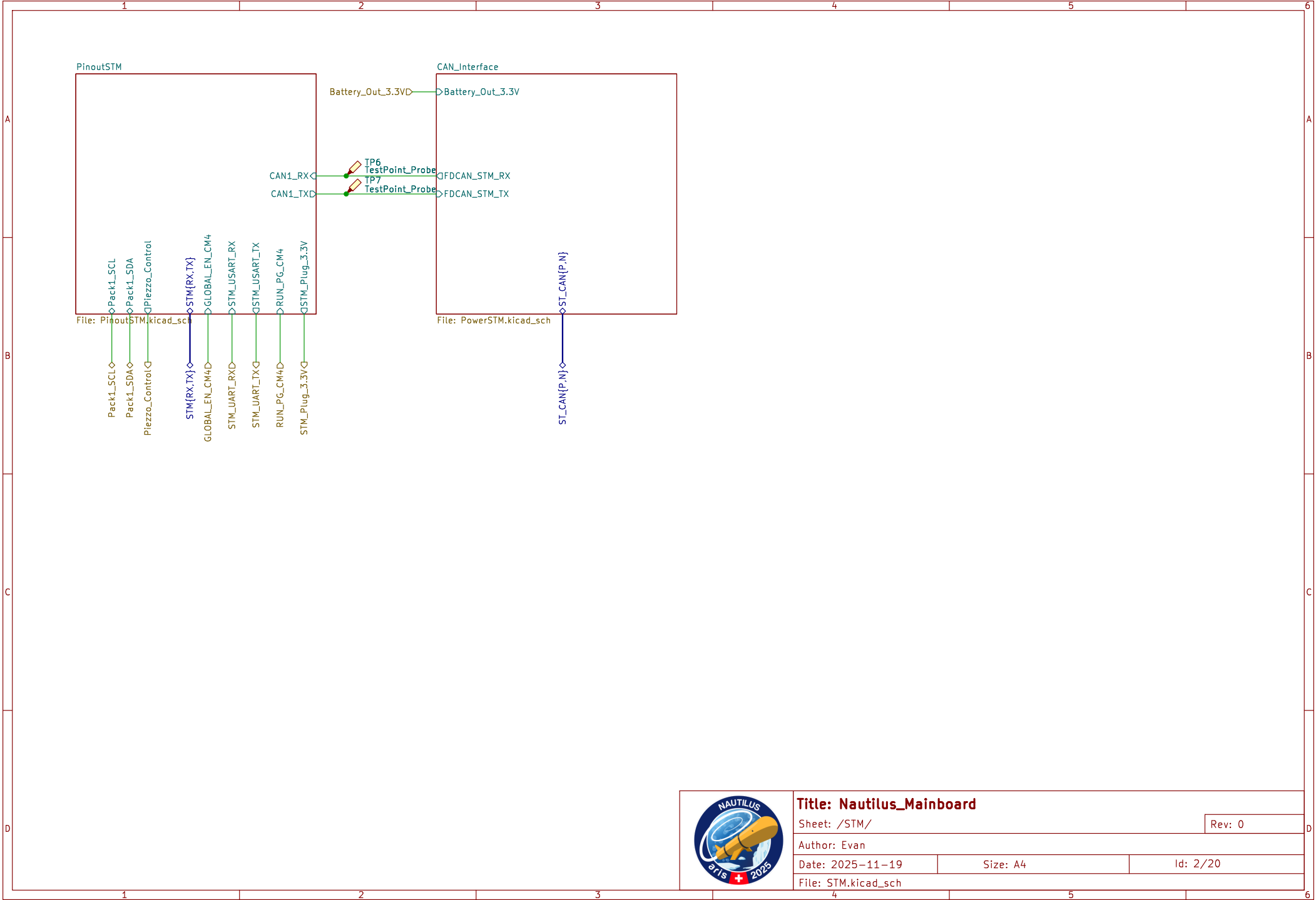
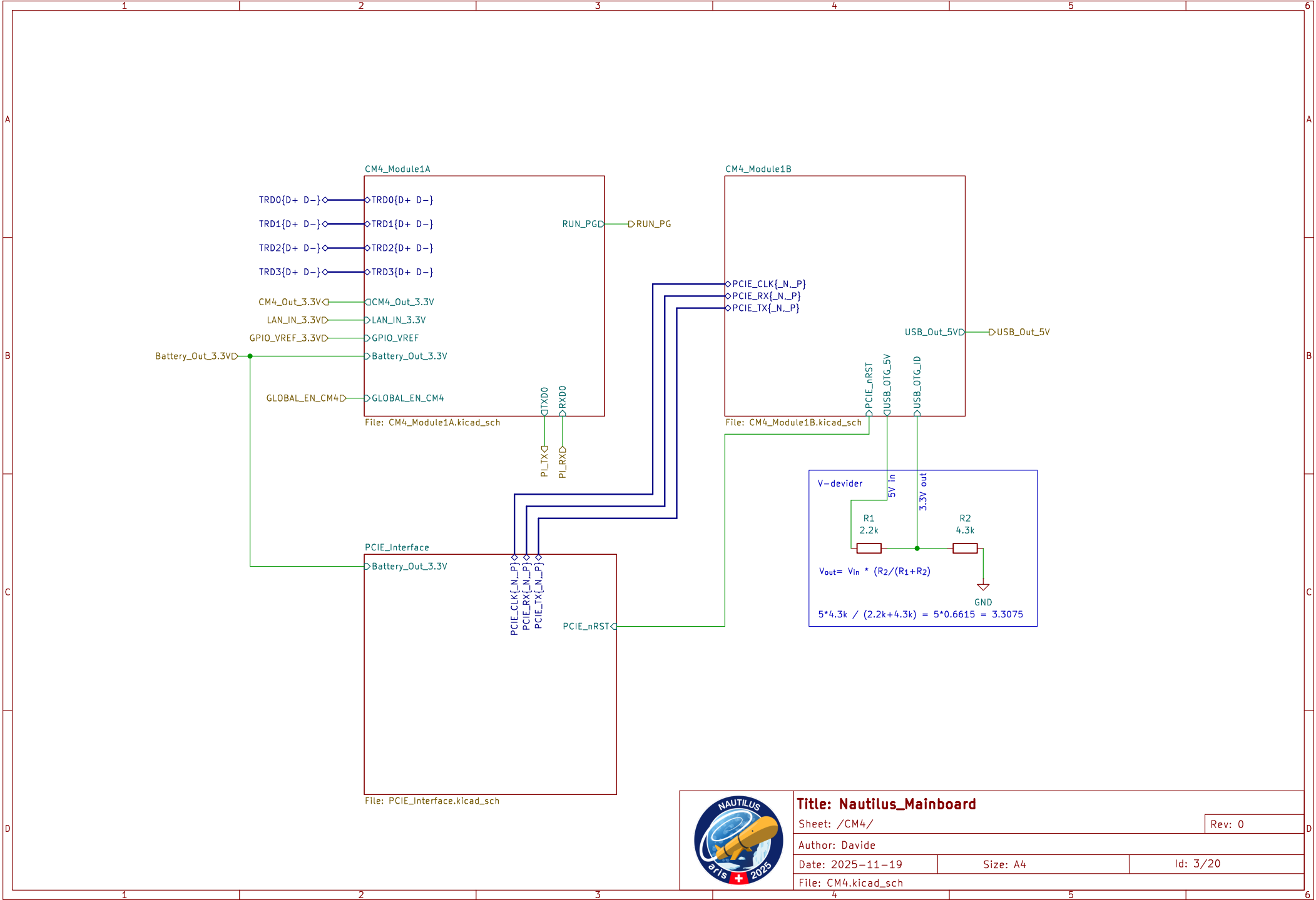


Title: Nautilus_Mainboard		
Sheet: /		Rev: 0
Author: Evan & Davide		
Date: 2025-11-19	Size: A4	Id: 1/20
File: nautilus_mainboard.kicad_sch		

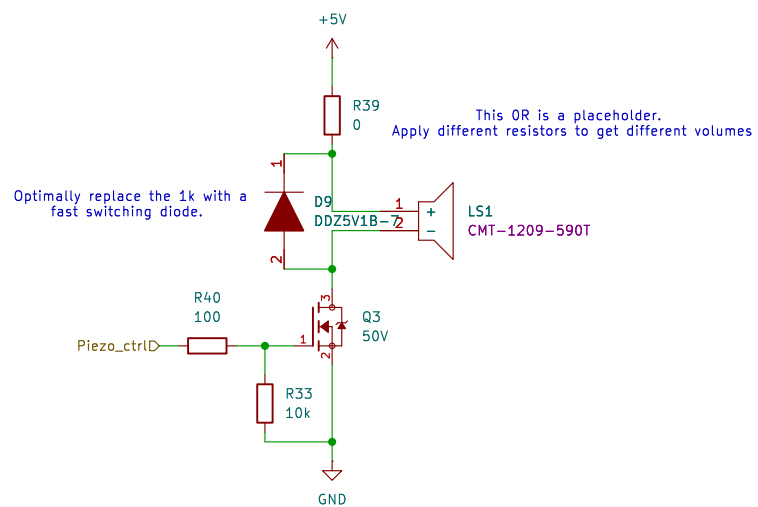


Title: Nautilus_Mainboard		
Sheet: /STM/		Rev: 0
Author: Evan		
Date: 2025-11-19	Size: A4	Id: 2/20
File: STM.kicad_sch		



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

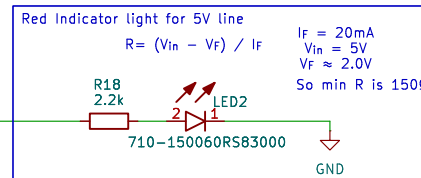
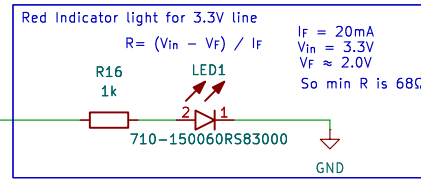
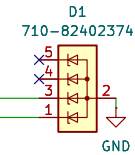
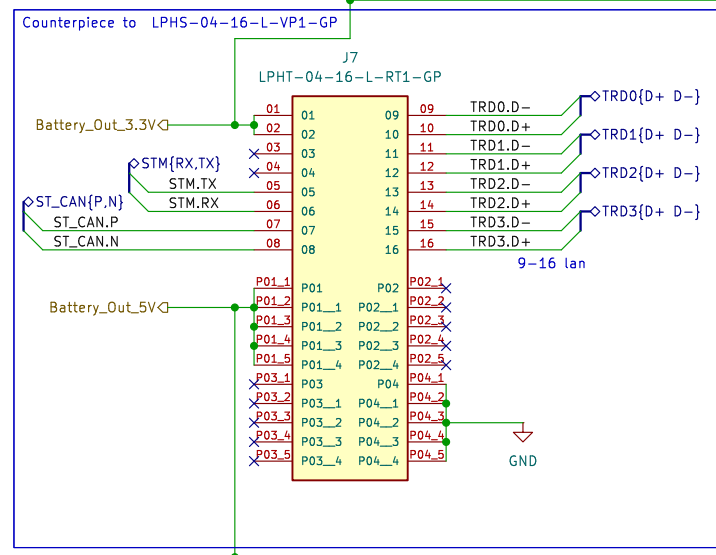
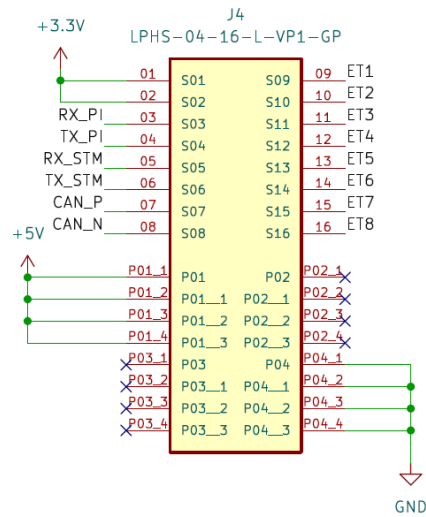
Date: 2025-11-19

Size: A4

Id: 4/20

File: Piezzo.kicad_sch

Mainboard



Title: Nautilus_Mainboard

Sheet: /LPHS-connector/

Rev: 1

Author: Davide, Evan

Date: 2025-11-19

Size: A4

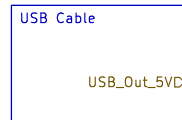
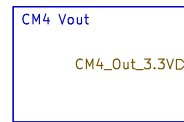
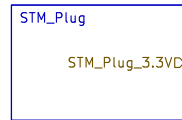
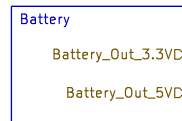
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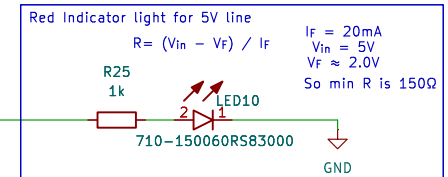
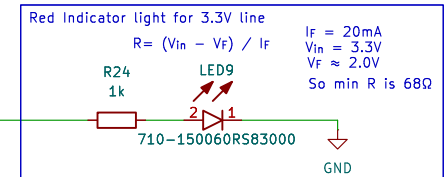
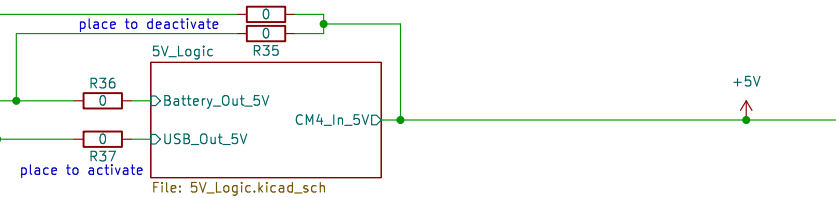
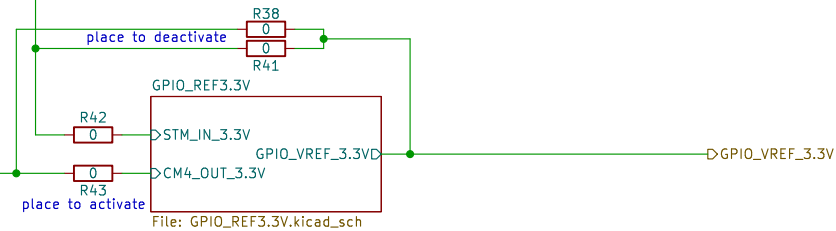
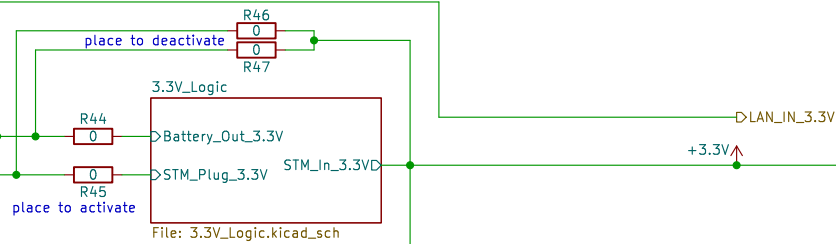
some rules:
 USB wont power the STM32.
 STM_Plug wont power the CM4
 The GPIO_VREF of the CM4 needs to be STM32's 3.3V
 The Lan Vin is only powered when running on Battery
 Battery preferably powers everything.
 Whenever the CM4 runs, also run the LED signals AND the
 SSD voltage. all "core" tasks tied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

Different Power Sources.

Reference power sources



Lan only if plugged in (battery)



Title: Nautilus_Mainboard

Sheet: /Power_logic/

Rev: 1

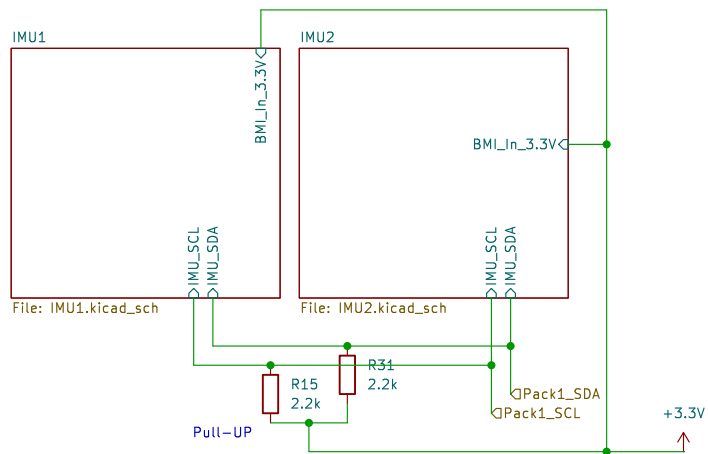
Author: Davide

Date: 2025-11-19

Size: A4

Id: 14/20

File: Power_logic.kicad_sch



Title: Nautilus_Mainboard

Sheet: /IMU/

Rev: 0

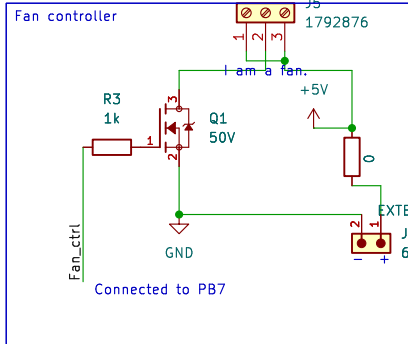
Author: Davide

Date: 2025-11-19

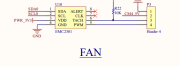
Size: A4

Id: 18/20

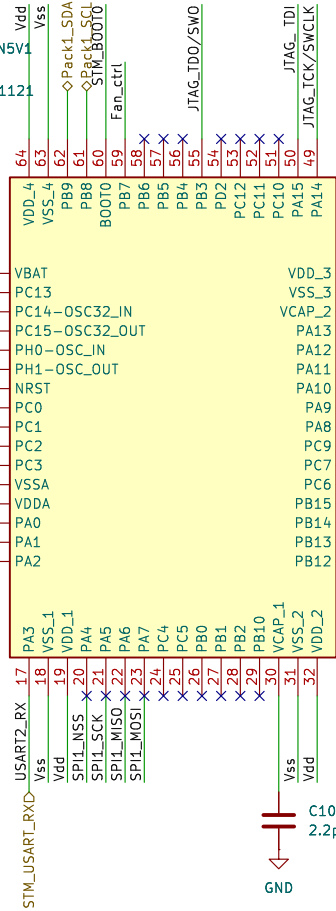
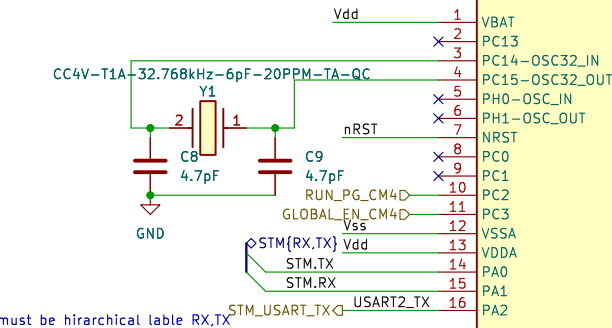
File: IMU.kicad_sch



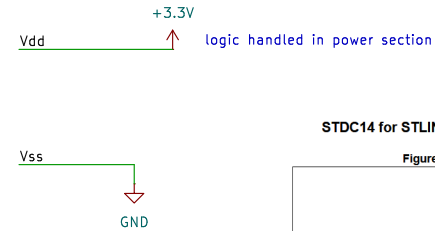
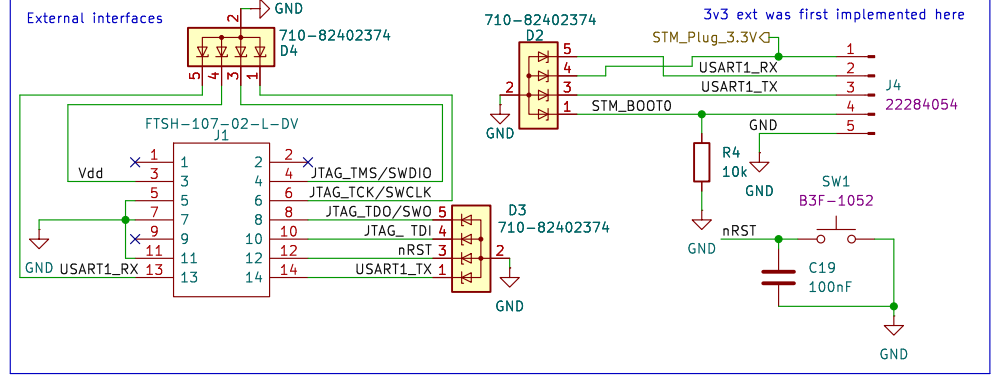
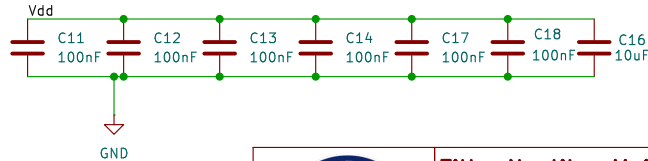
fan only active when battery is connected.
Mby add an external power pin to externally power the fan for testing.



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)

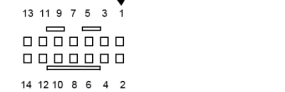
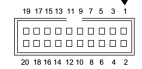


Table 4. CN5 STDC14 connector pinout

STDC14 Pin #	ARM10 Pin #	Pin description	Type
1	-	Reserved ⁽¹⁾	-
2	-	Reserved ⁽¹⁾	-
3	1	T_VCC ⁽²⁾	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 ⁽³⁾	I
9	7	T_JCLK	O
10	8	T_JTDI/NC ⁽⁴⁾	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

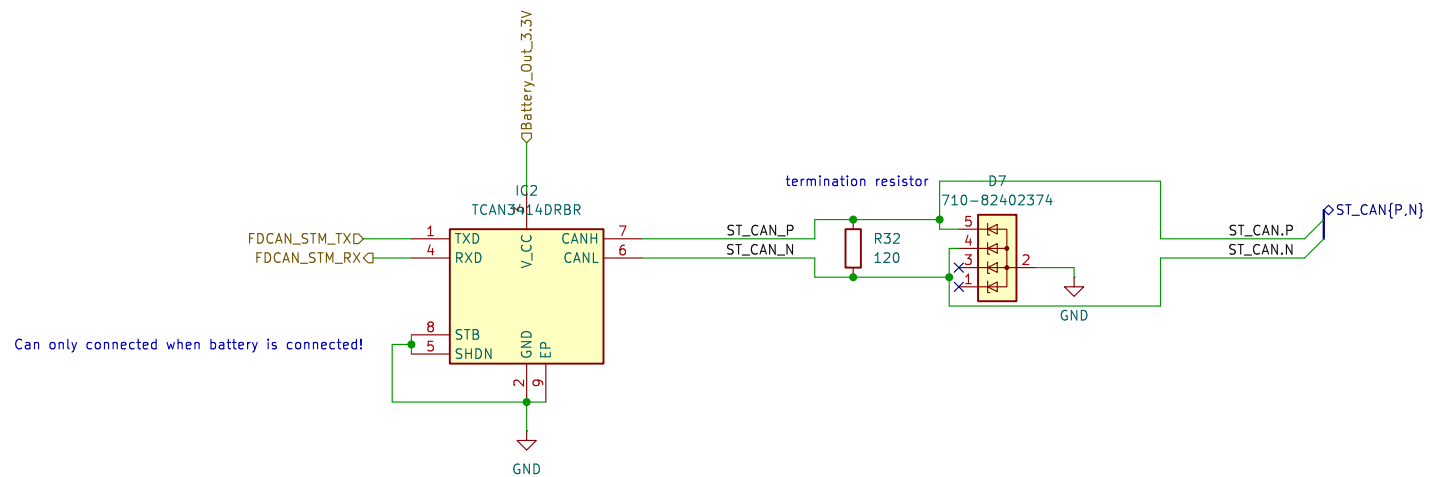
Author: Evan

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

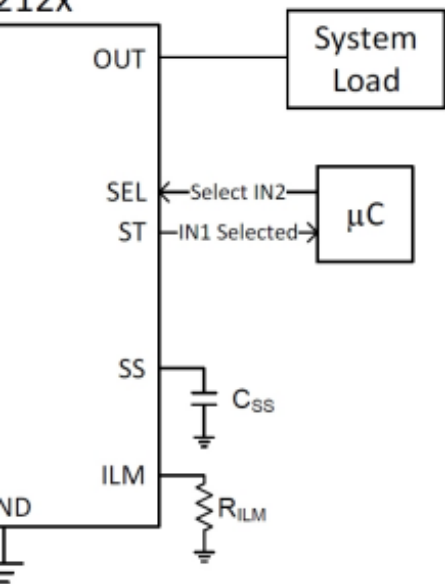
Date: 2025-11-19

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

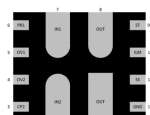
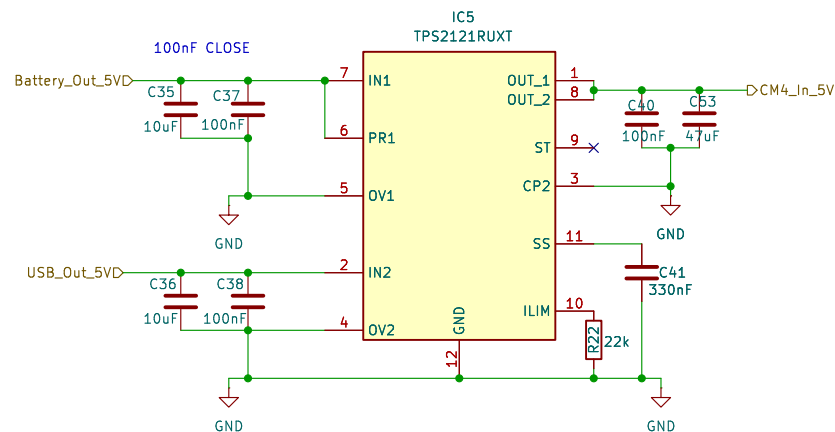


Figure 6-2. TPS2121 (RUX) Package 12-Pin VQFN-HR Bottom View

		PIN		Pin Functions	
NAME	TPS2120	TPS2121	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	6	I	Enables Priority Operation. Connect to IN1 to set switchover voltage. Connect to GND if not required.	
OV1	A2	5	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 _{IN1} , V _{IN2} , V _{OUT}	IN1, IN2, OUT	-0.3	24	V
V _{OV1} , V _{OV2}	OV1, OV2	-0.3	6	V
V _{PRI} , V _{SEL}	PRI, SEL	-0.3	6	V
V _{ST}	ST	-0.3	6	V
I _{OUT}	OUT	Internally Limited		
T _J , MAX		Internally Limited		
T _{STG}		-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

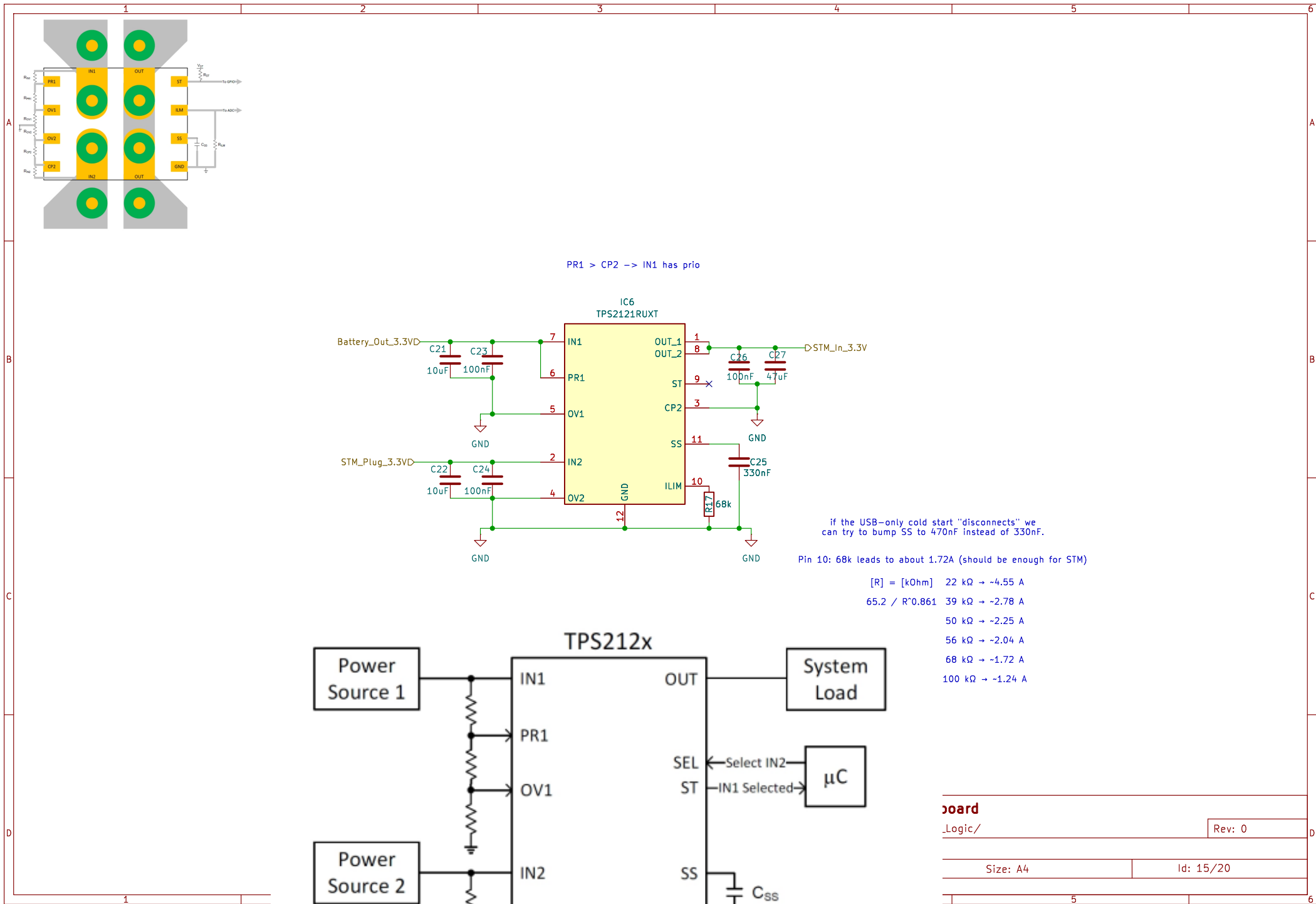
Author: Davide

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

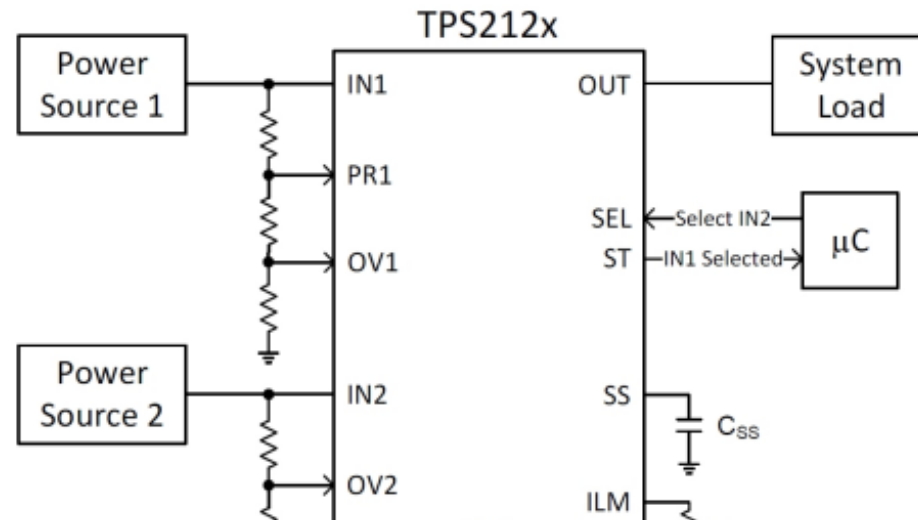
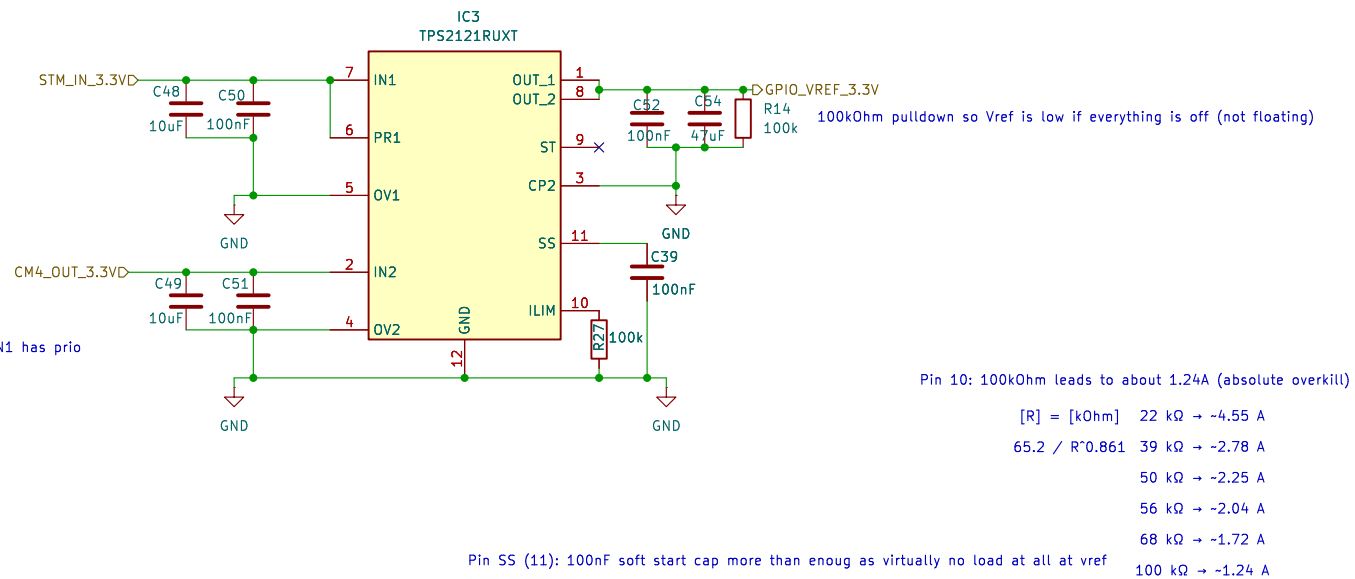
D

D

1

5

6



3V/

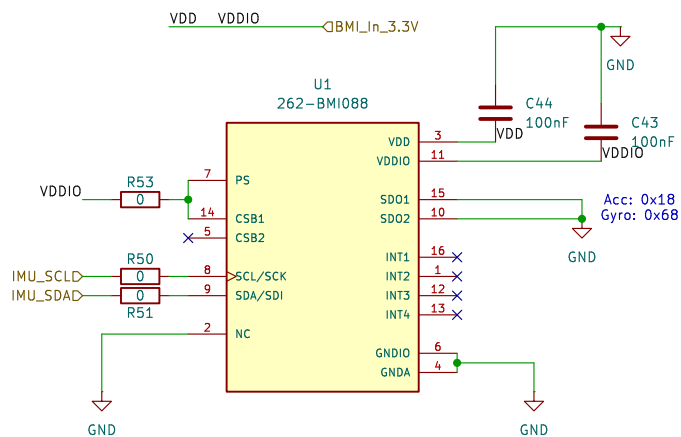
Rev: 0

Size: A4

Id: 16/20

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

PB8 on STM
PB9 on STM



Title: Nautilus_Mainboard

Sheet: /IMU/IMU1/

Rev: 0

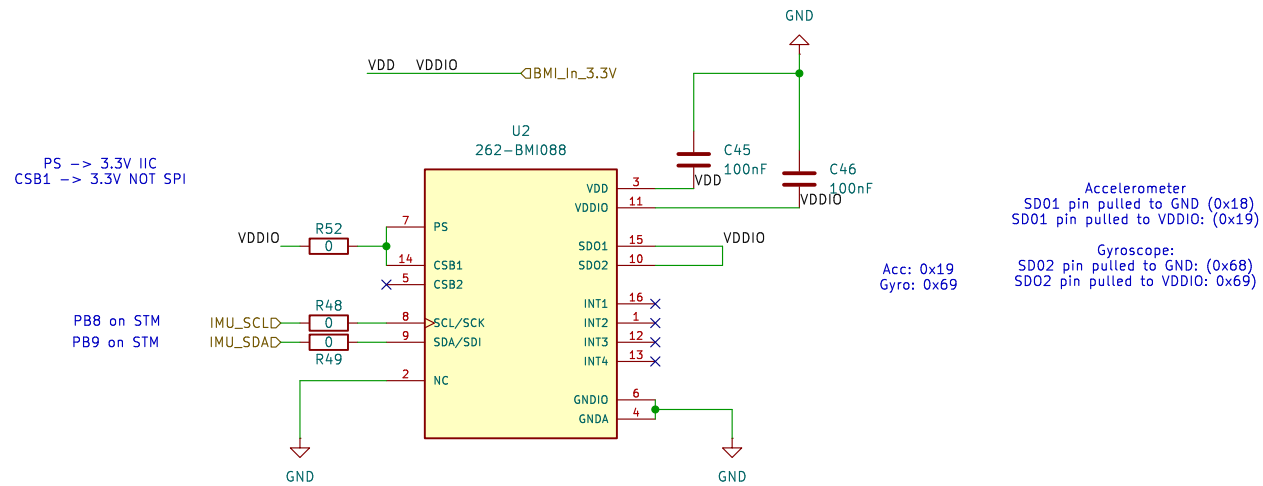
Author: Davide

Date: 2025-11-19

Size: A4

Id: 19/20

File: IMU1.kicad_sch



Title: Nautilus_Mainboard

Sheet: /IMU/IMU2/

Rev: 0

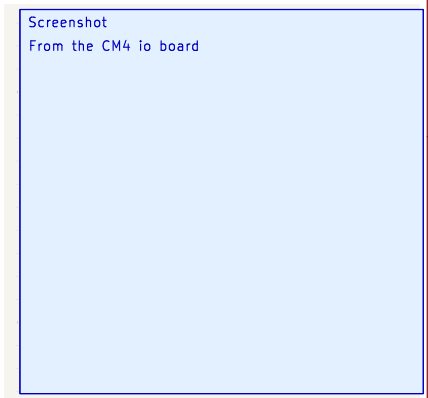
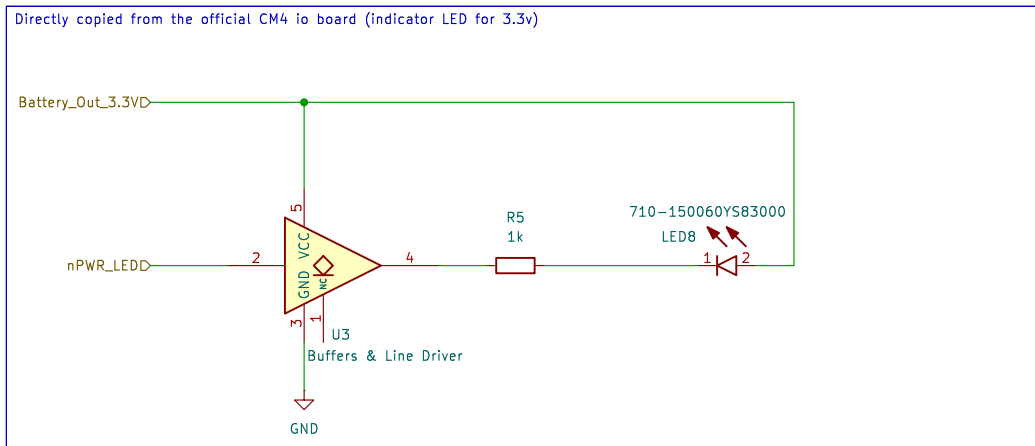
Author: Davide

Date: 2025-11-19

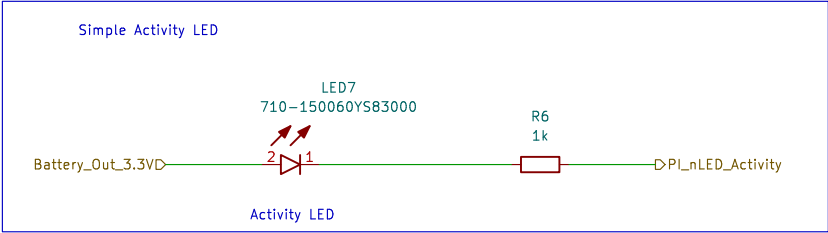
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File: IMU2.kicad_sch



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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

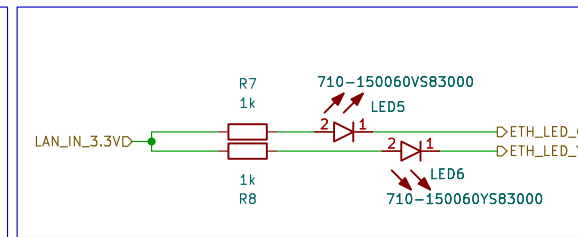
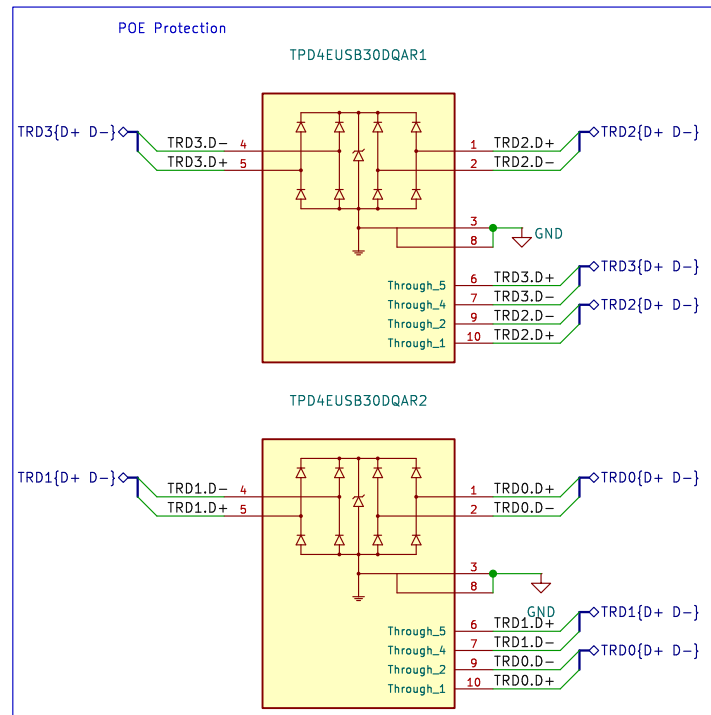
Author: Davide

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