

























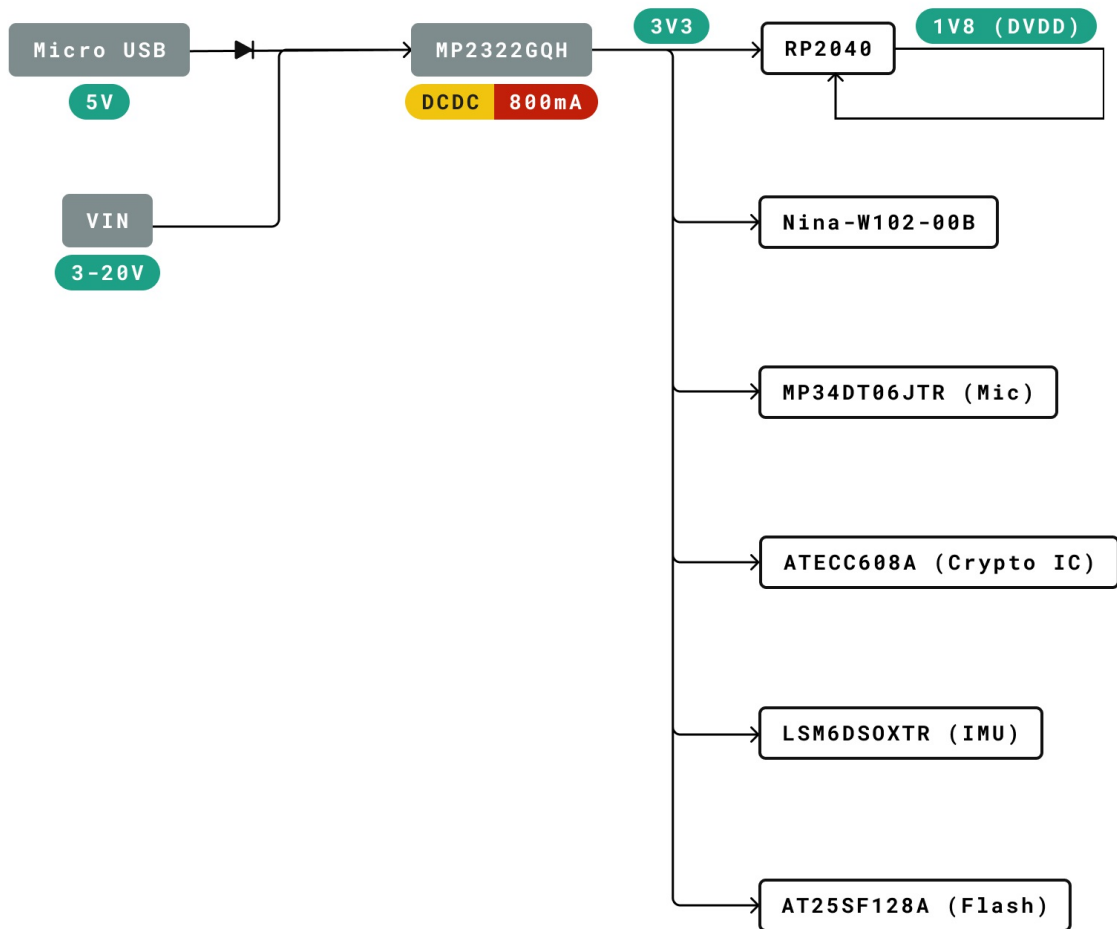
## 3.8 Microphone

The MP34DT06J microphone is connected via a PDM interface to the RP2040. The digital MEMS microphone is omnidirectional and operate via a capacitive sensing element with a high (64 dB) signal to noise ratio. The sensing element, capable of detecting acoustic waves, is manufactured using a specialized silicon micromachining process dedicated to produce audio sensors.

## 3.9 RGB LED

The RGB LED (DL3) is a common anode LED that is connected to the Nina W102 module. The LED are off when the digital state is HIGH and on when the digital state is LOW.

## 3.10 Power Tree



**Legend:**

- Component
- Power I/O
- Conversion Type
- Max Current
- Voltage Range

*Power Tree of Arduino Nano RP2040 Connect Topology*

The Arduino Nano RP2040 Connect can be powered by either the Micro USB port (J1) or alternatively via VIN on JP2. An onboard buck converter provides 3V3 to the RP2040 microcontroller and all other peripherals. Additionally, the RP2040 also has an internal 1V8 regulator.

## 4 Board Operation

### 4.1 Getting started - IDE

If you want to program your Arduino® Nano RP2040 Connect while offline you need to install the Arduino® Desktop IDE **[1]** To connect the Arduino® Edge control to your computer, you'll need a micro USB cable. This also provides power to the board, as indicated by the LED.

### 4.2 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.

### 4.3 Getting started - Arduino IoT Cloud

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

### 4.4 Sample Sketches

Sample sketches for the Arduino® Nano RP2040 Connect can be found either in the “Examples” menu in the Arduino® IDE or in the “Documentation” section of the Arduino website **[4]**

### 4.5 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 **[5]**, the Arduino® Library Reference **[6]** and the online store **[7]** where you will be able to complement your board with sensors, actuators and more.

### 4.6 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 double-tapping the reset button right after power up.

## 5 Connector Pinouts

### 5.1 J1 Micro USB

Pin	Function	Type	Description
1	VBUS	Power	5V USB Power
2	D-	Differential	USB differential data -
3	D+	Differential	USB differential data +
4	ID	Digital	Unused
5	GND	Power	Ground

### 5.2 JP1

Pin	Function	Type	Description
1	TX1	Digital	UART TX / Digital Pin 1
2	RX0	Digital	UART RX / Digital Pin 0
3	RST	Digital	Reset
4	GND	Power	Ground
5	D2	Digital	Digital Pin 2
6	D3	Digital	Digital Pin 3
7	D4	Digital	Digital Pin 4
8	D5	Digital	Digital Pin 5
9	D6	Digital	Digital Pin 6
10	D7	Digital	Digital Pin 7
11	D8	Digital	Digital Pin 8
12	D9	Digital	Digital Pin 9
13	D10	Digital	Digital Pin 10
14	D11	Digital	Digital Pin 11
15	D12	Digital	Digital Pin 12

### 5.3 JP2

Pin	Function	Type	Description
1	D13	Digital	Digital Pin 13
2	3.3V	Power	3.3V Power
3	REF	Analog	NC
4	A0	Analog	Analog Pin 0
5	A1	Analog	Analog Pin 1
6	A2	Analog	Analog Pin 2
7	A3	Analog	Analog Pin 3
8	A4	Analog	Analog Pin 4
9	A5	Analog	Analog Pin 5
10	A6	Analog	Analog Pin 6
11	A7	Analog	Analog Pin 7
12	VUSB	Power	USB Input Voltage
13	REC	Digital	BOOTSEL
14	GND	Power	Ground
15	VIN	Power	Voltage Input

**Note:** The analog reference voltage is fixed at +3.3V. A0-A3 are connected to the RP2040's ADC. A4-A7 are connected to the Nina W102 ADC. Additionally, A4 and A5 are shared with the I2C bus of the RP2040 and are each pulled up with 4.7 K $\Omega$  resistors.

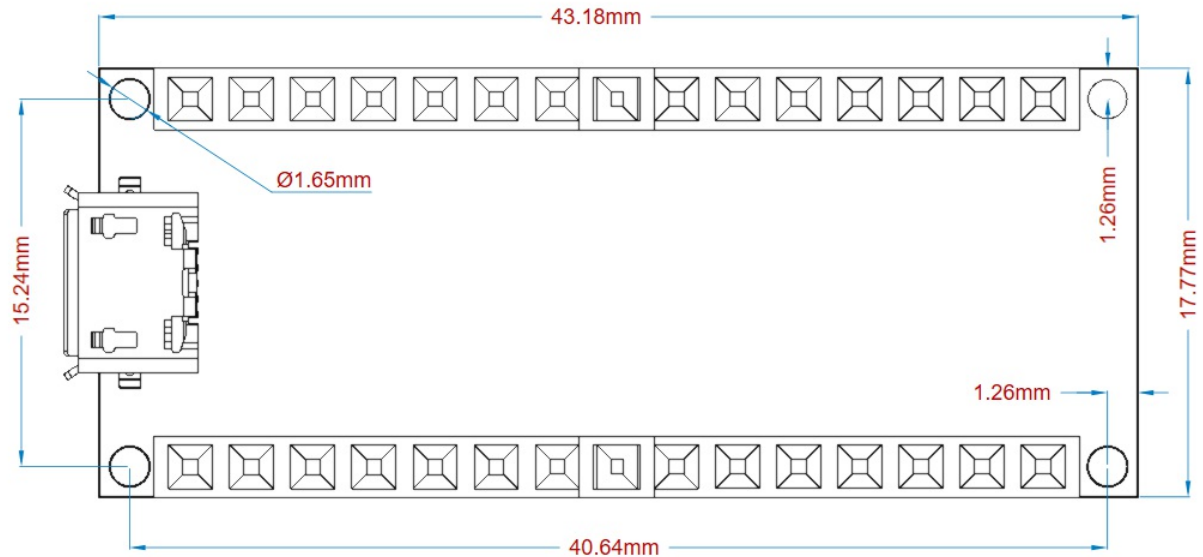
#### 5.4 RP2040 SWD Pad

Pin	Function	Type	Description
1	SWDIO	Digital	SWD Data Line
2	GND	Digital	Ground
3	SWCLK	Digital	SWD Clock
4	+3V3	Digital	+3V3 Power Rail
5	TP_RESETN	Digital	Reset

#### 5.5 Nina W102 SWD Pad

Pin	Function	Type	Description
1	TP_RST	Digital	Reset
2	TP_RX	Digital	Serial Rx
3	TP_TX	Digital	Serial Tx
4	TP_GPIO0	Digital	GPIO0

## 6 Mechanical Information



*Mechanical dimensions of Arduino Nano RP2040 Connect*

## 7 Certifications

### 7.1 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).

### 7.2 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.

### 7.3 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.

### 7.4 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 minimum distance 20cm 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 n' doit 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 minimum distance 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°C and shouldn't be lower than -40°C.

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.

Frequency bands	Maximum output power (ERP)
2400-2483.5 Mhz	17 dBm

## 8 Company information

<b>Company name</b>	<b>Arduino S.r.l.</b>
Company Address	Via Ferruccio Pelli 14, 6900 Lugano, TI (Ticino), Switzerland

## 9 Reference Documentation

Ref	Link
Arduino IDE (Desktop)	<a href="https://www.arduino.cc/en/Main/Software">https://www.arduino.cc/en/Main/Software</a>
Arduino IDE (Cloud)	<a href="https://create.arduino.cc/editor">https://create.arduino.cc/editor</a>
Cloud IDE Getting Started	<a href="https://create.arduino.cc/projecthub/Arduino_Genuino/getting-started-with-arduino-web-editor-4b3e4a">https://create.arduino.cc/projecthub/Arduino_Genuino/getting-started-with-arduino-web-editor-4b3e4a</a>
Arduino Website	<a href="https://www.arduino.cc/">https://www.arduino.cc/</a>
Project Hub	<a href="https://create.arduino.cc/projecthub?by=part&amp;part_id=11332&amp;sort=trending">https://create.arduino.cc/projecthub?by=part&amp;part_id=11332&amp;sort=trending</a>
PDM (microphone) Library	<a href="https://www.arduino.cc/en/Reference/PDM">https://www.arduino.cc/en/Reference/PDM</a>
WiFinINA (WiFi, W102) Library	<a href="https://www.arduino.cc/en/Reference/WiFinINA">https://www.arduino.cc/en/Reference/WiFinINA</a>
ArduinoBLE (Bluetooth, W-102) Library	<a href="https://www.arduino.cc/en/Reference/ArduinoBLE">https://www.arduino.cc/en/Reference/ArduinoBLE</a>
IMU Library	<a href="https://www.arduino.cc/en/Reference/Arduino_LSM6DS3">https://www.arduino.cc/en/Reference/Arduino_LSM6DS3</a>
Online Store	<a href="https://store.arduino.cc/">https://store.arduino.cc/</a>

## 10 Revision History

Date	Revision	Changes
14/05/2020	1	First Release