Brushed DC Motor Control with CAN Reference Design Kit

Luminary Micro's Stellaris® Brushed DC Motor Control Reference Design Kit (RDK-BDC) with CAN contains all the necessary hardware and software for you to design, develop, and integrate your brushed DC motor applications in industrial networks. The Brushed DC motor control design offers high performance CAN networking with variable speed control for 12 V brushed DC motors at up to 40 A continuous current, along with a rich set of control options and sensor interfaces, including analog and quadrature encoder interfaces.

The design uses highly optimized software and a powerful 32-bit Stellaris LM3S2616 microcontroller to implement open-loop speed control as well as closed-loop control of speed, position, or motor current.

The motor control design is is powered by the Stellaris LM3S2616 microcontroller, featuring Controller Area Network and advanced motion control capabilities. The high-frequency Stellaris-based PWM enables DC motors to run smoothly and quietly over a wide speed range. The LM3S2616 microcontroller's robust combination of features, along with the efficient and deterministic performance of the ARM Cortex-M3 core, positions the design 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.

Most users will use the supplied software as-is for brushed DC motor control applications. For other users, software development for the RDK-BDC is simplified by using Luminary Micro's comprehensive Stellaris peripheral driver library and ARM development tools from our tools partners.



Stellaris Brushed DC Motor Control with CAN Reference Design Kit

Features

The MDL-BDC ships as a ready-to-run, yet software-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 speed
  - Load firmware over CAN
- Status LED indicates Run, Direction, and Fault Conditions
- Motor brake/coast selector
- Limit switch inputs for forward and reverse directions
- Quadrature encoder input (QEI) and Analog input
- Colored screw terminals for all power wiring
  - Headers (0.1 inch pitch) for all control signals
- Easy to customize
  - Includes full source code, example applications, and design files
  - Develop using tools from Keil, IAR, Code Sourcery, or Code Red (using a Stellaris evaluation kit or preferred ARM Cortex-M3 debugger)
  - Supported by Stellaris Peripheral Driver Library

Kit Contents

In addition to being offered as a stand-alone, ready-for-production module (MDL-BDC), the Stellaris MDL-BDC is also offered as a complete open-tool reference design kit (RDK-BDC). The RDK ships with everything needed to quickly evaluate and easily customize the MDL-BDC for your specific application, including:

- MDL-BDC motor control module
- Mabuchi RS-555PH-5255 Brushed DC Motor (rated 5000 RPM, 12 V, 3 A)
- Universal input wall power supply
- BDC CAN console based on EK-LM3S2965 Evaluation Kit
- CAN cable and terminator; USB cable; ARM JTAG/SWD ribbon cable
- JTAG debug adapter for 10-pin fine-pitch connection to a standard 20-pin connector
- Quickstart Guide, User's Manual, Software Reference Manual, Board Data Sheet, source code, BOM, schematics, and Gerber files on CD

Ordering Information

PART NUMBER	DESCRIPTION
RDK-BDC	Stellaris Brushed DC Motor Control with CAN Reference Design Kit (RDK)
MDL-BDC	Stellaris Brushed DC Motor Control with CAN Module Single-Unit Packaging
MDL-BDC-B	Stellaris Brushed DC Motor Control with CAN Module Volume Packaging

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Intelligent Display Module with 3.5" Landscape Display Reference Design Kit

Luminary Micro's Stellaris® Intelligent Display Module with 3.5" Landscape Display (MDL-IDM-L35) offers a complete QVGA touch-screen user interface for control, automation, and instrumentation applications. The MDL-IDM-L35 features several serial, digital, and analog connectivity options for easy implementation as a Human Machine Interface (HMI) touch display panel in an embedded control device. Software development for the RDK-IDM-L35 is simplified by using Luminary Micro's comprehensive graphics library and ARM development tools from ARM tools partners. Stellaris® IDMs are the first display modules available with the efficient performance and robust integration of an ARM® Cortex™-M3 microcontroller, positioning the modules for use in building access controllers and security systems, intelligent white goods and home appliances, thin clients, and factory automation applications.

Features

The MDL-IDM-L35 ships as a software-customizable module with the following features:

- Bright QVGA LCD touch-screen display
  - 262 K colors, 3.5" QVGA 320 x 240 pixels
  - White LED backlight with resistive touch panel
- Serial connectivity options
  - RS232 serial port with RS232 signal levels
  - UART serial port with TTL signal levels
- High performance Stellaris LM3S1958 microcontroller and large memory
  - 50 MHz 32-bit ARM® Cortex™-M3 core
  - 256 KB main flash memory, 64 KB SRAM
- MicroSD card slot
- 5 V power supply with DC regulator that generates 3.3 V for powering the board
- Easy to customize
  - Includes full source code, example applications, and design files
  - Develop using tools supporting the IDM-L35 from Keil, IAR, Code Sourcery, and Code Red (using a Stellaris evaluation kit or preferred ARM Cortex-M3 debugger)
  - Supported by Stellaris® Graphics Library and Stellaris® Peripheral Driver Library



Stellaris Intelligent Display Module with 3.5" Landscape Display



Stellaris Intelligent Display Module with 3.5" Landscape Display

Kit Contents

The Stellaris Intelligent Display Module is offered in as a reference design and development kit (RDK-IDM-L35) as well as a stand-alone, ready-for-production module (MDL-IDM-L35). The reference design and development kit ships with everything needed to quickly evaluate and easily customize the Intelligent Display Module for your specific application, including:

- Stellaris Intelligent QVGA 3.5" Touch Panel Module (MDL-IDM-L35) with metal standoffs
- USB to TTL serial cable to simultaneously power the board and connect to the LM3S1958 Stellaris microcontroller via UART0
- JTAG debug adapter for 10-pin fine-pitch connection to a standard 20-pin connector
- 24 V power supply with international plug adapters
- Quickstart Guide, User's Manual, Software Reference Manual, Board Data Sheet, source code, BOM, schematics, and Gerber files on CD

Ordering Information

PART NUMBER	DESCRIPTION
RDK-IDM-L35	Stellaris Intelligent Display Module with 3.5" Landscape Display Reference Design Kit (RDK)
MDL-IDM-L35	Stellaris Intelligent Display Module with 3.5" Landscape Display for Single-Unit Packaging
MDL-IDM-L35-B	Stellaris Intelligent Display Module with 3.5" Landscape Display for Volume Packaging

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