Description

The Arduino UNO Breakout Carrier is designed to give developers complete, direct access to every signal available on the UNO Q's JMEDIA and JMISC high-speed connectors. Ideal for advanced prototyping, testing, and integration work, it exposes all lines — including high-speed video, camera, audio, I²C, SPI, UART, PWM, power rails, and control signals — to clearly labeled, easy-to-use breakout headers.

Target Areas

Rapid Prototyping, Proof of Concept, Edge AI, Research and Development

Features

- Connectors
  - Two 2x20 Male Headers (2.54 mm)
  - Two 2x30 Male Headers (JMEDIA and JMISC 1.27 mm)
  - 1x8 through-hole pads (2.54 mm)

- Power
  - Powered from the host UNO Q
  - VIN input power rails (+7-24 VDC)

- I/O
  - I2C
  - Microphone In / Headphone Out
  - Earphone Out
  - Audio Line Out
  - PWM
  - PSSI
  - GPIO
  - SPI
  - OPAMP

Contents

1 Application Examples

Embedded Hardware Development:

- **Custom Interface Boards:** Rapidly design and test custom peripherals for the Arduino UNO Q. By providing direct access to the JMEDIA and JMISC connectors, developers can seamlessly route I2C, SPI, UART, and GPIO signals to custom interface boards without the need for complex adapters or soldering.
- **Multimedia System Integration:** Leverage the comprehensive breakout of audio interfaces (HP OUT, LINE OUT, MIC IN, EAR OUT, PWM) to integrate the UNO Q into advanced multimedia and smart audio systems. The clearly labeled 2.54 mm male headers simplify wiring and testing, accelerating the development of complex embedded audio applications.
- **Rapid Hardware Prototyping:** Expand the UNO Q's capabilities by easily integrating third-party modules and external hardware components. The carrier's direct access to power rails and communication buses makes it an ideal platform for building out proofs of concept for advanced IoT, multimedia, and edge computing devices.

R&D and Testing:

- **Automated Lab Setups:** Build reliable, organized, and accessible automated test rigs for hardware validation. The Breakout Carrier exposes all critical UNO Q control signals to standard headers, allowing test engineers to quickly connect measurement equipment and script automated QA tests for complex systems.
- **Interface Compliance Testing:** Streamline the verification process for new system designs. Engineers can connect oscilloscopes and logic analyzers directly to the carrier's accessible pins to probe high-speed communication buses, power rails, and PSSI interfaces, ensuring strict electrical and protocol timing compliance.
- **Mixed-Signal Debugging:** Speed up troubleshooting during product development by providing immediate, clear access to audio and control signals. Teams can isolate issues and verify signal integrity safely without the risk of damaging the main UNO Q board or fabricating temporary breakout solutions.

Education:

- **Hardware Prototyping Courses:** Provide a durable, reusable tool for multiple student cohorts learning to build embedded systems around a powerful Linux SBC. The straightforward 2x20 header pinout allows students to easily wire external sensors, actuators, and breadboards, fostering hands-on experimentation in STEM and project-based learning.
- **Mixed-Signal Debugging Workshops:** Facilitate practical lab exercises in university engineering programs. The Breakout Carrier bridges the gap between theory and practice, giving students clear, accessible points to probe audio inputs/outputs, I2C, and GPIO signals using standard lab equipment.
- **Advanced Embedded Linux Projects:** Accelerate cross-disciplinary student projects by simplifying the hardware-software interface. Students can focus on developing custom kernel drivers and multimedia applications on the Arduino UNO Q, using the carrier to effortlessly connect their physical hardware prototypes.

1.1 Related Products

- Arduino UNO Q (SKU: ABX00162 - ABX00173)

2 Ratings

2.1 Recommended Operating Conditions

Symbol	Description	Min	Typ	Max	Unit
T	Conservative thermal limits	-10	20	60	°C
V_{IN}	Input voltage from VIN pad	7	-	24	V

3 Functional Overview

The UNO Breakout Carrier expands the connectivity of the Arduino UNO Q, featuring a variety of 2.54 mm male header connectors.

3.1 Board Topology
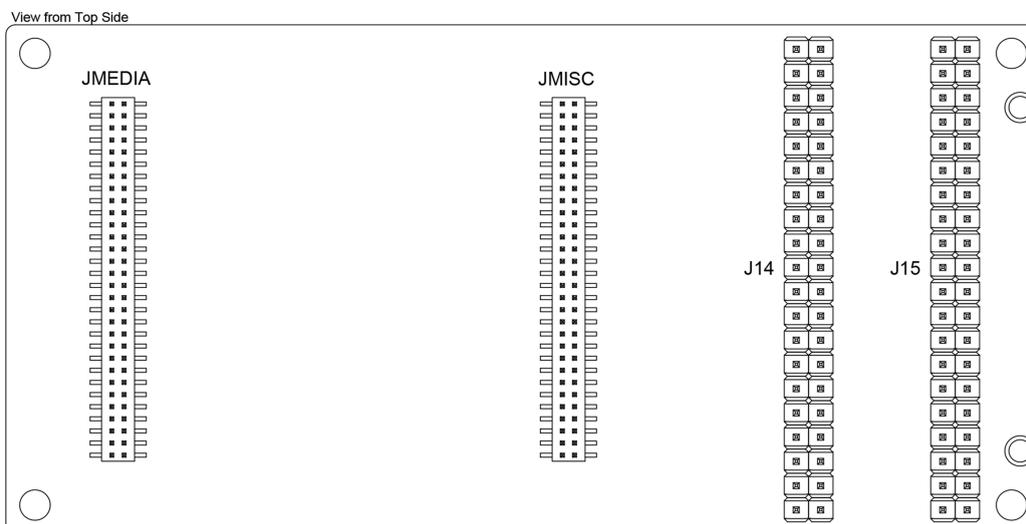
Top view - connectors

Ref.	Description
J14	Male header connector 2x20 2.54 mm
J15	Male header connector 2x20 2.54 mm
JMEDIA	High-speed male header connector 2x30 1.27 mm
JMISC	High-speed male header connector 2x30 1.27 mm

3.2 Pinout

The UNO Breakout Carrier pinout is shown in the following figure.

UNO Breakout Pinout
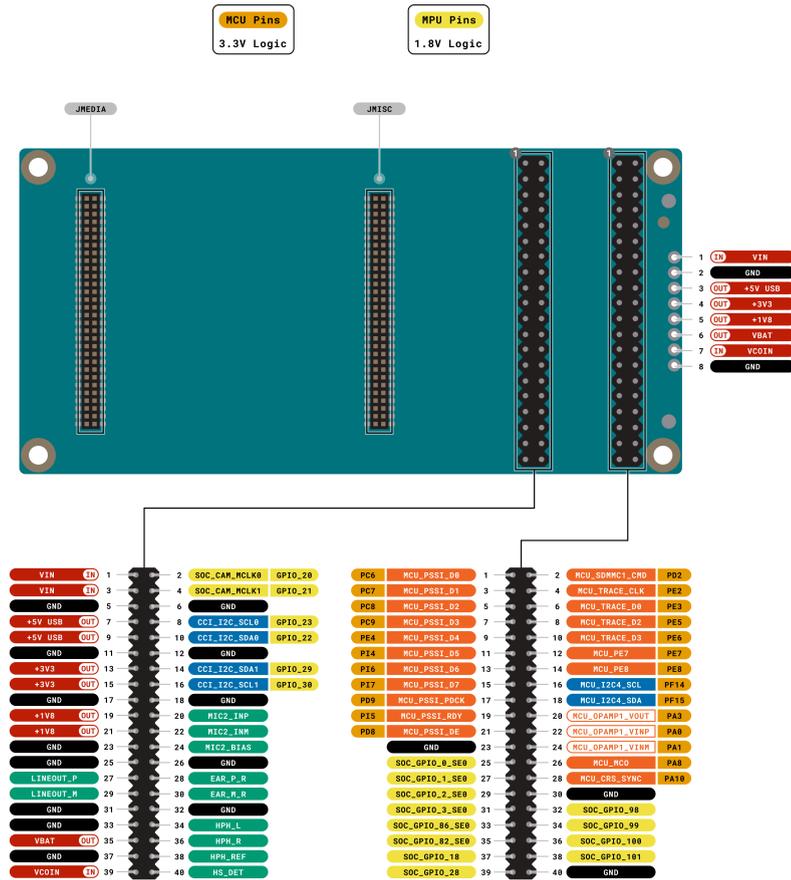
3.2.1 J14

Pin	Function	Type	Description
1	VIN	Power In	Voltage Input
2	GPIO_20	Digital	SOC_CAM_MCLK0
3	VIN	Power In	Voltage Input
4	GPIO_21	Digital	SOC_CAM_MCLK1
5	GND	Ground	Ground
6	GND	Ground	Ground
7	+5V USB	Power Out	+5V USB Power Output
8	GPIO_23	Digital / I2C	CCI_I2C_SCL0
9	+5V USB	Power Out	+5V USB Power Output
10	GPIO_22	Digital / I2C	CCI_I2C_SDA0
11	GND	Ground	Ground
12	GND	Ground	Ground
13	+3V3	Power Out	+3.3V Power Output
14	GPIO_29	Digital / I2C	CCI_I2C_SDA1
15	+3V3	Power Out	+3.3V Power Output
16	GPIO_30	Digital / I2C	CCI_I2C_SCL1
17	GND	Ground	Ground
18	GND	Ground	Ground
19	+1V8	Power Out	+1.8V Power Output
20	MIC2_INP	Analog	Microphone Input Positive
21	+1V8	Power Out	+1.8V Power Output
22	MIC2_INM	Analog	Microphone Input Negative
23	GND	Ground	Ground
24	MIC2_BIAS	Analog	Microphone Bias
25	GND	Ground	Ground
26	GND	Ground	Ground
27	LINEOUT_P	Analog	Audio Line Out Positive
28	EAR_P_R	Analog	Ear Right Positive
29	LINEOUT_M	Analog	Audio Line Out Negative
30	EAR_M_R	Analog	Ear Right Negative
31	GND	Ground	Ground
32	GND	Ground	Ground
33	GND	Ground	Ground
34	HPH_L	Analog	Headphone Left
35	VBAT	Power Out	+3.8V Buck Converter Output
36	HPH_R	Analog	Headphone Right
37	GND	Ground	Ground
38	HPH_REF	Analog	Headphone Reference
39	VCOIN	Power In	Coin Cell / RTC Backup Voltage Input
40	HS_DET	Analog	Headset Detection

3.2.2 J15

Pin	Function	Type	Description
1	MCU_PSSI_D0 / PC6	Digital	MCU GPIO
2	MCU_SDMMC1_CMD / PD2	Digital	MCU GPIO
3	MCU_PSSI_D1 / PC7	Digital	MCU GPIO
4	MCU_TRACE_CLK / PE2	Digital	MCU GPIO
5	MCU_PSSI_D2 / PC8	Digital	MCU GPIO
6	MCU_TRACE_D0 / PE3	Digital	MCU GPIO
7	MCU_PSSI_D3 / PC9	Digital	MCU GPIO
8	MCU_TRACE_D2 / PE5	Digital	MCU GPIO
9	MCU_PSSI_D4 / PE4	Digital	MCU GPIO
10	MCU_TRACE_D3 / PE6	Digital	MCU GPIO
11	MCU_PSSI_D5 / PI4	Digital	MCU GPIO
12	MCU_PE7 / PE7	Digital	MCU GPIO
13	MCU_PSSI_D6 / PI6	Digital	MCU GPIO
14	MCU_PE8 / PE8	Digital	MCU GPIO
15	MCU_PSSI_D7 / PI7	Digital	MCU GPIO
16	MCU_I2C4_SCL / PF14	Digital / I2C	MCU GPIO
17	MCU_PSSI_PDCK / PD9	Digital	MCU GPIO
18	MCU_I2C4_SDA / PF15	Digital / I2C	MCU GPIO
19	MCU_PSSI_RDY / PI5	Digital	MCU GPIO
20	MCU_OPAMP1_VOUT / PA3	Analog	MCU GPIO / OPAMP OUT
21	MCU_PSSI_DE / PD8	Digital	MCU GPIO
22	MCU_OPAMP1_VINP / PA0	Analog	MCU GPIO / OPAMP IN +
23	GND	Ground	Ground
24	MCU_OPAMP1_VINM / PA1	Analog	MCU GPIO / OPAMP IN -
25	SOC_GPIO_0_SE0	Digital	MPU GPIO
26	MCU_MCO / PA8	Digital	MCU GPIO
27	SOC_GPIO_1_SE0	Digital	MPU GPIO
28	MCU_CRS_SYNC / PA10	Digital	MCU GPIO
29	SOC_GPIO_2_SE0	Digital	MPU GPIO
30	GND	Ground	Ground
31	SOC_GPIO_3_SE0	Digital	MPU GPIO
32	SOC_GPIO_98	Digital	MPU GPIO
33	SOC_GPIO_86_SE0	Digital	MPU GPIO
34	SOC_GPIO_99	Digital	MPU GPIO
35	SOC_GPIO_82_SE0	Digital	MPU GPIO
36	SOC_GPIO_100	Digital	MPU GPIO
37	SOC_GPIO_18	Digital	MPU GPIO
38	SOC_GPIO_101	Digital	MPU GPIO
39	SOC_GPIO_28	Digital	MPU GPIO
40	GND	Ground	Ground

3.2.3 JMEDIA

Pin	Function	Type	Description
1	GND	Ground	Ground
2	GND	Ground	Ground
3	NC	None	Not Connected
4	NC	None	Not Connected
5	NC	None	Not Connected
6	NC	None	Not Connected
7	GND	Ground	Ground
8	GND	Ground	Ground
9	NC	None	Not Connected
10	NC	None	Not Connected
11	GND	Ground	Ground
12	NC	None	Not Connected
13	GND	Ground	Ground
14	GND	Ground	Ground
15	NC	None	Not Connected
16	SOC_CAM_MCLK0 / GPIO_20	Digital	MPU GPIO
17	NC	None	Not Connected
18	SOC_CAM_MCLK1 / GPIO_21	Digital	MPU GPIO
19	GND	Ground	Ground
20	GND	Ground	Ground
21	NC	None	Not Connected
22	CCI_I2C_SDA1 / GPIO_29	I2C	MPU GPIO
23	NC	None	Not Connected
24	CCI_I2C_SCL1 / GPIO_30	I2C	MPU GPIO
25	GND	Ground	Ground
26	GND	Ground	Ground
27	NC	None	Not Connected
28	NC	None	Not Connected
29	NC	None	Not Connected
30	NC	None	Not Connected
31	GND	Ground	Ground
32	GND	Ground	Ground
33	NC	None	Not Connected
34	NC	None	Not Connected
35	NC	None	Not Connected
36	NC	None	Not Connected
37	GND	Ground	Ground
38	GND	Ground	Ground
39	NC	None	Not Connected
40	NC	None	Not Connected
41	NC	None	Not Connected

Pin	Function	Type	Description
42	NC	None	Not Connected
43	GND	Ground	Ground
44	GND	Ground	Ground
45	NC	None	Not Connected
46	NC	None	Not Connected
47	NC	None	Not Connected
48	NC	None	Not Connected
49	GND	Ground	Ground
50	GND	Ground	Ground
51	CCI_I2C_SCL0 / GPIO_23	I2C	MPU GPIO
52	NC	None	Not Connected
53	CCI_I2C_SDA0 / GPIO_22	I2C	MPU GPIO
54	NC	None	Not Connected
55	GND	Ground	Ground
56	GND	Ground	Ground
57	VIN	Power In	Voltage Input
58	+3V3	Power Out	+3.3V Power Output
59	VIN	Power In	Voltage Input
60	+3V3	Power Out	+3.3V Power Output

3.2.4 JMISC

Pin	Function	Type	Description
1	MCU_PSSI_D0 / PC6	Digital	MCU GPIO
2	MCU_SDMMC1_CMD / PD2	Digital	MCU GPIO
3	MCU_PSSI_D1 / PC7	Digital	MCU GPIO
4	MCU_TRACE_CLK / PE2	Digital	MCU GPIO
5	MCU_PSSI_D2 / PC8	Digital	MCU GPIO
6	MCU_TRACE_D0 / PE3	Digital	MCU GPIO
7	MCU_PSSI_D3 / PC9	Digital	MCU GPIO
8	MCU_TRACE_D2 / PE5	Digital	MCU GPIO
9	MCU_PSSI_D4 / PE4	Digital	MCU GPIO
10	MCU_TRACE_D3 / PE6	Digital	MCU GPIO
11	MCU_PSSI_D5 / PI4	Digital	MCU GPIO
12	MCU_PE7 / PE7	Digital	MCU GPIO
13	MCU_PSSI_D6 / PI6	Digital	MCU GPIO
14	MCU_PE8 / PE8	Digital	MCU GPIO
15	MCU_PSSI_D7 / PI7	Digital	MCU GPIO
16	MCU_I2C4_SCL / PF14	Digital / I2C	MCU GPIO
17	MCU_PSSI_PDCK / PD9	Digital	MCU GPIO
18	MCU_I2C4_SDA / PF15	Digital / I2C	MCU GPIO
19	MCU_PSSI_RDY / PI5	Digital	MCU GPIO
20	MCU_OPAMP1_VOUT / PA3	Analog	MCU GPIO / OPAMP OUT

Pin	Function	Type	Description
21	MCU_PSSI_DE / PD8	Digital	MCU GPIO
22	MCU_OPAMP1_VINP / PA0	Analog	MCU GPIO / OPAMP IN +
23	MCU_MCO / PA8	Digital	MCU GPIO
24	MCU_OPAMP1_VINM / PA1	Analog	MCU GPIO / OPAMP IN -
25	MCU_CRS_SYNC / PA10	Digital	MCU GPIO
26	GND	Ground	Ground
27	GND	Ground	Ground
28	EAR_P_R	Analog	Ear Right Positive
29	MIC2_INP	Analog	Microphone Input Positive
30	EAR_M_R	Analog	Ear Right Negative
31	MIC2_INM	Analog	Microphone Input Negative
32	LINEOUT_P	Analog	Audio Line Out Positive
33	MIC2_BIAS	Analog	Microphone Bias
34	LINEOUT_M	Analog	Audio Line Out Negative
35	GND	Ground	Ground
36	HPH_L	Analog	Headphone Left
37	SOC_GPIO_0_SE0	Digital	MPU GPIO
38	HPH_R	Analog	Headphone Right
39	SOC_GPIO_1_SE0	Digital	MPU GPIO
40	HPH_REF	Analog	Headphone Reference
41	SOC_GPIO_2_SE0	Digital	MPU GPIO
42	HS_DET	Analog	Headset Detection
43	SOC_GPIO_3_SE0	Digital	MPU GPIO
44	GND	Ground	Ground
45	SOC_GPIO_86_SE0	Digital	MPU GPIO
46	SOC_GPIO_98	Digital	MPU GPIO
47	SOC_GPIO_82_SE0	Digital	MPU GPIO
48	SOC_GPIO_99	Digital	MPU GPIO
49	SOC_GPIO_18	Digital	MPU GPIO
50	SOC_GPIO_100	Digital	MPU GPIO
51	SOC_GPIO_28	Digital	MPU GPIO
52	SOC_GPIO_101	Digital	MPU GPIO
53	+3V3	Power Out	+3.3V Power Output
54	+5V USB	Power Out	+5V USB Power Output
55	+3V3	Power Out	+3.3V Power Output
56	+5V USB	Power Out	+5V USB Power Output
57	+1V8	Power Out	+1.8V Power Output
58	GND	Ground	Ground
59	VCOIN	Power In	Coin Cell / RTC Backup Voltage Input
60	VBAT	Power Out	+3.8V Buck Converter Output

3.3 Block Diagram

An overview of the UNO Breakout Carrier high-level architecture is illustrated in the figure below.

UNO Breakout Carrier Block Diagram

4 Device Operation

4.1 Getting Started

If you want to program your UNO Q to use the UNO Breakout Carrier while offline, you need to install the Arduino® App Lab **[1]**. To connect the UNO Q to your computer, you will need a USB cable or an internet connection (Network Mode), which can also provide power to the board.

4.2 Online Resources

Now that you have learned the basics of what you can do with the carrier, you can explore its endless possibilities by checking out exciting projects on Arduino Project Hub **[4]**, the Arduino Library Reference **[5]**, and the online store **[6]**. Here, you can complement your board with sensors, actuators and more.

# 5 Mechanical Information

5.1 Board Dimensions

The outline and dimensions of the UNO Breakout Carrier and mounting holes can be seen in the following figure; all the dimensions are in mm.
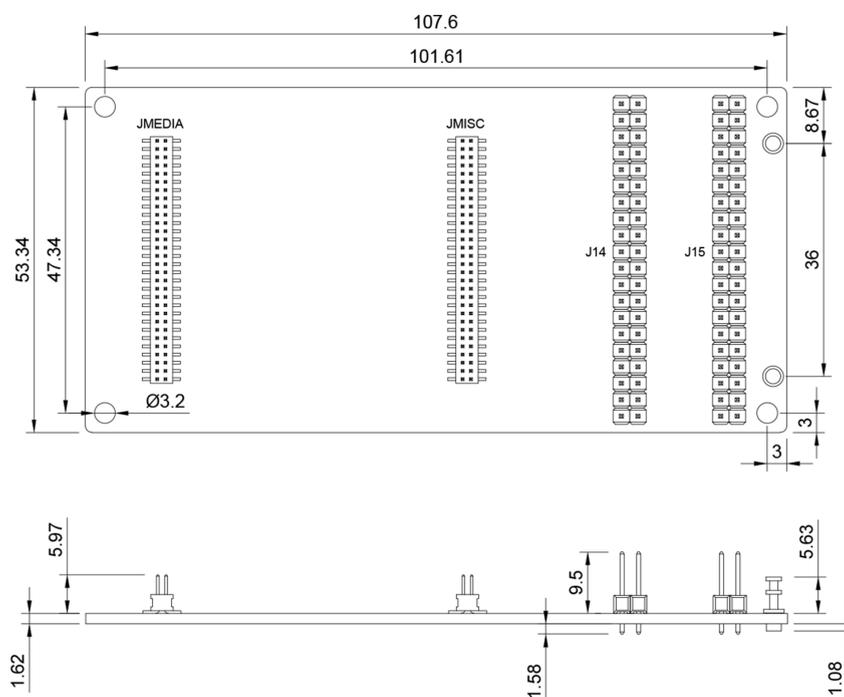
Board outline and screw holes

5.2 Board Connectors

The UNO Breakout Carrier's connectors are placed on the top side of the board, as shown in the figure below; all the dimensions are in mm.
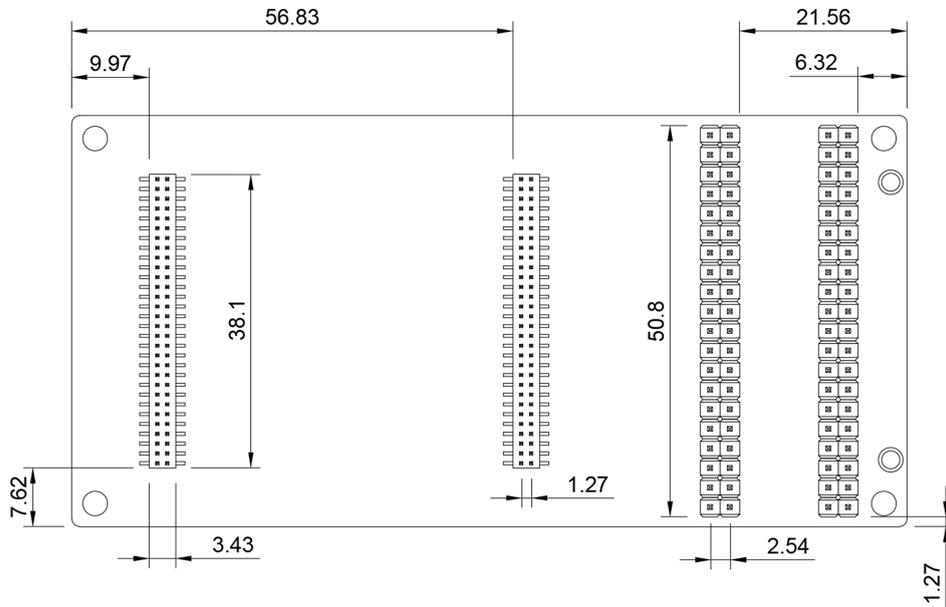
Mechanical View of UNO Breakout Carrier's Connectors

6 Certifications

6.1 Certificactions Summary

Certification	Status
CE (European Union)	Yes
RoHS	Yes
REACH	Yes
WEEE	Yes
FCC (USA)	Yes
IC (Canada)	Yes
UKCA (UK)	Yes
VCC (Japan)	Yes

6.2 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).

6.3 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
Cadmium (Cd)	100
Mercury (Hg)	1000
Hexavalent Chromium (Cr6+)	1000
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.

6.4 Conflict Minerals Declaration

As a global supplier of electronic and electrical components, Arduino is aware of our obligations with regards 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.

6.5 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.

English: User manuals for licence-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 licence-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 201453/EU. This product is allowed to be used in all EU member states.

7 Company Information

Company name	Arduino S.r.l.
Company Address	Via Andrea Appiani, 25 - 20900 MONZA (Italy)

8 Reference Documentation

No.	Ref	Link
1	Arduino App Lab	https://docs.arduino.cc/software/app-lab/
2	Arduino IDE (Desktop)	https://www.arduino.cc/en/Main/Software
3	Arduino IDE (Cloud)	https://create.arduino.cc/editor
4	Cloud IDE Getting Started	https://create.arduino.cc/projecthub/Arduino_Genuino/getting-started-with-arduino-web-editor-4b3e4a
5	Arduino Pro Website	https://www.arduino.cc/pro
6	Project Hub	https://create.arduino.cc/projecthub?by=part&part_id=11332&sort=trending
7	Library Reference	https://www.arduino.cc/reference/en/
8	Online Store	https://store.arduino.cc/

9 Change Log

Date	Revision	Changes
27/03/2026	1	First Release