

Stellaris® Brushed DC Motor Control Module for *FIRST*® Robotics Competition



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Luminary Micro presents the new official *FIRST*® Robotics Competition (FRC) motor controller: the Brushed DC Motor Control module known as Jaguar. Luminary Micro's Jaguar module will be included in the 2009 FRC Kit of Parts. Designed specifically for the FRC competition, the Jaguar module facilitates the design of complex robots within the short six-week FRC build period.

What is the Jaguar Module?

The new Jaguar module is a variable speed control for 12 V brushed DC motors. While the Jaguar module offers features that teams have come to expect, including the servo (PWM) input and the brake/coast input, the Jaguar modules are specifically tuned to the servo signal outputs provided by the new FRC control system that will be used in the 2009 competition: <http://www.usfirst.org/community/frc/content.aspx?id=8976>.

The Jaguar module brings new motor control technology to the *FIRST*® Robotics Competition including integrated limit switch inputs that function in combination with the brake/coast input. The Jaguar module also provides safety features such as monitoring for instantaneous winding current, battery voltage, and ambient temperature, all at the same frequency at which the H-bridge is driven.

Designed for Competition

Teams will find that the Jaguar module's enclosure is easy to use and well-designed for competition. The power and motor terminals are color-coded to reduce wiring errors, the enclosure better shields the cooling fan and electronics from debris, and the wire retention tabs keep wires in place during competition.

Features for 2009 Competition

- Quiet control of brushed DC motors
 - 20 kHz PWM frequency
- Speed control
 - Industry standard R-C Servo type (PWM) interface
- Status LED indicates run, direction, and fault conditions
- Limit switch inputs for forward and reverse directions
- Integrated over-current protection
- Screw terminals for all power wiring
- Headers (0.1 inch pitch) for all control signals



Additional Features for Future Competitions

- CAN Communication
 - New speed control option via Controller Area Network (CAN) protocol version 2.0 A/B interface
 - Multicast shared serial bus for connecting systems in electromagnetically noisy environments
 - 1M bits/s bit rate
 - Real-time monitoring of current, voltage, speed, and other parameters
- Quadrature encoder input with 5 V supply output to encoder and index input
- Analog 10-kΩ potentiometer input

Module Availability

Initially, the Jaguar module will be made available to the more than 1,700 individual 2009 FRC teams through *FIRST*®'s Kit of Parts distributed for the year 2009 competition. Additional Jaguar modules will be made available to individual teams thereafter through Luminary Micro's worldwide distribution channel. In the meantime, Luminary Micro has launched a special web site for FRC teams (www.luminarymicro.com/jaguar) to stay current with Jaguar news, developments, ordering information, and documentation, as well as provide a moderated user group area for teams to post questions and answers about the Jaguar module and other topics.

Luminary Micro, Inc.
108 Wild Basin, Suite 350 • Austin, TX 78746
Main: +1-512-279-8800 • Fax: +1-512-279-8879
<http://www.luminarymicro.com> • sales@luminarymicro.com



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