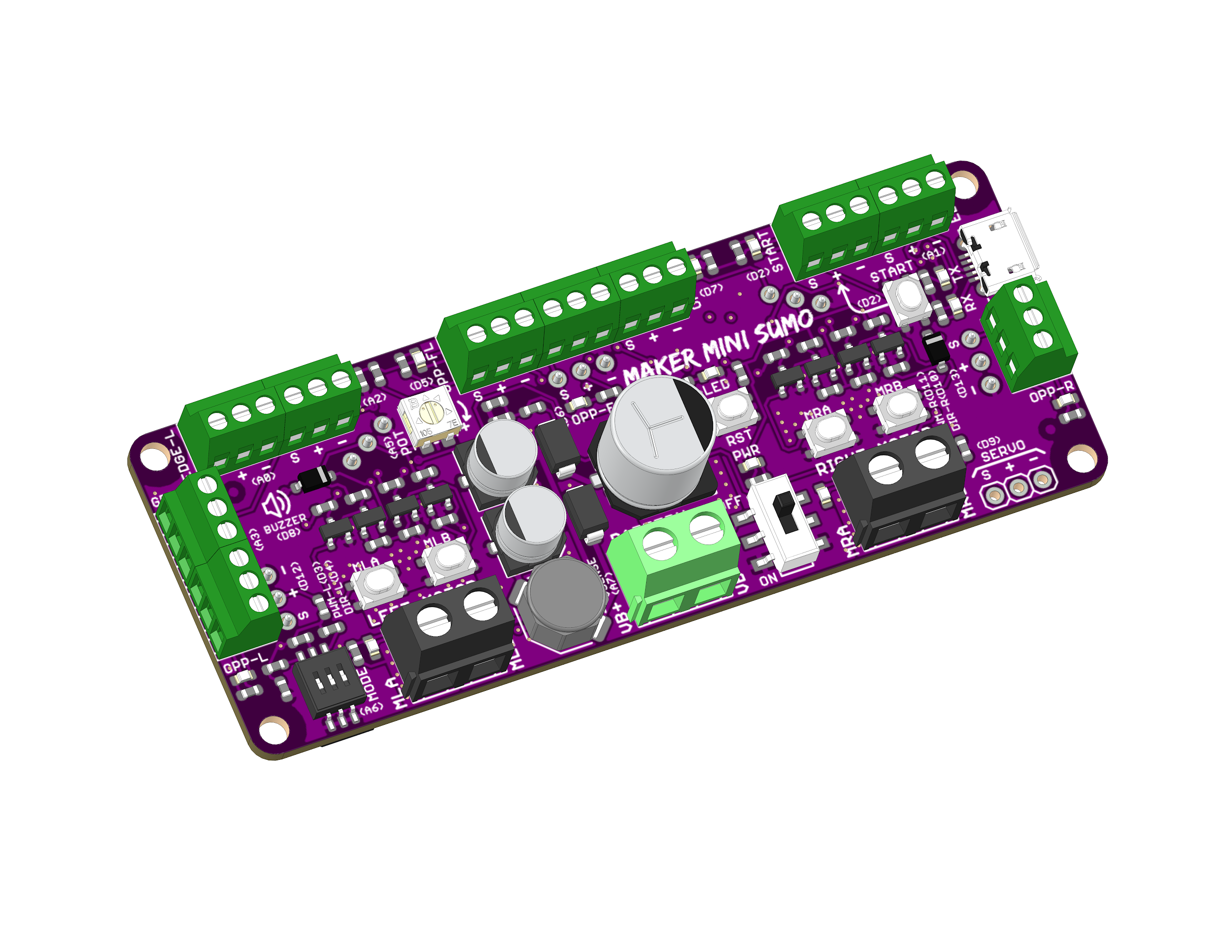


**Board RCU 7A 2 CH**

**(Arduino Nano/Uno Compatible)**



Datasheet

Rev 1.0

January 2025

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# 1. FEATURES

* Arduino Nano/Uno Compatible (Powered by ATMEGA328P).
* Vin: 5V - 12V
* Reverse polarity protection on Vin.
* Switching regulator for +5V reduce heat and increase efficiency.
* Motor: 3A continuous, 6A peak
* Test buttons and status LED for motors.
* 1 x Start Module Input (Digital), with LED and onboard start button.
* 1 x Onboard Potentiometer.
* 1 x Mode Selection DIP Switch (3 Ways).
* Converts higher voltage down to 5v for microcontroller operation.
* 4 x Extra Digital pin and Analog pin on board.

# 2. BOARD LAYOUT & FUNCTION

A diagram of a circuit board

Description automatically generated

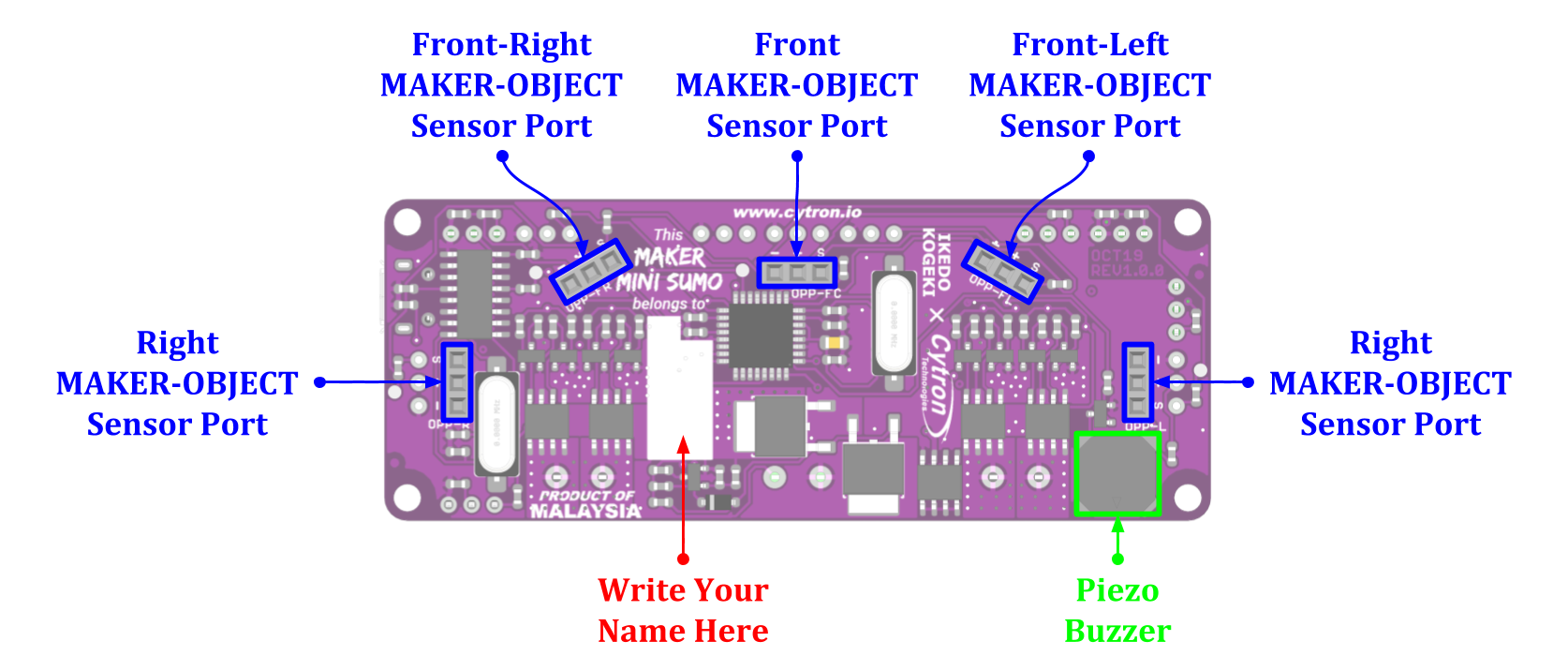
*Figure 1: RCU 7A 2CH Board Functions (Top)*

|  |  |
| --- | --- |
| **Function** | **Description** |
| **Battery Terminal** | Connect to battery.   * VIN+ : Positive * VIN- : Negative/Ground |
| **On/Off Switch** | Turn on/off the power to the board. |
| **Motor Terminals** | Connect to motors.  Motor direction is dependent on the polarity. |
| **Motor Status LEDs** | Turn on when the motor is running.   * MLA / MRA : Forward\* * MLB / MRB : Backward\* |
| **Analog Pin & Digital Pin** | Can be used as a digital input/output or analog input.   * S : Digital Input/Output or Analog Input Signal. * V : DC +5V Output. * G : Ground. |
| **Dual-15 pin Arduino Nano** | Connect Arduino Nano on board |
| **Potentiometer** | Connected internally to analog input.  Can be used to fine tune the robot speed, sensor threshold, etc... |
| **Mode Selection**  **DIP Switch** | 3-Ways DIP switch provides up to 8 configurations.  Can be used to select different tactic/mode for competition. |
| **Calibrate Switch** | Use to calibrate to establish movement |
| **Motor Calibrate Switch** | Use to calibrate Motor forward and backward, right and left. |

*Table 1: RCU 7A 2CH Board Functions (Top)*

* *Actual motor direction is dependent on the motor connection.*

*Swapping the connection (MxA & MxB) will reverse the direction.*



*Figure 2: RCU 7A 2CH Board (Bottom)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PWM-L/PWM-R** | **DIR-L/DIR-R** | **MLA/MRA** | **MLB/MRB** | **Motor** |
| **Low** | **X (Don’t Care)** | Low | Low | Brake |
| **High** | **Low** | High | Low | Forward\* |
| **High** | **High** | Low | High | Backward\* |

*Table 3: Input Truth Table*

|  |  |  |  |
| --- | --- | --- | --- |
| DIP Switch Output | | | Sensor Value |
| 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 839-841 |
| 0 | 1 | 0 | 930-932 |
| 0 | 1 | 1 | 957-959 |
| 1 | 0 | 0 | 977-979 |
| 1 | 0 | 1 | 985-987 |
| 1 | 1 | 0 | 991-993 |
| 1 | 1 | 1 | 995-997 |

* *Actual motor direction is depending on the motor connection.*

*Swapping the connection (MxA & MxB) will reverse the direction.*

# 3. ARDUINO PIN MAPPING

All the pins of Arduino Nano on dual-15 pin RCU 7A 2CH Board are already pre-defined in the [CytronMakerSumo Library](https://github.com/CytronTechnologies/CytronMakerSumo). Please refer to the GitHub page on how to install the library.

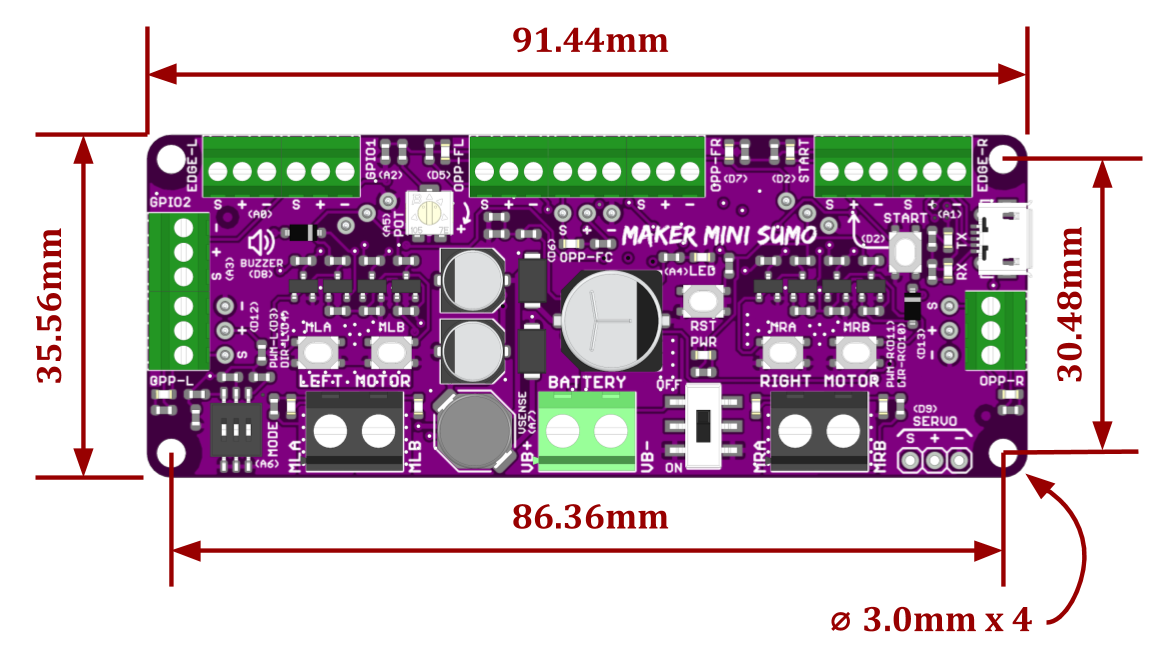
|  |  |  |  |
| --- | --- | --- | --- |
| **Port** | | **Constant Defined in Library** | **Arduino Pin** |
| Potentiometer | | POT | A5 |
| Mode Selection DIP Switch | | MODE | A6 |
| Left Motor | PWM | PWM\_L | D3 |
| Direction | DIR\_L | D4 |
| Right Motor | PWM | PWM\_R | D11 |
| Direction | DIR\_R | D10 |
| Digital and Analog Pin | Analog Pin | A0 | A0 |
| A1 | A1 |
| A3 | A2 |
| A4 | A4 |
| Digital Pin | D3 | D3 |
| D11 | D11 |
| D6 | D6 |
| D13 | D13 |

# 4. SPECIFICATIONS

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No** | **Parameters** | | **Min** | **Max** | **Unit** |
| 1 | Power Input Voltage (Vin) | | 5.0 | 12.0 | VDC |
| 2 | Maximum Motor Current (Per Channel) | Continuous | - | 3.0 | A |
| Peak (< 5 seconds) | - | 6.0 | A |
| 3 | Motor PWM Frequency | | DC | 20 | KHz |
| 4 | Digital Input Voltage | Low Level | 0 | 0.5 | V |
| High Level | 1.7 | 5.0 | V |
| 5 | Analog Input Voltage | | 0 | 5.0 | V |
| 5 | DC +5V Output Maximum Current (Total) | | - | 500 | mA |

*Table 3: RCU 7A CH Absolute Maximum Ratings*

# 5. DIMENSION



*Figure 3: RCU 7A 2CH Board Dimension*

*Prepared by:*

***Mycest Solutions Sdn Bhd***

[*www.Mycest.com*](http://www.Mycest.com)

No. 3 Tingkat Atas,

Taman Bunga Chempaka Serom 6,

84400 Sungai Mati,

Johor, Malaysia.

*Tel: +6019 – 607 6807*

*Fax: +606 – 975 3630*

*Email:* [*mycestsolution@gmail.com*](mailto:mycestsolution@gmail.com)