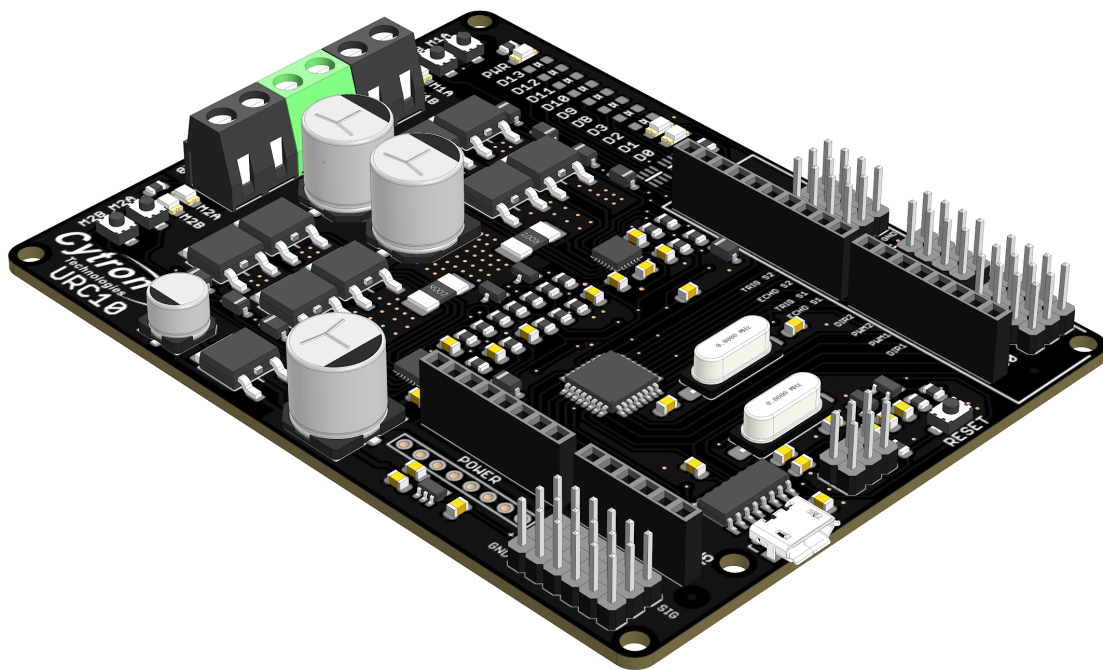




URC10

Sumo Robot Controller



Datasheet

Rev 1.0
March 2019

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1. BOARD LAYOUT & FUNCTION

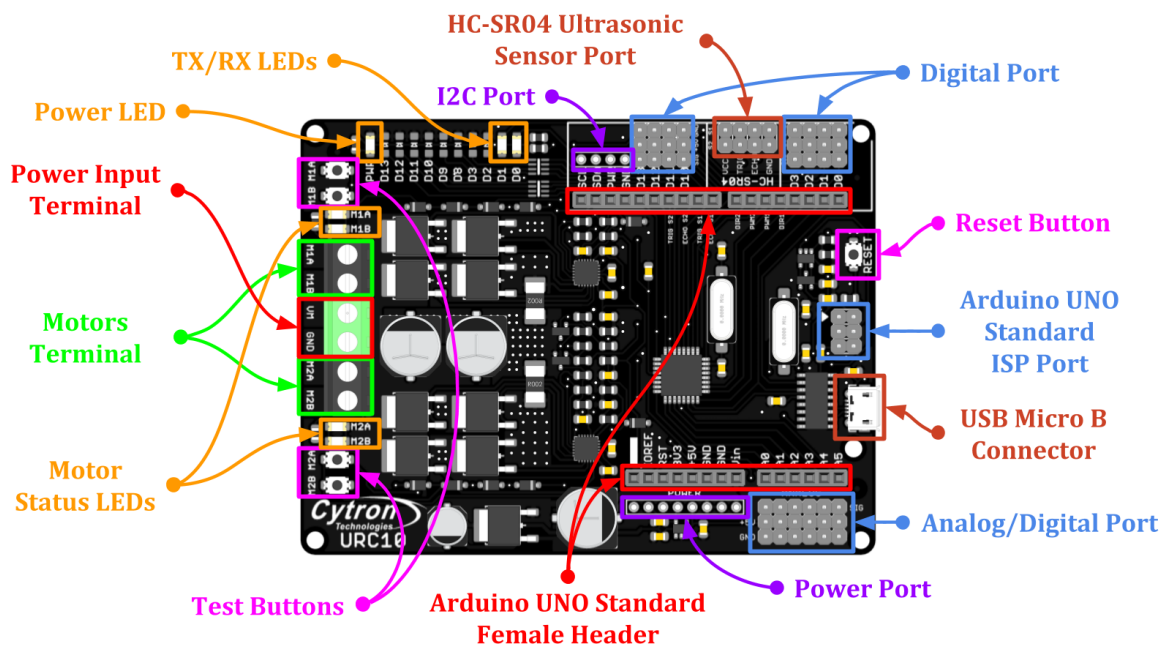
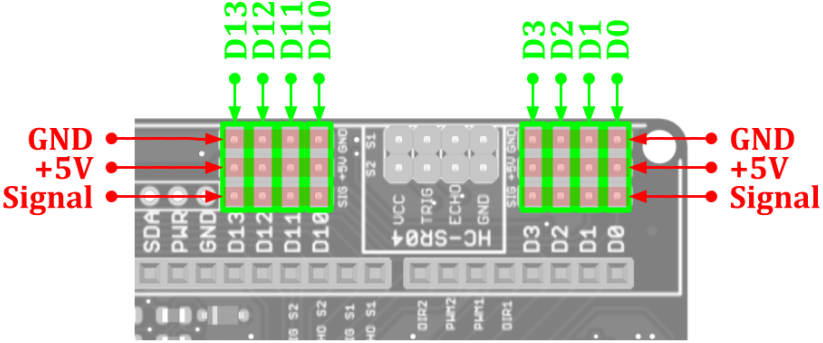
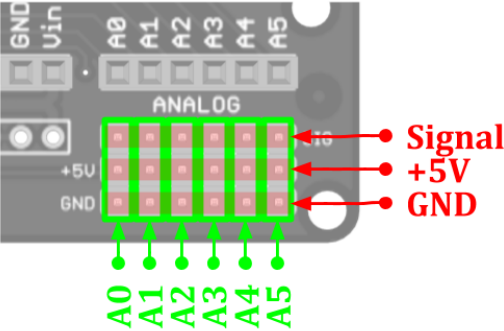
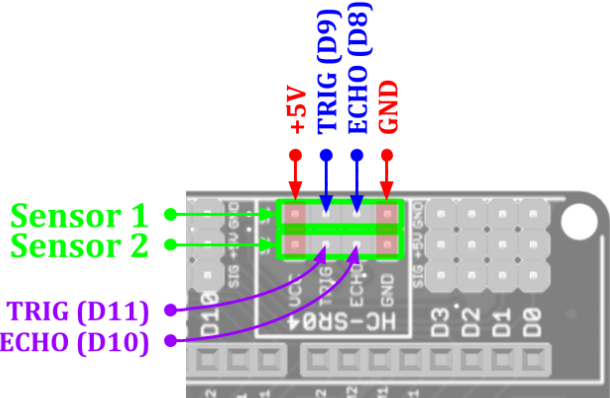


Figure 1: URC10 Board Functions

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.</i> <i>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
Digital Port x 6	<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> 
Analog/Digital Port x 6	<p>Analog Input or Digital Input/Output Port. This port is connected to pin A0 - A5.</p> 
Arduino UNO Standard ISP Port	<p>Standard Arduino UNO ISP Port. Used to load program via AVR Programmer. Can be used for SPI communication too.</p>
HC-SR04 Ultrasonic Sensor Port x 2	<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> 

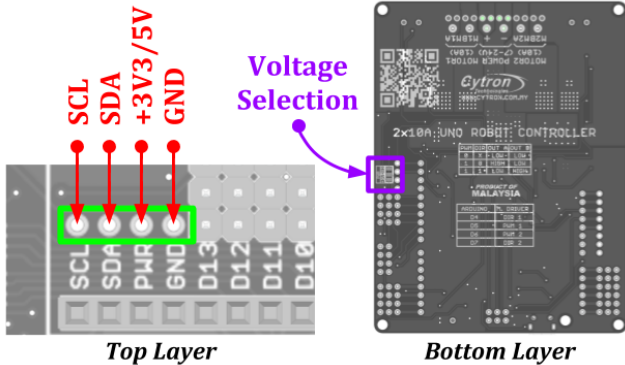
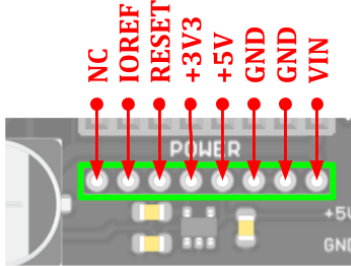
Function	Description
USB Micro B Connector	Used to upload Arduino program from PC. Can be used for debugging purpose too (Serial Monitor).
I2C Port	<p>Connect to I2C slave device. Power voltage is selectable at bottom layer. +3V3 is selected by default. To select +5V, cut trace and solder center pad and 5V pad together.</p>  <p><i>Top Layer</i> <i>Bottom Layer</i></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

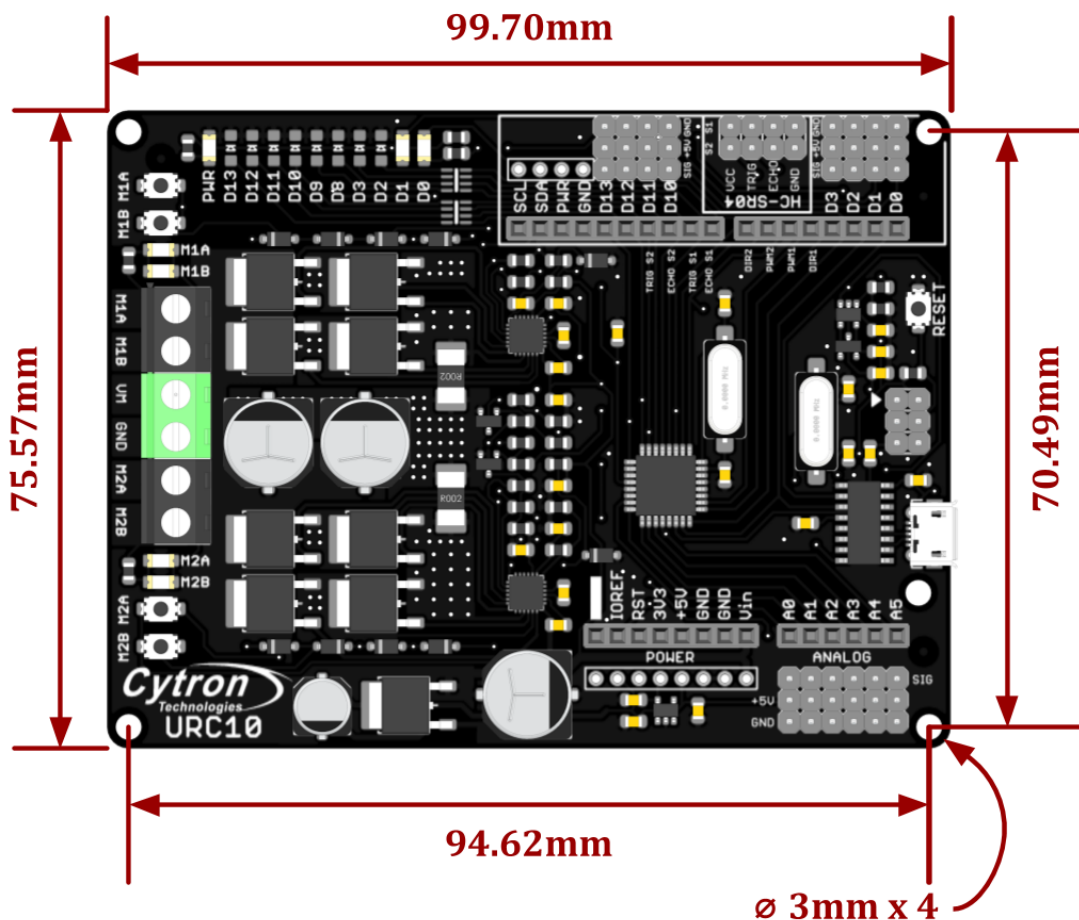


Figure 2: URC10 Dimension

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