adafruit

SHOP   BLOG   LEARN   FORUMS   VIDEOS   🔍

Adafruit METRO M0 Express - designed for CircuitPython - ATSAMD21G18
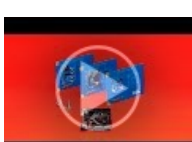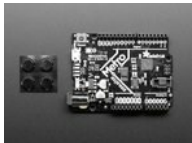
PRODUCT ID: 3505

IN STOCK

| 1 | ADD TO CART |

1-9
10-99
100+

ADD TO WISHLIST

DESCRIPTION

TECHNICAL DETAILS

LEARN

DESCRIPTION

Metro is our series of microcontroller boards for use with the Arduino IDE. This new **Metro M0 Express** board looks a whole lot like our original Metro 328, but with a huge upgrade. Instead of the ATmega328, this Metro features a ATSAMD21G18 chip, an ARM Cortex M0+. It's our first Metro that is designed for use with CircuitPython! CircuitPython is our beginner-oriented flavor of MicroPython - and as the name hints at, its a small but full-featured version of the popular Python programming language specifically for use with circuitry and electronics.

Not only can you use CircuitPython, but the Metro M0 is also usable in the Arduino IDE.

At the Metro M0's heart is an ATSAMD21G18 ARM Cortex M0 processor, clocked at 48 MHz and at 3.3V logic, the same one used in the new Arduino Zero. This chip has a whopping 256K of FLASH (8x more than the Atmega328) and 32K of RAM (16x as much)! This chip comes with built in USB so it has USB-to-Serial program & debug capability built in with no need for an FTDI-like chip.

- **Power the METRO** with 7-9V polarity protected DC or the micro USB connector to any 5V USB source. The 2.1mm DC jack has an on/off switch next to it so you can turn off your setup easily. The METRO will automagically switch between USB and DC.
- **METRO has 25 GPIO pins**, 12 of which are analog in, and one of which is a true analog out. There's a hardware SPI port, hardware I2C port and hardware UART. Logic level is 3.3V
- **Native USB**, there's no need for a hardware USB to Serial converter as the Metro M0 has built in USB support. When used to act like a serial device, the USB interface can be used by any computer to listen/send data to the METRO, and can also be used to launch and update code via the bootloader. It can also act like a keyboard, mouse or MIDI device as well.
- **Four indicator LEDs and one NeoPixel**, on the front edge of the PCB, for easy debugging. One green power LED, two RX/TX LEDs for data being sent over USB, and a red LED connected. Next to the reset button there is an RGB NeoPixel that can be used for any purpose.
- **2 MB SPI Flash** storage chip is included on board. You can use the SPI Flash storage like a very tiny hard drive. When used in Circuit Python, the 2 MB flash acts as storage for all your scripts, libraries and files. When used in Arduino, you can read/write files to it, like a little datalogger or SD card, and then with our helper program, access the files over USB.
- **Easy reprogramming**, comes pre-loaded with the UF2 bootloader, which looks like a USB storage key. Simply drag firmware on to program, no special tools or drivers needed! It can be used to load up CircuitPython, PXT/MakeCode or Arduino IDE (it is bossa-compatible)

Comes fully assembled with headers, tested, and with the UF2 bootloader loaded on. We also include 4 rubber bumpers to keep it from slipping off your desk. No soldering required to use, plug and play!

Good news, CircuitPython now comes preloaded!

Check out our full guide for pinouts, schematics, drivers, instructions, Fritzing object, and more!

New Products 5/3/2017
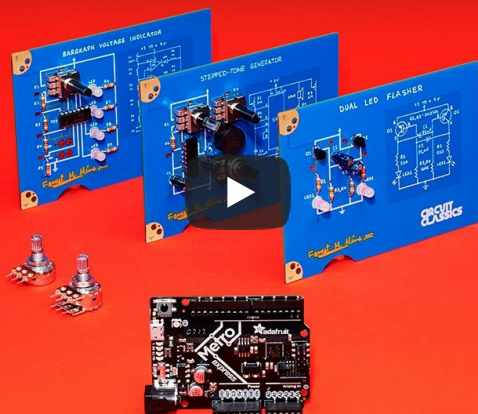
TECHNICAL DETAILS

Revision History:

- **As of April 27, 2018** we have updated the design to have lower analog noise, replaced the SMT DC jack and headers with through-hole headers and jack, and now ship with CircuitPython already loaded.

Detailed specifications:

- ATSAMD21G18 @ 48MHz with 3.3V logic/power
- 256KB of FLASH + 32KB of RAM
- 2 MB SPI Flash chip
- No EEPROM
- 32.768 KHz crystal for clock generation & RTC
- 3.3V regulator with 500mA peak current output
- USB native support, comes with USB bootloader and serial port debugging
- You also get tons of pins - 25 GPIO pins, 5 more than the Metro 328
- Hardware Serial, hardware I2C, hardware SPI support
- PWM outputs on almost all pins
- 6 x 12-bit analog inputs
- 1 x 10-bit analog output (DAC)
- Built in NeoPixel on pin #40
- Pin #13 red LED for general purpose blinking
- Power on/off switch
- 4 mounting holes
- We also include 4 rubber bumpers to keep it from slipping off your desk
- Reset button
- Adafruit Black PCB with gold plate on pads
- Dimensions: 71mm x 53mm / 2.8" x 2.1"
- Height (w/ barrel jack): 13mm / 0.5"
- Weight: 20g

LEARN

32x16 and 32x32 RGB LED Matrix
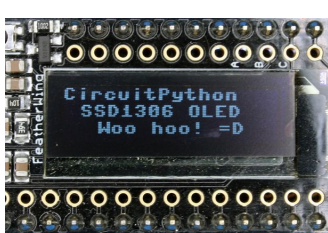Hundreds of pixels of eye-blasting LED glory!
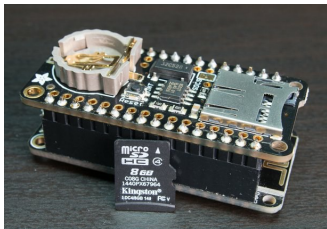
CircuitPython Hardware: SD Cards
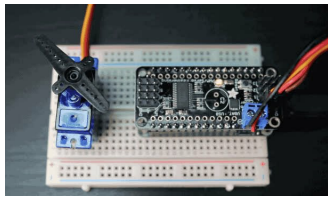Learn how to use a microSD card to store code & data with CircuitPython and MicroPython!
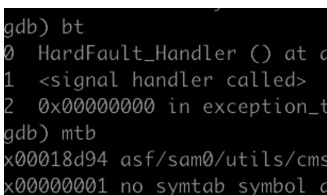
Debugging the SAMD21 with GDB
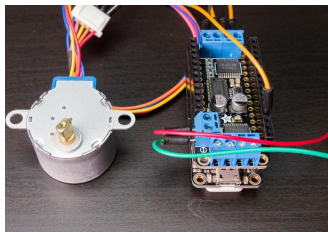Using GDB to better understand program state and history.

[CircuitPython Hardware: SSD1306 OLED Display](#)
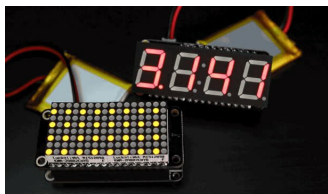How to use a SSD1306 OLED display with CircuitPython boards.

[CircuitPython Hardware: PCA9685 PWM & Servo Driver](#)
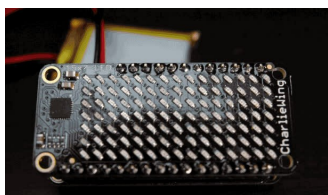How to use the PCA9685 PWM & servo driver with CircuitPython!

[CircuitPython Hardware: PCA9685 DC Motor & Stepper Driver](#)
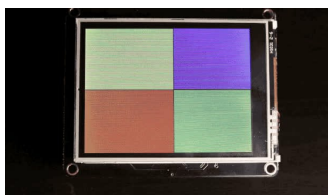How to use the PCA9685 DC Motor & Stepper driver with CircuitPython!

[CircuitPython Hardware: LED Backpacks & FeatherWings](#)
How to use LED Backpacks & FeatherWings with CircuitPython!

[CircuitPython Hardware: Charlieplex LED Matrix](#)
How to use Charlieplex LED matrices with CircuitPython!

[CircuitPython Hardware: ILI9341 TFT & FeatherWing](#)
How to draw on a ILI9341 TFT display with CircuitPython!

[Adafruit Metro M0 Express - Designed for CircuitPython](#)
CircuitPython, Arduino IDE or even MakeCode with this Metro M0
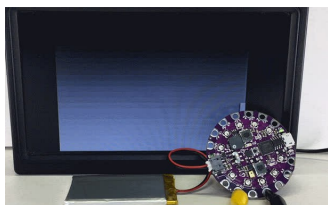
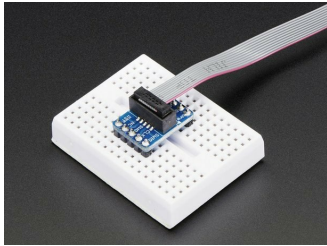[Circuit Playground Express (& other ATSAMD21 Boards) DAC Hacks](#)
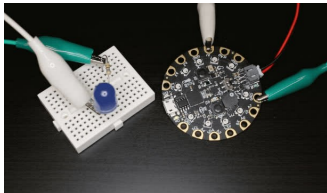Revisiting the Olde Days of television and radio
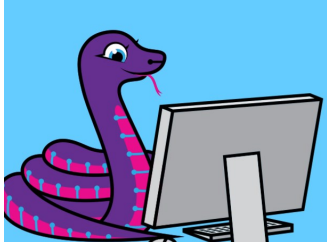
[Creating and sharing a CircuitPython library](#)
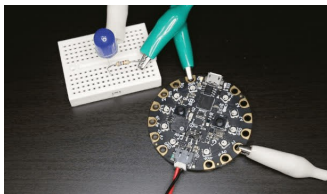Share your code with the world

[DMA-Driven NeoPixels](#)
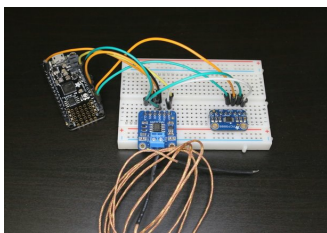NeoPixels and interrupts living in peace and harmony!

[Programming an M0 using an Arduino](#)
computers are overrated anyhow

[CircuitPython Basics: Digital Inputs & Outputs](#)
Learn how to control digital inputs and outputs with CircuitPython!

[CircuitPython Basics: Analog Inputs & Outputs](#)
Learn how to control analog, or continuous voltage, values with CircuitPython!

[CircuitPython Basics: I2C and SPI](#)
Learn how to talk to I2C and SPI devices with CircuitPython!

[CPU Temperature Logging with CircuitPython](#)
Explore some new features in CircuitPython 2.0.0 with nothing but your board and one wire!
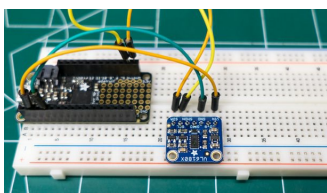
[Porting an Arduino library to CircuitPython: VL6180X Distance Sensor](#)
Learn about porting an Arduino library to CircuitPython with the VL6180X distance sensor.

Adafruit WINC1500 WiFi Shield for Arduino
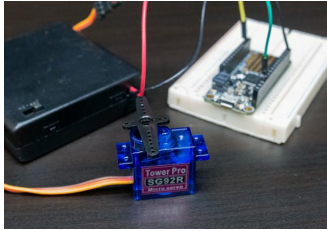Add WiFi to your Arduino with a snap of this shield
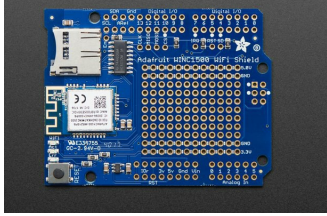
Welcome to CircuitPython!
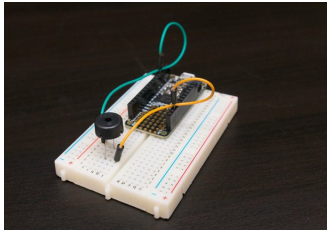New to CircuitPython? This is the place to start.

Using Servos With CircuitPython and Arduino
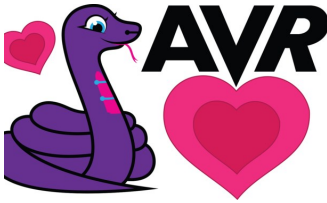How to use servo motors with CircuitPython and Arduino

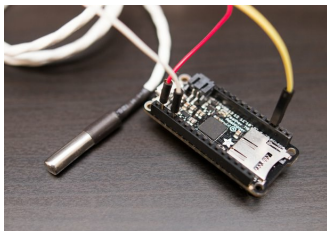### Using Piezo Buzzers with CircuitPython & Arduino
beep *beep* *boop*

Stand-alone programming AVRs using CircuitPython
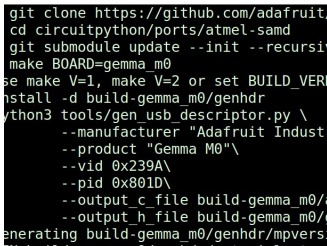Program your favorite AVR chips directly from CircuitPython

Using DS18B20 Temperature Sensor with CircuitPython
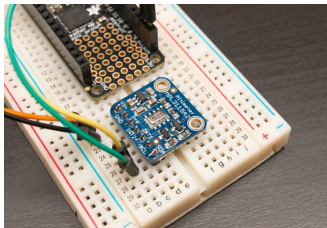How to connect and use a DS18B20 one-wire temperature sensor with CircuitPython!

Building CircuitPython
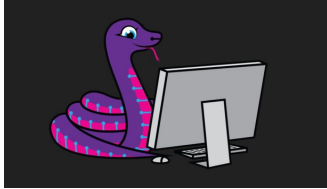How to build CircuitPython yourself on different platforms

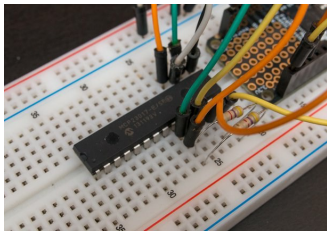### Using MPL3115A2 with CircuitPython
How to use the MPL3115A2 barometric pressure sensor with CircuitPython
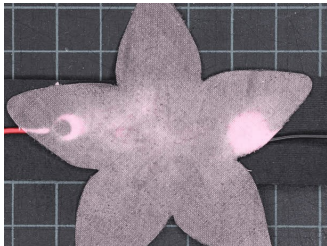
CircuitPython Essentials

The next step in learning CircuitPython.

Using MCP23008 & MCP23017 with CircuitPython
How to wire up and use the MCP230xx I2C I/O extender with CircuitPython!

Experimenting with Conductive Heater Fabric
Great for hyper color effects!

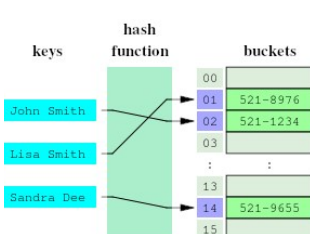## Sensor Plotting with Mu and CircuitPython
Plot all the things!

Adafruit NeoPXL8 FeatherWing and Library
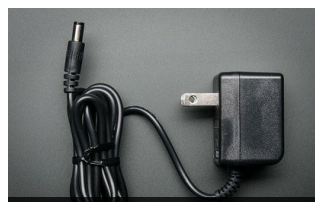NeoPixels to the max!

CircuitPython with Jupyter Notebooks
Interact with CircuitPython Code from within a Jupyter Notebook

CircuitPython 101: Basic Builtin Data Structures
Tuples, Lists, and Dictionaries! Oh My!

MAY WE ALSO SUGGEST...

Adafruit Metro Mini 328 - 5V

Adafruit METRO 328

9 VDC 1000mA regulated

USB cable - A/MicroB	Adafruit METRO 328 with	Adafruit Metro 328 Starter
Adafruit MetroX Classic Kit -	Adafruit Feather M0	Blinka the CircuitPython
Maker-Friendly Zipper Case	Adafruit WINC1500 WiFi	Adafruit Feather M4

DISTRIBUTORS EXPAND TO SEE DISTRIBUTORS

CONTACT

SUPPORT

DISTRIBUTORS

EDUCATORS

JOBS

FAQ

SHIPPING & RETURNS

TERMS OF SERVICE

PRIVACY & LEGAL

ABOUT US

"I would rather walk with a friend in the dark, than alone in the light" - Helen Keller

ENGINEERED IN NYC Adafruit ®

Authorize.Net
Click

4.9 ★★★★★
Google
Customer Reviews