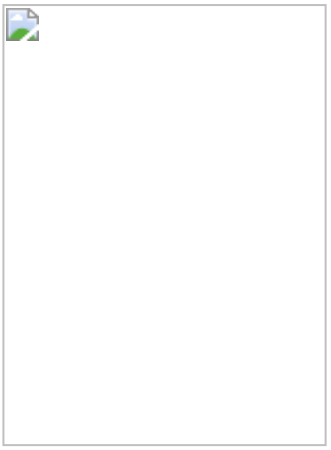
Product Reference Manual
SKU: AKX00069



Description

The Plug and Make Kit features the Arduino R4 board with built-in Wi-Fi® capabilities, enabling connectivity and opening the doors to integration with the Arduino IoT Cloud plataform. This kit includes a selection of 7 modules, all easily connectable via I2C Qwiic cables. Tailor your project to perfection by selecting the sensors and inputs that best suit your needs, and experience a completely solder-free way to easily build your ideas. Dive into the world of electronics with hands-on learning and intuitive module interaction, empowering you to innovate and create with unparalleled ease and flexibility.

Target Areas

Maker, beginner, education

Contents

1 Application Examples

The Plug and Make Kit, featuring the Arduino UNO R4 WiFi, offers a seamless and user-friendly introduction to IoT and electronics. With its extensive array of modular sensors and components, this kit is designed to simplify project development and enhance learning experiences. The I2C Qwiic cable connectivity ensures quick and easy customization of your projects, making it an ideal choice for a variety of applications. Below are some examples of how this kit can be utilized:

- **Smart Home Automation:** Utilize the kit to build smart home devices that can monitor and control various environmental factors. With sensors for temperature, humidity, and movement, create a system that automates climate control, security, and lighting. The onboard WiFi allows for remote monitoring and control through the Arduino IoT Cloud or other third-party services.
- **Environmental Monitoring:** Leverage the kit's sensors to develop a comprehensive environmental monitoring system. Measure and track data such as air quality, temperature, and humidity levels. The kit's modular design facilitates effortless expansion with additional sensors, providing the flexibility to adapt to evolving project requirements. Data can be logged and analyzed through the Arduino IoT Cloud, providing real-time insights and alerts.
- **Interactive Learning Tools:** The kit's interactive modules, including buttons, RGB LEDs, and buzzers, can be used to create engaging educational tools. Develop projects that teach coding, electronics, and IoT concepts in a hands-on manner. The plug-and-play nature of the kit simplifies setup and reduces the learning curve, making it perfect for classrooms and educational workshops.

2 Features

2.1 Contains

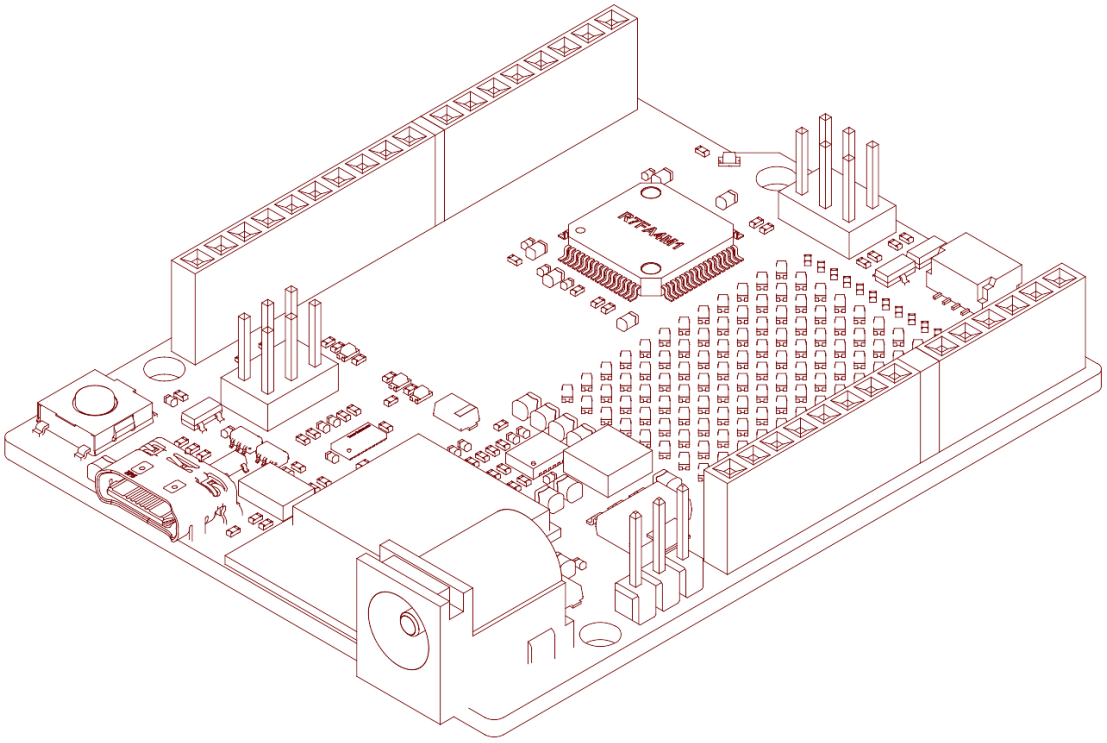
The Plug and Make Kit offers an intuitive and effortless introduction to the world of IoT and electronics. Featuring the powerful Arduino UNO R4 WiFi, this kit enables seamless integration with the Arduino IoT Cloud for a smooth, wireless experience. With its array of modular sensors and components connectable via I2C Qwiic cables, the kit allows for easy customization of your projects. Equipped with a diverse range of sensors and interactive modules, this kit provides the tools you need to create dynamic and engaging projects with ease. Perfect for both beginners and experienced makers, the Plug and Make Kit empowers you to explore and innovate effortlessly.

SKU	*Name**	Purpose	Quantity
ABX00080	Arduino UNO R4 WiFi	Programmable board with WiFi	1
ASX00071	Plate Node	Fix firmly an UNO and some nodes on it	1
ABX00101	Modulino Movement	Measure acceleration and rotation	1
ABX00102	Modulino Distance	Time of flight, finds distances	1
ABX00103	Modulino Thermo	Measure temperature and humidity	1
ABX00107	Modulino Knob	Rotary encoder for input	1
ABX00108	Modulino Buzzer	Produce sound	1
ABX00109	Modulino Pixels	8 RGB LEDs for display	1
ABX00110	Modulino Buttons	3 push buttons for input	1

2.2 Arduino UNO R4 WiFi

2.2.1 Description

The Arduino® UNO R4 WiFi is the first UNO board to feature a 32-bit microcontroller and an ESP32-S3 Wi-Fi® module (ESP32-S3-MINI-1-N8). It features a RA4M1 series microcontroller from Renesas (R7FA4M1AB3CFM#AA0), based on a 48 MHz Arm® Cortex®-M4 microprocessor. The UNO R4 WiFi's memory is larger than its predecessors, with 256 kB flash, 32 kB SRAM, and 8 kB of EEPROM. This board is ideal for entry-level projects, easy IoT applications, and projects requiring a built-in 12x8 LED matrix for animations and displays.



Topology R4

2.2.2 Tech Specs

Specification	Details
Microcontroller	Renesas RA4M1 (R7FA4M1AB3CFM#AA0)
Clock Speed	48 MHz
Operating Voltage	5 V (RA4M1), 3.3 V (ESP32-S3)
Memory	256 kB Flash, 32 kB SRAM, 8 kB EEPROM
Peripherals	Capacitive Touch Sensing Unit (CTSU), USB 2.0 Full-Speed Module, 14-bit ADC, Up to 12-bit DAC, Operational Amplifier (OPAMP)
Communication	1x UART, 1x SPI, 1x I2C, 1x CAN (external transceiver required)
Wi-Fi	802.11 b/g/n (Wi-Fi 4), up to 150 Mbps
Bluetooth	Bluetooth 5
Power Supply	6-24 V via VIN, 5 V via USB-C®
LED Matrix	12x8 red LEDs, fully programmable
Additional Features	Real-time Clock (RTC), Memory Protection Unit (MPU), DAC, DMA

2.2.3 Pinout

Pin	Function
GND	Ground
3V3	3.3V Power Rail
5V	5V Power Rail
VIN	Voltage Input
SDA	I2C Data
SCL	I2C Clock
A0	Analog Input 0 / DAC
A1	Analog Input 1 / OPAMP+
A2	Analog Input 2 / OPAMP-
A3	Analog Input 3 / OPAMPOut
A4	Analog Input 4 / I2C Serial Data (SDA)
A5	Analog Input 5 / I2C Serial Clock (SCL)
D0	Digital I/O 0 / UART RX
D1	Digital I/O 1 / UART TX
D2-D13	Digital I/O 2-13
D14 (TXD)	Serial Transmit (UART)
D15 (RXD)	Serial Receive (UART)
CANRX	CAN Receiver (requires transceiver)
CANTX	CAN Transmitter (requires transceiver)


Arduino UNO R4 WiFi

Arduino UNO R4 WiFi

3 Power Options

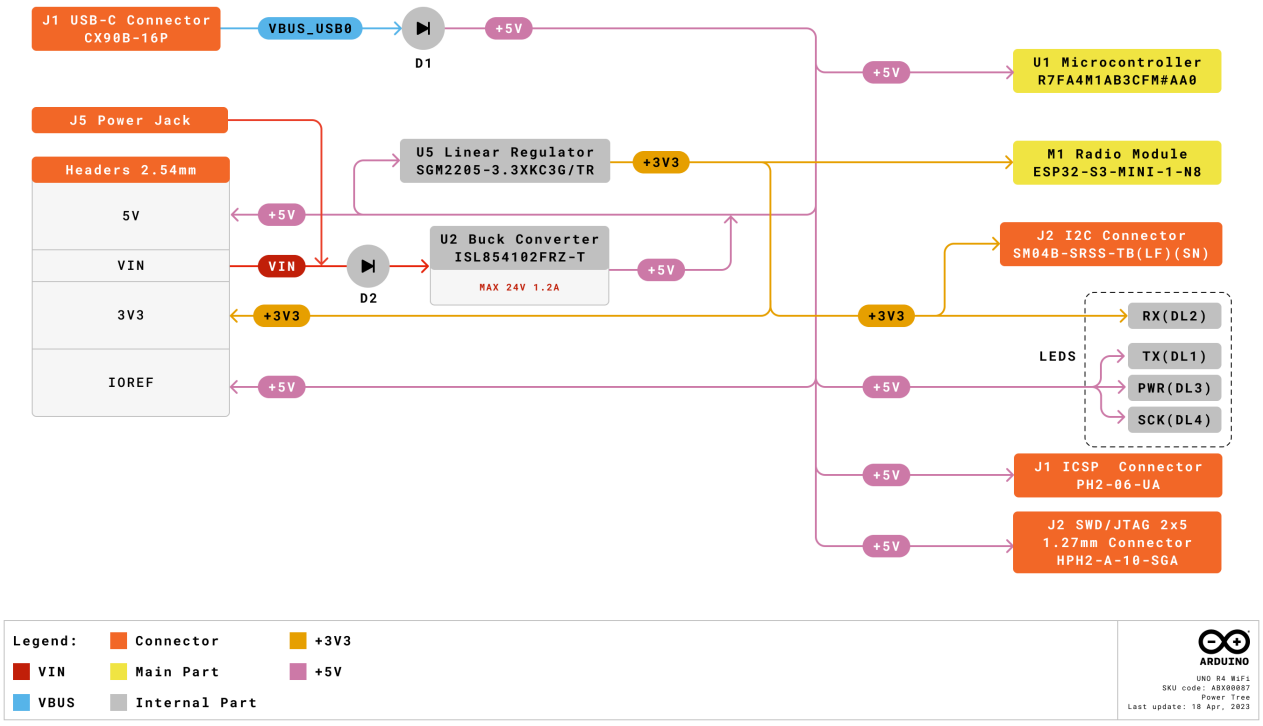
Power can either be supplied via the VIN pin, or via USB-C® connector. If power is supplied via VIN, the ISL854102FRZ buck converter steps the voltage down to 5 V.

Both VUSB and VIN pins are connected to the ISL854102FRZ buck converter, with Schottky diodes in place for reverse polarity & overvoltage protection respectively.

Power via USB supplies about ~4.7 V (due to Schottky drop) to the RA4M1 MCU.

The linear regulator (SGM2205-3.3XKC3G/TR) converts 5 V from either the buck converter or USB, and provides 3.3 V to a number of components, including the ESP32-S3 module.

3.1 Power Tree



Arduino UNO R4 WiFi power tree.

3.2 Pin Voltage

The general operating voltage for UNO R4 WiFi is 5 V, however the ESP32-S3 module's operating voltage is 3.3 V.

Note: It is **very** important that ESP32-S3's pins (3.3 V) do not come in contact with any of the RA4M1's pins (5 V), as this may damage the circuits.

3.3 Pin Current

The GPIOs on the R7FA4M1AB3CFM#AA0 microcontroller can safely handle up to 8 mA of current. Never connect devices that draw higher current directly to a GPIO as this may damage the circuit.

For powering e.g. servo motors, always use an external power supply.

3.3.1 Mechanical Information

Arduino UNO R4 WiFi

3.4 Plate Node

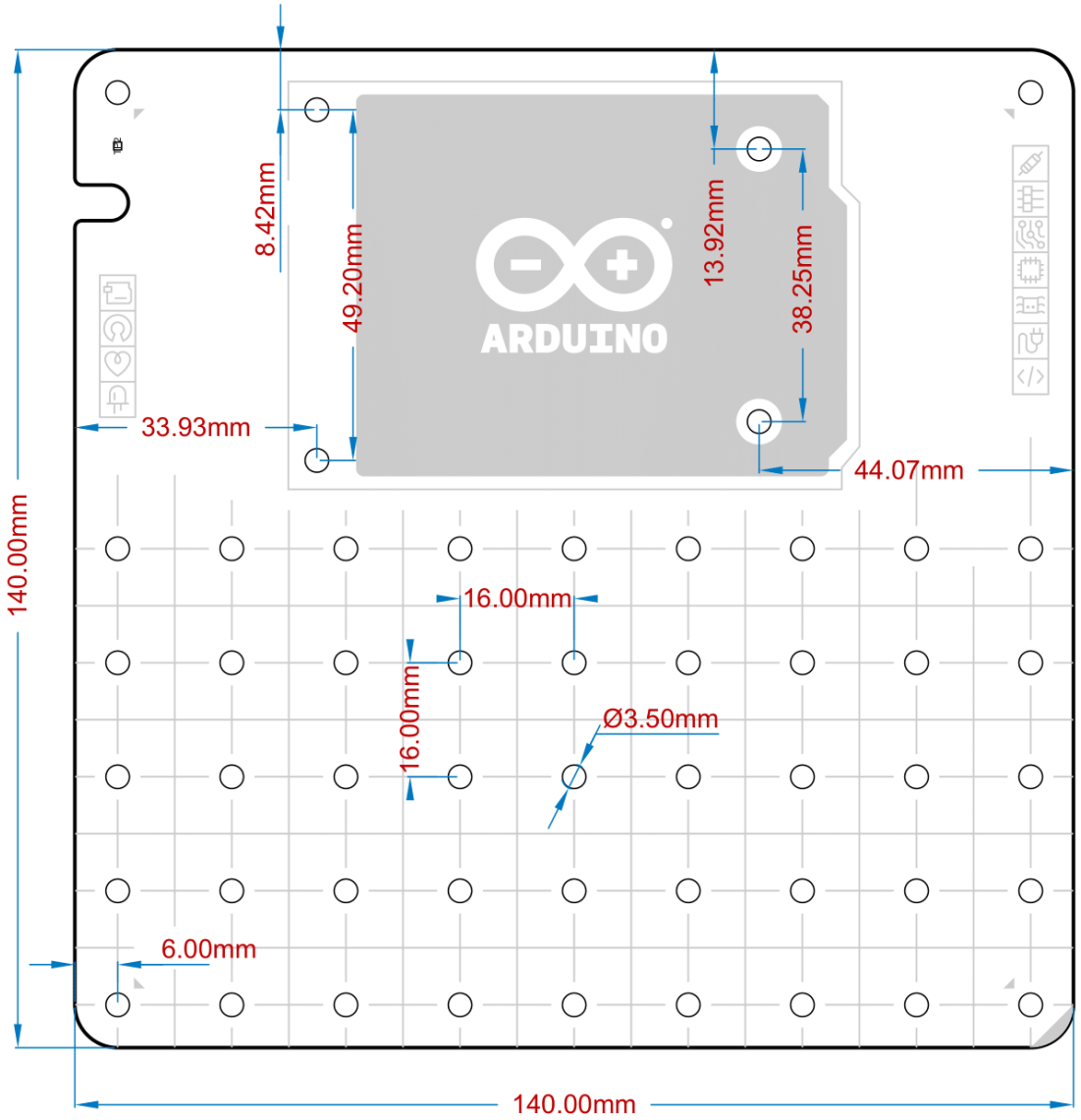
3.4.1 Description

The Plate Node is designed to provide a stable and secure mounting solution for your Arduino UNO R4 WiFi and additional nodes. Measuring 140x140x1.6mm with 3.5mm holes, it ensures that your setup remains firm and organized, making it easier to manage your components and connections, particularly useful in complex projects where multiple sensors and modules need to be fixed in place to ensure consistent performance.

3.4.2 Tech Specs

Specification	Details
Dimensions	140x140x1.6mm
Holes	3.5mm

3.4.3 Mechanical Information



Base Plate Mechanical info

4 Modules

4.1 General Characteristics

4.1.1 Description

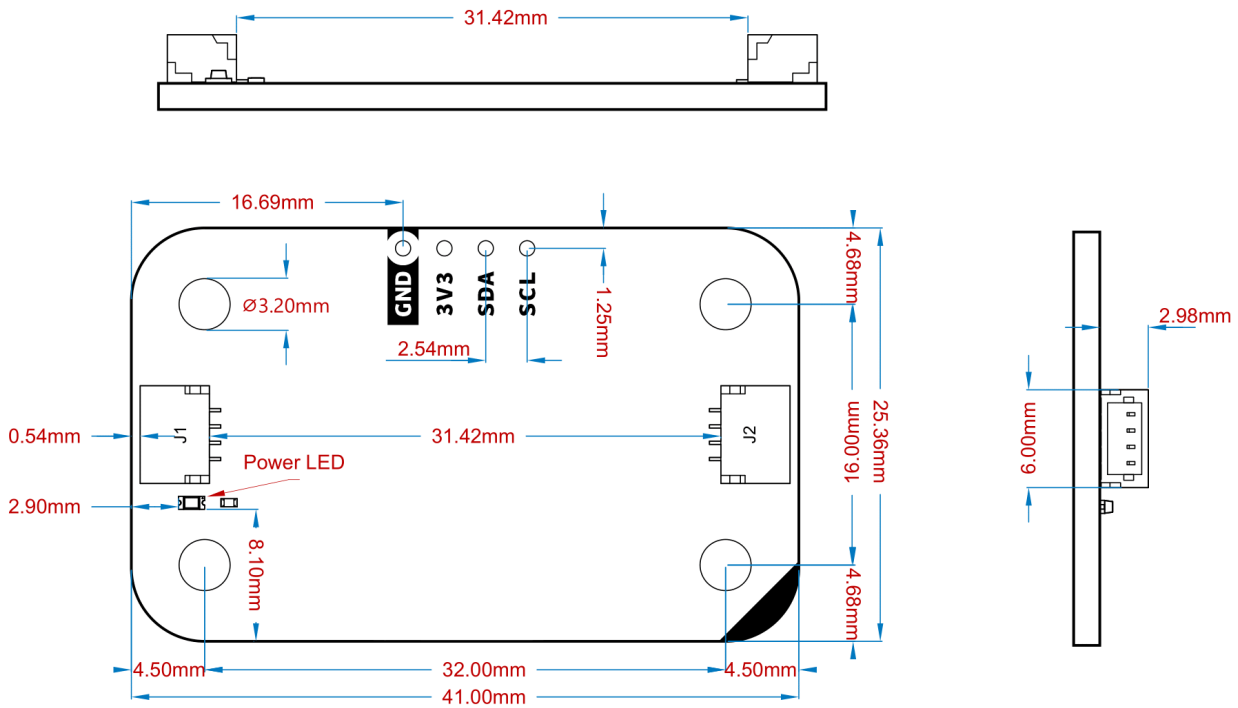
The Plug and Make Kit modules offer a versatile and user-friendly introduction to IoT and electronics. Designed for seamless integration, these modules allow for easy expansion with additional sensors and components, providing a flexible platform to meet diverse project requirements. The modules can be easily connected using Qwiic cables, enabling straightforward daisy-chaining of multiple modules via I2C. This design makes it perfect for both beginners and advanced users, enabling them to experiment and create with ease.

4.1.2 PCB Specifications

- 2 layers
- Solder mask color: blue
- Silkscreen color: white
- Surface finish: HAL LF (silver for “exposed copper”)
- Minimum isolation: 0.127mm
- Minimum trace width: 0.127mm

4.1.3 Mechanical Information

- Board dimensions: 41mm x 25.36mm
- Board thickness: 1.6mm, tolerance ± 0.2mm
- 4 mounting holes, nominal diameter 3.2mm, tolerance -0mm, +0.2mm
- Hole to hole quotes: 16mm vertical, 32mm horizontal
- Green power LED powered by +3V3 net, with 1kΩ series resistor
- Power LED nominal current consumption: 1mA ≈ (3.3V - 2.2V) / 1kΩ



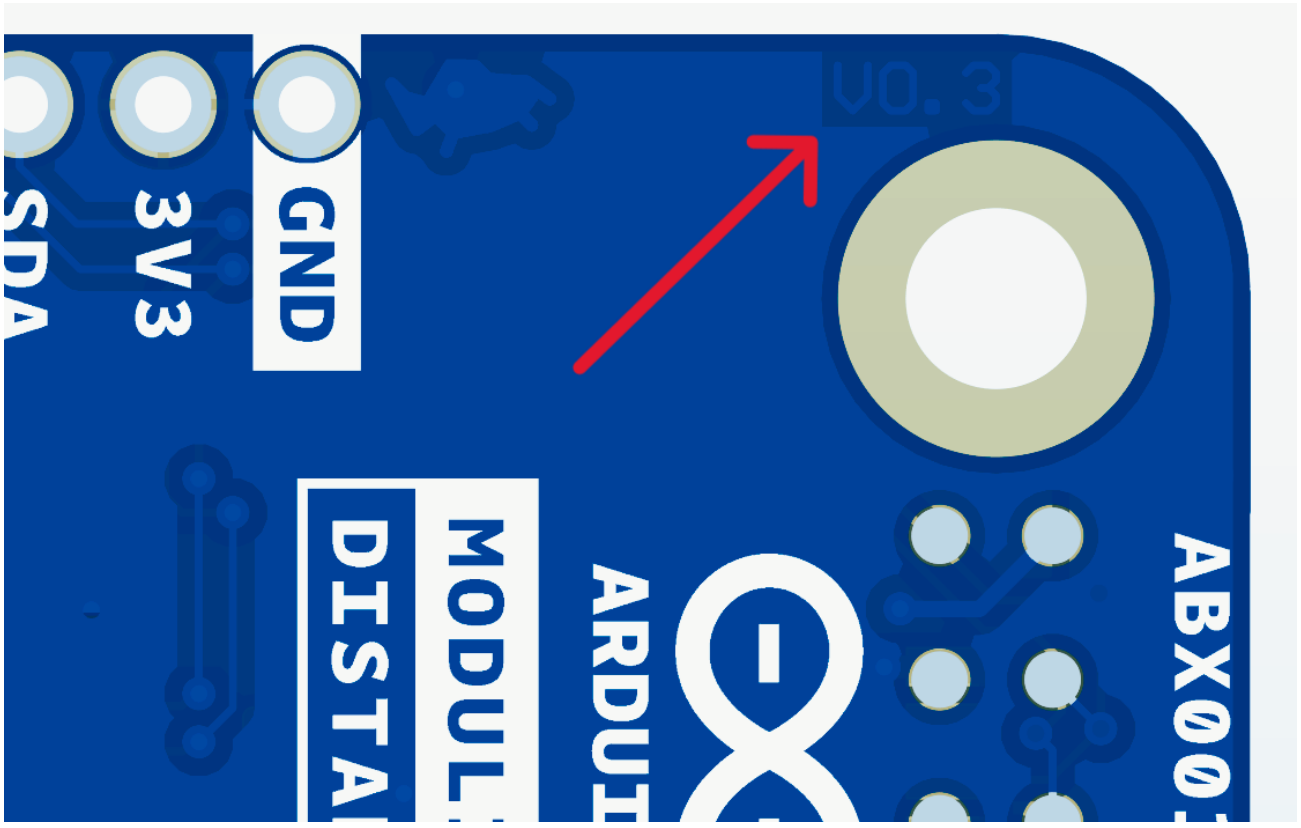
4.1.4 I2C Side Connectors

At least x2 connectors, JST pitch 1mm compatible like SM04B-SRSS-TB

4.1.5 Pinout

4.1.6 Version Number

Version number on bottom copper, below solder mask. Location is always on the top right corner (bottom view).



4.1.7 Modules with Microcontroller

All modules that have a added microcontroller for interfacing, such as the knob, buzzer, buttons, and pixels, have footprints allowing for the optional mounting of I2C pullups. However, these pullups are not mounted by default. This table allows to easily check this information, “x” in the table means that the pullup of that pin is not mounted.

Board	SKU	PA6	PA7	PA8	PC14	PC15	PF2
Modulino Knob	ABX00107			x			
Modulino Buzzer	ABX00108	x					
Modulino Pixels	ABX00109			x			
Modulino Buttons	ABX00110						

4.2 Movement

4.2.1 Description

The MOVEMENT module, featuring the LSM6DSOXTR sensor, measures acceleration, rotation, and temperature, providing comprehensive data for motion detection applications. It's ideal for projects involving gesture recognition, pedometers, and vibration monitoring.

4.2.2 Tech Specs

Specification	Details
Sensor	LSM6DSOXTR
Supply Voltage	Min: 1.71 V, Max: 3.6 V
Power Consumption	Gyro: 0.55 mA, Accel: 170 µA
Range	±125 dps to ±2000 dps
Accuracy	Accel: ±20 mg, Gyro: ±1 dps
Resolution	Accel: 0.061 mg/LSB to 0.488 mg/LSB, Gyro: 4.375 mdps/LSB to 70 mdps/LSB
Communication	SPI, I²C, MIPI I3CSM

4.2.3 Pinout

4.2.3.1 1x4 Header

Pin	Net Name	Function
GND	GND	Ground
3V3	+3V3	Power Supply
SDA	SDA_1	I2C Data
SCL	SCL_1	I2C Clock

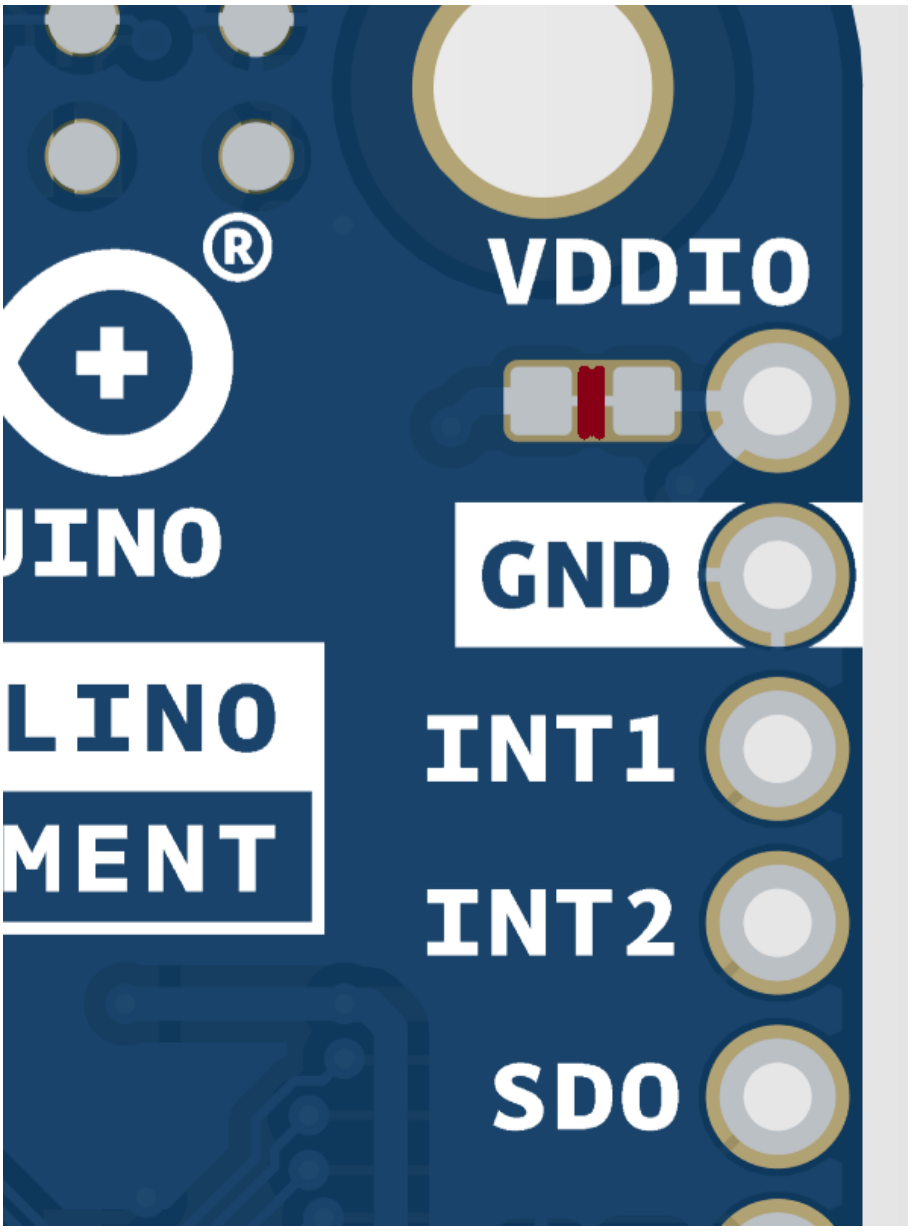
4.2.3.2 LSM6DSOXTR Signals

Pin	Net Name	Function
VDDIO	+3V3	3V3 (cuttable)
GND	GND	Ground
INT1	INT1_1	Interrupt 1 (Sensor)
INT2	INT2_1	Interrupt 2 (Sensor)
SDX	SDx_1	SPI Data X
SCX	SCx_1	SPI Clock X
SDO/SA0	SDO/SA0_1	SPI Data Out / I2C Addr
CS	CS_1	SPI Chip Select
OCSAUX	OCS_Aux_1	Auxiliary Output

1x4 Header for GND, 3V3, SDA, SCL. These holes provide a place to mount header pins if desired.

1x10 header for LSM6DSOXTR signals. These holes provide a place to mount header pins if desired.

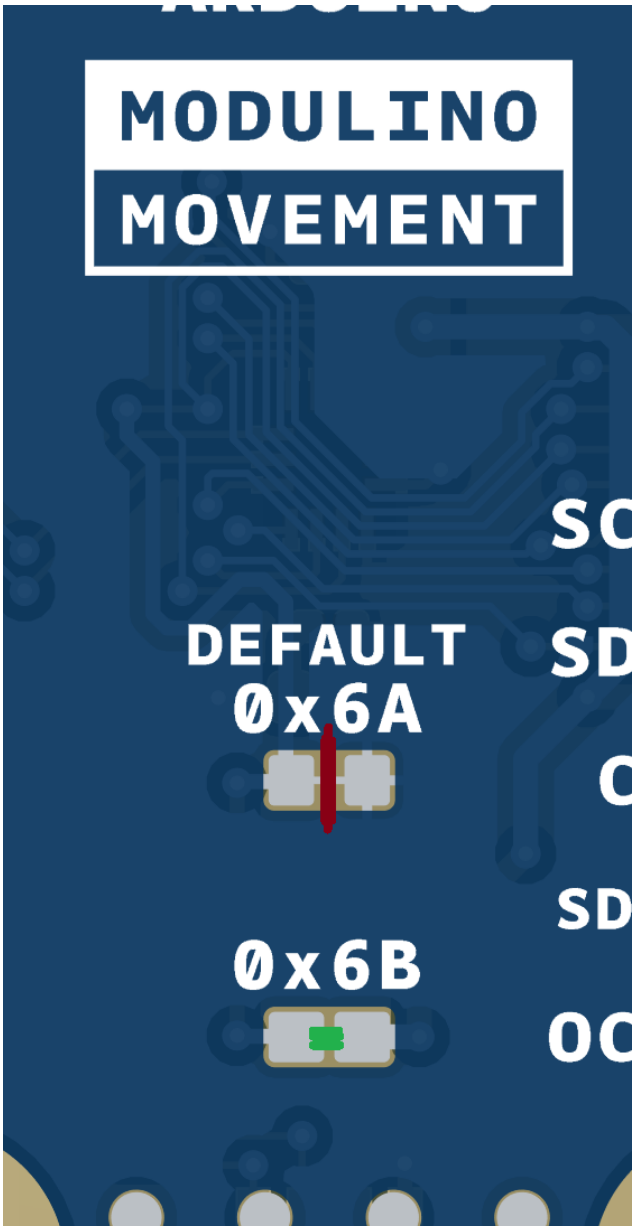
It is possible to make VDDIO independent from +3V3 by cutting its solder jumper.



LSM6DSOXTR interrupts INT1 and INT2 are available on the header.

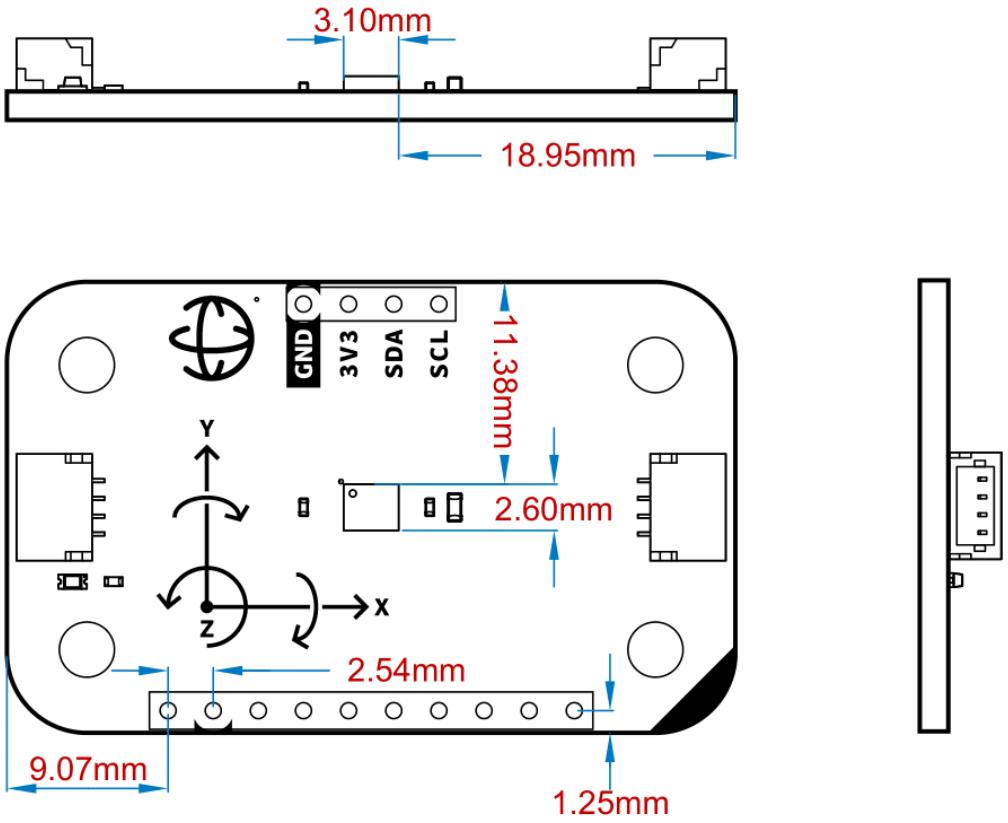
With the header pins and cutting the appropriate solder jumpers, it is possible to control the LSM6DSOXTR with 3-wire SPI or 4-wire SPI, connecting other sensors to it. Check the LSM6DSOXTR datasheet for more details.

It is possible to change the I2C adress for the module with a small hardware change. For this the exposed pads on the bottom of the board corresponding with the desired adress (0x6A or 0x6B) must be separated shorted together and the oposite set of pads needs to be separated. Image for reference is changing from the (default) 0x6A to 0x6B. Please remember to disconnect the modules when making these changes.



LSM6DSOXTR has several advanced features to control other compatible sensors with its “machine learning capabilities,” which can be empowered with a combination of advanced FW code, the headers, and the solder jumper on board. Check the LSM6DSOXTR datasheet for more details.

4.2.4 Mechanical Information



4.3 Distance

4.3.1 Description

The DISTANCE module, featuring the VL53L4CDV0DH/1 sensor, provides accurate distance measurements using time-of-flight technology. It's perfect for applications requiring precise distance sensing, such as robotics and proximity sensors.

4.3.2 Tech Specs

Specification	Details
Sensor	VL53L4CDV0DH/1
Supply Voltage	Min: 2.6 V, Max: 3.5 V
Power Consumption	40 mA (peak), 24 mA active ranging, 4mA I2C
Range	0 to 1200mm
Accuracy	±7 mm to ±3%
Resolution	1 mm
Communication	I2C

4.3.3 Pinout

4.3.3.1 1x4 Header

Pin	Net Name	Function
GND	GND	Ground
3V3	+3V3	Power Supply
SDA	SDA_1	I2C Data
SCL	SCL_1	I2C Clock

4.3.3.2 VL53L4CDV0DH/1 Signals

Pin	Net Name	Function
GPIO1	GPIO1_1	Digital output (Sensor)
XSHUT	XSHUT_1	Shutdown (Sensor)

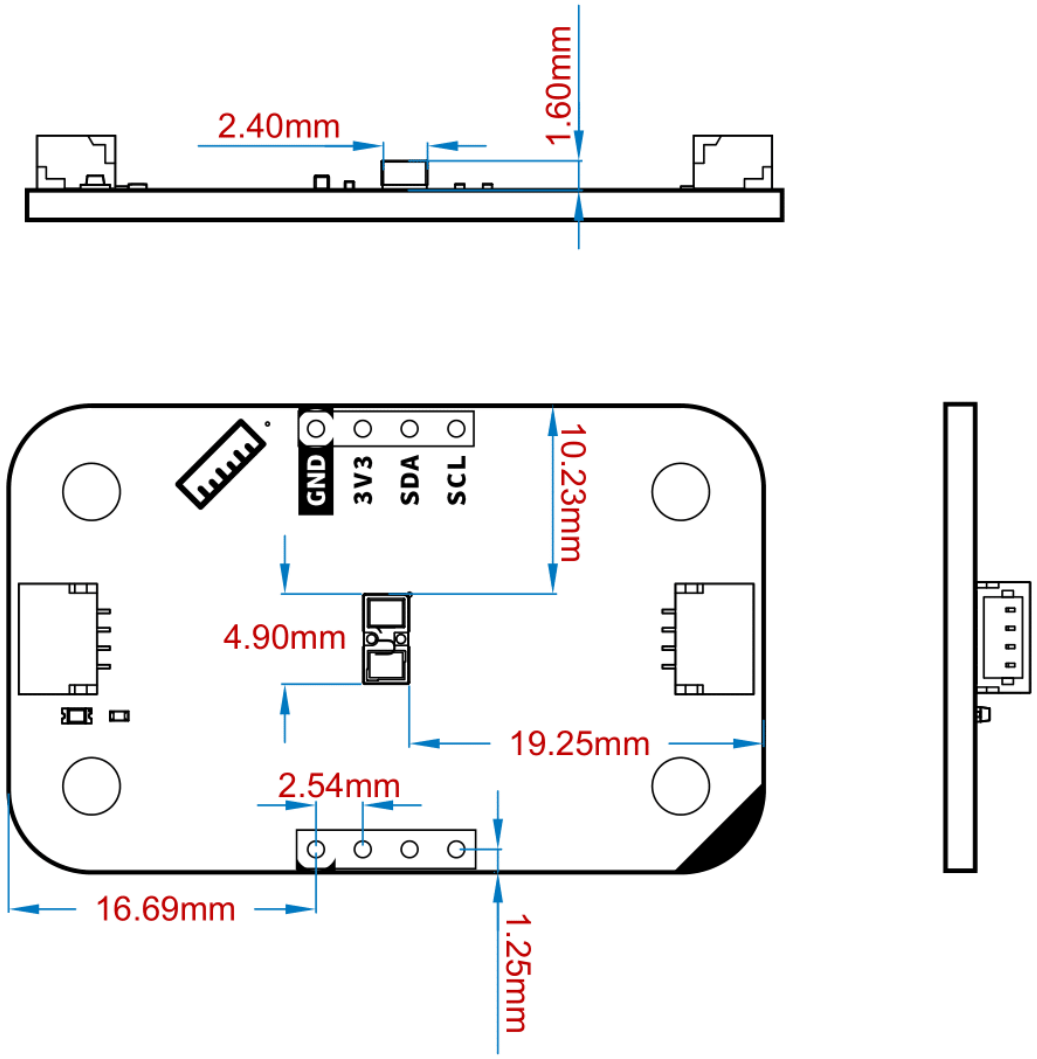
1x4 header for GND, 3V3, SDA, SCL. These holes provide a place to mount header pins if desired.

1x4 header for VL53L4CDV0DH/1 signals. These holes provide a place to mount header pins if desired.

GPIO1 open drain interrupt output, with onboard 10kΩ pullup to 3V3.

XSHUT active low digital input, with onboard 10kΩ pullup to 3V3.

4.3.4 Mechanical Information



4.4 Thermo

4.4.1 Description

The THERMO module, featuring the HS3003 sensor, measures both temperature and humidity. It's suitable for environmental monitoring and climate control applications.

4.4.2 Tech Specs

Specification	Details
Sensor	HS3003
Supply Voltage	Min: 2.3 V, Max: 5.5 V
Power Consumption	24.4 µA (14-bit resolution, 3.3V supply)
Range	0% to 100% RH, -40°C to +125°C
Accuracy	Humidity: ±2.8%RH, Temperature: ±0.25°C
Resolution	Humidity: 14-bit, Temperature: 14-bit
Communication	I2C

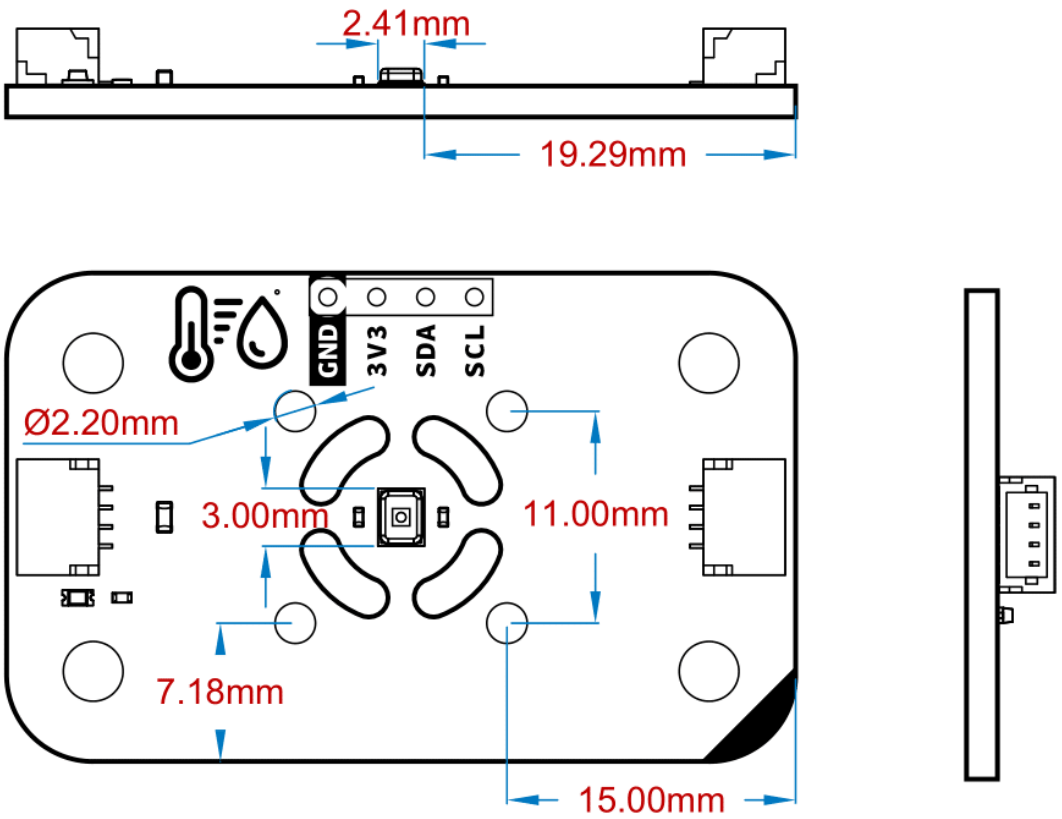
4.4.3 Pinout

4.4.3.1 1x4 Header

Pin	Net Name	Function
GND	GND	Ground
3V3	+3V3	Power Supply
SDA	SDA_1	I2C Data
SCL	SCL_1	I2C Clock

1x4 header for GND, 3V3, SDA, SCL. These holes provide a place to mount header pins if desired.

4.4.4 Mechanical Information



4.5 Knob

4.5.1 Description

The KNOB module includes a quadrature rotary encoder with an SPST switch, using the STM32C011F4 microcontroller for digital communication. This setup allows precise control for user interfaces and adjustments in various applications. All of the microcontroller boards have the footprints to provide the option to mount I2C pullups, but no pullups are mounted.

4.5.2 Tech Specs

Specification	Details
Sensor	Quadrature Rotary Encoder
Microcontroller	STM32C011F4
Supply Voltage	Min: 2.0 V, Max: 3.6 V
Power Consumption	3.4 mA
Range	360° continuous
Accuracy	Internal Oscillator: ±1%
Resolution	12-bit ADC
Communication	I2C, USART, SPI, I2S

4.5.3 Pinout

4.5.3.1 1x4 Header

Pin	Net Name	Function
GND	GND	Ground
3V3	+3V3	Power Supply
SDA	SDA_1	I2C Data
SCL	SCL_1	I2C Clock

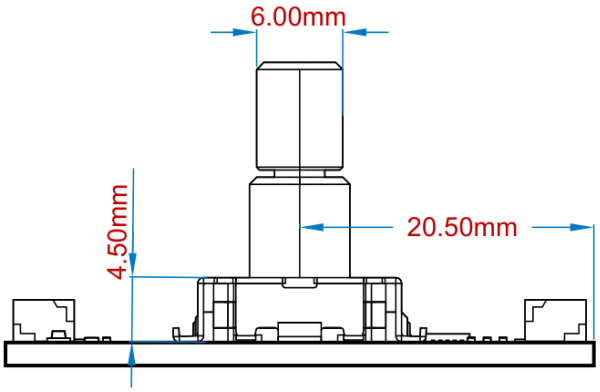
4.5.3.2 Encoder Signals

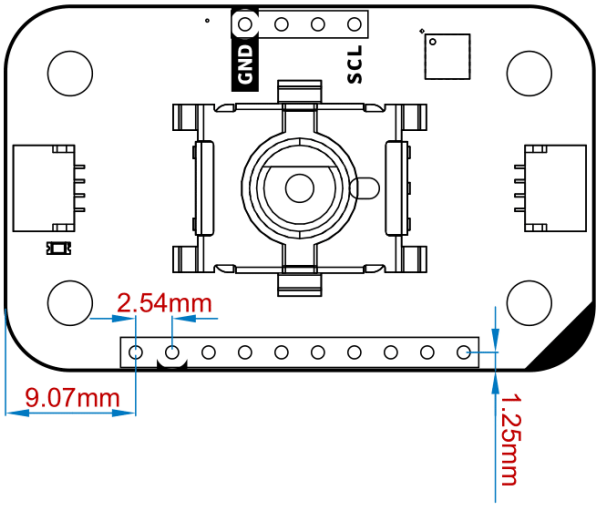
Pin	Net Name	Function
PA0	PA0_1	PinA (Encoder)
PA1	PA1_1	PinB (Encoder)
PA2	PA2_1	Switch (Encoder)
RX1	PA10_USART1_RX_1	UART Receive
TX1	PA9_USART1_TX_1	UART Transmit
SWDIO	PA13_SWDIO_1	SWD Data
SWCLK	PA14_SWCLK_BOOT0_1	SWD Clock
PF2	PF2_NRST_1	NRST

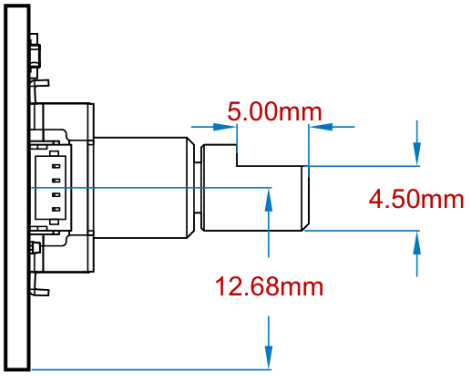
1x4 header for GND, 3V3, SDA, SCL. These holes provide a place to mount header pins if desired.

1x10 header for encoder and microcontroller signals. This header can be used to read the encoder from an external controller, to use the microcontroller pins for other purposes, or to reprogram the microcontroller using its SWD interface. These holes provide a place to mount header pins if desired.

4.5.4 Mechanical Information







4.6 Buzzer

4.6.1 Description

The BUZZER module contains a single buzzer and uses the STM32C011F4 microcontroller for digital communication, making it suitable for producing sound alerts and notifications in various projects. All of the microcontroller boards have the footprints to provide the option to mount I2C pullups, but no pullups are mounted.

4.6.2 Tech Specs

Specification	Details
Sensor	1 Buzzer
Microcontroller	STM32C011F4
Supply Voltage	Min: 2.0 V, Max: 3.6 V
Power Consumption	6.4 mA
Accuracy	ADC: ±2 LSB typical INL
Resolution	12-bit ADC
Communication	I2C

4.6.3 Pinout

4.6.3.1 1x4 Header

Pin	Net Name	Function
GND	GND	Ground
3V3	+3V3	Power Supply
SDA	SDA_1	I2C Data
SCL	SCL_1	I2C Clock

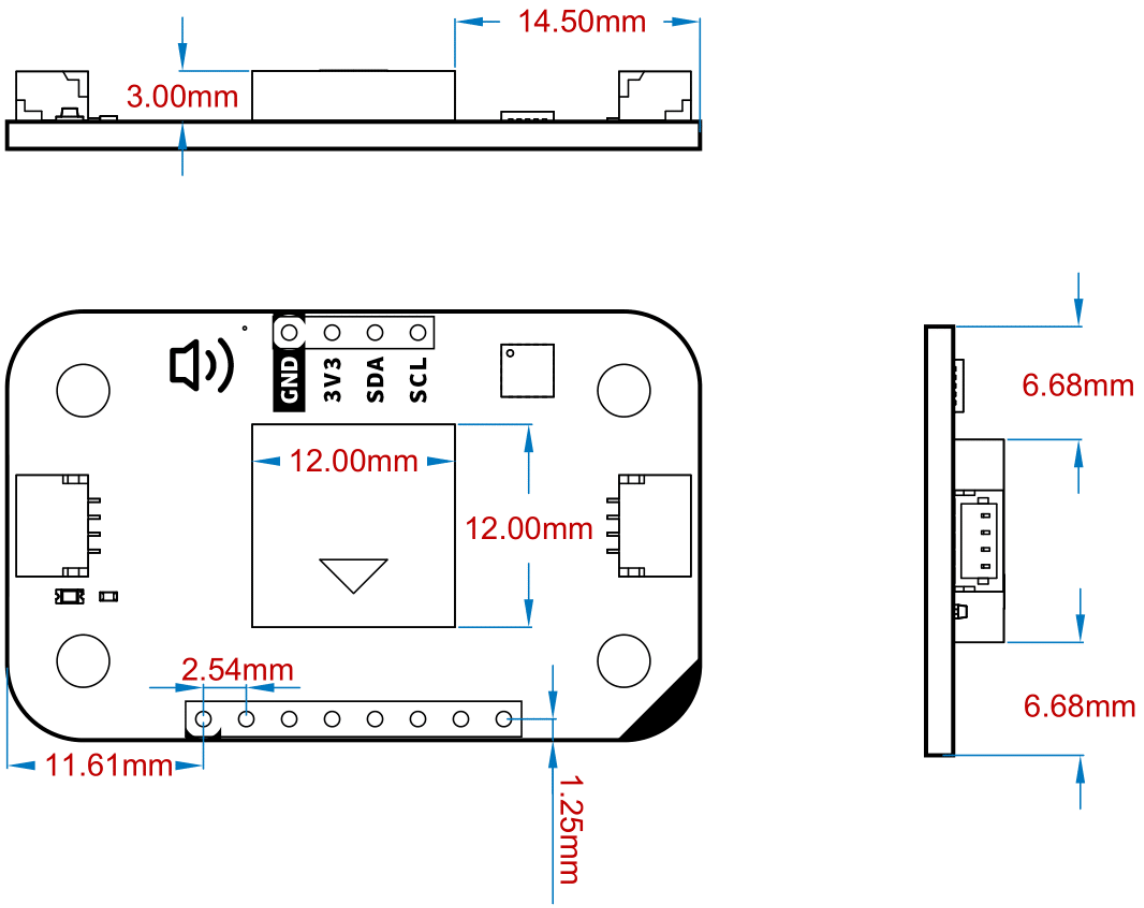
4.6.3.2 Buzzer and Microcontroller Signals

Pin	Net Name	Function
PA0	PA0_1	+ (Buzzer)
RX1	PA10_USART1_RX_1	UART Receive
TX1	PA9_USART1_TX_1	UART Transmit
SWDIO	PA13_SWDIO_1	SWD Data
SWCLK	PA14_SWCLK_BOOT0_1	SWD Clock
PF2	PF2_NRST_1	NRST

1x4 header for GND, 3V3, SDA, SCL. These holes provide a place to mount header pins if desired.

1x8 header for buzzer and microcontroller signals. This header can be used to actuate the buzzer from an external 3.3V source, to use the microcontroller pins for other purposes, or to reprogram the microcontroller using its SWD interface. These holes provide a place to mount header pins if desired.

4.6.4 Mechanical Information



4.7 Pixels

4.7.1 Description

The PIXELS module includes eight LC8822-2020 RGB LEDs and uses the STM32C011F4 microcontroller for digital communication, perfect for creating colorful displays and lighting effects in your projects. All of the microcontroller boards have the footprints to provide the option to mount I2C pullups, but no pullups are mounted.

4.7.2 Tech Specs

Specification	Details
Sensor	Eight LC8822-2020
Microcontroller	STM32C011F4
Supply Voltage	Min: 2.0 V, Max: 3.6 V
Power Consumption	33mA @ 3.3V * 8 + 3.4 mA
Resolution	12-bit ADC
Communication	I2C, USART, SPI, I2S

4.7.3 Pinout

4.7.3.1 1x4 Header

Pin	Net Name	Function
GND	GND	Ground
3V3	+3V3	Power Supply
SDA	SDA_1	I2C Data
SCL	SCL_1	I2C Clock

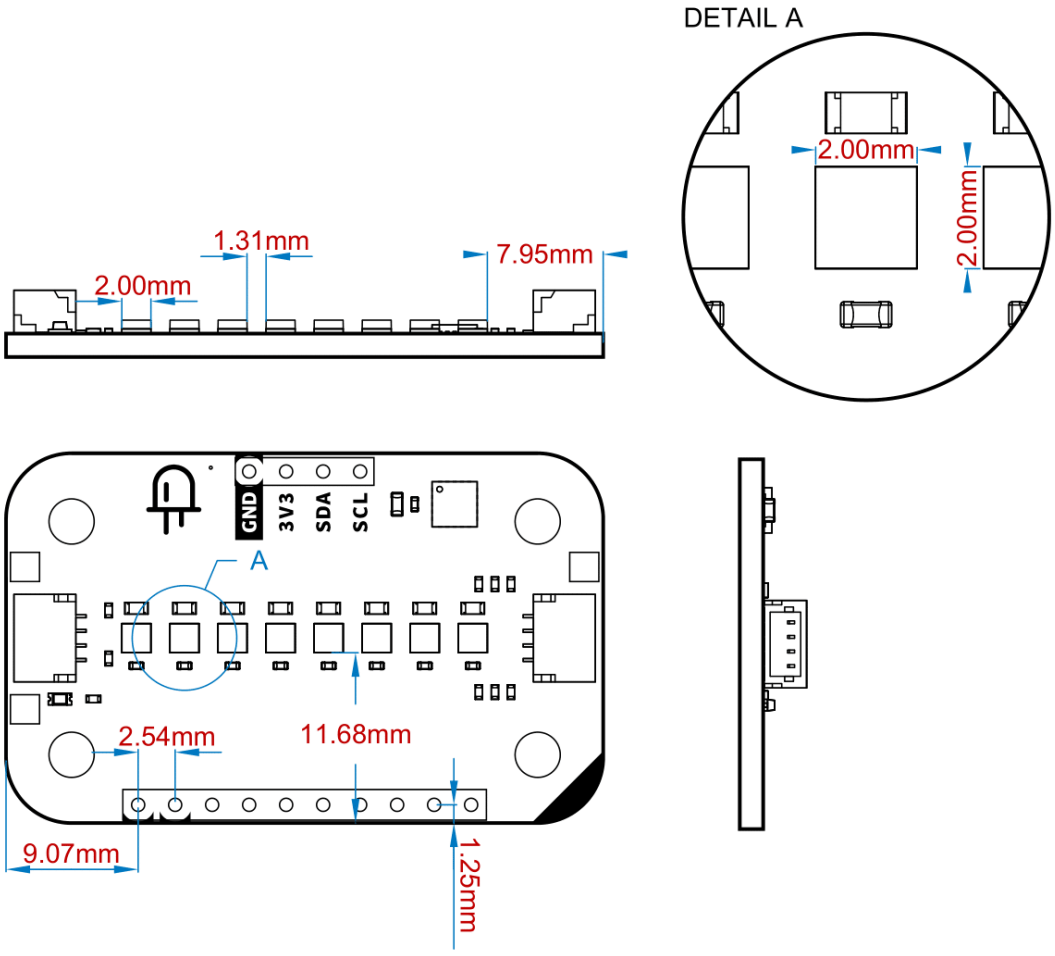
4.7.3.2 LC8822-2020 and Microcontroller Signals

Pin	Net Name	Function
CO	CO_1	Clock Out
DO	DO_1	Data Out
RX1	PA10_USART1_RX_1	UART Receive
TX1	PA9_USART1_TX_1	UART Transmit
SWDIO	PA13_SWDIO_1	SWD Data
SWCLK	PA14_SWCLK_BOOT0_1	SWD Clock
PF2	PF2_NRST_1	NRST

1x4 header for GND, 3V3, SDA, SCL. These holes provide a place to mount header pins if desired.

1x10 header for LC8822-2020 and microcontroller signals. This header can be used to add more LC8822-2020 to the chain. The header also has other microcontroller pins usable for other purposes or to reprogram the microcontroller using its SWD interface. These holes provide a place to mount header pins if desired.

4.7.4 Mechanical Information



4.8 Buttons

4.8.1 Description

The BUTTONS module includes three SPST push buttons and three yellow LEDs, using the STM32C011F4 microcontroller for digital communication. It's ideal for creating interactive input interfaces. All of the microcontroller boards have the footprints to provide the option to mount I2C pullups, but no pullups are mounted.

4.8.2 Tech Specs

Specification	Details
Sensor	3 SPST Push Buttons
Microcontroller	STM32C011F4
Supply Voltage	Min: 2.0 V, Max: 3.6 V
Power Consumption	2.5 mA * 3 + 3.4 mA
Accuracy	ADC: ±2 LSB typical INL
Resolution	12-bit ADC
Communication	I2C, USART, SPI, I2S

4.8.3 Pinout

4.8.3.1 1x4 Header

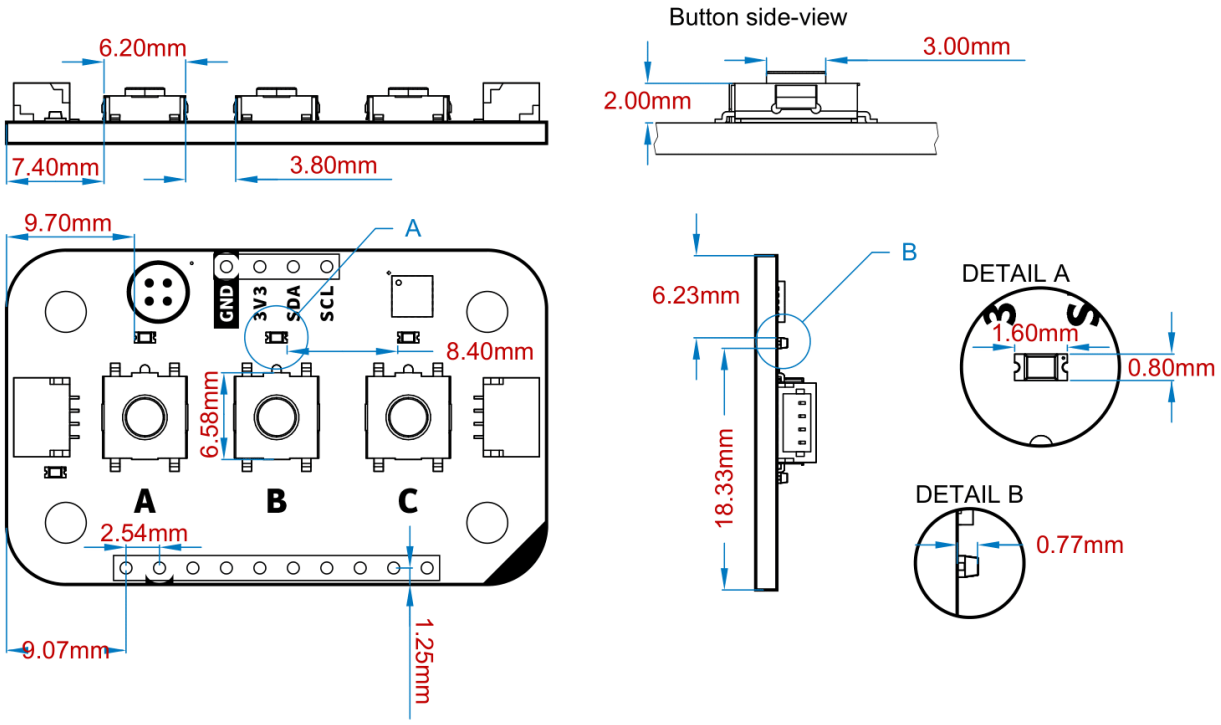
Pin	Net Name	Function
GND	GND	Ground
3V3	+3V3	Power Supply
SDA	SDA_1	I2C Data
SCL	SCL_1	I2C Clock

4.8.3.2 Pushbutton and Microcontroller Signals

Pin	Net Name	Function
PA0	PA0_1	A (Pushbutton)
PA1	PA1_1	B (Pushbutton)
PA2	PA2_1	C (Pushbutton)
RX1	PA10_USART1_RX_1	UART Receive
TX1	PA9_USART1_TX_1	UART Transmit
SWDIO	PA13_SWDIO_1	SWD Data
SWCLK	PA14_SWCLK_BOOT0_1	SWD Clock
PF2	PF2_NRST_1	NRST
1x4 header for GND, 3V3, SDA, SCL. These holes provide a place to mount header pins if desired.		

1x10 header for pushbutton signals and microcontroller signals. This header can be used to read the pushbuttons status from an external 3.3V controller, to use the microcontroller pins for other purposes, or to reprogram the microcontroller using its SWD interface. These holes provide a place to mount header pins if desired.

4.8.4 Mechanical Information



5 Software

5.1 Libraries and Sketches

The Plug and Make Kit is compatible with the Modulino library, which can be found at the following link: Modulino library link.

5.2 I2C Connections on UNO R4 WiFi

- **Wire** on headers A4, A5
- **Wire1** on QWIIC connector

Keep in mind that by default the Modulino library assumes the QWIIC connector is going to be used, therefore by default it is using the Wire1.

When connecting the Modulino boards to the UNO R4 WiFi headers, or to the Portenta on Mid Carrier, remember to modify the code to use Wire instead of Wire1.

Example code to connect the Modulino boards:

```
#include "Modulino.h"
#include "Wire.h"

ModulinoDistance distance;

void setup() {
  Serial.begin(115200);
  Modulino.begin(Wire);
  distance.begin();
}

void loop() {
  Serial.println(distance.get());
}
```

5.3 I2C Address Reference

Board Silk Name	Sensor/Device	Default I2C Address (HEX)	Editable Solder Jumper Addresses (HEX)
MOVEMENT	LSM6DSOXTR	0x6A	0x6A, 0x6B
DISTANCE	VL53L4CDV0DH/1	0x29	-
THERMO	HS3003	0x44	-
BUZZER	ADD BUZZER MODEL TODO	0x3C	-
KNOB	Quadrature Rotary Encoder	0x76	-
PIXELS	Eight LC8822-2020	0x6C	-
BUTTONS	3 SPST Push Buttons	0x7C	-

With the provided sketch, users can change the default I2C address of the microcontroller firmware. Assigning different addresses allows users to connect multiple boards of the same type in a chain.

To facilitate this, a white rectangle is positioned on the bottom silk of the board, where users can write the new I2C address directly on the board itself.

TODO add sketch and image of the rectangle

6 Accessories (Included / Not Included)

- 24 M3x10 screws (Included)
- 20 M3 bolts (Included)
- 4 M3x20 female spacers (Included)
- 7 Female-to-Female I2C cables (with QWICC connectors)
- USB-C® cable (Not included)

7 Related Products

TODO Get this info

8 Rating

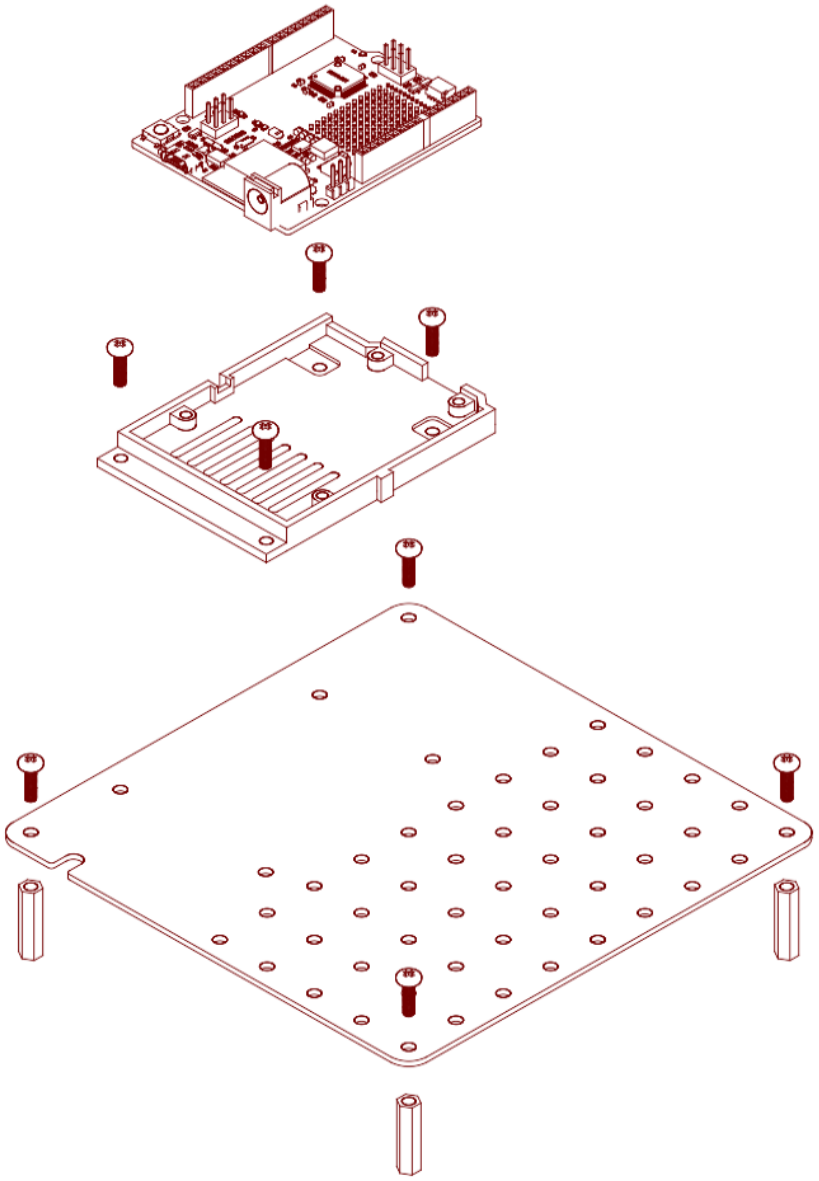
9 Recommended Operating Conditions

Symbol	Description	Min	Typ	Max	Unit
V_{IN}	Input voltage from VIN pad / DC Jack	6	7.0	24	V
V_{USB}	Input voltage from USB connector	4.8	5.0	5.5	V
T_{OP}	Operating Temperature	-40	25	85	°C

Note: V_{DD} controls the logic level and is connected to the 5V power rail. V_{AREF} is for the analog logic.

9.1 Block Diagram

9.2 Product Topology



Product Overview

9.3 Getting Started - IDE

If you want to program your Arduino U while offline you need to install the Arduino® Desktop IDE **[1]**. To connect the **Arduino UNO R4 WiFi** to your computer, you will need a USB-C cable, which can also provide power to the board, as indicated by the LED (DL1).

9.4 Getting Started - Arduino Web Editor

All Arduino boards, including this one, work out-of-the-box on the Arduino® Web Editor **[2]**, by just installing a simple plugin.

The Arduino Web Editor is hosted online, therefore it will always be up-to-date with the latest features and support for all boards. Follow **[3]** to start coding on the browser and upload your sketches onto your board.

9.5 Getting Started - Arduino Cloud

All Arduino IoT enabled products are supported on Arduino Cloud which allows you to log, graph and analyze sensor data, trigger events, and automate your home or business.

9.6 Online Resources

Now that you have gone through the basics of what you can do with the board you can explore the endless possibilities it provides by checking exciting projects on ProjectHub **[4]**, the Arduino Library Reference **[5]**, and the online store **[6]**; where you will be able to complement your board with sensors, actuators and more.

9.7 Board Recovery

All Arduino boards have a built-in bootloader which allows flashing the board via USB. In case a sketch locks up the processor and the board is not reachable anymore via USB, it is possible to enter bootloader mode by doubletapping the reset button right after the power-up.

10 Certifications

10.1 Certifications Summary

Certification	Status
CE/RED (Europe)	Yes
UKCA (UK)	Yes
FCC (USA)	Yes
IC (Canada)	Yes
MIC/Telec (Japan)	Yes
RCM (Australia)	Yes
RoHS	Yes
REACH	Yes
WEEE	Yes

10.2 Declaration of Conformity CE DoC (EU)

We declare under our sole responsibility that the products above are in conformity with the essential requirements of the following EU Directives and therefore qualify for free movement within markets comprising the European Union (EU) and European Economic Area (EEA).

10.3 Declaration of Conformity to EU RoHS & REACH 211 01/19/2021

Arduino boards are in compliance with RoHS 2 Directive 2011/65/EU of the European Parliament and RoHS 3 Directive 2015/863/EU of the Council of 4 June 2015 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Substance	Maximum limit (ppm)
Lead (Pb)	1000
----------	----------
02/11/2023	2
25/10/2023	1
Poly Brominated Biphenyls (PBB)	1000
Poly Brominated Diphenyl ethers (PBDE)	1000
Bis(2-Ethylhexyl) phthalate (DEHP)	1000
Benzyl butyl phthalate (BBP)	1000
Dibutyl phthalate (DBP)	1000
Diisobutyl phthalate (DIBP)	1000

Exemptions: No exemptions are claimed.

Arduino Boards are fully compliant with the related requirements of European Union Regulation (EC) 1907 /2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH). We declare none of the SVHCs (https://echa.europa.eu/web/guest/candidate-list-table), the Candidate List of Substances of Very High Concern for authorization currently released by ECHA, is present in all products (and also package) in quantities totaling in a concentration equal or above 0.1%. To the best of our knowledge, we also declare that our products do not contain any of the substances listed on the "Authorization List" (Annex XIV of the REACH regulations) and Substances of Very High Concern (SVHC) in any significant amounts as specified by the Annex XVII of Candidate list published by ECHA (European Chemical Agency) 1907 /2006/EC.

10.4 Conflict Minerals Declaration

As a global supplier of electronic and electrical components, Arduino is aware of our obligations with regard to laws and regulations regarding Conflict Minerals, specifically the Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 1502. Arduino does not directly source or process conflict minerals such as Tin, Tantalum, Tungsten, or Gold. Conflict minerals are contained in our products in the form of solder or as a component in metal alloys. As part of our reasonable due diligence, Arduino has contacted component suppliers within our supply chain to verify their continued compliance with the regulations. Based on the information received thus far we declare that our products contain Conflict Minerals sourced from conflict-free areas.

10.5 FCC Caution

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference

(2) this device must accept any interference received, including interference that may cause undesired operation.

FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with RF radiation exposure limits set forth for an uncontrolled environment.
3. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator & your body.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

English: User manuals for license-exempt radio apparatus shall contain the following or equivalent notice in a conspicuous location in the user manual or alternatively on the device or both. This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

French: Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

(1) l' appareil nedoit pas produire de brouillage

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

IC SAR Warning:

English: This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

French: Lors de l' installation et de l' exploitation de ce dispositif, la distance entre le radiateur et le corps est d 'au moins 20 cm.

Important: The operating temperature of the EUT can't exceed 85℃ and shouldn't be lower than -40℃.

Hereby, Arduino S.r.l. declares that this product is in compliance with essential requirements and other relevant provisions of Directive 2014/53/EU. This product is allowed to be used in all EU member states.

Company Information

Company name	Arduino SRL
Company Address	Via Andrea Appiani, 25 - 20900 MONZA (Italy)

Reference Documentation

Ref	Link
Arduino IDE (Desktop)	https://www.arduino.cc/en/Main/Software
Arduino IDE (Cloud)	https://create.arduino.cc/editor
Cloud IDE Getting Started	https://docs.arduino.cc/cloud/web-editor/tutorials/getting-started/getting-started-web-editor
Project Hub	https://create.arduino.cc/projecthub?by=part&part_id=11332&sort=trending
Library Reference	https://github.com/arduino-libraries/
Online Store	https://store.arduino.cc/

11 Revision History

Date	Revision	Changes
14/03/2023	1	First release