RoboClaw 2x5A (v4)

Pololu item #: 1492 **10** in stock

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The RoboClaw motor controllers from Orion Robotics can control a pair of brushed DC motors using serial, RC, or analog inputs. Integrated dual quadrature decoders make it easy to create a closed-loop speed control system, or analog feedback can be used for position control. This version can supply a continuous **5 A** per channel (10 A peak).

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Description **Specifications (8)** **Pictures (6)** **Resources (5)** FAQs (0)

As of June 17, 2013, we are selling **v4** RoboClaw controllers (2×5A, 2×15A, and 2×30A) with upgraded firmware. The new features include position control, current limiting, and support for closed-loop control in RC and analog modes. They are physically the same as the preceding versions.

Overview

The RoboClaw from Orion Robotics (formerly Basic Micro) is an efficient, versatile, dual-channel synchronous regenerative motor controller. It can supply two brushed DC motors with 5 A, 15 A, 30 A, or 60 A continuous (depending on the model) at voltages from 6 to 30+ V, and it allows for peak currents up to twice the maximum continuous rating.

The RoboClaw features dual quadrature decoding capability. A built-in PID routine can be used for closed-loop speed control, maintaining motor speeds even if the load varies, or the encoder counts and speeds can be read directly from the RoboClaw for use with an external control system. Analog feedback is also supported for closed-loop position control (2×5A, 2×15A, and 2×30A only).

Several interface modes are supported by the RoboClaw: it can be controlled via TTL serial for use with an embedded system or a PC with a serial adapter, RC hobby servo pulses for use as an RC-controlled electronic speed control (ESC), or analog voltages for use with potentiometers or analog joysticks.

Key Features

- Simple bidirectional control of two brushed DC motors
- 6 V to 30+ V operating supply range
- 5 A to 60 A maximum continuous current output, depending on controller model
- Automatic current limiting reduces duty cycle when motor current is between 1× and 2× the controller's rated current (2×5A, 2×15A, and 2×30A)
- Three communication or control options:
  1. Logic-level (TTL) serial interface for direct connection to microcontrollers or other embedded controllers, or connection to a PC with a serial port (external RS-232 level converter required) or USB-to-serial adapter
  2. Hobby radio control (RC) pulse width interface for direct connection to an RC receiver or RC servo controller
  3. 0 V to 2 V (5 V tolerant) analog voltage interface for direct connection to potentiometers and analog joysticks
- Dual feedback inputs for PID closed-loop control:
  - Speed control with quadrature encoders, up to 19.6 million encoder pulses per second (2×60A: 8 million encoder pulses per second)
  - Position control with analog encoders or potentiometers (2×5A, 2×15A, and 2×30A)
  - (Open-loop control with no feedback also available)
- Screw terminals for quick connect/disconnect
- Configurable via pushbutton interface (2×5A, 2×15A, and 2×30A) or onboard DIP switches (2×60A)

- Regenerative braking
- Tolerates high-speed direction changes
- Jumper-selectable 5 V BEC
- Battery monitoring and under-voltage cutoff protects batteries from over-discharging

RoboClaw Comparison Table

	 2×5A	 2×15A	 2×30A	 2×60A
Motor channels:	2			
Operating voltage:	6–34 V			
Continuous output current:	5 A	15 A	30 A	60 A
Peak output current:	10 A	30 A	60 A	120 A
5V BEC[1] max current:	150 mA	3 A		
Width:	1.7″ (4.2 cm)	2.1″ (5.2 cm)		4.2″ (10.7 cm)
Length:	1.9″ (4.8 cm)	2.9″ (7.4 cm)		4.1″ (10.4 cm)
Weight:	17 g	63 g		298 g

[1] Battery Eliminator Circuit

Sample Code

Orion Robotics has written an Arduino library for the RoboClaw that makes it easy to interface these motor controllers with an Arduino. The library comes with several example sketches that demonstrate different methods of controlling the RoboClaw.