



TINYZERO PROCESSOR BOARD

ASM2021-R

TinyZero is TinyCircuits' second generation processor board, adding performance upgrades and additional features to the original TinyDuino. TinyZero 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 20x20mm board. This processor board also has an **optional accelerometer** version, which adds the low power Bosch BMA250 3-axis accelerometer to the same board without increasing the size. We've kept our standard TinyShield expansion port, allowing for use of all of our current shields, and all 20 IO pins are available for use. *Note: The battery is not included and is sold separately.*

The TinyZero Processor Board is available in two variations:

- **Without accelerometer** - TinyZero with all the features mentioned above, except the 3-axis accelerometer.
- **With accelerometer** - TinyZero with a built in Bosch BMA250 3-axis accelerometer

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**
- **Optional 3-axis accelerometer**
- **Up to 10 ADC inputs, up to 10 PWM outputs, up to 16 external interrupts**

*To learn more about the **TinyDuino Platform**, click [here](#)*

TECHNICAL DETAILS

- 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!)
 - 20mm x 20mm (.787 inches x .787 inches)
 - Max Height: 2.9mm (0.12 inches)
 - Ultra-thin 0.61mm (0.024 inches) PCB
 - Weight: 1.40 grams (0.049 ounces)
- Atmel 32-bit ATSAMD21G18A ARM Microcontroller
 - ARM Cortex M0
 - 256KB Flash, 32KB SRAM
 - 12-bit ADC, 10-bit DAC
 - Default Clock speed: 48MHz
- Bosch BMA250 Accelerometer Specs (optional)
 - 3-axis (X, Y, & Z)

- Digital resolution: 10bit
- Measurement ranges: +-2g, +-4g, +-8g, +-16g
- Bandwidths: 1000Hz to 8Hz
- Low Power: 130uA @1kHz data rate
- 2.7V – 5.5V operating voltage with built in 3.3V regulator
- 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

NOTES

- 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



