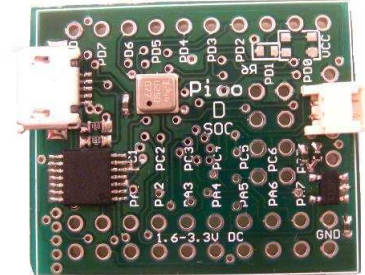
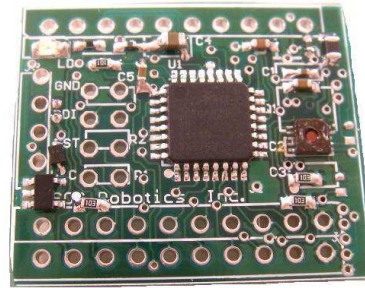


Overview

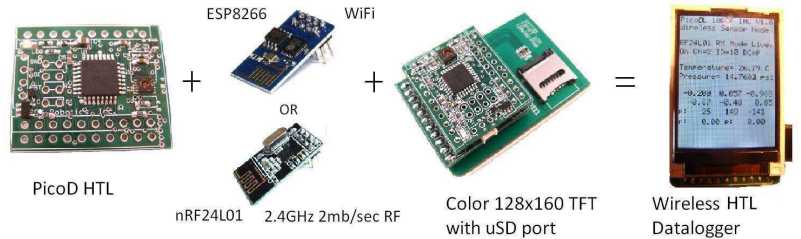
PicoD is an environmental sensor node with precision digital humidity, temperature and ambient light level sensors. PicoD main processor is an ATxmega32E5 running at 32MHz with high speed A/D, D/A plus digital IO and a PIC16F1454 processor providing a USB 2.0 connection. PicoD is a cost effective environment sensor platform with expansion options.

Features:

- Fast 32MHz 8bit ATxmega32E5 processor
- USB 2.0 (PIC16F1454 processor)
- 12-16bit A/D 300Ksps, 12bit 1Msps DAC
- Two USARTs, 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 PicoD sensor data wirelessly using RF24L01 module
- Si7013 humidity/temperature sensor
- APDS-9007 ambient light level sensor lux
- BMP180 barometric pressure sensor
- Source code and project file for AVR Studio 6.2



The PicoD is an environmental sensor node for wireless humidity/temperature sensing applications. PicoD comes with a real time data acquisition application that acquires all environmental data and wirelessly sends it to the desktop. The application was developed using AVR Studio 6.2 and source code and project files are available for download. An onboard bootloader can be used to load new applications via the USB connection.



RF24L01 Wireless Connector

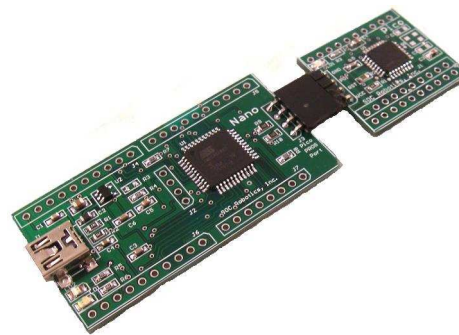
PicoA has a connector that allows direct connection of a low cost RF2401 wireless communication module. Using a small adapter a Serial WiFi module can also be attached to the PicoA.

Si7013 Humidity/Temperature Sensor

A precision digital humidity and temperature sensor monitors environmental parameters.

BMP180 Barometer Sensor

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



RF Modules



RF24L01

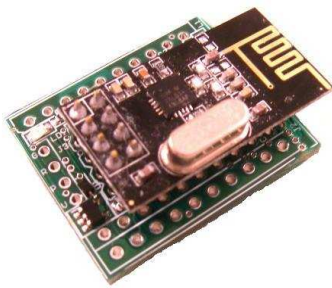
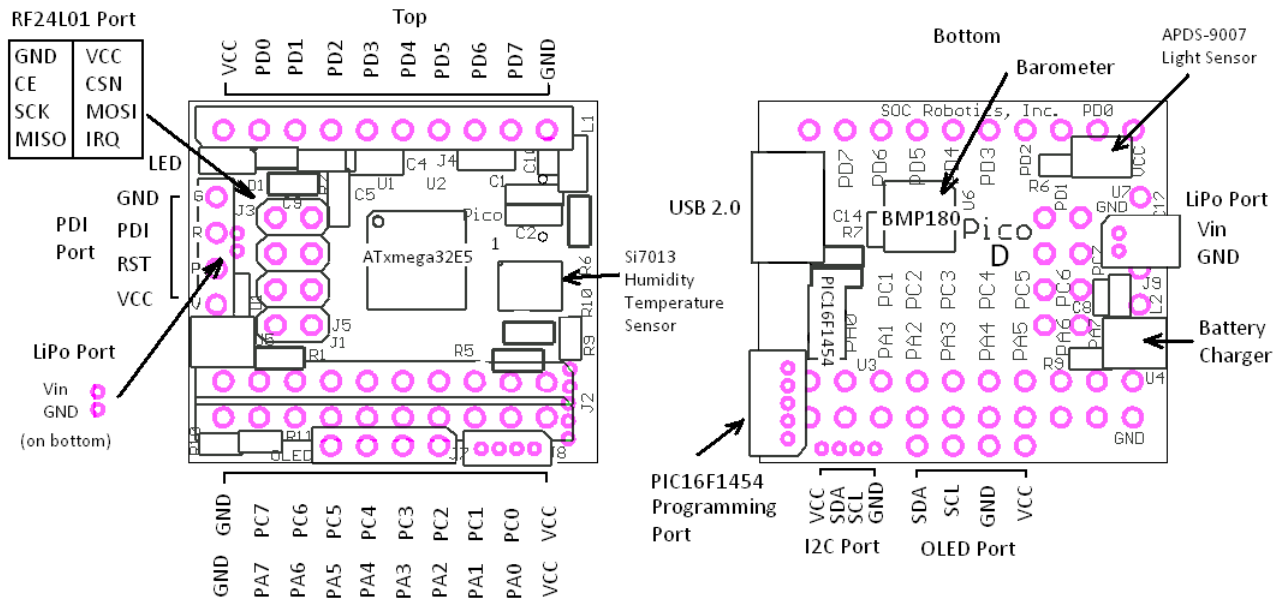


ESP8266 WiFi

PicoD Connector Pin Assignments

PicoD has several interface options and two processors – ATxmega32E5 and PIC16F1454. The ATxmega32E5 provides analog input, analog output, digital IO, SPI, USARTs and I2C interfaces. The PIC16F1454 provides the USB interface and can reset the other processor. A dedicated connector allows direct connection of the popular RF24L01 wireless communication module. PicoD also supports the ESP8266 Serial WiFi module (with an adapter). A precision digital environmental sensor measures humidity (2%) and local temperature (0.5C) (Si7013), ambient light level (lux) sensor (APDS-9007) and barometer (BMP180) turn the PicoD into a precision environmental sensor node. 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. A Nano can program a PicoD using the PDI programming port – programming software is included or via the USB port by activating the ATxmega’s on chip bootloader. A lithium battery charging circuit monitors the state of an attached battery and automatically charges the battery when needed if the PicoA is plugged into a USB port. The PicoD comes pre-programmed with a data acquisition application and the ambient light level sensor is calibrated to output a reading in lux.

PicoD Connector Pin Assignment



RF24L01 mounted on PicoD.



OLED 128x64 pixel display mounted on PicoD.

Light level sensor is calibrated at the factory to output light level in lux. The barometer measures atmospheric pressure in psi.