

The ATmega328 processor has plenty of GPIO, Analog inputs, hardware UART SPI and I2C, timers and PWM galore – just enough for most simple projects.

This is the Adafruit METRO with headers. It comes with headers soldered on. It's a fully assembled and tested board with through-hole headers attached.

METRO is the culmination of years of playing with AVRs: a development board that is easy to use and is hacker friendly. At its heart is an ATmega328P, with 32KB of flash and 2KB of RAM, running at 16 MHz. It comes with the Optiboot bootloader already installed, and is Arduino IDE compatible. To use it with the Arduino IDE, select "Arduino UNO" in the board selection drop down.

Features:

- 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 automatically switch between USB and DC.
- METRO has 19 GPIO pins, 6 of which are Analog in as well, and 2 of which are reserved for the USB–serial converter. There's also 6 PWMs available on 3 timers (1 x 16–bit, 2 x 8–bit). There's a hardware SPI port, hardware I2C port and hardware UART to USB. Logic level is 5V but by cutting and soldering closed a jumper, you can easily convert it to 3.3V logic
- USB to Serial converter, there's a hardware USB to Serial converter that 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
- Four indicator LEDs, on the front edge of the PCB, for easy debugging. One green power LED, two RX/TX LEDs for the UART, and a red LED connected to pin PB5
- Easy reprogramming, comes pre–loaded with the Optiboot bootloader, which is supported by Arduino IDE, and avrdude and only uses 512 bytes – so you have lots of space for your code!
- Arduino IDE compatible, you can use this with the Arduino IDE (both desktop and cloud version) by selecting 'Arduino UNO' in the Boards menu.
- Works with all Adafruit shields

Four rubber bumpers are also included to keep it from slipping off your desk.

Detailed specifications:

- ATmega328 microcontroller with Optiboot (UNO) Bootloader
- USB Programming and debugging via the well–supported genuine CP2104
- Input voltage: 7–9V (a 9VDC power supply is recommended)
- 5V regulator can supply peak ~800mA as long as the die temp of the regulator does not exceed 150°C
- 3.3V regulator can supply peak ~150mA as long as the die temp of the regulator does not exceed 150°C

- 5V logic with 3.3V compatible inputs, can be converted to 3.3V logic operation
- 20 Digital I/O Pins: 6 are also PWM outputs and 6 are also Analog Inputs
- 6-pin ICSP Header for reprogramming
- 32KB Flash Memory – 0.5K for bootloader, 31.5KB available after bootloading
- 16MHz Clock Speed
- Compatible with "Classic" and "R3" Shields
- Adafruit Black PCB with gold plate on pads
- 53mm x 71mm / 2.1" x 2.8"
- Height (w/ barrel jack): 13mm / 0.5"
- Weight: 19g
- Derivative of "Arduino UNO R3 Reference design"

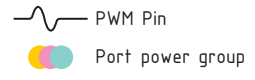
METRO

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PINOUT

- Vin** Input voltage to the board when it's using an external power source. Not USB bus
- IOREF** Logic reference voltage for shields that use it. Is connected to the 5V bus
- 3V3** The **Absolute** output from the 3.3V regulator is MAX 150MA

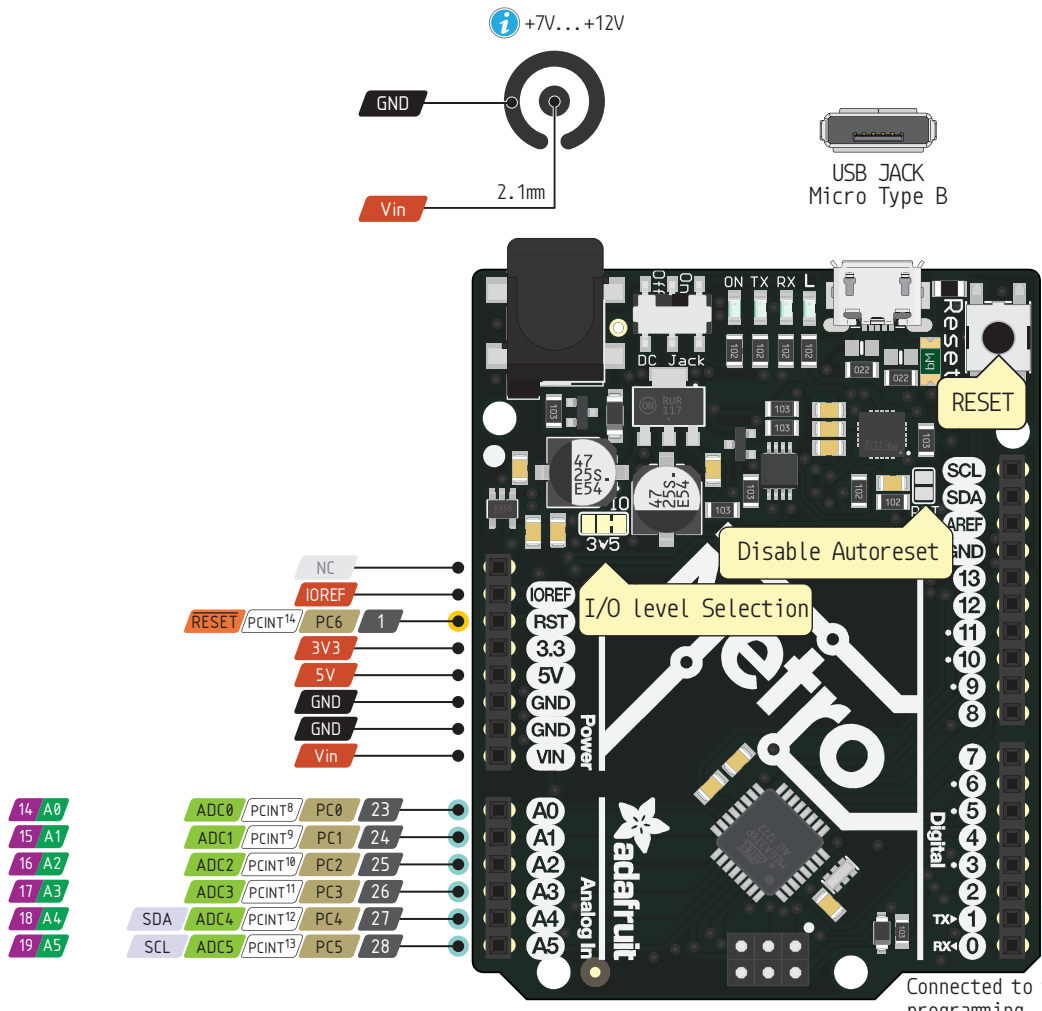
- Power
- GND
- Physical PIN
- Port PIN
- Analog PIN
- Serial PIN
- PIN Function
- Interrupt PIN
- Control PIN
- IDE



- Absolute** MAX per pin 40mA, 20mA recommended
- Absolute** MAX 200mA for the entire package
- The total current of each port power group **should not exceed** 100mA

When I/O Level is 3.3V

- Absolute** MAX per pin 20mA, 10mA recommended



| | | | | | |
|----|---------------|------|------|----|----|
| 28 | PC5 / PCINT13 | ADC5 | SCL | 19 | A5 |
| 27 | PC4 / PCINT12 | ADC4 | SDA | 18 | A4 |
| 21 | AREF | | | | |
| | GND | | | | |
| 19 | PB5 / PCINT5 | | SCK | 13 | |
| 18 | PB4 / PCINT4 | | MISO | 12 | |
| 17 | PB3 / PCINT3 | OC2A | MOSI | 11 | |
| 16 | PB2 / PCINT2 | OC1B | SS | 10 | |
| 15 | PB1 / PCINT1 | OC1A | | 9 | |
| 14 | PB0 / PCINT0 | CLKO | ICP1 | 8 | |
| 13 | PD7 / PCINT23 | AIN1 | | 7 | |
| 12 | PD6 / PCINT22 | AIN0 | OC0A | 6 | |
| 11 | PD5 / PCINT21 | T1 | OC0B | 5 | |
| 6 | PD4 / PCINT20 | XCK | T0 | 4 | |
| 5 | PD3 / PCINT19 | INT1 | OC2B | 3 | |
| 4 | PD2 / PCINT18 | INT0 | | 2 | |
| 3 | PD1 / PCINT17 | | TXD | 1 | |
| 2 | PD0 / PCINT16 | | RXD | 0 | |

Connected to the ATmega and used for USB programming and communicating with it

