MYOSA V2.0 BOARD PINOUT

3.5 mm 4 poles Female Connector for Sensor

CP2102 USB TO UART CONTROLLER FOR POWER AND COMMUNICATION
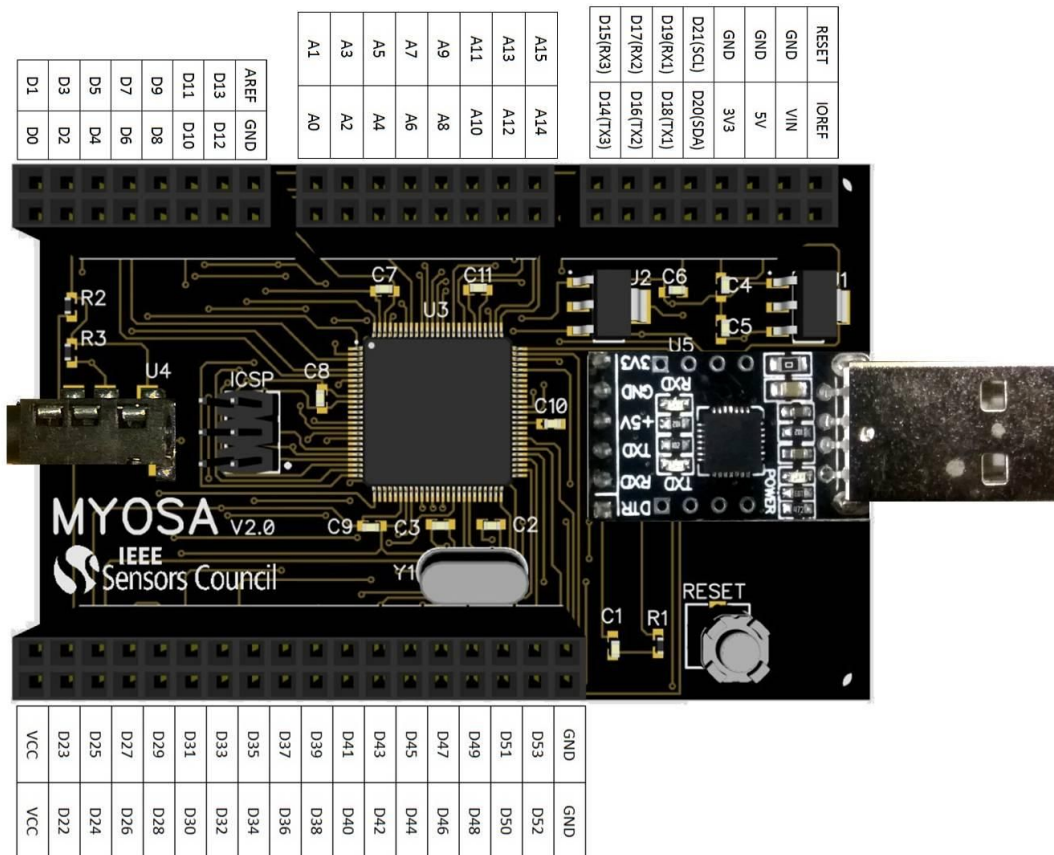
MYOSA V2.0 Technical Specifications

I. Microcontroller – ATmega2560
II. Operating Voltage – 5 V
III. Input Voltage(Recommended) – 7 to 12 V
IV. Input Voltage(limit) – 6-20 V
V. Digital I/O Pins – 54 (of which 15 provide PWM output)
VI. Analog Input Pins – 16
VII. DC current per I/O Pin – 20 mA
VIII. DC current for 3.3 V Pin – 50 mA
IX. Flash Memory - 256 KB of which 8 KB used by boot loader
X. SRAM – 8 KB
XI. EEPROM – 4 KB
XII. Clock Speed – 16 MHz
XIII. BUILT-IN LED – D13
XIV. Length – 95 mm
XV. Width – 50 mm

SPECIFICATIONS OF MYOSA v2.0

OVERVIEW:

MYOSA board is a great choice for learning about sensors and its applications. Actually, it is meant for the electronic enthusiastic school students. But, it can also be used by

developers who can modify the code and use it the way they want. It has 54 digital input/output pins (of which 15 can be used as PWM outputs), 16 analog inputs, a USB connection, connector for sensor, a reset button and other components. It contains everything needed to support the microcontroller; simply connect it to a computer using USB port if you want to modify the code or power it using a power bank*.

POWER:

- Every MYOSA board needs a way to be connected to a power source. The MYOSA board can directly be powered from a USB port of computer or a (power bank)*.

- The USB connection also helps you in loading code onto your MYOSA board.

- Thus, USB port of the MYOSA board is not only used to modify the code but also it is used to power up the board.

  *NOTE: Do NOT use a power supply greater than 20 Volts as you will overpower (and thereby destroy) your MYOSA board. The recommended voltage for most MYOSA boards is between 6 and 12 Volts.

VOLTAGE REGULATOR:

- The voltage regulator is not actually something you can (or should) interact with on the MYOSA board. But it is potentially useful to know that it is there and what it's for.

- The voltage regulator does exactly what it says – it controls the amount of voltage that is let into the MYOSA board. Think of it as a kind of gatekeeper; it will turn away an extra voltage that might harm the circuit. Of course, it has its limits, so don't hook up your MYOSA board to anything greater than 20 volts.

Reset Button:

- Pushing it will temporarily connect the reset pin to ground and restart any code that is loaded on the MYOSA board.

- This can be very useful if your code doesn't repeat, but you want to test it multiple times.

PIN SPECIFICATION:

- **GND**: Short for 'Ground'. There are several GND pins any of which can be used to ground your circuit.

- **5V & 3.3V**: As you might guess, the 5V pin supplies 5 volts of power, and the 3.3V pin supplies 3.3 volts of power. Most of the simple components used with the MYOSA board run happily off of 5 or 3.3 volts.

- **DIGITAL PINS (D0 TO D53):** These pins can be used for both digital input (like telling if a button is pushed) and digital output (like powering an LED).

- **PWM PINS:** These pins act as normal digital pins, but can also be used for something called Pulse-Width Modulation (PWM). These are digital pins D2 to D13, D45, D46 and D47. These pins are able to simulate analog output (like fading an LED in and out).

- **Analog (A0 TO A15)**: These pins can read the signal from an analog sensor (like a temperature sensor LM35) and convert it into a digital value that we can read.
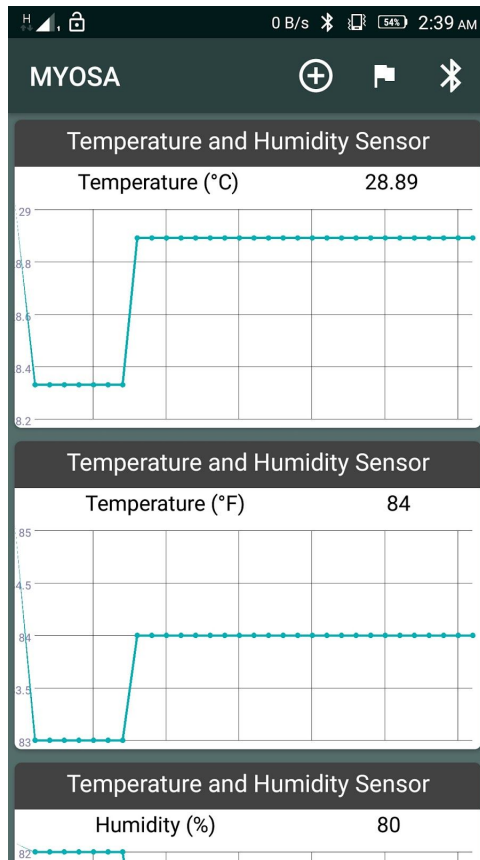
CP2102(USB to UART Bridge):

- The CP2102 is a highly-integrated USB-to-UART Bridge Controller providing a simple solution for updating RS-232 designs to USB using a minimum of components and PCB space.

- The CP2102 includes a USB 2.0 full-speed function controller, USB transceiver, oscillator, EEPROM, and asynchronous serial data bus (UART) with full modem control signals in a compact 5 x 5 mm MLP-28 package.

- No other external USB components are required.

HC-05(Bluetooth Module):

- HC-05 module is an easy to use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup.

- Serial port Bluetooth module is fully qualified Bluetooth V2.0+EDR (Enhanced Data Rate) 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband.

- **Specifications of HC-05:**

  - Typical -80dBm sensitivity
  - Up to +4dBm RF transmit power
  - Low Power 1.8V Operation ,1.8 to 3.6V I/O
  - PIO control
  - UART interface with programmable baud rate
  - With integrated antenna
  - With edge connector

MYOSA Android Application:

- MYOSA android application is an easy way to visualize the data from the sensors and create events based on sensor data.
- Data from the sensors is sent to the application using HC-05(Bluetooth Module) which uses RX1 and TX1 of the controller.
- Application plots this data and gives a better understanding of the data.
- Also application can generate actions/events based on particular data. It triggers that event when sensor data meets certain conditions.
- For example, If temperature is greater than 30 ℃ , then it should be indicated by red LED.
- This app communicates back with the controller board and turns on the I2C LED(which is an actuator module) connected to the controller board.

Temperature and Humidity Sensor

Temperature (°C)	28.89

Temperature and Humidity Sensor

Temperature (°F)	84

Temperature and Humidity Sensor

Humidity (%)	80

Event Management

Event Name: _____

Character to send: _____

- ☐ Visibility(Raw Data) (Luminousity Sensor)
- ☐ Infrared (Raw Data) (Luminousity Sensor)
- ☐ Illuminance(LUX) (Luminousity Sensor)
- ☐ Temprature (°C) (Berometric Pressure sensor)
- ☐ Pressure (mbar) (Berometric Pressure sensor)
- ☐ Pressure (mmHg) (Berometric Pressure sensor)
- ☐ Altitude (meter) (Berometric Pressure sensor)
- ☐ CO2 (ppm) (Air Quality Snensor)
- ☐ TVOC (ppb) (Air Quality Snensor)
- ☐ Heart Rate (BPM) (Particle Sensor)
- ☐ Avg Heart Rate (BPM) (Particle Sensor)
- ☐ Oxygenated blood (%) (Particle Sensor)

CANCEL   CLEAR ALL EVENT   DONE