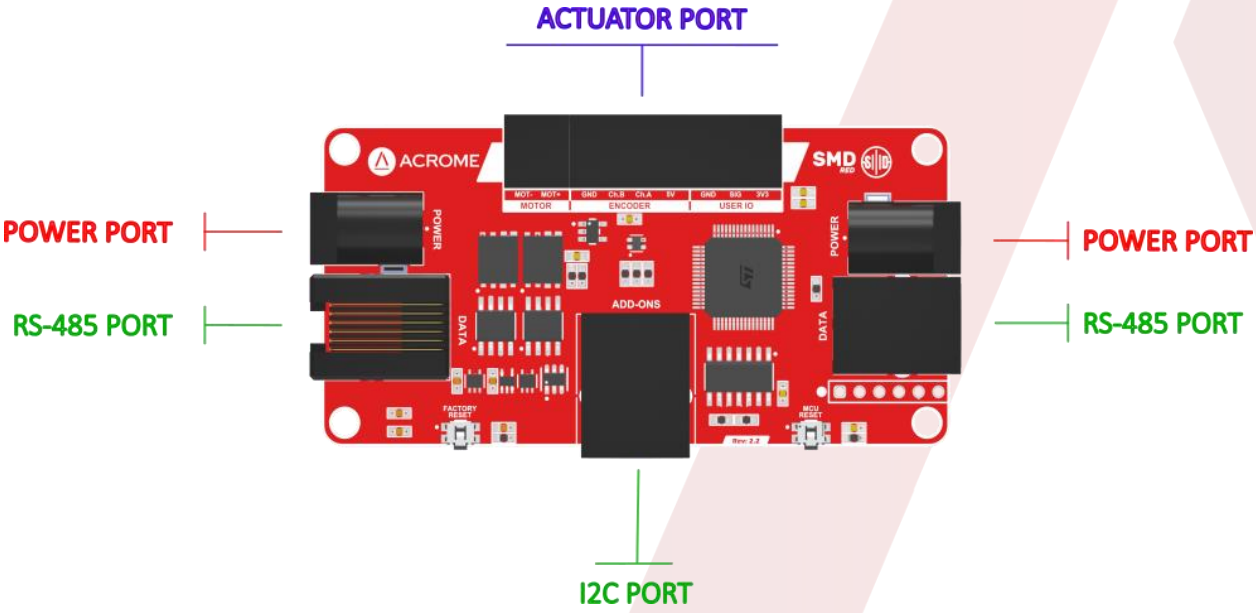
SMD Red BDC Motor Driver

Technical Specifications

Revision Date: 08/2024

Introduction:

ACROME SMD Red Brushed DC Motor Driver is a specifically designed smart motor control and driver board for robotics and mechatronics projects based on ACROME's SMD product family. This product is connected to a master controller (such as PC, Raspbbery Pi, Arduino...), sends & receives commands to this master controller to control the DC motor and (optional) SMD Add-On Modules. It communicates with the master controller through an optimized RS-485 communication protocol using APIs available in Python, Arduino IDE and Java. With the daisy chain connection hardware and software capability, up to 254 SMD Motor Drivers can be connected to a single master controller. As the SMD Red DC Motor Driver runs the intensive motor control code onboard, increase in motor count will not add additional CPU load to the master controller.



General Information:

- Brushed DC motor driver of Smart Motion Devices (SMD) product family
- Supports 1x 9-16Vdc motor
- 2.5A continuous, 5Apeak power, bi-directional
- Optimized daisy chain network for multi-motor applications (up to 254 motors)
- Open-loop or closed-loop (velocity, position, torque) control modes
- Onboard auto-tune function
- Works with PC or master controllers such as Raspberry Pi 3 or later, Jetson, Arduino (Gateway modules required)

Hardware Specifications:

- MCU Unit: Arm®-Cortex® 32bit MCU
- Motor specifications:
  - Type: Brushed DC Motor
  - Nominal supply voltage: 12V dc
  - Nominal max. current: 2.5A dc.
  - Supports Incremental or Quadtature encoders for closed-loop control modes
- Power Port:
  - Type: 2.54mm. barrel connector
  - 2x Vsupply (=Vm): 9V - 16V DC tolerant
  - Power Rating:
    - For applications without a motor, 12V @ 1.5 A
    - For applications with a motor, 12V @ 5 A (**Recomended minimum value**)
- Actuator Port Pins:
  - 2x Motor Output (±Vm): 30W nominal
  - 2x GND
  - 2x Encoder Input: 0 – 5V
  - 1x 5Vout for encoder supply
  - 1x Analog Input (SIG): 0 - 3.3V
  - 1x 3.3Vout for Ext. Sensor Supply (SIG)
- RS-485 Ports:
  - Type: RJ-11 jack socket
  - 2x for daisy chain communication
  - Baud Rates: 1527 - 6250000 bits/s. Software selectable. Default: 115,200
- I2C Port:
  - Type: RJ-45 jack socket
  - Baud Rate: 400,000 bits/s.

Software Specifications:

- Simple and well documented Python, Arduino and Java library
- Communicates with an optimized RS-485 protocol, through convenient RJ-11 connectors and cables
- Offloads the CPU of the main controller by handling all motor control tasks onboard
- Input and output connectors available for an easy daisy-chain connection
- Onboard Over-current, over-temperature, short-motor-circuit protection

- The System comes with a ready-to-use Graphical User Interface (GUI) for manual control and an Application Programming Interface (API) for controlling with an external application/programming language.
- System provides feedback to the software for its current position, velocity and torque (with current measurement).
- System uses USB as the default computer interface.
- GUI application runs on Windows 10/11 or Linux (Ubuntu distro is tested). API can be used with any OS through the USB interface.

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