

# Stellaris<sup>®</sup> DK-LM3S-DRV8312

## 3-Phase Brushless DC & AC Motor Control Kit

TEXAS INSTRUMENTS



The Texas Instruments Medium Voltage Digital Motor Control Kit for Stellaris Microcontrollers (DK-LM3S-DRV8312) is a development platform for spinning 3-phase brushless DC (BLDC) and brushless AC (BLAC, aka PMSM) motors. The low-cost Stellaris LM3S818 microcontroller (MCU) on the MDL-LM3S818CNCD controlCARD module comes pre-programmed with the necessary firmware in Flash memory to run the Texas Instruments (TI) InstaSPIN<sup>™</sup> BLDC motor control solution out-of-the-box once plugged into the DRV8312 baseboard. The system will automatically detect and spin a customer's 3-phase brushless DC motor.

The operation of this system is controllable and viewable across a USB interface using an included Crosshairs-enabled environment that consists of a PC application interface and Crosshairs' embedded kernel running on the LM3S818 MCU. The LM3S818 MCU provides all of the necessary computational requirements to run TI's InstaSPIN BLDC technology and other customer-developed applications as well.

Follow the steps in the kit's README First document to quickly get up and running. Using TI's InstaSPIN BLDC technology, you can quickly identify a 3-phase brushless motor's key characteristics in order to spin the motor successfully.



### Features

The DK-LM3S-DRV8312 motor control kit contains a cost-effective, Stellaris LM3S818 MCU-based controlCARD module compatible with other TI motor control platforms.

In addition to instantly spinning your motor, the kit also demonstrates the InstaSPIN BLDC motor control solution's operational advantages with simplified tuning, immediate acceleration adaptation, reliable low-speed operation, and more.

The included Crosshairs solution enables users to control and monitor the total solution through an easy-to-use PC application that can be extended for end-customer applications.



Crosshairs control GUI Windows application

- Hardware compatible with the following TI DRV baseboards
  - DRV8312 Rev C and Rev D
  - DRV8301HC (High Current 60A) Rev A and DRV8301 (6A) Kit

### Contents

The DK-LM3S-DRV8312 is a bundle of the following components:

- MDL-LM3S818CNCD controlCARD module
  - Stellaris 50-MHz ARM<sup>®</sup> Cortex<sup>™</sup>-M3 LM3S818 MCU with on-board Stellaris In-Circuit Debug Interface (ICDI)
  - Pluggable 100-pin DIMM form factor
  - Auto-isolation enabling upon debug connection
- DRV8312 baseboard (TI-integrated 3P motor driver board supporting up to 52.5V and 6.5A)
- NEMA17 BLDC/PMSM 55W motor
- 24V 2.5A DC power adapter, 110-240V AC input, USA power cable
- USB-miniB to USB-A plug cable (for debug and serial communication)
- Kit CD
  - Documentation
  - LM Flash programmer utility for firmware updates
  - Crosshairs GUI
  - Applicable source code
  - Schematics
- TI's Code Composer Studio<sup>™</sup> Integrated Development Environment (IDE)

### Ordering information

Product Number	Description
DK-LM3S-DRV8312	3-Phase BLDC Motor Kit with DRV8312 and Stellaris LM3S818 controlCARD Module
MDL-LM3S818CNCD	Stellaris LM3S818 controlCARD Module for 3-Phase BLDC motors in single-unit packaging

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