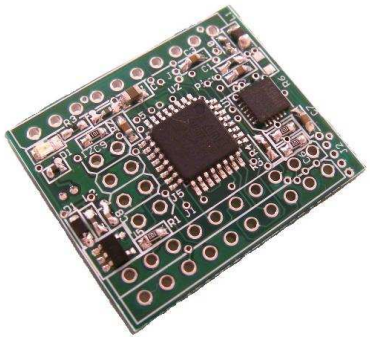
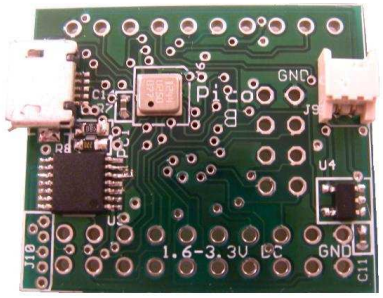
Overview

PicoB is a 10DOF sensor node with 3-axis accelerometer, 3-axis gyro, 3-axis magnetometer and barometric pressure sensor. PicoB main processor is an ATmega328 running at 8MHz with high speed A/D, D/A and digital IO and a PIC16F1454 processor providing a USB 2.0 connection. PicoB is available without sensors for wireless control applications in automation and industrial applications.

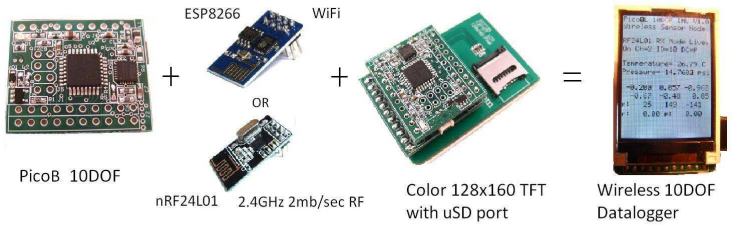


Features:

- 8MHz 8bit ATmega328 processor
- USB 2.0 (PIC16F1454 processor)
- 10bit A/D 30Ksps
- One USART, one SPI
- Lithium battery port and onboard charger
- On chip DFU boot loader for software field upgrades
- SPI interface connector for RF24L01 Wireless module
- Digital and Analog IO brought to connectors
- Expansion connectors on 0.1" centers for proto board
- Real time data acquisition application communicating wirelessly with PicoB sensors using RF24L01 module
- MPU-9150 9DOF motion sensor
- BMP180 barometric pressure sensor
- Source code and project file for AVR Studio 6.2 and Arduino IDEs

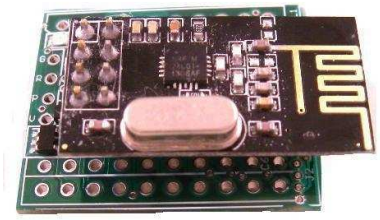


The PicoB is a 10DOF sensor node for wireless motion sensing applications. PicoB comes with a real time data acquisition application that acquires all motion sensor data and wireless sends it to the desktop. The application was developed using AVR Studio 6.2 and Arduino. Source code and project files are available for download. An onboard bootloader can be used to load new applications.



RF24L01 Wireless Connector

PicoB has a connector that allows direct connection of a low cost RF2401 wireless communication module. Using a small adapter a Serial WiFi module can also be attached to the PicoB.



MPU-9150 9DOF Inertial Sensor

A 9 Degree of Freedom (9DOF) Inertial sensor provides motion sensing. The sensor measures acceleration, rotation and magnetic heading on three axis.

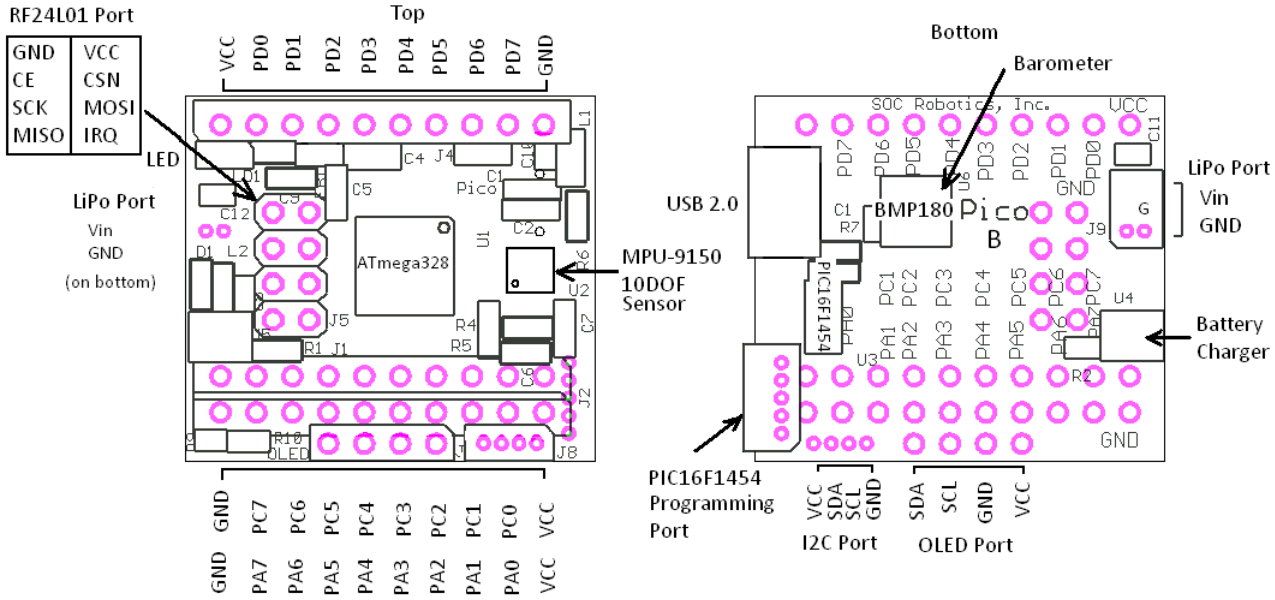
BMP180 Barometer Sensor

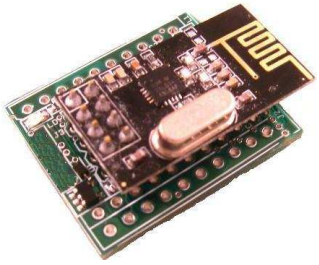
A barometric pressure sensor can be used to measure height with a resolution of 75 cm.

PicoB Connector Pin Assignments

PicoB has several interface options and two processors – ATmega328 and PIC16F1454. The ATmega328 provides analog input, digital IO, SPI, USART and I2C interfaces. The PIC16F1454 provides a USB interface and can reset the other processor. A dedicated connector allows direct connection of the popular RF24L01 wireless communication module. PicoB also supports the ESP8266 Serial WiFi module (with an adapter). A 9 DOF Inertial sensor (MPU-9150) and barometer (BMP180) turn the PicoB into a 10DOF IMU. Processor signal pins are brought out to expansion ports to allow prototype development and the attachment of other sensors. A dedicated connector port allows direct connection of a popular low cost OLED 128x64 pixel display. PicoB can be programmed by activating the onchip bootloader via the USB port. A lithium battery charging circuit monitors the state of an attached battery and automatically charges the battery when needed if the PicoB is plugged into a USB port. The PicoB comes pre-programmed with a data acquisition application.

PicoB Connector Pin Assignment

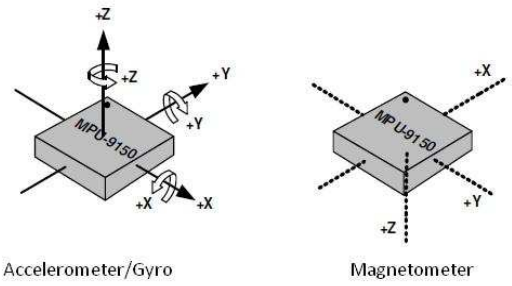




RF24L01 mounted on PicoB.

OLED 128x64 pixel display mounted on PicoB

MPU-9150 Sensor Orientation



Orientation of the accelerometer, gyro and magnetometer on the PicoB. The small dot on the package above corresponds to the small circle in the picture above.