APPLICATION NOTE

# Getting Started with the Atmel ATA6844-DK BLDC Motor Control Kit

## ATA6844-DK GETTING STARTED

## Kit Contents

- 1 BLDC motor application board Atmel® ATA6844-DK
- 1 Atmel controller board ATA6844-DK3 with Atmel BLDC microcontroller ATmega32M1 and Atmel USB microcontroller ATmega32U2
- 1 brushless DC motor ref: FL42BLS01-001 (3 phases, 8 poles, 12VDC)
- “Getting Started” Application Note

## Prepare Connections

Before starting, the following preparations need to be done:

1. Connect the motor application board X4 to the controller board X101.
2. Connect the motor according to Table 1 on page 2. For the given example, only the 3-phase wire (3 thick wires on pins 1 to 3) are needed, the other wires (5 thin wires on pins 4 to 8) do not need to be connected.
3. Check all jumpers: Set WDD (default), VMODE to 5V (default), SCREF to micro-controller (default), set RESET (default) and UART mode to LIN.

In case of no USB connection, the jumpers at USB-UART bridge and J105 are not relevant, the USB connector J104 is not necessary.

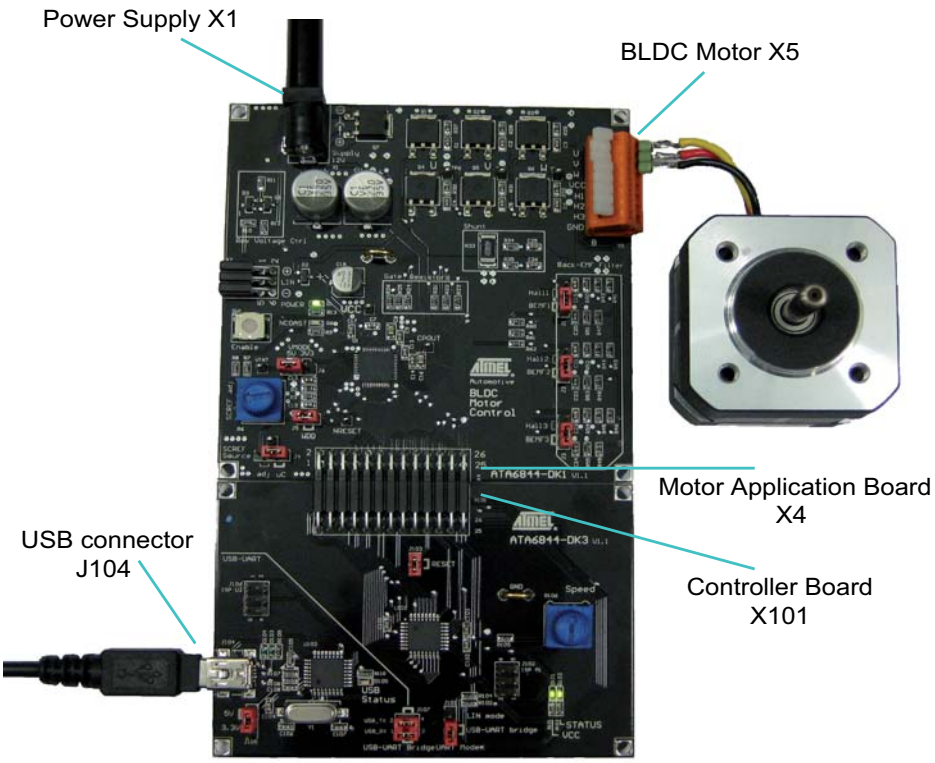
For USB operation, please refer to the “Atmel ATA6844-DK BLDC Motor Control Kit” Application Note (http://www.atmel.com/Images/doc9236.pdf).

**Table 1. BLDC Motor Connections to Screwless Row Connector X5**

| Pin Number | Signal Names on PCB Bottom | Function | Motor Wire | Remark | Direction |
|---|---|---|---|---|---|
| 1 | Ph_A | Motor phase A | Yellow | Thick wire | Output |
| 2 | Ph_B | Motor phase B | Red | Thick wire | Output |
| 3 | Ph_C | Motor phase C | Black | Thick wire | Output |
| 4 | 5V | Power 5V | Red | Thin wire(1) | Output |
| 5 | HALL_A | Hall A | Blue | Thin wire(1) | Input |
| 6 | HALL_B | Hall B | Green | Thin wire(1) | Input |
| 7 | HALL_C | Hall C | White | Thin wire(1) | Input |
| 8 | GND | Power GND | Black | Thin wire(1) | Output |

Note: 1. Optional, not necessary for B-EMF feedback

**Figure 1. Atmel ATA6844-DK**



# 1. Operating

## 1.1 Software

The Atmel® ATmega32M1 is preloaded with a demo software that supports BLDC motor control with Back EMF (B-EMF) feedback. Since the B-EMF values measured by this software depend on the motor type, the software only runs with the motor included in the kit. To operate with other motor types than the one enclosed, the start parameters need to be calculated by means of the evaluation software.

## 1.2 Startup Procedure

To start the system, provide 12V to the power supply connector X1. The motor starts 5 seconds after powering the kit. First, the motor performs forced start-up. After a few milliseconds, the motor switches to locked loop mode. The target speed of the loop is defined by the potentiometer speed.

# 2. Revision History

Please note that the following page numbers referred to in this section refer to the specific revision mentioned, not to this document.

| Revision No. | History |
|---|---|
| 9233D-AUTO-02/15 | • Put document in the latest template |
| 9233C-AUTO-06/12 | • Section “Prepare Connections” on page 1 updated |
| 9233B-AUTO-08/11 | • ATA6844-DK1 in ATA6844-DK renamed<br>• Figure 2-1 “Atmel ATA6844-DK” on page 2 updated |






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