ECS640A Development Platform - Quick Start
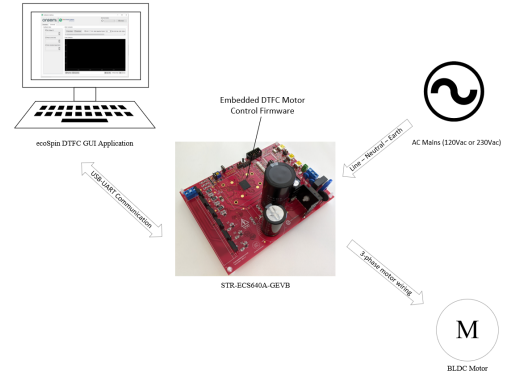
STR-ECS640A-GEVK

Description

This document describes how to get started with ECS640A development platform. A 10−steps process on setting up STR−ECS640A−GEVB unit with ecoSpin DTFC motor controller graphical user interface (ecoSpin DTFC GUI) application and how to issue BLDC motor movement commands using embedded "Direct Torque and Flux Control" (DTFC) motor control algorithm firmware is described.

Features

- ECS640A Development Platform Comprises a User−friendly ecoSpin DTFC GUI Application and an ECS640A EVB Unit with Embedded Motor Control "Direct Torque and Flux Control" (DTFC) Firmware
- Configurable "BLDC Motor and Motor Control" Parameters Set for Direct Torque and Flux Control – DTFC. Trapezoidal and Field Oriented Control (FOC) Algorithms will be Available in Future Release.
- Seamless Motor Electromechanical Characterization Using Single Set of Closed Loop Control Parameters
- Enables BLDC Motor Start/Stop Commands and Clockwise (CW) and Counterclockwise (CCW) Speed Reference Selection
- Live Motor Performance Variables Monitoring in a Display or Graphical Waveform Interfaces
- Isolated USB Communication

**Figure 1. ECS640A Development Platform
(See Figure 2 for Details)**

ECS640A DEVELOPMENT PLATFORM

The ECS640A development platform has 3 basic elements. These elements are listed below:

- STR−ECS640A−GEVB unit (ECS640A EVB)
- ecoSpin DTFC Motor Controller Graphical Interface (ecoSpin DTFC GUI)
- Embedded Motor Control "Direct Torque and Flux Control" (DTFC) firmware

Each element is important to enable a target 3−phase BLDC motor operation. Figure 2 shows these elements role and how they are linked to each other. STR−ECS640A−GEVB unit is embedded with "DTFC Motor Control" firmware. The embedded firmware enables data communication with "ecoSpin DTFC GUI" application running on a Windows based computer.

ecoSpin DTFC GUI Application

USB-UART Communication

Embedded DTFC Motor Control Firmware

STR-ECS640A-GEVB

Line – Neutral – Earth

AC Mains (120Vac or 230Vac)

3-phase motor wiring

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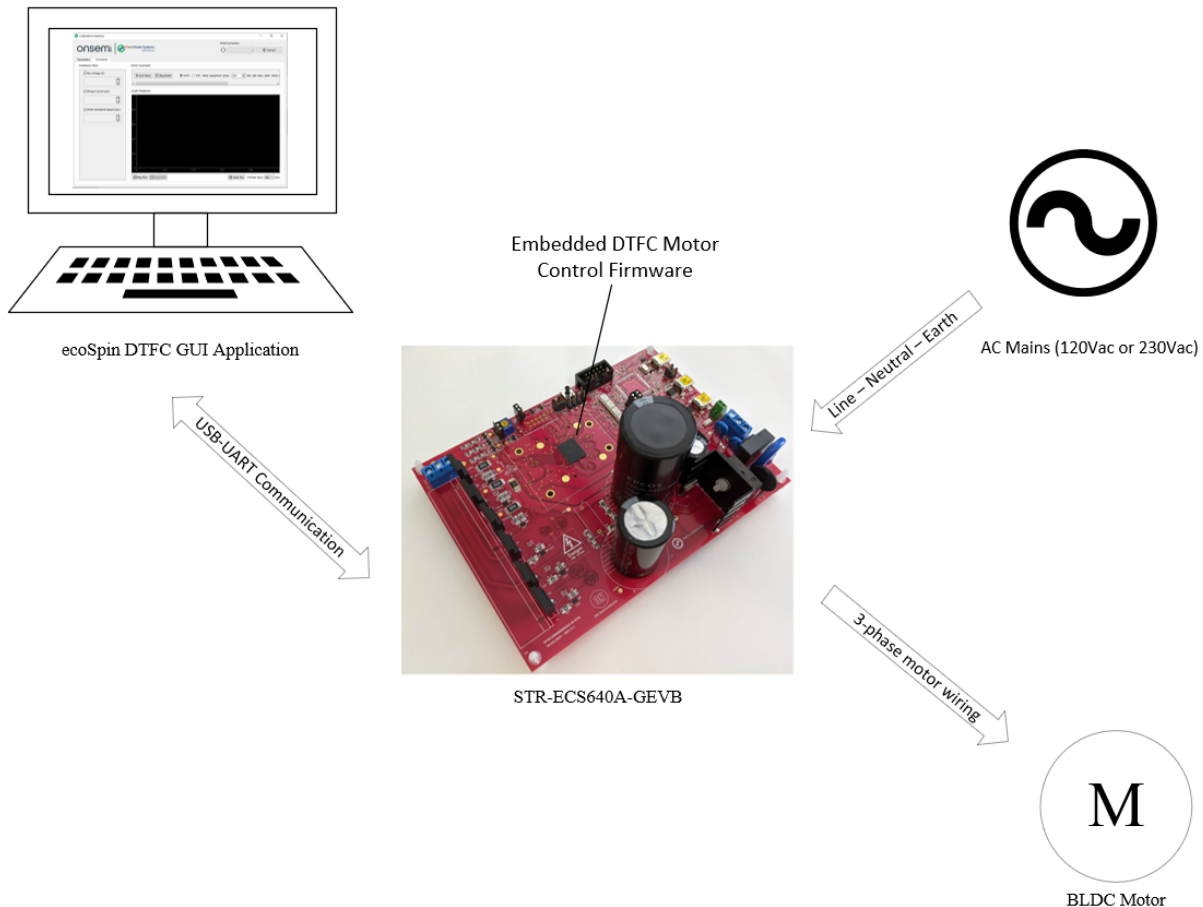
BLDC Motor

Figure 2. ECS640A Development Platform

Getting Started with ECS640A Development Platform

Please follow these steps to run a 3−phase BLDC motor.

Step 1

Download "ecoSpin DTFC Interface.exe" application from Strata Developer Studio environment.

Step 2

Download latest "ECS640A EVB User Manual" (EVBUM2816 file) and "ecoSpin DTFC GUI User Manual" (UM70067 file) from Strata Developer Studio environment.

Step 3

Launch "ecoSpin DTFC Interface.exe" application on a Windows based laptop. Follow "New BLDC Motor Setup Process" section in "ecoSpin DTFC GUI User Manual" document (UM70067 file) downloaded from Strata environment (see "Step 2" for details)

Step 4

Connect ECS640A EVB J3 serial communication connector to laptop USB port using USB cable provided in the ECS640A EVB box. See details in Figure 3.
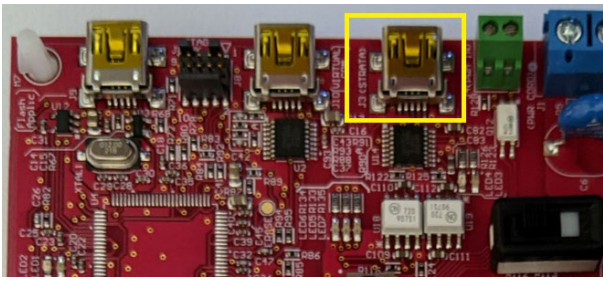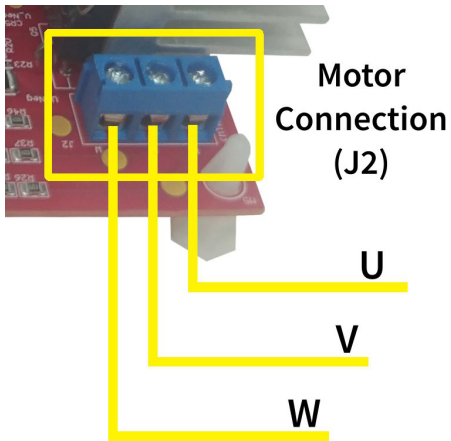
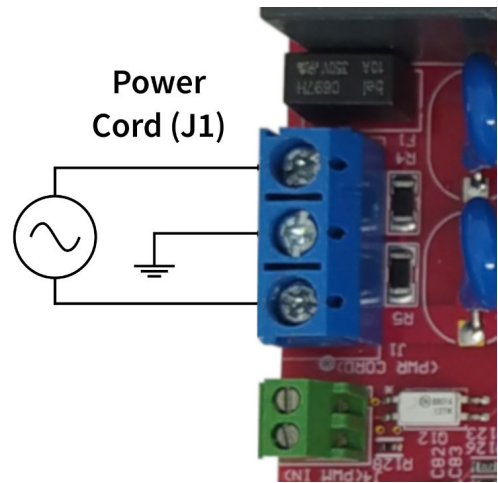**Figure 3. ECS640A EVB USB Connector (J3)**

Step 5

Connect 3−phase motor wiring to ECS640A EVB J2 following phase sequence depicted on PCB silkscreen. See Figure 4 for details.

Figure 4. ECS640A EVB BLDC Motor Connection (J2)

Step 6

Connect AC mains wiring cable to ECS640A EVB J1 connector. AC mains power cord is not provided with ECS640A EVB. See Figure 5 for details.

Figure 5. ECS640A EVB AC Mains Connection (J1)

Step 7

Enable ecoSpin GUI USB communication with ECS640A EVB and download parameters set to ECS640A flash memory. Detailed process is described in "USB Connection" and "ECS640A EVB Send and Reload Parameters" sections in "ecoSpin DTFC GUI User Manual" document (UM70067 file).

Step 8

Start 3−phase BLDC motor using "ecoSpin DTFC Interface.exe" application. Detailed process is described in "BLDC Motor Commands" section in "ecoSpin DTFC GUI User Manual" document (UM70067 file).

Step 9

Plot motor live data in "Graph Feedbacks" window. Detailed process is described in "Plot Window" section in "ecoSpin DTFC GUI User Manual" document (UM70067 file).

Step 10

Keep up to date ECS640A documentation by visiting Strata Developer Studio environment.

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