

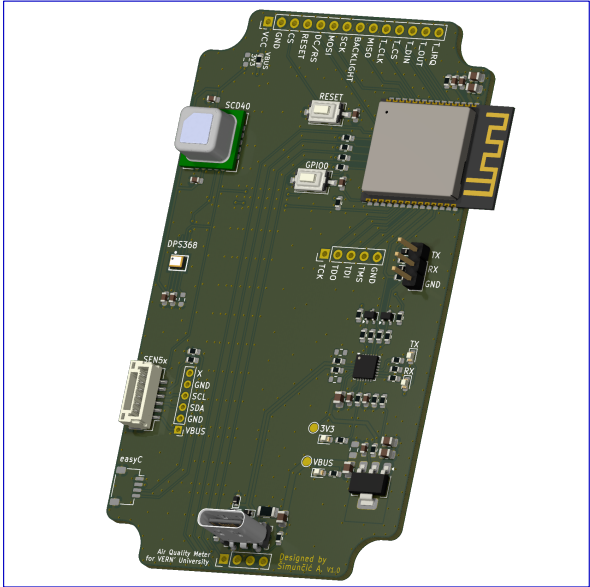
VERN Air Quality Monitor

Variant: RELEASED

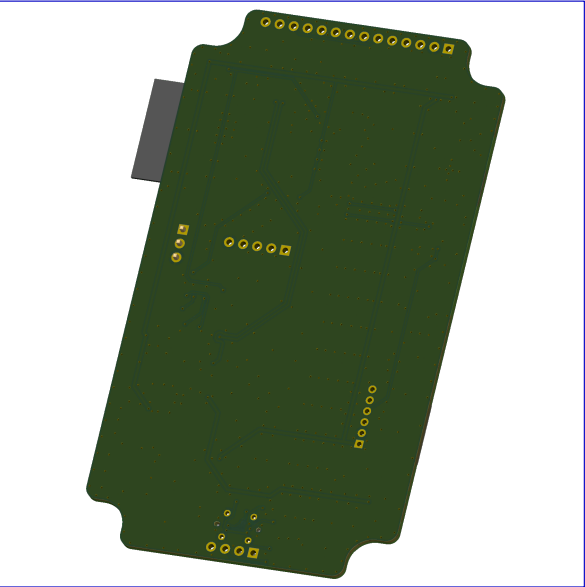
2024-11-11
Rev 10

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TOP VIEW



BOTTOM VIEW



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.

NOTES

- Board designed for 3.5" LCD display with ILI9488 driver
- Not fitted components are marked as **X**
- 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.

RELEASED 2024-11-11

	Comments:	Company: VERN University		Variant: RELEASED	
		Board Name: VERN Air Quality Monitor		Project Name: Smart AQM	
	Sheet Title: Cover Page	File Name: 100008_hw-vern-aqm.kicad_sch	Designer: Antonio Šimunčić	Date: 2024-11-11	Revision: 10
Sheet Path: /			Reviewer: doc. dr. sc. Petar Kolar	Size: A3	Sheet: 1 of 6

[2] Project Architecture

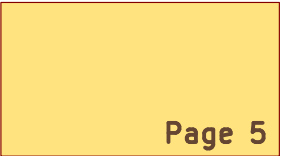
Connectors and Power



File: connectors-and-power.kicad_sch

USB, Debug and
Sensor connectors
and Power Supply

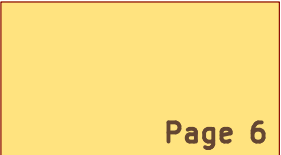
MCU – ESP32



File: mcu-esp32.kicad_sch

Microcontroller

SENSORS

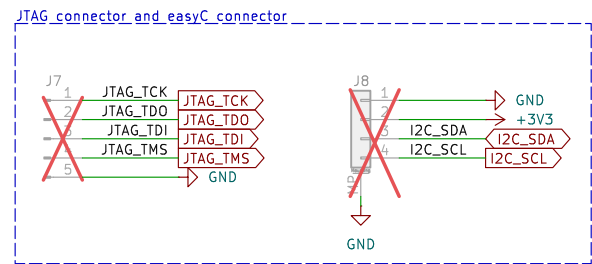
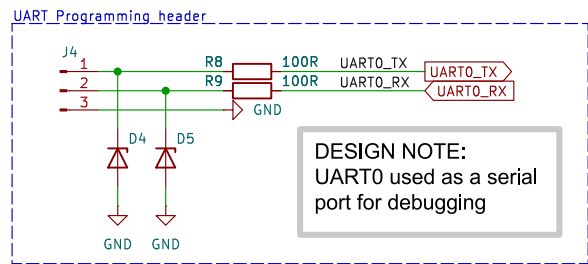
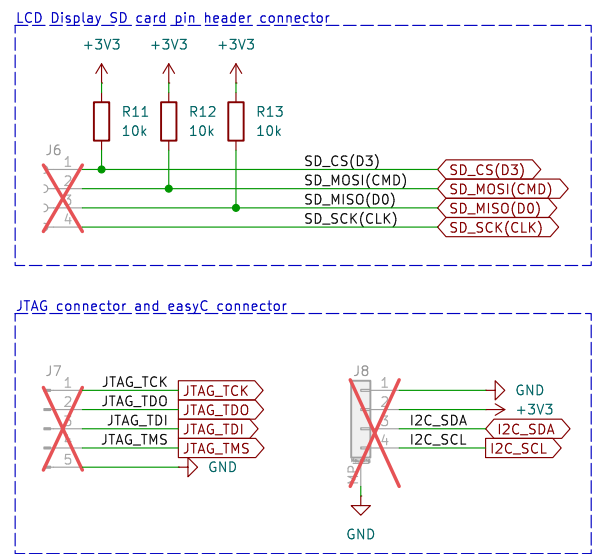
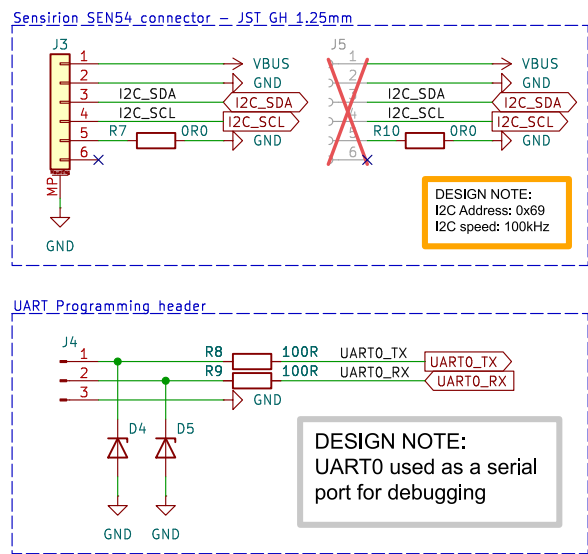
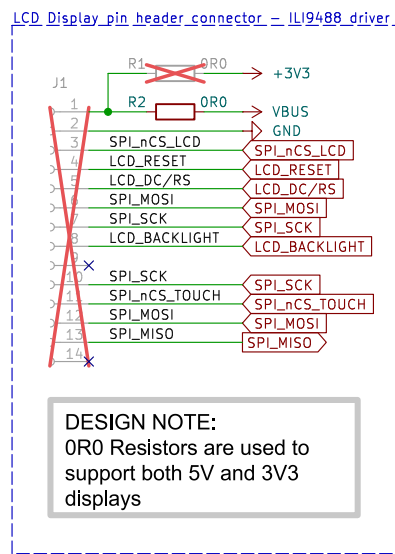
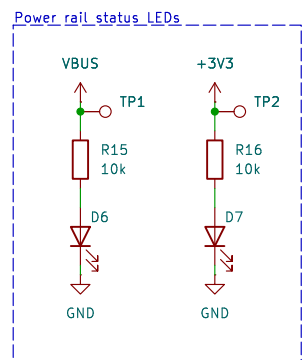
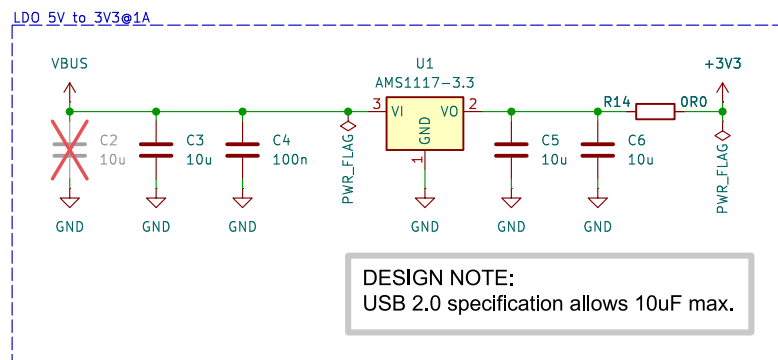
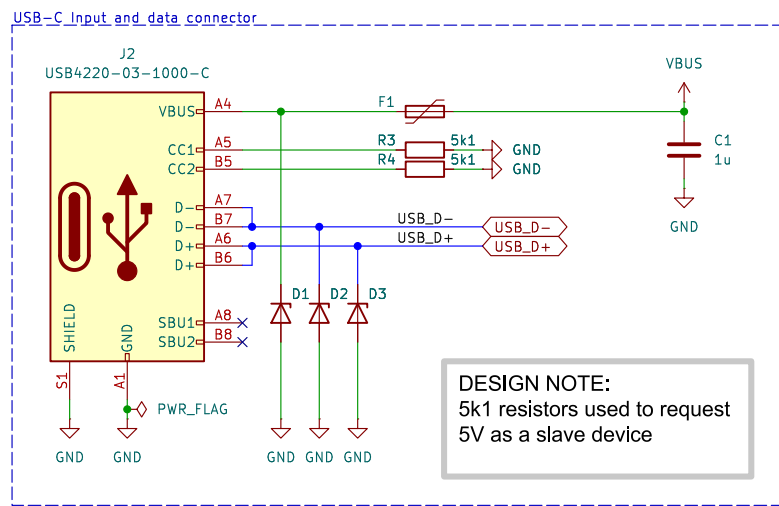


File: sensors.kicad_sch

CO2 and
Pressure Sensors

	Comments:	Company: VERN University		Variant: RELEASED	
		Board Name: VERN Air Quality Monitor		Project Name: Smart AQM	
	Sheet Title: Project Architecture	File Name: Project Architecture.kicad_sch	Designer: Antonio Šimunčić	Date: Last Modified Date	Revision: 10
	Sheet Path: /Project Architecture/		Reviewer: doc. dr. sc. Petar Kolar	Size: A3	Sheet: 2 of 6

[3] Connectors and Power

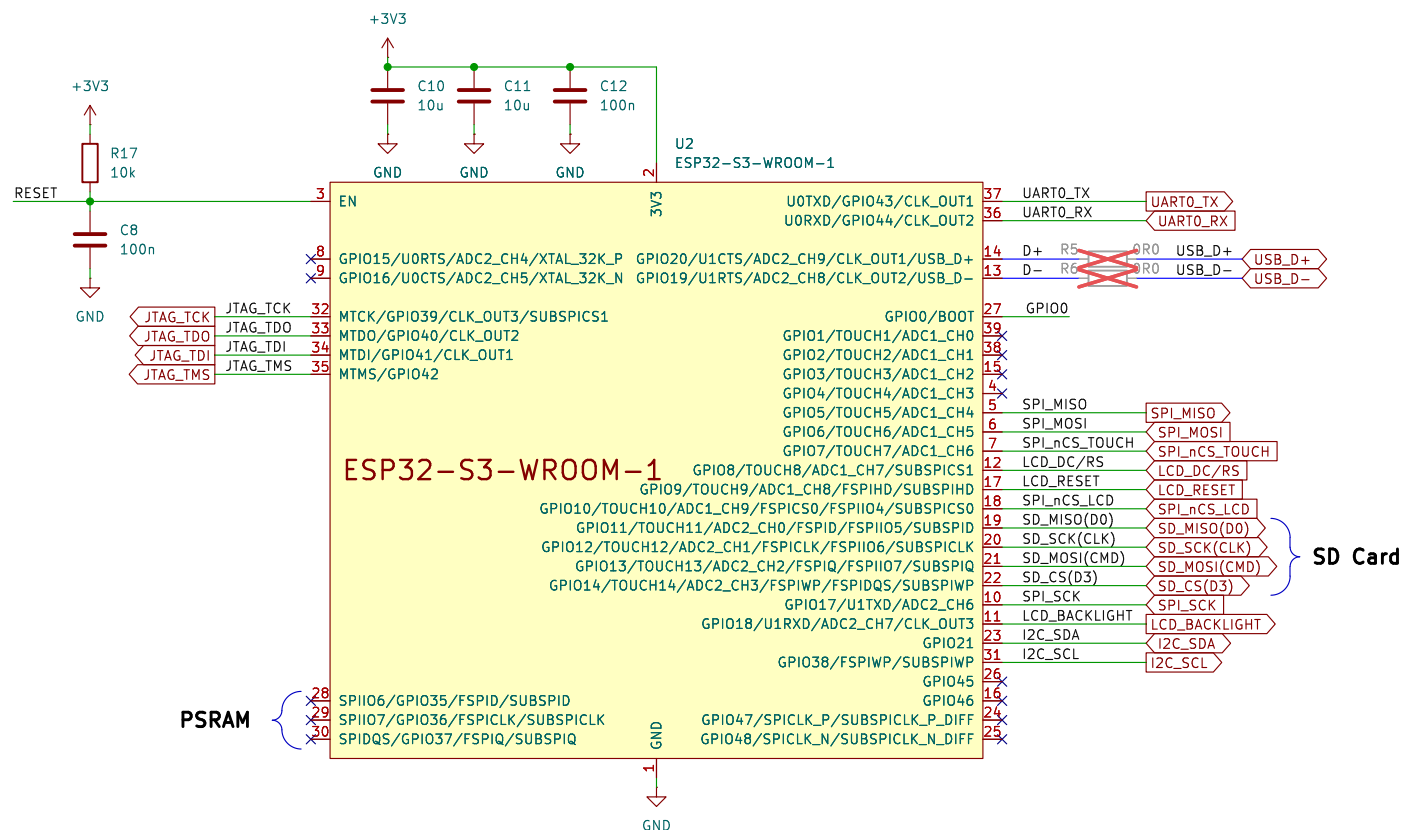


Connectors and Power Scheme

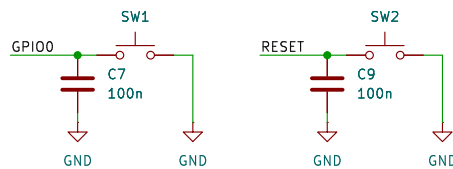
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		Board Name: VERN Air Quality Monitor		Project Name: Smart AQM	
	Sheet Title: Connectors and Power	File Name: connectors-and-power.kicad_sch	Designer: Antonio Šimunčić	Date: Last Modified Date	Revision: 10
	Sheet Path: /Project Architecture/Connectors and Power/		Reviewer: doc. dr. sc. Petar Kolar	Size: A3	Sheet: 3 of 6

[4] MCU - ESP32

Reset and GPIO buttons

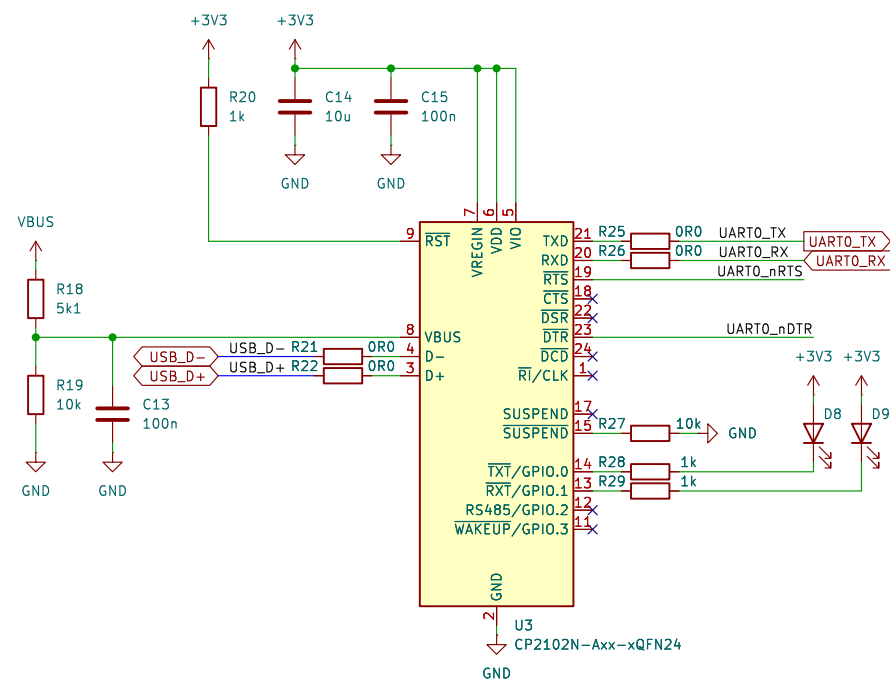


Reset and GPIO buttons



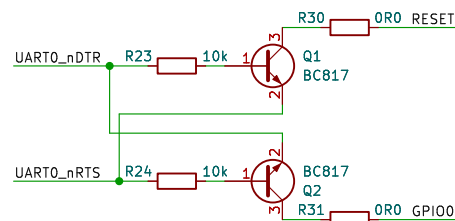
DESIGN NOTE:
Hold GPIO0 button and cycle
RESET button to enter firmware
download mode

USB to UART and automatic reset circuit



DESIGN NOTE:
Auto download mode
DTR RTS -> EN IO0

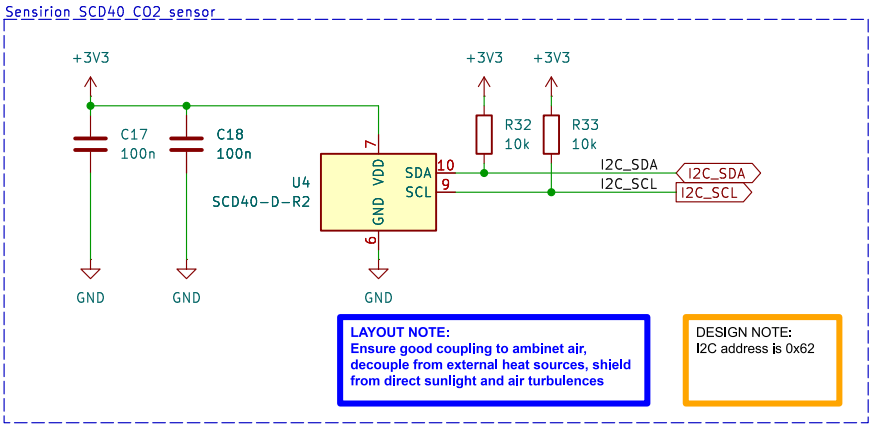
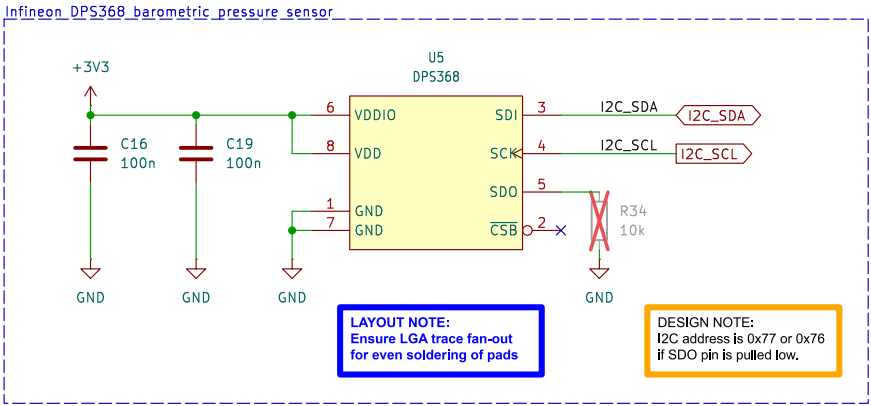
1	1	1	1
0	0	1	1
1	0	0	1
0	1	1	0



Microcontroller

Comments: References: ESP32-S3 Datasheet ESP32-S3 Technical Reference Manual	Company: VERN University		Variant: RELEASED	
	Board Name: VERN Air Quality Monitor		Project Name: Smart AQM	
	Sheet Title: MCU - ESP32	File Name: mcu-esp32.kicad_sch	Designer: Antonio Šimunčić	Date: Last Modified Date
Sheet Path: /Project Architecture/MCU - ESP32/		Reviewer: doc. dr. sc. Petar Kolar		Revision: 10
		Size: A3	Sheet: 4 of 6	

[5] Sensors



Barometric pressure and CO2 sensors

	<div>Comments:</div> <div>References:</div> <div>Design-in Guide SCD4x CO2 Sensor Flexible I/O source configuration</div>	<div>Company:</div> <div>VERN University</div>		<div>Variant:</div> <div>RELEASED</div>	
		<div>Board Name:</div> <div>VERN Air Quality Monitor</div>		<div>Project Name:</div> <div>Smart AQM</div>	
	<div>Sheet Title:</div> <div>Sensors</div>	<div>File Name:</div> <div>sensors.kicad_sch</div>	<div>Designer:</div> <div>Antonio Šimunčić</div>	<div>Date:</div> <div>Last Modified Date</div>	<div>Revision:</div> <div>10</div>
	<div>Sheet Path:</div> <div>/Project Architecture/SENSORS/</div>		<div>Reviewer:</div> <div>doc. dr. sc. Petar Kolar</div>	<div>Size:</div> <div>A3</div>	<div>Sheet:</div> <div>5 of 6</div>

[6] Revision History

11.11.2024 - Initial Release
Variant: Rev 10 Prototype

- First prototype release.
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	Comments:	Company: VERN University		Variant: RELEASED	
		Board Name: VERN Air Quality Monitor		Project Name: Smart AQM	
	Sheet Title: Revision History	File Name: Revision History.kicad_sch	Designer: Antonio Šimunčić	Date: Last Modified Date	Revision: 10
	Sheet Path: /Revision History/		Reviewer: doc. dr. sc. Petar Kolar	Size: A4	Sheet: 6 of 6