Luminary Micro - MDL-BDC - Motor Control Reference Design Kit

Product Overview:

The Stellaris® Brushed DC Motor Control Module with CAN (MDL-BDC) offers a variable speed control for 12 V brushed DC motors at up to 40 A continuous current. The motor control module includes high performance Controller Area Network (CAN) connectivity and a rich set of control options and sensor interfaces, including analog and quadrature encoder interfaces. The high-frequency PWM on the MDL-BDC enables DC motors to run smoothly and quietly over a wide speed range. The module uses highly optimized software and a powerful 32-bit Stellaris® microcontroller to implement open-loop speed control as well as closed-loop control of speed, position, or motor current.

The Stellaris® MDL-BDC is powered by the LM3S2616 microcontroller, featuring CAN and advanced motion control capabilities. The LM3S2616 microcontroller's robust combination of features, along with the efficient and deterministic performance of the ARM® Cortex™-M3 core, positions the modules into a wide variety of consumer and industrial applications, including factory automation devices and systems, mobile robots, household appliances, pumping and ventilation systems, and electric wheelchairs and mobility devices.

Key Features:

The MDL-BDC ships as a ready-to-run, yet customizable, module with the following features:

- Quiet control of brushed DC motors

  - 15 kHz PWM frequency

- Two options for Speed control

  - Industry-standard R-C servo type (PWM) interface
  - Controller Area Network (CAN) interface

- CAN communication

- ▪ Full configurability of module options
- ▪ Real-time monitoring of current, voltage, speed, and other parameters
- ▪ Load firmware over CAN

- • Limit switch inputs for forward and reverse directions
- • Status LED indicates Run, Direction, and Fault conditions Motor brake/coast selector
- • Quadrature encoder input (QEI) and analog input
- • Color-coded screw terminals for all power wiring
- • Easy to customize using tools supporting the MDL-BDC from Keil, IAR, Code Sourcery, or Code Red (using a Stellaris evaluation kit or preferred ARM® Cortex™-M3 debugger)

Ordering Information:

Products:

Part Number	Manufacturer	Farnell P/N	Newark P/N
MDL-BDC	Luminary Micro	1673913	24R9715

Associated Products:

Part Number	Manufacturer	Description	Farnell P/N	Newark P/N
LM3S2616-IQR50-A0	Luminary Micro	Stellaris LM3S2616 Microcontroller Industrial Temperature 64-pin LQFP	NA	45P3577
VEH60US15	XP Power	15V power plug In power adapter	1673383	04R9682

Similar Products:

Part Number	Manufacturer	Description	Support Device	Farnell P/N	Newark P/N
MDL-BDC-B	Luminary Micro	Stellaris® Brushed DC Motor Control Module with CAN for Volume Packaging	LM3S2616	NA	24R9715
RDK-BDC	Luminary Micro	Stellaris® Brushed DC Motor Control Reference Design Kit (includes the MDL-BDC module)	LM3S2616	1673914	45P3933

Document List:

Datasheets:

Part Number	Description	Size
MDL-BDC	Datasheet for Brushed DC Motor Control Module	-
LM3S2616	LM3S2616 Microcontroller Datasheet	-

Application Notes:

File Name	Size
Programming the On-Chip Flash Memory in a Stellaris Microcontroller	-
ADC Oversampling Techniques	-
Clocking options for Stellaris Family Microcontrollers	-
Using a Stellaris Microcontroller as an I/O Processor	-
Using the Stellaris Serial Flash Loader	-
Adding 32KB of Serial SRAM to a Stellaris Microcontroller	-
Using the Stellaris Microcontroller Analog-to-Digital Converter	-
Upgrading to Luminary Micro's Stellaris Microcontrollers from Microchip's PIC Microcontrollers	-
Implementing RS-232 Flow Control on a Stellaris® Microcontroller	-
Using Schematic Part Libraries and PCB Footprint Libraries for Stellaris® Microcontrollers	-
Flash Protection for Stellaris® Microcontrollers	-
Optimizing Code Performance and Size for Stellaris Microcontrollers	-
Using Stellaris Microcontrollers Internal Memory to Emulate EEPROM	-
Software UART for Stellaris® Microcontrollers	-
Using the IEC 60730 Standard for Safe and Reliable Operation of Stellaris® Microcontrollers	-

Hardware & Software:

File Name	Size
BDC RDK Quick start	-
Brushed DC Motor Module and RDK Design Package Rev B	-
RDK-BDC Firmware Development Package	-
RDK-BDC Kit CD	-