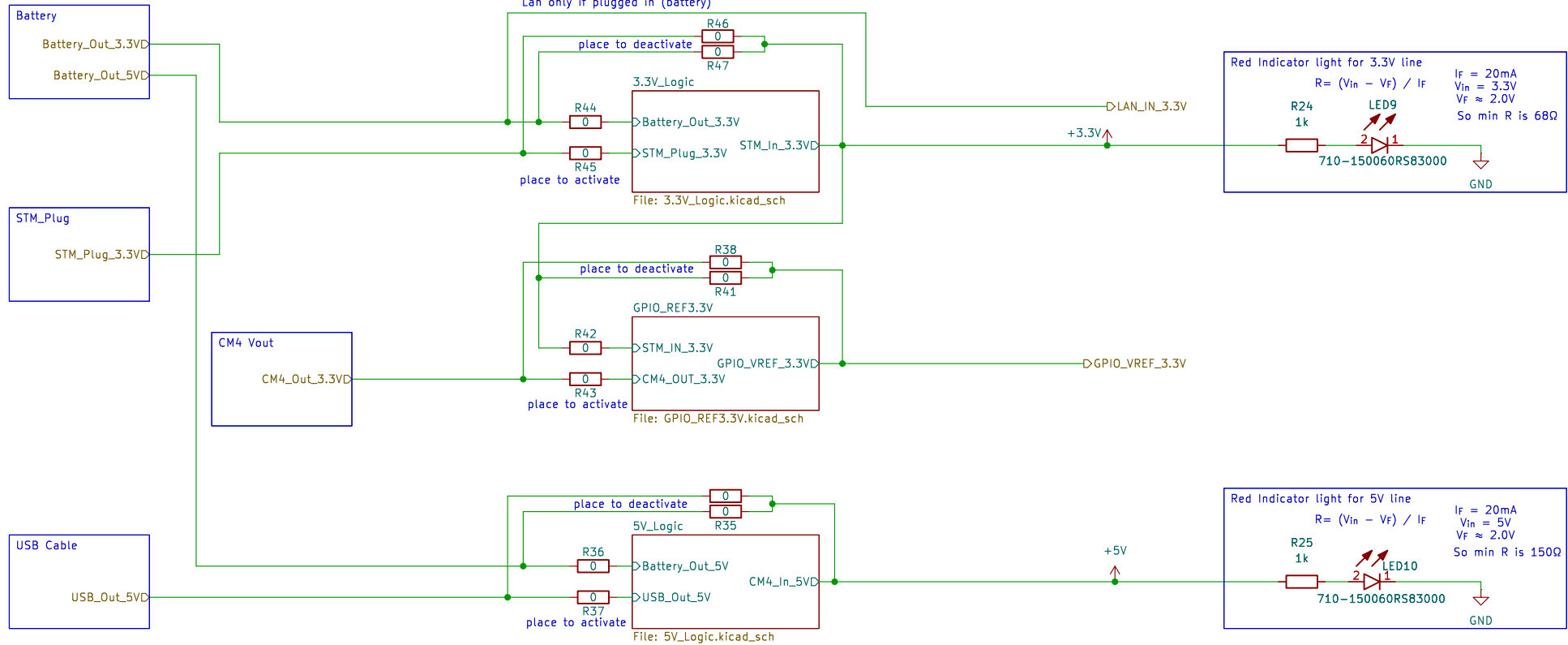
File: Piezzo.kicad\_sch



some rules:  
 USB wont power the STM32.  
 STM\_Plug wont power the CM4  
 The GPIO\_VREF of the CM4 needs to be STM32's 3.3V  
 The Lan Vin is only powered when running on Battery  
 Battery preferably powers everything.  
 Whenever the CM4 runs, also run the LED signals AND the  
 SSD voltage. all "core" tasks tied to the CM4.

#### Different Power Sources.

#### Reference power sources



#### Title: Nautilus\_Mainboard

Sheet: /Power\_logic/

Rev: 1

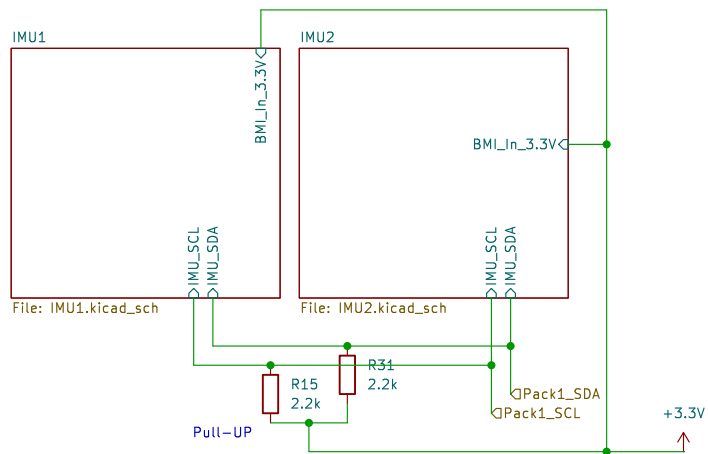
Author: Davide

Date: 2025-11-19

Size: A4

Id: 14/20

File: Power\_logic.kicad\_sch



# Title: Nautilus\_Mainboard

Sheet: /IMU/

Rev: 0

Author: Davide

Date: 2025-11-19

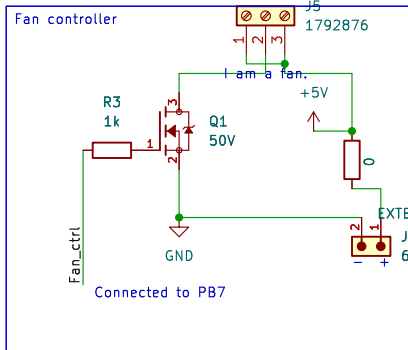
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Id: 18/20

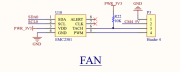
File: IMU.kicad\_sch



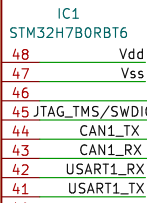
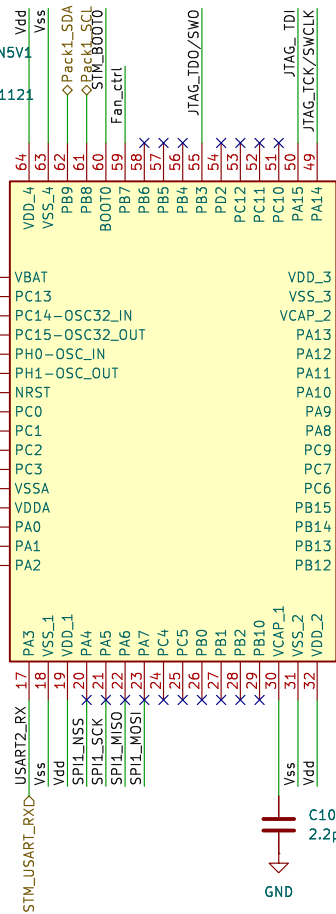
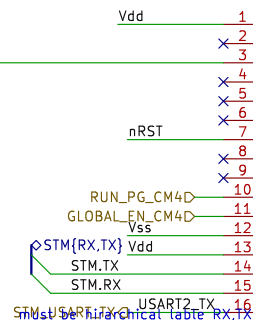
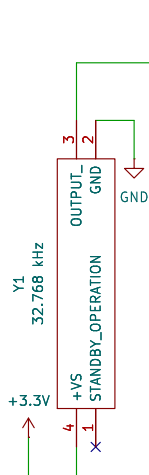
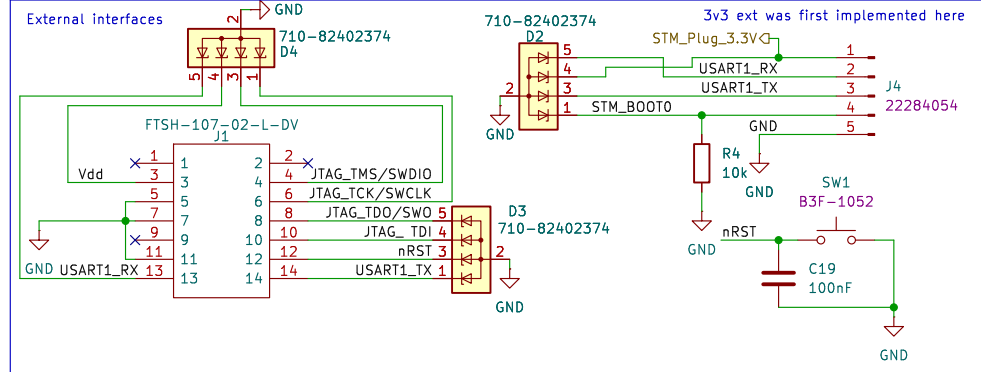




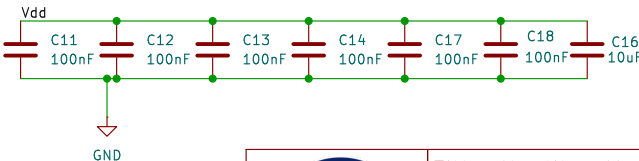
fan only active when battery is connected.  
Mby add an external power pin to externally power the fan for testing.



This part should be changed... implement directly a fan  
not this 3 pin screw terminal that I randomly found @evan



Chose a Pin here please.  
I chose 7 but please make sure its an actual pin evan. I just gambled.  
For review: if this pin is incorrect, Im sorry. I just guessed  
please let me know so that I can tell evan if it needs to be changed.



STDC14 for STLINK-V3MINI (STM32 JTAG/SWD and VCP)

Figure 11. CN5 STDC14 connector (Top view)

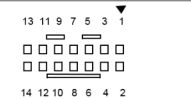
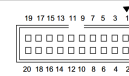


Table 4. CN5 STDC14 connector pinout

STDC14 Pin #	ARM10 Pin #	Pin description	Type
1	-	Reserved <sup>(1)</sup>	-
2	-	Reserved <sup>(1)</sup>	-
3	1	T_VCC <sup>(2)</sup>	I
4	2	T_JTMS/T_SWCLK	I/O
5	3	GND	S
6	4	T_JCLK/T_SWCLK	O
7	5	GND	S
8	6	T_JTDO/T_SWO <sup>(3)</sup>	I
9	7	T_JCLK	O
10	8	T_JTDI/NC <sup>(4)</sup>	O
11	9	GND	O
12	10	T_NRST	O
13	-	T_VCP_RX	O
14	-	T_VCP_TX	I

Figure 10. JTAG debugging flat ribbon layout



## Title: Nautilus\_Mainboard

Sheet: /STM/PinoutSTM/

Rev: 0

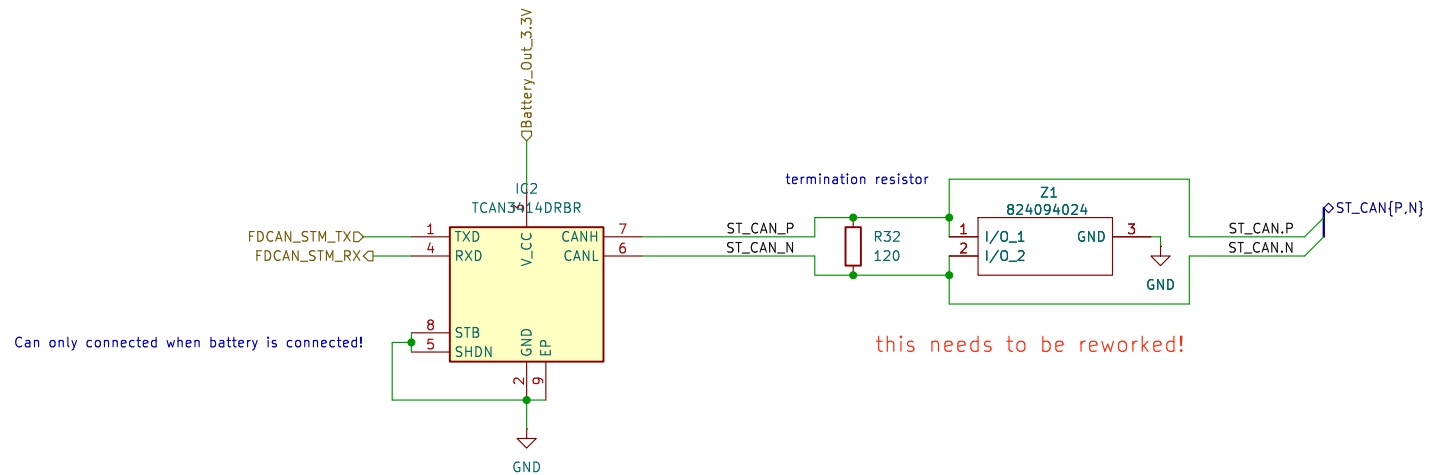
Author: Evan

Date: 2025-11-19

Size: A4

Id: 6/20

File: PinoutSTM.kicad\_sch



# Title: Nautilus\_Mainboard

Sheet: /STM/CAN\_Interface/

Rev: 1

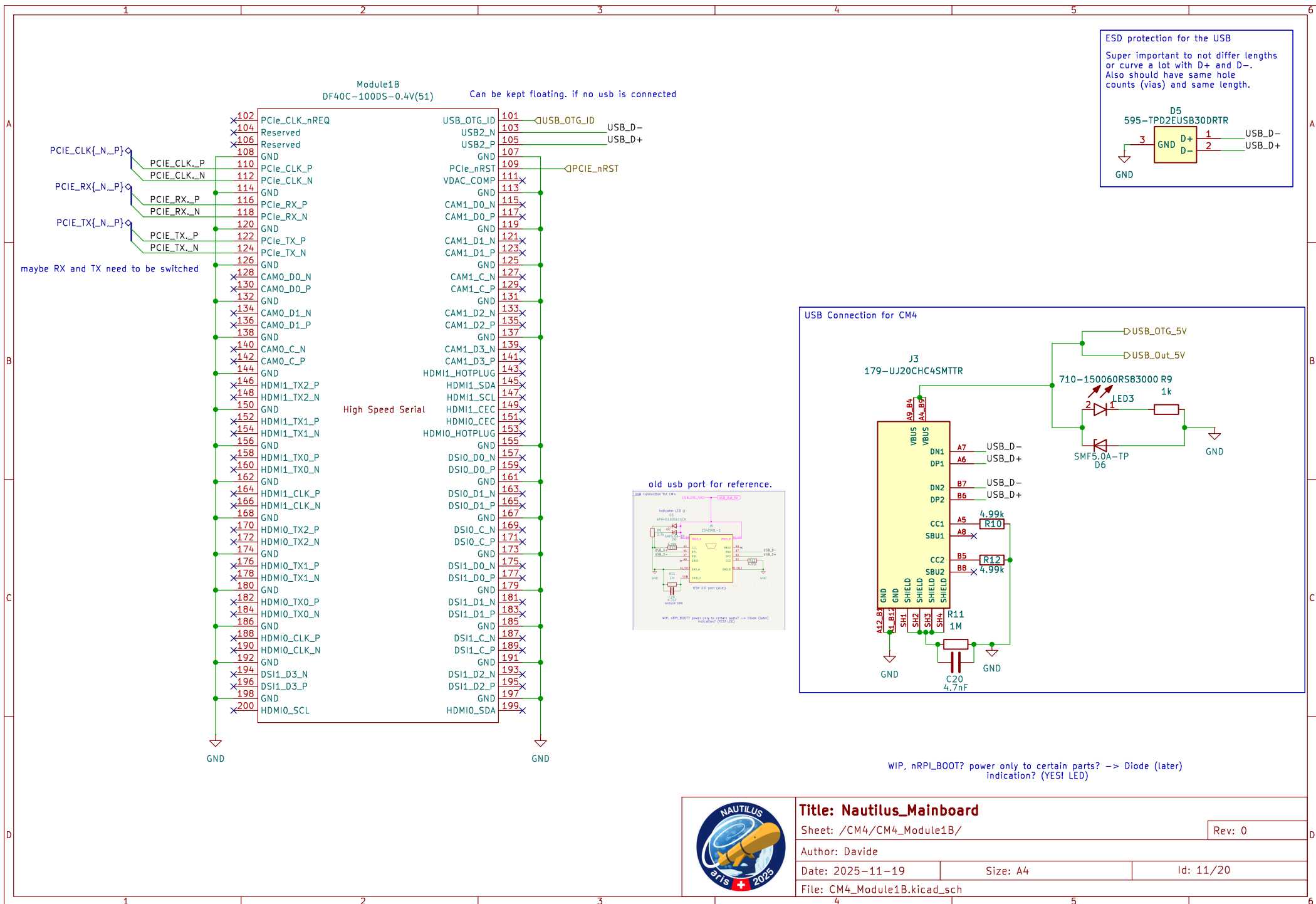
Author: Evan & Davide

Date: 2025-11-19

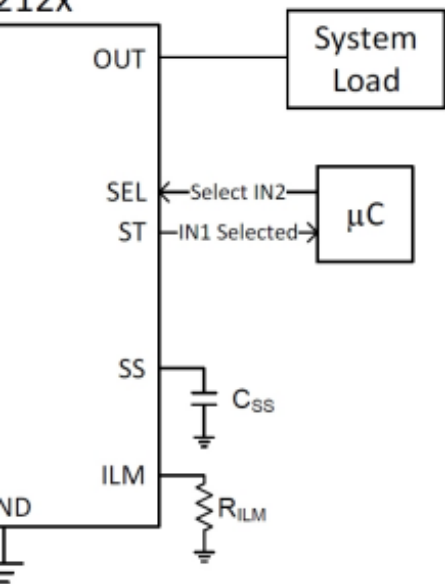
Size: A4

Id: 7/20

File: PowerSTM.kicad\_sch



212x



for questions about wiring etc please consult the datasheet...  
<https://www.ti.com/lit/ds/symlink/tps2120.pdf?ts=1761678178328>

PR1 > CP2 -> IN1 has prio

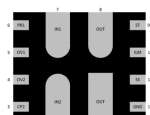
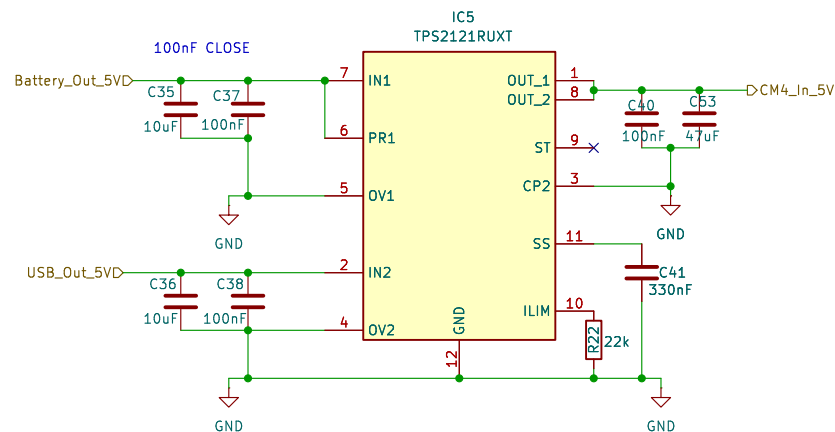


Figure 6-2. TPS2121 (RUX) Package 12-Pin VQFN-HR Bottom View

		PIN		Pin Functions	
NAME	TPS2120	TPS2121	TPS2121	IO	DESCRIPTION
IN1	B1, B2, C1	7	I		Power Input for Source 1
IN2	B3, B4, C4	2	I		Power Input for Source 2
OUT	C2, C3, D1, D2, D3, D4	1, 8	I		Power Output
ST	E1	9	O		Status output indicating which channel is selected. Connect to GND if not required.
ILM	E2	10	O		Output Current Limiting for both channels.
SS	E3	11	O		Adjusts Input Setting Delay Time and Output Soft Start Time.
GND	E4	12	—		Device Ground
PR1	A1	5	I		Enables Priority Operation. Connect to IN1 to set switchover voltage. Connect to GND if not required.
OV1	A2	6	I		Active Low Enable Supervisor for IN1 Overvoltage Protection. Connect to GND if not required.
OV2	A3	4	I		Active Low Enable Supervisor for IN2 Overvoltage Protection. Connect to GND if not required.
SEL	A4	—	I		Active Low Enable for IN1. Allows GPO to override priority operation and manually select IN2. TPS2120 only.

CP2	—	3	I	Enables Comparator Operation and is compared to PR1 to set switchover voltage. Connect to GND if not required. TPS2121 only.
-----	---	---	---	--

	Pins	MIN	MAX	UNIT
V <sub>IN1</sub> , V <sub>IN2</sub> , V <sub>OUT</sub>	IN1, IN2, OUT	-0.3	24	V
V <sub>OV1</sub> , V <sub>OV2</sub>	OV1, OV2	-0.3	6	V
V <sub>PRI</sub> , V <sub>SEL</sub>	PRI, SEL	-0.3	6	V
V <sub>ST</sub>	ST	-0.3	6	V
I <sub>OUT</sub>	OUT	Internally Limited		
T <sub>J</sub> , MAX		Internally Limited		
T <sub>STG</sub>		-65	150	°C

if the USB-only cold start "disconnects" we can try to bump SS to 470nF instead of 330nF.



Title: Nautilus\_Mainboard

Sheet: /Power\_logic/5V\_Logic/

Rev: 0

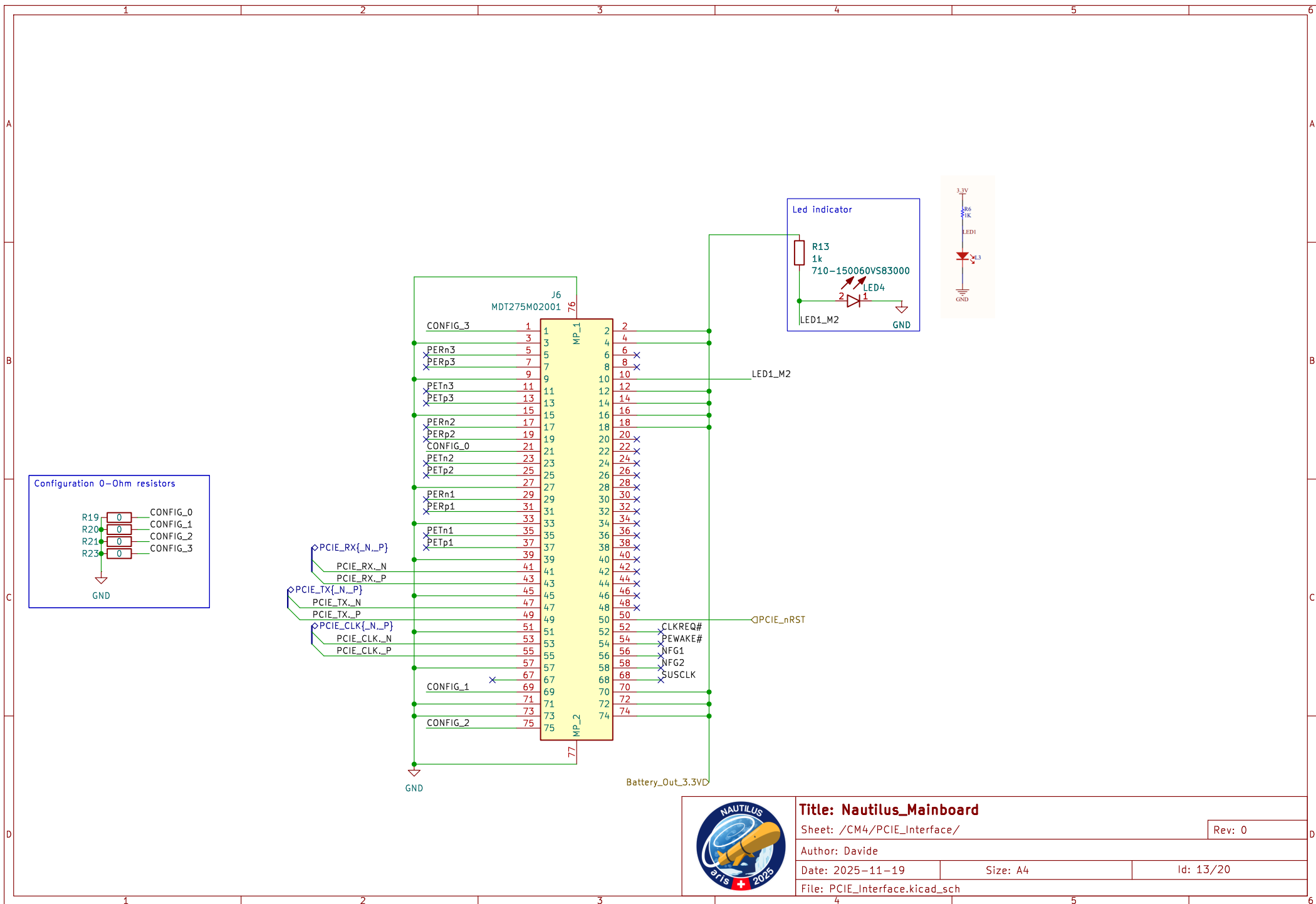
Author: Davide

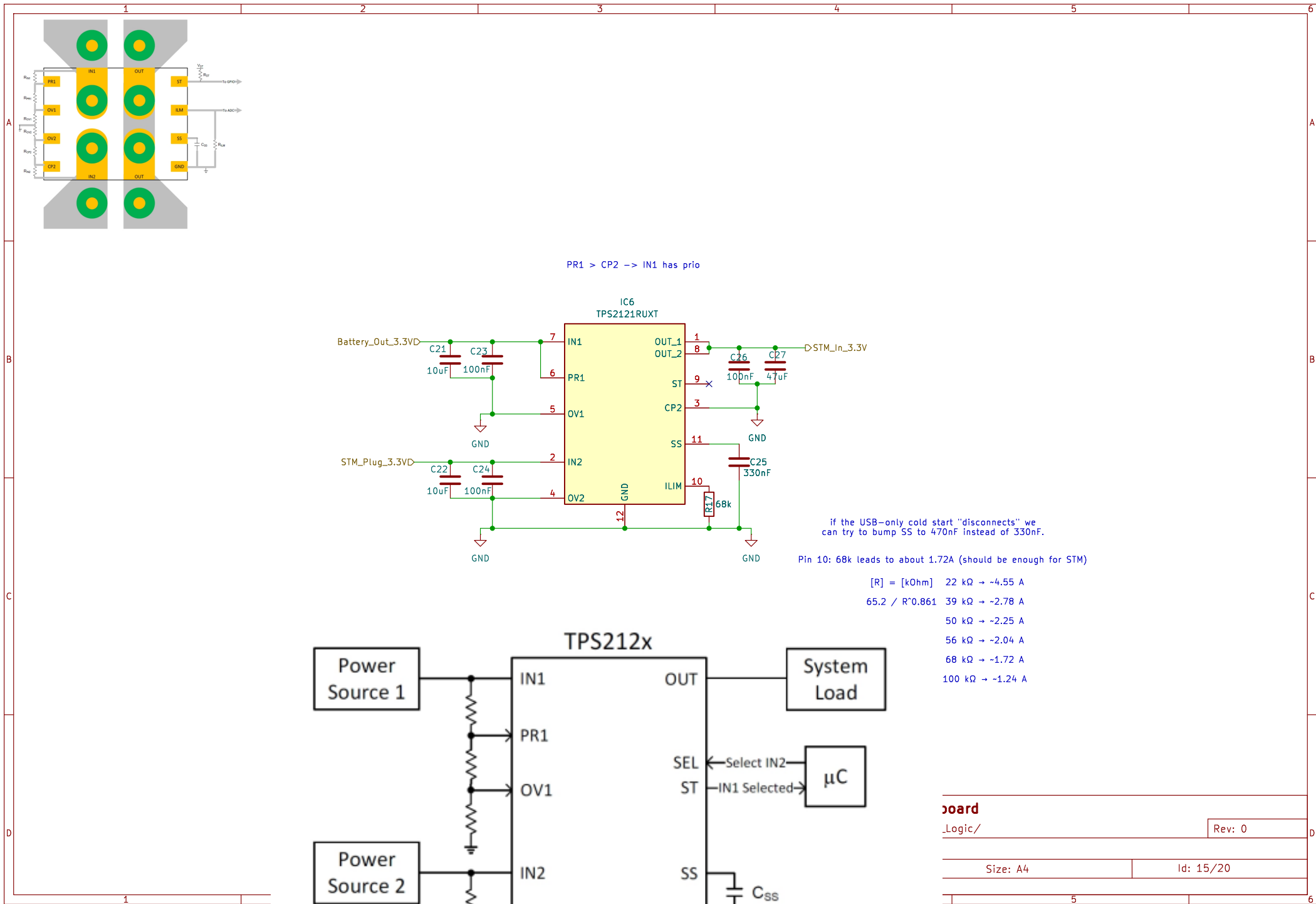
Date: 2025-11-19

Size: A4

Id: 12/20

File: 5V\_Logic.kicad\_sch





1

2

3

4

5

6

A

A

B

B

C

C

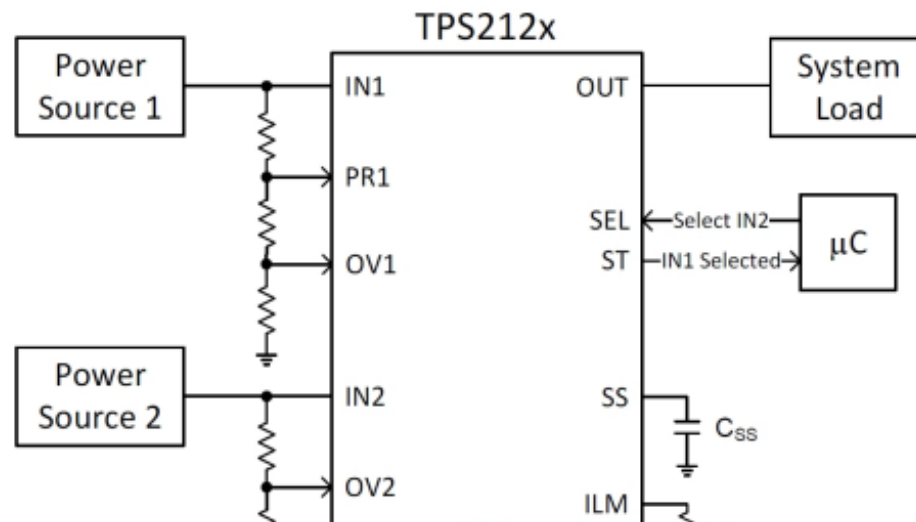
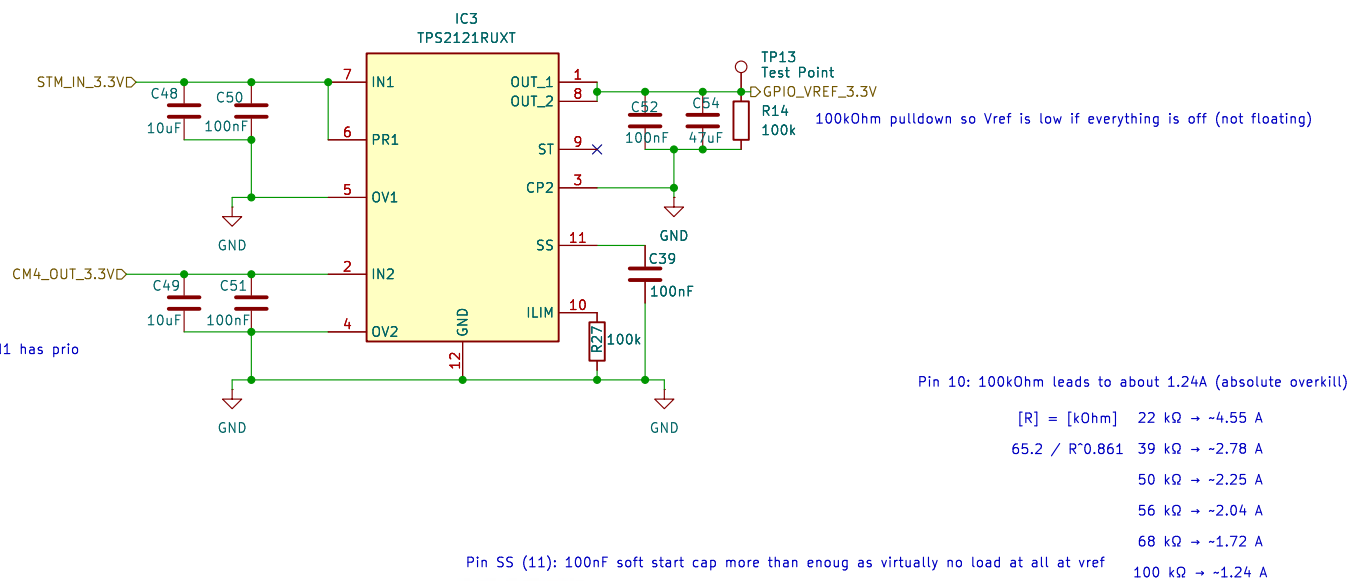
D

D

1

5

6



3V/

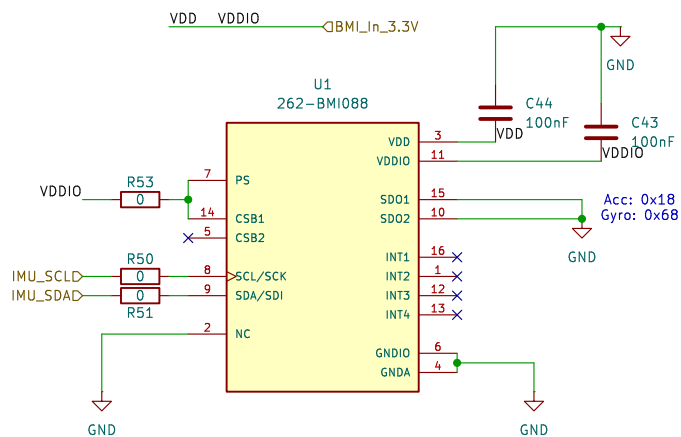
Rev: 0

Size: A4

Id: 16/20

PS -> 3.3V IIC  
CSB1 -> 3.3V NOT SPI

PB8 on STM  
PB9 on STM



Accelerometer  
SD01 pin pulled to GND (0x18)  
SD01 pin pulled to VDDIO: (0x19)

Gyroscope:  
SD02 pin pulled to GND: (0x68)  
SD02 pin pulled to VDDIO: 0x69



**Title: Nautilus\_Mainboard**

Sheet: /IMU/IMU1/

Rev: 0

Author: Davide

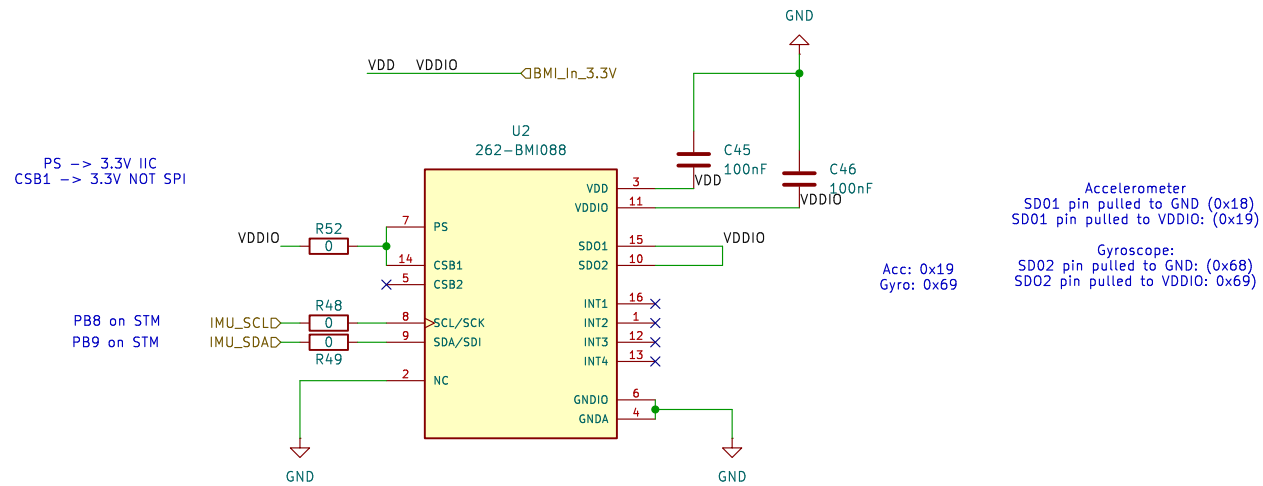
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Size: A4

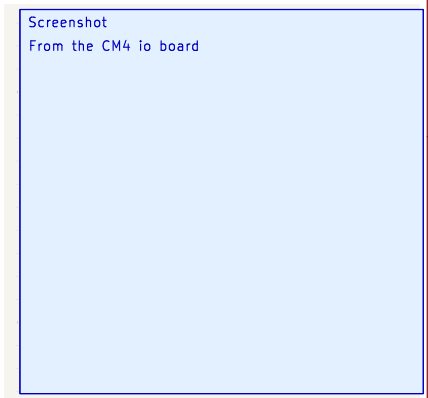
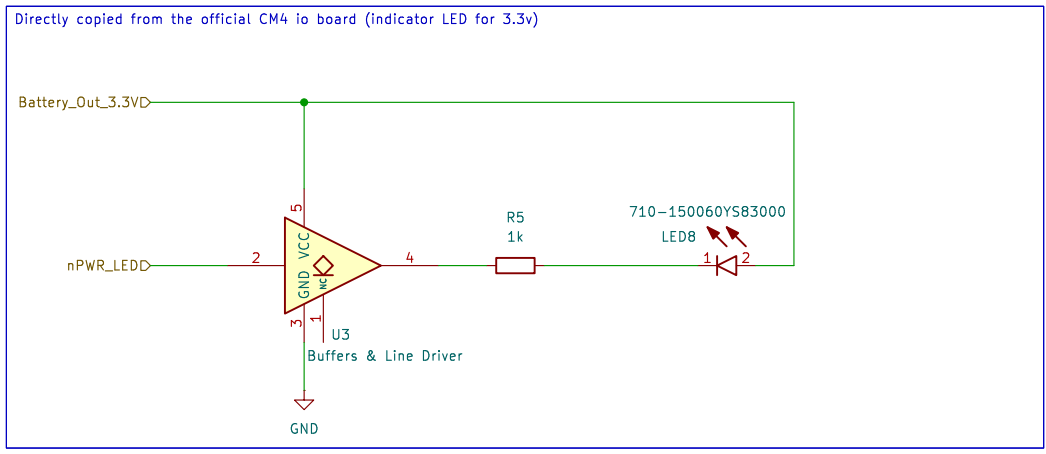
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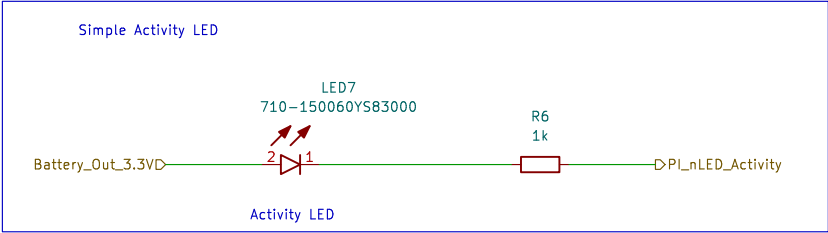




<b>Title: Nautilus_Mainboard</b>		
Sheet: /IMU/IMU2/		Rev: 0
Author: Davide		
Date: 2025-11-19	Size: A4	Id: 20/20
File: IMU2.kicad_sch		



<b>Title: Nautilus_Mainboard</b>		
Sheet: /CM4/CM4_Module1A/CM4_LED1/		Rev: 0
Author: Davide		
Date: 2025-11-19	Size: A4	Id: 8/20
File: CM4_LED1.kicad_sch		



**Title: Nautilus\_Mainboard**

Sheet: /CM4/CM4\_Module1A/CM4\_LED2/

Rev: 0

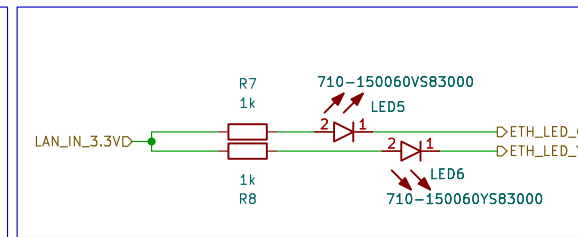
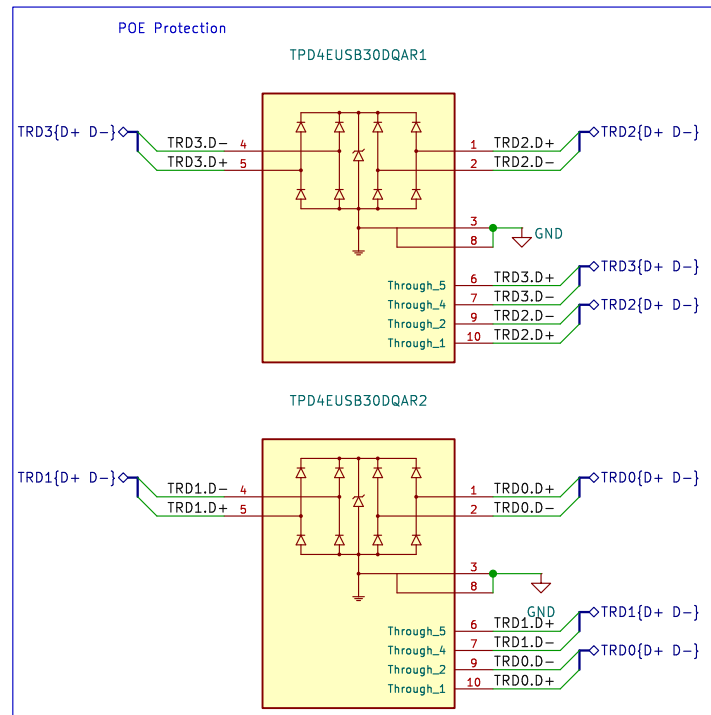
Author: Davide

Date: 2025-11-19

Size: A4

Id: 9/20

File: CM4\_LED2.kicad\_sch



# Title: Nautilus\_Mainboard

Sheet: /CM4/CM4\_Module1A/CM4\_Ethernet/

Rev: 0

Author: Davide

Date: 2025-11-19

Size: A4

Id: 10/20

File: CM4\_Ethernet.kicad\_sch