Arduino 101 (USA ONLY)

& Genuino 101 (OUTSIDE USA)

Arduino 101 & Genuino 101 are the ideal successor of the UNO, updated with the latest technologies. It recognises gestures, and features a six-axis accelerometer and gyroscope. Control your projects with your phone over Bluetooth connectivity!

Overview

A learning and development board that delivers the performance and low-power consumption of the Intel® Curie™ Module with the simplicity of Arduino at an entry-level price.

It keeps the same robust form factor and peripheral list of the UNO with the addition of onboard Bluetooth LE capabilities and a 6-axis accelerometer/gyro to help you easily expand your creativity into the connected world. .

The module contains two tiny cores, an x86 (Quark) and a 32-bit ARC architecture core, both clocked at 32MHz. The Intel toolchain compiles your Arduino sketches optimally across both cores to accomplish the most demanding tasks.

The Real-Time Operating Systems (RTOS) and framework developed by Intel is scheduled to be open sourced in March 2016. Until then, it's not possible to interface with it directly; only the Arduino core can do it via static mailboxes, so it can only accomplish a predefined list of tasks (interface with PC using USB, program the sketch into flash, expose Bluetooth LE functionality to sketch, perform

PWM). The RTOS for Intel Curie is still under development and new functions and features will be released in the near future.

The 101 comes with 14 digital input/output pins (of which 4 can be used as PWM outputs), 6 analog inputs, a USB connector for serial communication and sketch upload, a power jack, an ICSP header with SPI signals and I2C dedicated pins. The board operating voltage and I/O is 3.3V but all pins are protected against 5V overvoltage.

The Arduino 101 (USA only) and the Genuino 101 (outside USA) has been designed in collaboration with Intel®.

Getting Started

In the Getting Started section, you can find all the information you need to configure your board, use the Arduino Software (IDE), and start to tinker with coding and electronics.

Get Inspired

- Try out the integrated accelerometer and gyro and discover sensor fusion
- Count your steps using the advanced features of 101's accelerometer
- Monitor your heart rate using the Bluetooth Low Energy capabilities (BLE)

Need Help?

- On the Software on the Arduino Forum
- On Projects on the Arduino Forum
- On the Product itself through our Customer Support

Technical specs

Microcontroller	Intel Curie
Operating Voltage	3.3V (5V tolerant I/O)
Input Voltage (recommended)	7-12V
Input Voltage (limit)	7-20V
Digital I/O Pins	14 (of which 4 provide PWM output)
PWM Digital I/O Pins	4
Analog Input Pins	6
DC Current per I/O Pin	4 mA
Flash Memory	196 kB
SRAM	24 kB
Clock Speed	32MHz
Features	Bluetooth LE, 6-axis accelerometer/gyro
Length	68.6 mm
Width	53.4 mm

Programming

The 101 can be programmed with the Arduino Software (IDE). Select "Arduino/Genuino 101" from the Tools > Board menu. For details, see the reference and tutorials.

The board comes preprogrammed with an RTOS that handles USB connection and allows you to upload new code without the use of an external hardware programmer. It communicates using the DFU protocol (reference).

Differences with other boards

The 101 has some features in common with both UNO (connectors, available peripherals) and Zero (32bit microcontroller, 3.3V IO) but the low power Intel microcontroller, on-board BLE and motion sensors make it unique.

Power

The 101 board can be powered via the USB connection or with an external power supply. The power source is selected automatically.

External (non-USB) power can come either from an AC-to-DC adapter (wall-wart) or battery. The adapter can be connected by plugging a 2.1mm center-positive plug into the board's power jack. Leads from a battery can be inserted in the GND and Vin pin headers of the POWER connector.

The power pins are as follows:

- VIN. The input voltage to the Arduino board when it's using an external power source (as opposed to 5 volts from the USB connection or other regulated power

source). You can supply voltage through this pin, or if supplying voltage via the power jack, access it through this pin.

- 5V. This pin outputs a regulated 5V from the regulator on the board. The board can be supplied with power either from the DC power jack (7 - 12V), the USB connector (5V), or the VIN pin of the board (7-12V). Supplying voltage via the 5V or 3.3V pins bypasses the regulator, and can damage your board if it is not sufficiently regulated. We don't advise it.
- 3.3V. A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 1500 mA. This regulator also provides power to the Curie microcontroller.
- GND. Ground pins.
- IOREF. This pin on the Arduino board provides the voltage reference with which the microcontroller operates. A properly configured shield can read the IOREF pin voltage and select the appropriate power source or enable voltage translators on the outputs for working with the 5V or 3.3V.

Memory

The Intel Curie module memory is shared between the two microcontrollers, so your sketch can use 196 kB out of 384 kB (flash memory) and 24 kB out of 80 kB (SRAM)

Input and Output

Each of the 20 general purpose I/O pins on the 101 can be used for digital input or digital output using pinMode(), digitalWrite(), and digitalRead() functions. Pins that can be used for PWM output are: 3, 5, 6, 9 using analogWrite() function. All pins operate at 3.3 volts. Each pin can source or sink a maximum of 4 mA.

In addition, some pins have specialized functions:

- Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the Serial1 class.
- External Interrupts on all pins. Can trigger an interrupt on a low value, high value, a rising or falling edge, or a change in value (change is only supported by pins 2, 5, 7, 8, 10, 11, 12, 13). See the attachInterrupt() function for details.
- PWM: 3, 5, 6, 9, 10, 11, and 13. Provide 8-bit PWM output with the analogWrite() function.

- SPI: SS, MOSI, MISO, SCK. Located on the SPI header support SPI communication using the SPI library.
- LED: 13. There is a built-in LED driven by digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off.
- Analog Inputs. Six of the 20 general purpose I/O pins on the Zero provide analog input. These are labeled A0 through A5, and each provide 10 bits of resolution (i.e. 1024 different values). They measure from ground to 3.3 volts
- TWI: SDA pin and SCL pin. Support TWI communication using the Wire library