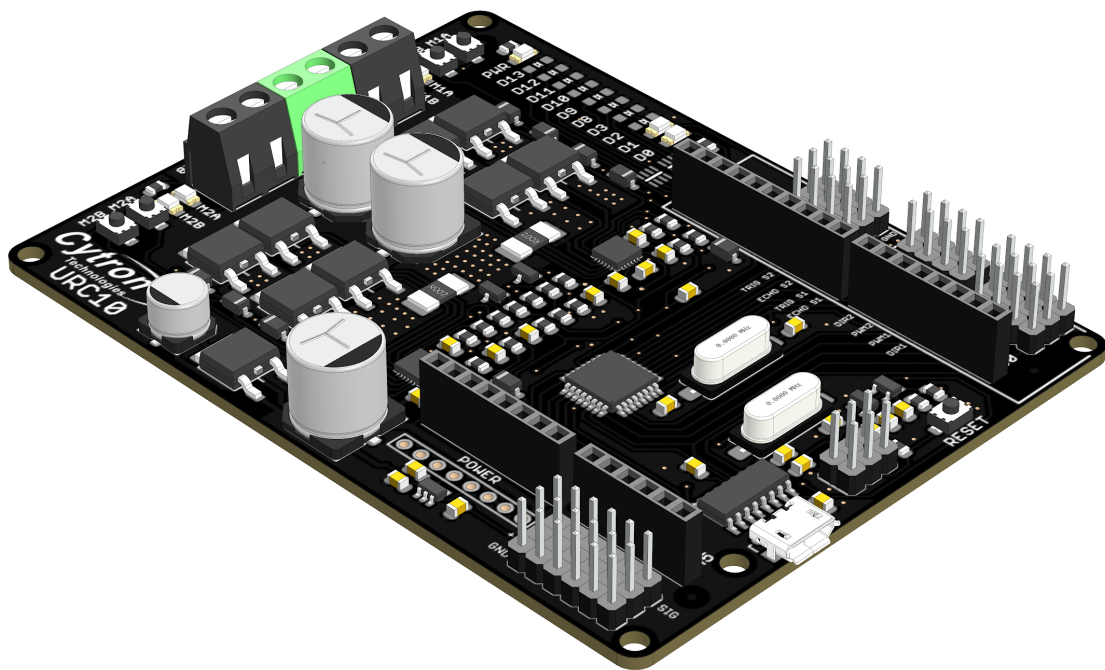




URC10

Sumo Robot Controller



Datasheet

Rev 1.0
March 2019

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1. BOARD LAYOUT & FUNCTION

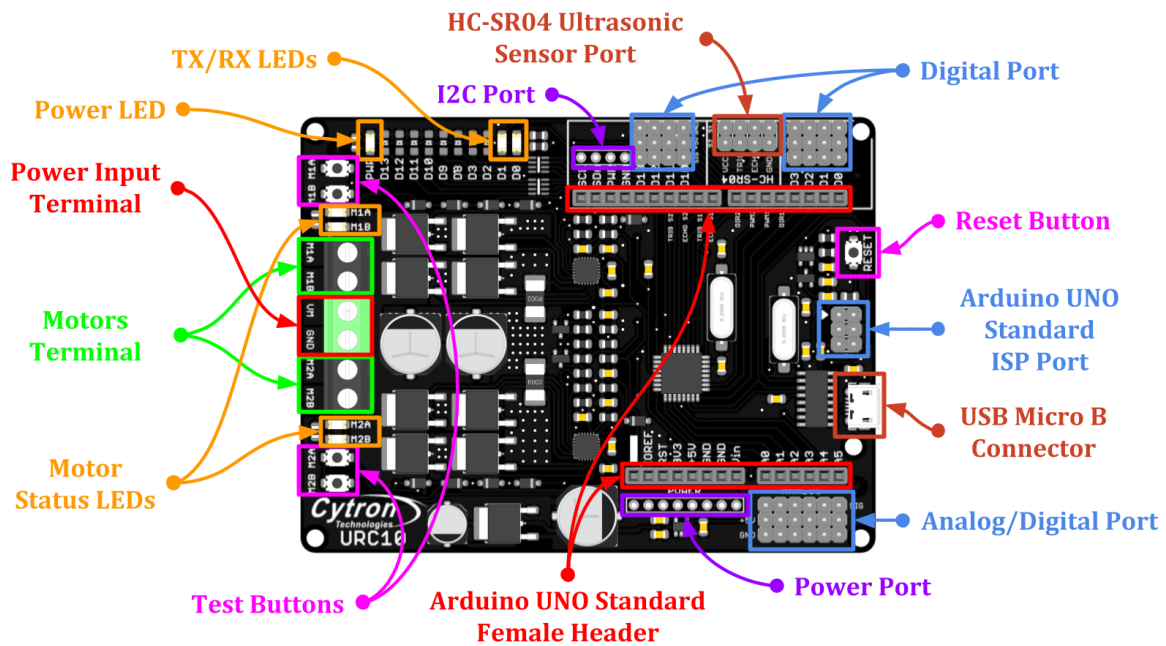
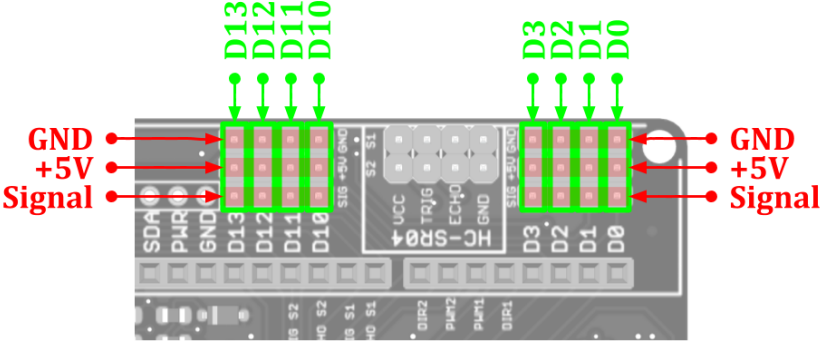
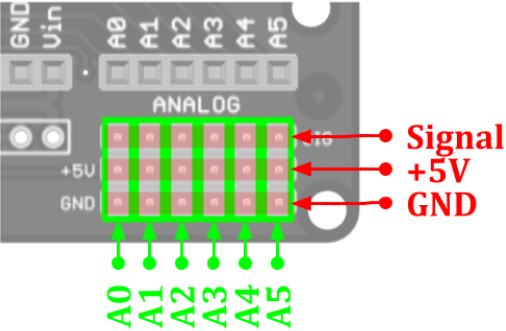
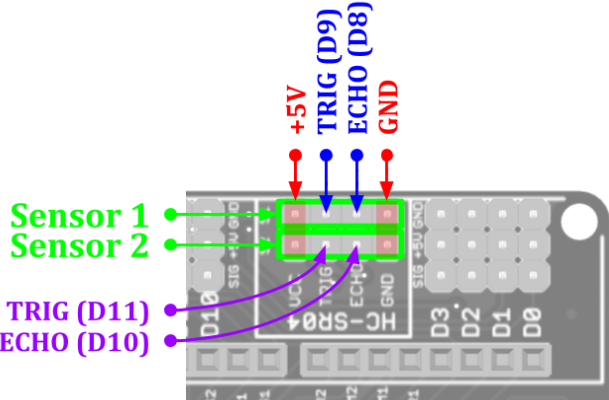


Figure 1: URC10 Board Functions

| Function | Description |
|---|---|
| Power Input Terminal | Connect to battery. <ul style="list-style-type: none"> • VM : Positive • GND : Negative <i>Warning : Connecting in reverse polarity will damage the board instantaneously.</i> |
| Motors Terminal | Connect to motors. Motor direction depends on the polarity. |
| Power LED | Turn on when power up. |
| Motor Status LEDs | Turn on when the motor is running. <ul style="list-style-type: none"> • M1A / M2A : Forward* • M1B / M2B : Backward* |
| TX/RX LEDs | Turn on when data is transmitted/received via the serial port. |
| Test Buttons | Press to test the functionality of the motor driver. Motor will run at full speed. <ul style="list-style-type: none"> • M1A / M2A : Forward* • M1B / M2B : Backward* |
| Reset Button | Press to reset the microcontroller. |
| Arduino UNO Standard Female Header | The female header follows the standard Arduino UNO form factor. Can be used with compatible Arduino Shield. <i>Note : Pin D4, D5, D6 D7 are connected to motor driver internally. Avoid using shield that uses these pins.</i> |

* Actual motor direction is depending on the motor connection.
 Swapping the connection (MA & MB) will reverse the direction.

| Function | Description |
|--|--|
| <p>Digital Port x 6</p> | <p>Digital Input/Output Port. This port is connected to pin D0 - D3 and D10 - D13. <i>Note : Pin D0 and D1 are used for serial communication.</i></p>  |
| <p>Analog/Digital Port x 6</p> | <p>Analog Input or Digital Input/Output Port. This port is connected to pin A0 - A5.</p>  |
| <p>Arduino UNO Standard ISP Port</p> | <p>Standard Arduino UNO ISP Port. Used to load program via AVR Programmer. Can be used for SPI communication too.</p> |
| <p>HC-SR04 Ultrasonic Sensor Port x 2</p> | <p>Connect to HC-SR04 Ultrasonic Sensor. Sensor 1: <ul style="list-style-type: none"> • ECHO - D8 • TRIG - D9 Sensor 2: <ul style="list-style-type: none"> • ECHO - D10 • TRIG - D11 </p>  |

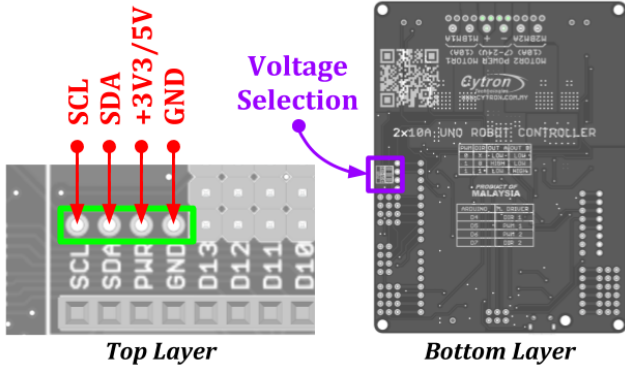
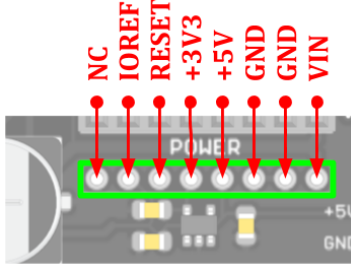
| Function | Description |
|---|---|
| USB Micro B Connector | Used to upload Arduino program from PC. Can be used for debugging purpose too (Serial Monitor). |
| I2C Port | <p>Connect to I2C slave device. Power voltage is selectable at bottom layer. +3V3 is selected by default. To select +5V, cut trace and solder center pad and 5V pad together.</p>  |
| Power Port | <p>Breakout of the Arduino power pins.</p>  |
| Motor Driver Port (Connected Internally) | <p>These pins are connected to the motor driver internally.</p> <p>Motor 1:</p> <ul style="list-style-type: none"> • DIR - D4 • PWM - D5 <p>Motor 2:</p> <ul style="list-style-type: none"> • DIR - D7 • PWM - D6 |

Table 1: URC10 Board Functions

| PWM | DIR | Output A (MA) | Output B (MB) | Motor |
|------|----------------|---------------|---------------|-----------|
| Low | X (Don't Care) | Low | Low | Brake |
| High | Low | High | Low | Forward* |
| High | High | Low | High | Backward* |

Table 2: PWM/DIR Input Truth Table

* Actual motor direction is depending on the motor connection.
 Swapping the connection (MA & MB) will reverse the direction.

2. SPECIFICATIONS

| No | Parameters | Min | Max | Unit | |
|----|--------------------------------|---------------------|------|------|---|
| 1 | Power Input Voltage (Vin) | 8 | 25 | VDC | |
| 2 | Maximum Motor Current | Continuous | - | 10 | A |
| | | Peak (< 10 seconds) | - | 30 | A |
| 3 | Logic Input Voltage | Low Level | 0 | 0.7 | V |
| | | High Level | 1.5 | 5.0 | V |
| 4 | DC +3V3 Output Maximum Current | - | 500 | mA | |
| 5 | DC +5V Output Maximum Current | - | 1000 | mA | |
| 6 | IO pin Maximum Current | - | 20 | mA | |

Table 3: URC10 Absolute Maximum Ratings

3. DIMENSION

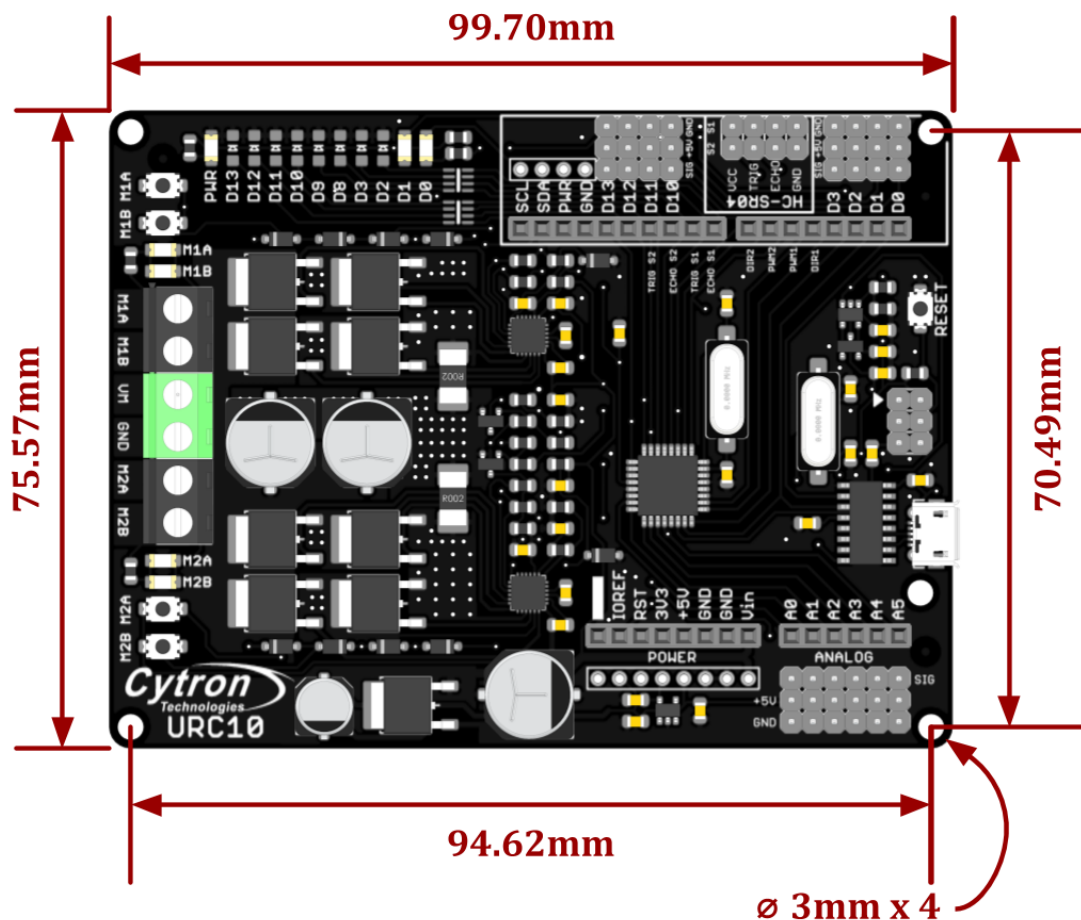


Figure 2: URC10 Dimension

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