Board Name

Variant: DRAFT

2026-02-06
Rev V1

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To Do:

Make block diagram

Add extra bright LED for visibility through body tube?

Add/confirm Atmo Sensors

Add/confirm Position Sensors

TOP VIEW

3D render of your PCB here (Top View)

BOTTOM VIEW

3D render of your PCB here (Bottom View)

NOTES

Add a comment here

Not fitted components are marked as ✗

DRAFT - Very early stage of schematic, ignore details.
PRELIMINARY - Close to final schematic.
CHECKED - There shouldn't be any mistakes. Contact the engineer if you find any.
RELEASED - A board with this schematic has been sent to production.

DRAFT

DESIGN CONSIDERATIONS

DESIGN NOTE: Example text for informational design notes.

DESIGN NOTE: Example text for debug notes.

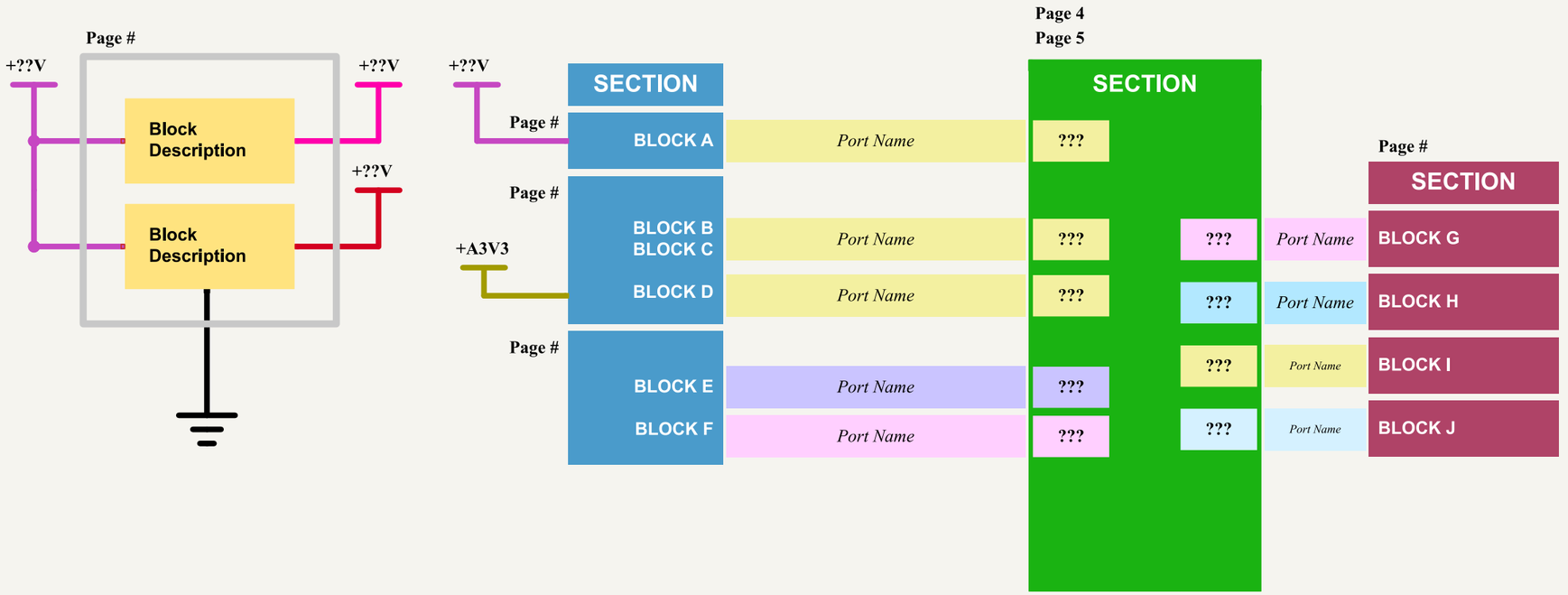
DESIGN NOTE: Example text for cautionary design notes.

DESIGN NOTE: Example text for critical design notes.

LAYOUT NOTE: Example text for critical layout guidelines.

Comments: GRID - mil (1.27mm, 2.54mm)	Company: Southampton University Spaceflight Society		Variant: DRAFT	
	Board Name: Board Name		Project Name: SUSF CanSat 25/26	
Sheet Title: Cover Page	File Name: CanSat_SensorSuite.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-04	Revision: V1
Sheet Path: /		Reviewer: ...	Size: A3	Sheet: 1 of 8

[2] Block Diagram

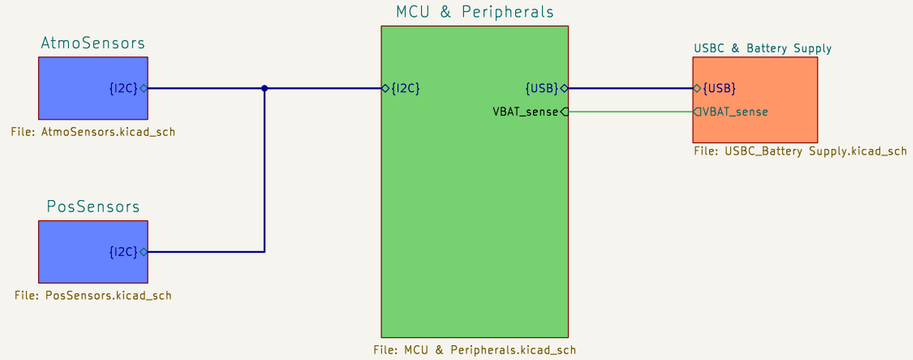


Target specifications:

Input voltage:	?? - ?? V
Spec 2	??
Spec 3	??
Spec 4	??

Comments: GRID - mil (1.27mm, 2.54mm)	Company: **Southampton University Spaceflight Society**		Variant: DRAFT	
	Board Name: **Board Name**		Project Name: **SUSF CanSat 25/26**	
Sheet Title: Block Diagram	File Name: Block Diagram.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-04	Revision: V1
Sheet Path: /Block Diagram/		Reviewer: ...	Size: **A3**	Sheet: **2** of **8**

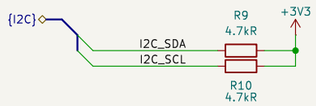
[3] Sensor Suite Board Overview



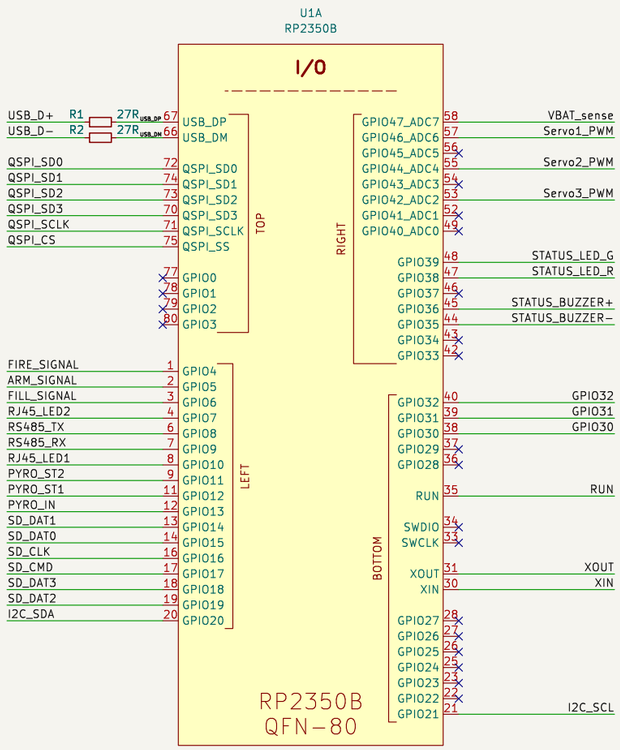
Comments: GRID - mil (1.27mm, 2.54mm)	Company: **Southampton University Spaceflight Society**		Variant: DRAFT	
	Board Name: **Board Name**		Project Name: **SUSF CanSat 25/26**	
Sheet Title: Sensor Suite Board Overview	File Name: Sensor Board Schematic.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-04	Revision: V1
Sheet Path: /Sensor Board Schematic/		Reviewer: ...	Size: **A3**	Sheet: **3** of **8**

[4] MCU & Peripherals

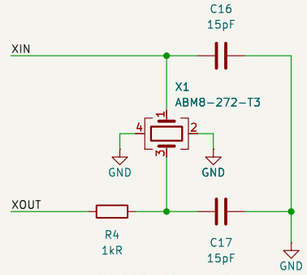
DESIGN NOTE:
I2C Pull Ups



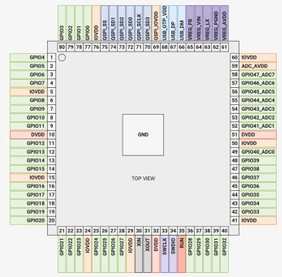
Sheet Input & Outputs



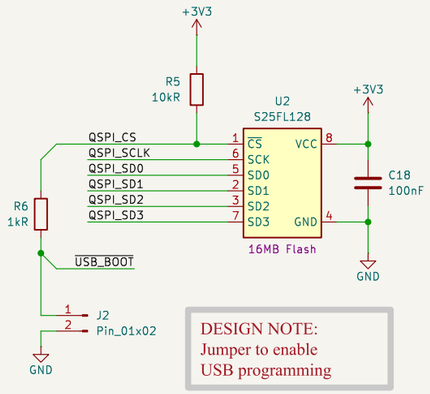
Sheet Input & Outputs



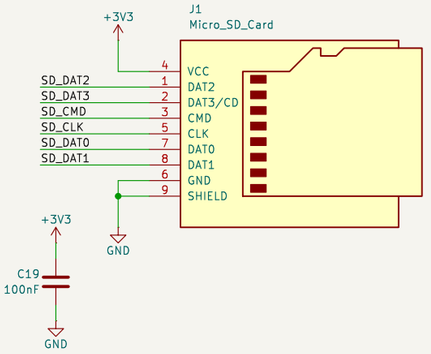
12MHz Crystal



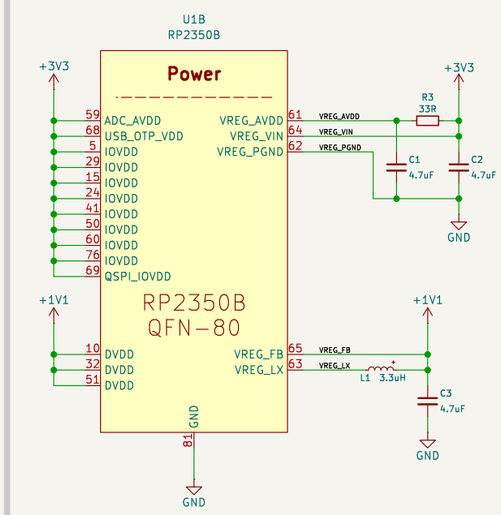
RP2350 Pin Location Reference

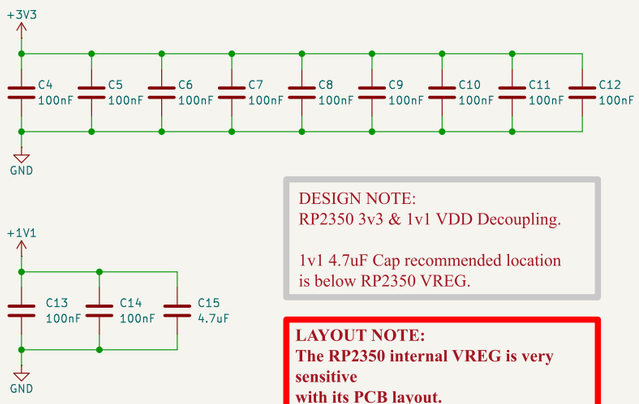


DESIGN NOTE:
Jumper to enable
USB programming



Memory



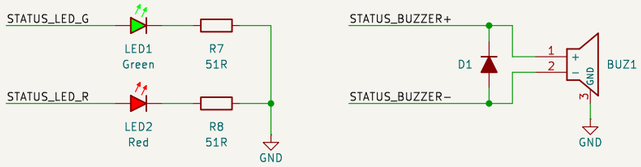


DESIGN NOTE:
RP2350 3v3 & 1v1 VDD Decoupling.

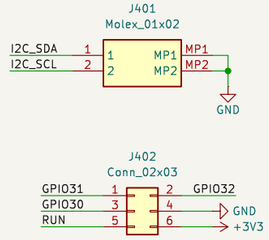
1v1 4.7uF Cap recommended location is below RP2350 VREG.

LAYOUT NOTE:
The RP2350 internal VREG is very sensitive with its PCB layout. Follow RP2350 Hardware Design doc or copy layout from Pico 2 example.

RP2350 Power



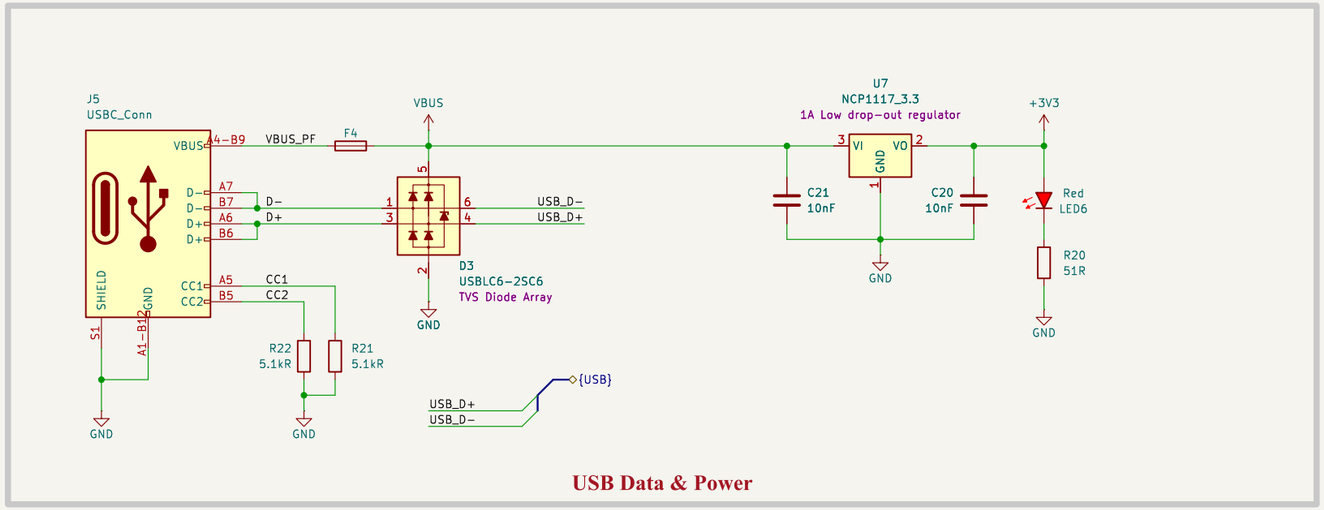
Status Indication



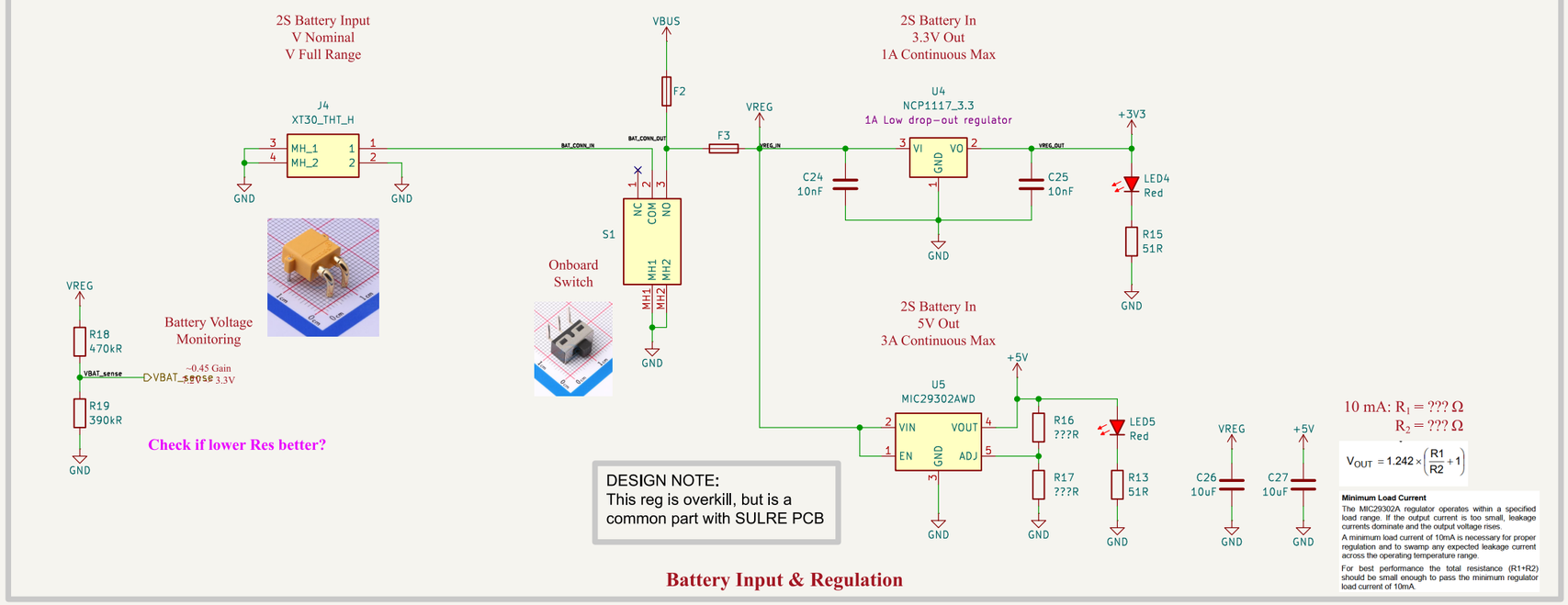
Extra Outputs

	Comments: GRID - mil (1.27mm, 2.54mm)	Company: **Southampton University Spaceflight Society**		Variant: DRAFT
		Board Name: **Board Name**		Project Name: **SUSF CanSat 25/26**
	Sheet Title: MCU & Peripherals	File Name: MCU & Peripherals.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-04 / Revision: V1
	Sheet Path: /Sensor Board Schematic/MCU & Peripherals/		Reviewer: ...	Size: **A3** / Sheet: **4** of **8**

[5] USBC & Battery



USB Data & Power

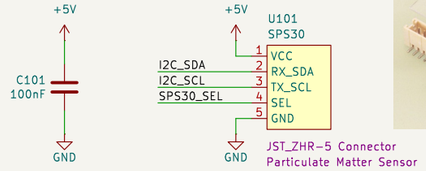


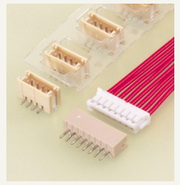
Battery Input & Regulation

Comments: GRID - mil (1.27mm, 2.54mm)	Company: **Southampton University Spaceflight Society**		Variant: DRAFT	
	Board Name: **Board Name**		Project Name: **SUSF CanSat 25/26**	
Sheet Title: USBC & Battery	File Name: USBC_Battery Supply.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-04	Revision: V1
Sheet Path: /Sensor Board Schematic/USBC & Battery Supply/		Reviewer: ...	Size: **A3**	Sheet: **5** of **8**

[6] Atmospheric Sensors

SPS30
Particulate Matter Sensor, 0 to 1000 µg/m3
Particle Sizes – PM0.5, PM1, PM2.5, PM4, PM10





SPS30

Particulate Matter Sensor, 0 to 1000 µg/m3, Laser, I2C, UART, Calibrated, 4.5 to 5.5 V Supply

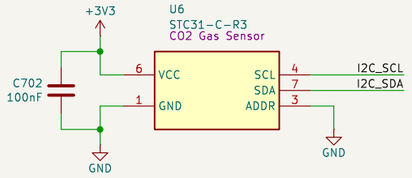
Image is for illustrative purposes only. Please refer to product description.

Manufacturer	SENSIRION
Manufacturer Part No	SPS30
Order Code	3804199
Your Part Number	Enter your par
Technical Datasheet	Data Sheet

3D Model

STC31-C-R3
Gas Sensor Module, CO2
CO2 Concentration in Air

I2C Address – 0x29



STC31-C-R3

Gas Detection Sensor, I2C Output, SMD, Carbon Dioxide, 30.5 ppm, ±0.2%, STC31-C Series

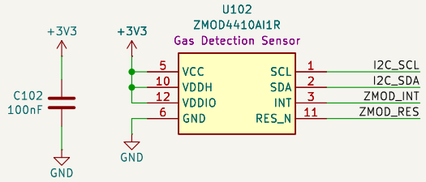
Image is for illustrative purposes only. Please refer to product description.

Manufacturer	SENSIRION
Manufacturer Part No	STC31-C-R3
Order Code	4468672
Product Range	STC31-C Series
Your Part Number	Enter your part number
Technical Datasheet	Data Sheet

PCB Symbol, Footprint & 3D Model

ZMOD4410AI1R
Gas Sensor Module, TVOC
Total Volatile Organic Compounds

Pollution from industry, vehicles etc



ZMOD4410AI1R

Gas Sensor Module, TVOC and Indoor Air Quality, 1.7 V to 3.6 V, LGA-12, -40 °C to 65 °C

Image is for illustrative purposes only. Please refer to product description.

Manufacturer	RENESAS
Manufacturer Part No	ZMOD4410AI1R
Order Code	3869679
Product Range	ZMOD4410 Series
Your Part Number	Enter your part nu
Technical Datasheet	Data Sheet

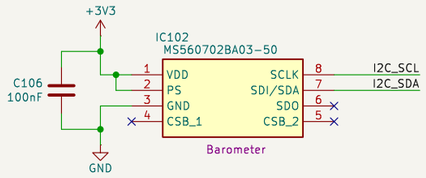
PCB Symbol, Footprint & 3D Model

	Comments: GRID - mil (1.27mm, 2.54mm)	Company: **Southampton University Spaceflight Society**		Variant: DRAFT
		Board Name: **Board Name**		Project Name: **SUSF CanSat 25/26**
	Sheet Title: Atmospheric Sensors	File Name: AtmoSensors.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-04 / Revision: V1
	Sheet Path: /Sensor Board Schematic/AtmoSensors/		Reviewer: ...	Size: **A3** / Sheet: **6** of **8**

[8] Positioning Sensors

???
IMU

MS5607
Barometer

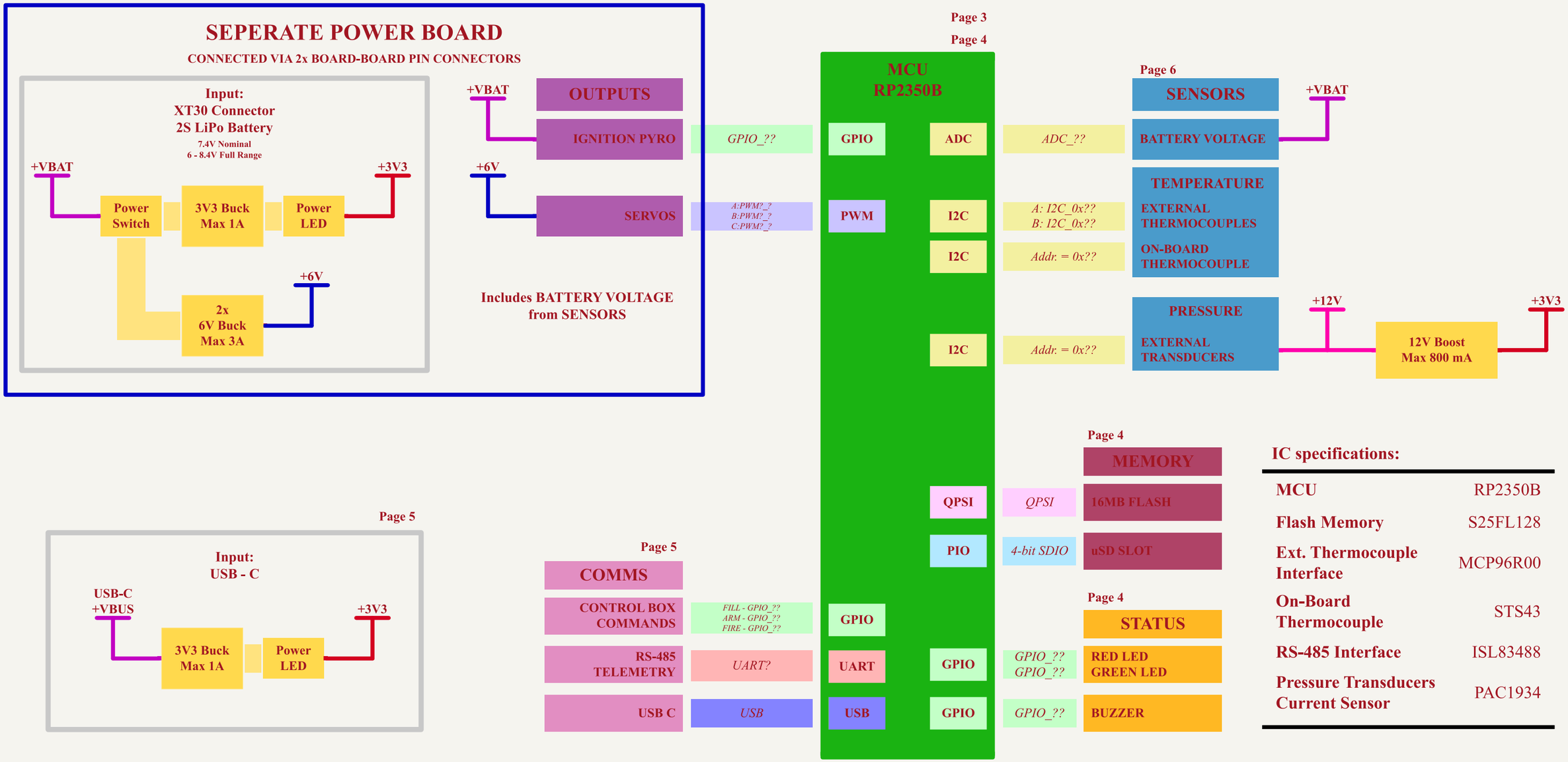


Potential Baros:
MS5607

Potential IMUs:
BNO055 – £7 JLC / £9 Mouser
+ High performance
+ Sensor fusion functionality
– Not on Farnell

Comments: GRID - mil (1.27mm, 2.54mm)	Company: **Southampton University Spaceflight Society**		Variant: DRAFT	
	Board Name: **Board Name**		Project Name: **SUSF CanSat 25/26**	
Sheet Title: Positioning Sensors	File Name: PosSensors.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-04	Revision: V1
Sheet Path: /Sensor Board Schematic/PosSensors/		Reviewer: ...	Size: **A3**	Sheet: **8** of **8**

[9] Block Diagram



IC specifications:

MCU	RP2350B
Flash Memory	S25FL128
Ext. Thermocouple Interface	MCP96R00
On-Board Thermocouple	STS43
RS-485 Interface	ISL83488
Pressure Transducers Current Sensor	PAC1934

Comments: GRID - mil (1.27mm, 2.54mm)	Company: Southampton University Spaceflight Society		Variant: DRAFT	
	Board Name: Board Name		Project Name: SUSF CanSat 25/26	
Sheet Title: Block Diagram	File Name: Block DiagramSULREexample.kicad_sch	Designer: Ethan Wilson, ..., ...	Date: 2026-01-02	Revision: V1
Sheet Path: /Block DiagramSULREexample/		Reviewer: ...	Size: A3	Sheet: 9 of 8