PiGo™

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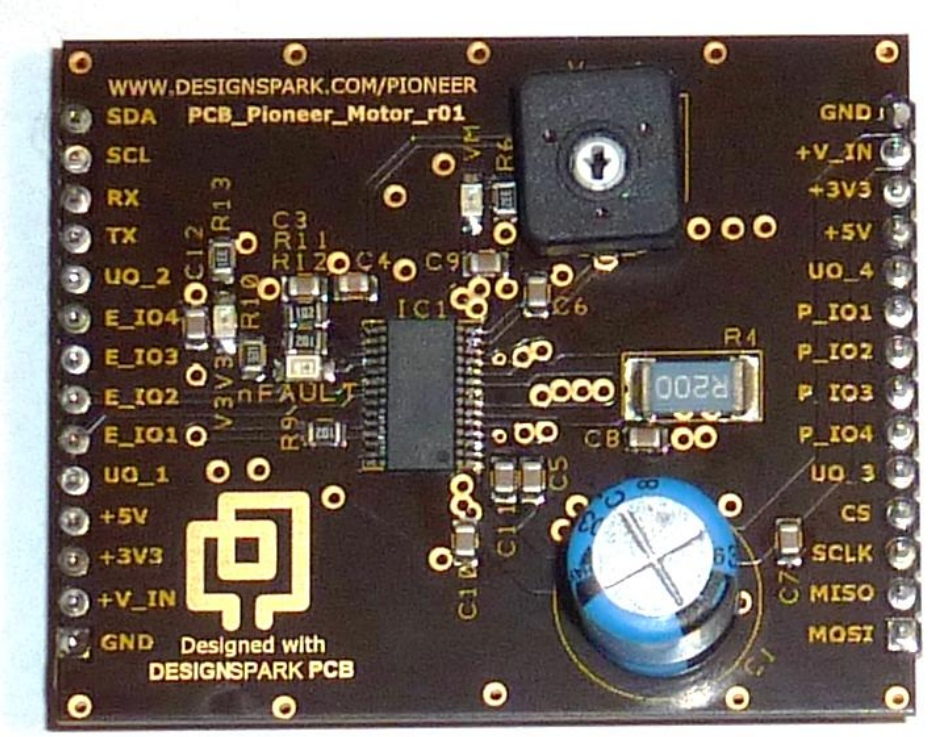
Modular Expansion System for Raspberry Pi

Motor module

User manual



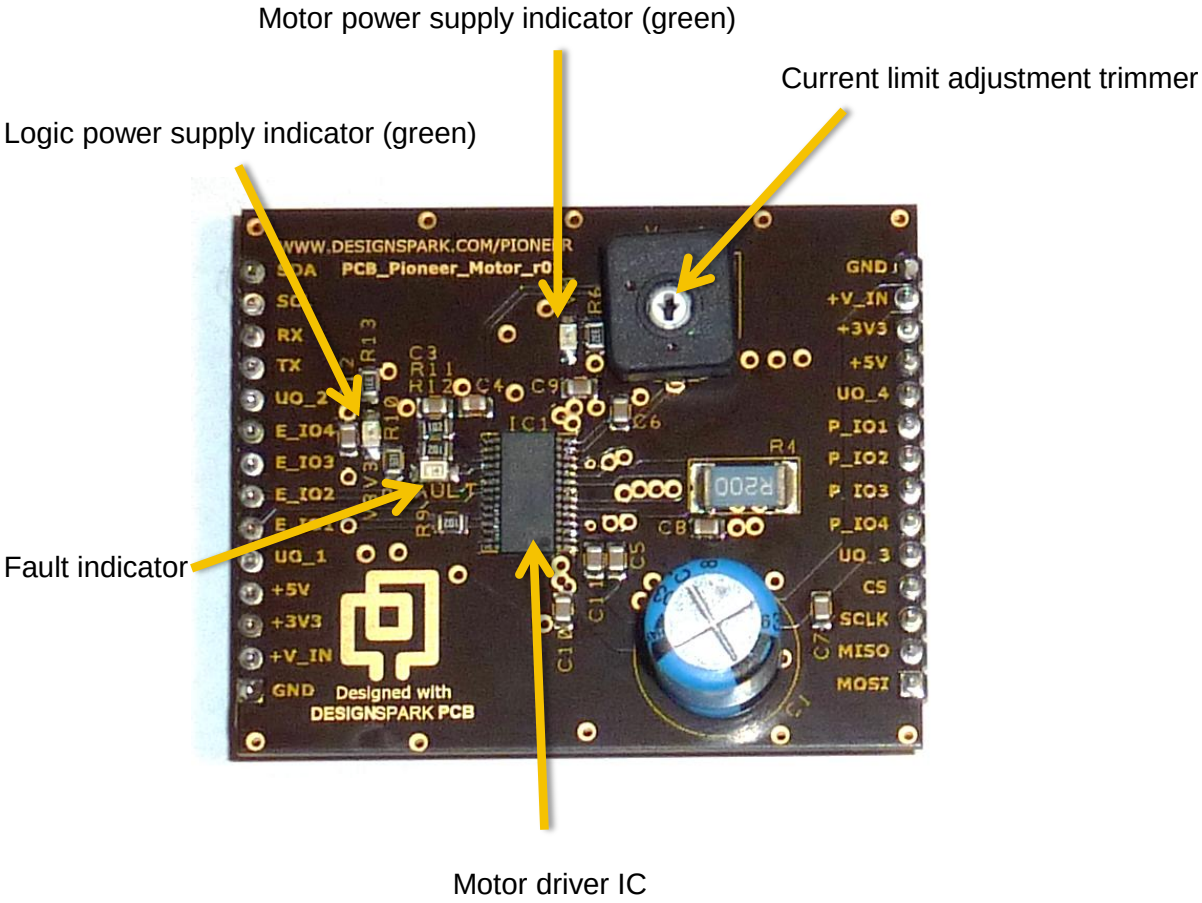
Overview

PiGo motor module is a module that can be attached to any of the PiGo module sockets (A, B, C or D). The module contains DRV8842 motor driver IC, which contains two half-bridges. The IN1 and IN2 input pins of the driver directly control the state of the OUT1 and OUT2 outputs of the driver. The outputs are powered from the V_{IN} power supply (DC power supply input jack) of the PiGo board.

PiGo motor module also contains a current limit adjustment trimmer, which is used to define the maximum output current.

Architecture and physical specification

PiGo motor module layout



Electrical specifications

PiGo motor module is powered from both 3.3 V and V_{IN} (PiGo DC power supply) power supply, provided by the PiGo base board.

The following table shows basic parameters of the motor driver IC used. For more details, users should study the datasheet of the device.

Motor driver (DRV8842)

Input voltage	12 V
Maximum output current	5 A peak

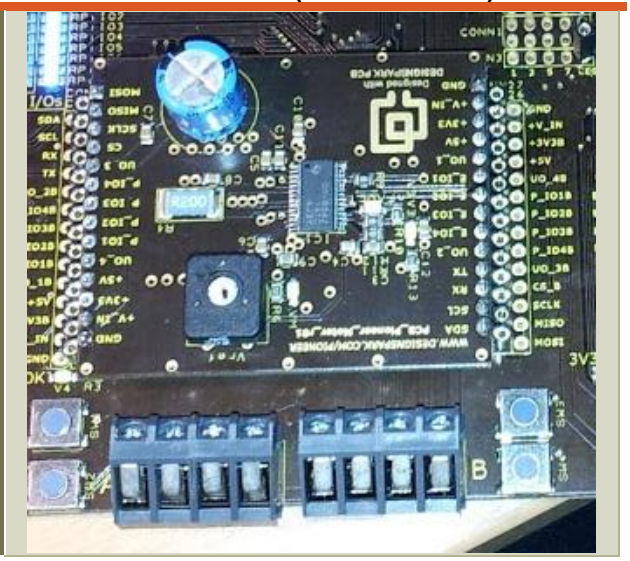
Module connectors

PiGo motor module can be attached to any of the PiGo module sockets (A, B, C or D). It has the following connections:

Left socket			Right socket
Pi_{SDA}	NC	Power Supply ground	GND
Pi_{SCL}	NC	Raspberry DC power supply	V_{IN}
Pi_{RX}	NC	3.3 V power supply	$V_{3.3\ V}$
Pi_{TX}	NC	NC	$V_{5\ V}$
$U_{IO2A/B/C/D}$	OUT 2 (PWM mode)	OUT1 (digital mode)	$U_{IO3A/B/C/D}$
EXT10/12/14/16	NC	NC	$P_{IO1A/B/C/D}$
EXT9/11/13/15	NC	NC	$P_{IO2A/B/C/D}$
EXT2/4/6/8	IN2 input	NC	$P_{IO3A/B/C/D}$
EXT1/3/5/7	IN1 input	NC	$P_{IO4A/B/C/D}$
$U_{IO1A/B/C/D}$	OUT 1 (PWM mode)	OUT2 (digital mode)	$U_{IO4A/B/C/D}$
$V_{5\ V}$	NC	NC	$CS_{A/B/C/D}$
$V_{3.3\ V}$	Same as $V_{3.3}$ V right	NC	Pi_{SCLK}
V_{IN}	Same as V_{IN} right	NC	Pi_{MISO}
GND	Same as GND right	NC	Pi_{MOSI}

Note: NC stands for Not Connected – this signal is not used by the module.

PiGo motor module can be inserted in two different configurations into the module sockets on the PiGo base board, providing two different mode of operation.

Digital Mode (‘aligned’)	PWM Mode (‘rotated 180°’)
	

In digital mode, External GPIO signals are used to control the direction of the connected motor. Only three different speeds are available: -100%, 0% and +100%.
In PWM mode, P_IO1{A/B/C/D} and P_IO2{A/B/C/D} pins on the PiGo board must be connected to buffered IO pins 1 and 2. In this mode, motor speed can be adjusted in multiple steps between -100% and +100%. The exact number of steps depends on the PWM frequency selected.

Module usage

PiGo motor module can be accessed using the ModuleMotor class from the PiGo Python library.

Function and description	**ModuleMotor** – Initialize PiGo motor module class
Arguments	**PiGoBoardObject**: reference to the PiGo board object **SocketID**: Socket on the PiGo base board, where the PiGo motor module is attached to **Mode**: 0 (digital mode) or 1 (PWM mode) **PWMfreq**: PWM frequency (default: 1000)
Returns	Instance of the motor module class

Example	`brd = PiGoBoard()`
	`# PiGo Motor module is connected to socket 'A'`
	`motor = ModuleMotor (brd, "B", 0)`

Function and description	**setOutput** – Set the output power
Arguments	**power**: motor power (-1 to 1)
Returns	none

Example	`brd = PiGoBoard()`
	`# PiGo Motor module is connected to socket 'A'`
	`motor = ModuleMotor (brd, "B", 0)`
	`# Full power to one direction`
	`motor.setOutput(1)`
	`# Full power to other direction`
	`motor.setOutput(-1)`
	`# Stop`
	`motor.setOutput(0)`

Frequently asked questions

None yet

Module schematics