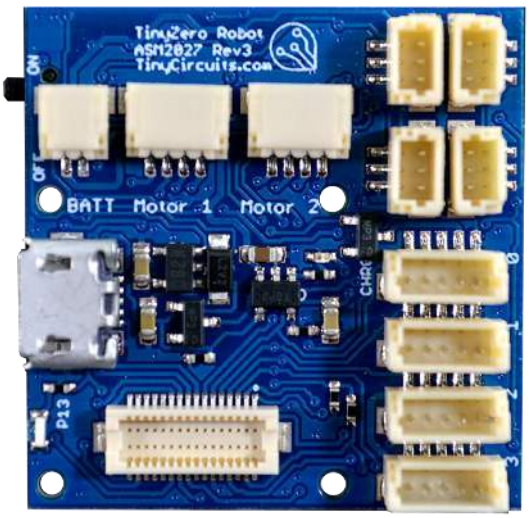
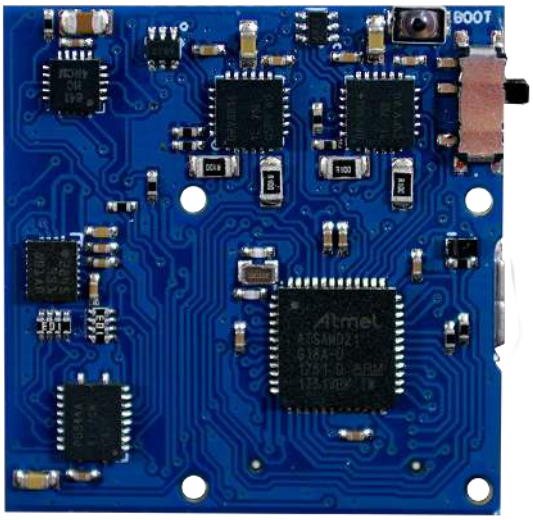
TINYCIRCUITS
DIY Electronics - Modular, Simple & Tiny





ROBOTZERO PROCESSOR

ASM2027

RobotZero is one of TinyCircuits' second-generation processor boards, adding performance upgrades and additional features to the original TinyDuino including (4) Wireling connectors, (2) motor ports, (4) servo ports, and a built-in 9-Axis sensor. RobotZero is based on the Atmel SAMD21 **32-bit ARM Cortex M0+** processor (the same one used in the Arduino Zero) and provides a USB connectivity port, power management and battery charger in a single 30x30mm board. We've kept our standard TinyShield expansion port, allowing for use with our current shields.

Note* The battery and 5-Pin Wireling cables are not included and sold separately.

Main Features:

- **Atmel SAMD21 processor (same as is used on the Arduino Zero)**
- **More memory compared to TinyDuino (both Flash and RAM)**
- **TinyShield expansion connector, built-in micro USB connection**
- **Power switch, regulator, lithium battery management on board**
- **Precision clock crystal and Real-Time Clock hardware built-in, low power standby**
- **Populated 9-Axis Sensor: 3D accelerometer, 3D gyroscope, and 3D magnetometer**
- **(4) Wireling Ports**
- **(2) Motor Ports**
- **(4) Servo Ports**
- **Up to 10 ADC inputs, up to 10 PWM outputs, up to 16 external interrupts**

*To learn more about the **TinyDuino Platform,** click **here***

- Atmel ATSAMD21G18A 32 bit ARM processor at 48MHz, Arduino Zero compatible
- 32.728KHz clock crystal, RTC hardware built-in with standby mode down to 0.2mA
- Expandable with our full lineup of stackable TinyShield boards
- Ultra-compact size and weight (smaller than a US Quarter!)
  - 30mm x 30mm (1.18 inches x 1.18 inches)
  - Max Height: 3.2mm (0.13 inches)
  - Ultra-thin 0.61mm (0.024 inches) PCB
  - Weight: 3 grams (0.11 ounces)
- **Atmel 32-bit ATSAMD21G18A ARM Microcontroller**
  - ARM Cortex M0
  - 256KB Flash, 32KB SRAM
  - 12-bit ADC, 10-bit DAC
  - Default Clock speed: 48MHz
- **TI DRV8837 H-bridge Motor Driver**
  - This board features (2) of these motor drivers for driving two separate motors
  - Low MOSFET On-Resistance: HS + LS 280mOhm
  - 1.8A Max Drive Current (Recommend 500mA max)
  - 1.8V to 11V Motor Operating Supply Voltage Range

- **TI PCA9544A Low Voltage 4-Channel I2C Multiplexer**
  - Channel Selection via I2C Bus
  - 0 to 400kHz Clock Frequency
  - Low Standby Current
  - Four Active-Low Interrupt Inputs
  - Active-Low Interrupt Output
- **ST LSM9DS1 9-Axis 3D accelerometer, 3D gyroscope, 3D magnetometer**
  - 3 acceleration channels, 3 angular rate channels, 3 magnetic field channels
  - ±2 / ±4 / ±8 / ±16 g linear acceleration full scale
  - ±4/±8/±12/±16 gauss magnetic full scale
  - ±245/±500/±2000 dps angular rate full scale
  - 16-bit data output
  - Embedded temperature sensor
  - "Always-on" eco power mode down to 1.9mA
  - Embedded FIFO
  - Position and motion detection functions
  - Click/double-click recognition
- **Atmel ATtiny841 8-bit Microcontroller**
  - 8 KB Flash Memory
  - 512 Bytes SRAM and EEPROM
  - Voltage: 1.7V - 5.5V
- 2.7V – 5.5V operating voltage with built-in 3.3V regulator
- Current: 20mA
- 20 IO pins available- up to 10 ADC inputs or up to 10 PWM outputs
- Arduino compatible bootloader with CDC Serial port, plug and play on OSX and Windows 10

- To send text to the Arduino IDE Serial Monitor, use the SerialUSB object instead of Serial
- If you were able to upload a sketch to the TinyZero and now it does not respond, you may need to force this into bootloader mode. To do this, power off the TinyZero using the slide switch. Plug the USB cable into the TinyZero and your computer. Then press and hold the button on the bottom on the TinyZero while sliding the switch to the ON position. Then try uploading your program to the TinyZero and it should work. You may need to try this several times if it does not work the first time.
- All batteries are sold separately

Downloads

- **SAMD21 Datasheet**
- **DRV8834 Datasheet**
- **PCA9544A Datasheet**
- **LSM9DS1 Datasheet**
- **ATtiny841 Datasheet**
- **Eagle Files**
- **Schematic**