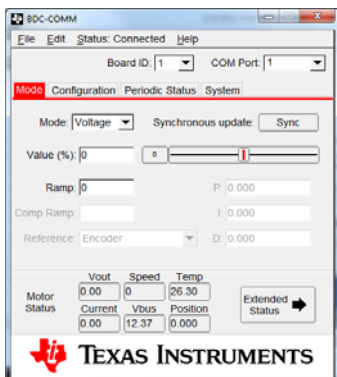


# Stellaris® Brushed DC Motor Control Module with CAN (RDK-BDC24)

The Stellaris® Brushed DC Motor Control Module with CAN (RDK-BDC24) provides variable speed control for both 12 V and 24 V brushed DC motors at up to 40 A continuous current, and includes a new RS232-based serial control input that also functions as a serial-to-CAN bridge. The MDL-BDC24 includes a rich set of sensor interfaces, connectivity, and control options, including analog and quadrature encoder interfaces, high performance Controller Area Network (CAN) interfaces, and an RS232 port. The module uses highly optimized software and a powerful 32-bit Stellaris® LM3S2616 microcontroller that enables DC motors to run smoothly and quietly over a wide speed range.

The MDL-BDC24 design also incorporates several high-quality analog components from Texas Instruments, including the SN65HVD1050 CAN Transceiver, MAX3221 RS232 Line Driver/Receiver, TPS54040 Swift DC/DC Converter, TPS73633 Voltage Regulator, and INA193 Current Shunt Monitor. The MDL-BDC24 is positioned 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.



**Stellaris®  
BDC-COMM GUI  
for Monitor and  
Control**

## Features

The MDL-BDC24 ships as a ready-to-run, yet customizable, module with the following features:

- Quiet control of brushed DC motors with 15 kHz PWM frequency
- Three options for open-loop voltage control
  - Industry-standard R-C servo type (PWM) interface
  - Controller Area Network (CAN) interface
  - RS232 serial interface
- Controller Area Network (CAN) interface or RS232 serial interface for closed-loop, speed, position, or current control
- CAN communication
  - Full configurability of module options
  - Real-time monitoring of current, voltage, speed, and other parameters
  - Load firmware over RS232/CAN
- RS232 serial communication
  - Bridges an RS232-enabled device to the CAN

- Directly interfaces to a PC serial port or National Instruments cRIO
- Limit switch inputs for forward and reverse directions
- Firmware features
  - Full configurability of closed-loop module parameters
  - Real-time monitoring of sensor data including motor current, encoder position or speed, and limit switch state
- Status LED indicates run, direction, and fault conditions
- Motor brake/coast selector
- Quadrature encoder input (QE1) and analog input
- Color-coded screw terminals for all power wiring
- Easy to customize using development tools from Keil, IAR, Code Sourcery, Code Red Technologies, or Texas Instruments (using a Stellaris evaluation kit or preferred ARM® Cortex™-M3 debugger)

## Reference Design Kit

In addition to being offered as a stand-alone, ready-for-production module, the Stellaris® MDL-BDC24 is also offered as a complete open-tool reference design kit (RDK-BDC24). The RDK ships with everything needed to quickly evaluate the MDL-BDC24 for your specific application, including:

- MDL-BDC24 motor control module
- Mabuchi RS-555PH-3255 Brushed DC Motor (rated 5000 RPM, 12 V, 3 A)
- Universal input wall power supply
- DB9 to RJ12 Serial-to-CAN adapter
- 2 6P-6C modular cables (1 ft and 7 ft)
- CAN plug-in 120-Ω terminator
- Adapter cable for ARM JTAG/SWD fine-pitch header
- Reference design kit CD with complete documentation, LM Flash Programmer utility for firmware updates, BDC-COMM GUI for monitor and control, and complete source code, schematics, and PCB Gerber files



See [www.usfirst.org](http://www.usfirst.org) for more information.

## Ordering Information

Product Number	Description
MDL-BDC24	Stellaris® Brushed DC Motor Control Module with CAN (RDK-BDC24) for Single-Unit Packaging
MDL-BDC24-B	Stellaris® Brushed DC Motor Control Module with CAN (RDK-BDC24) for Volume Packaging
RDK-BDC24	Stellaris® Brushed DC Motor Control Reference Design Kit (includes the MDL-BDC24 module)

Texas Instruments • 108 Wild Basin, Suite 350 • Austin, TX 78746  
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Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
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