Sigma-delta current sensing solution for industrial drive applications

Fully assembled board developed for performance evaluation only, **not available for sale**

Features

- Accurate current sensing for high-end industrial motor control applications based on ISOSD61
- 6 kV galvanic isolation, 16 bit sigma-delta modulator, up to 25 MSps
- Fast and dynamic response to load variations
- Compatible with field-oriented control for PMSM motors
- Triple simultaneous current sampling via shunt resistors placed in line with the motor phases
- Fully compatible with the STM32H7B3LI DFSDM peripheral
- Tailored for high-end servo drives

Description

The STDES-AKI003V1 provides an accurate current sensing for high-end industrial motor control applications based on three-phase inverter topology. It is a solution tailored for high-end servo drive.

It has been designed to be used in place of the STEVAL-CTM008V1 within the STEVAL-CTM009V1 kit. A complete system can be arranged using the STEVAL-CTM009V1, the STM32H7B3I-EVAL as control board and the STDES-AKI003V1.

The board features three ISOSD61 16-bit isolated sigma-delta modulators with low voltage differential signaling (LVDS) and single-ended options.

The solution features six power metal strip shunt resistors (two in parallel for each phase) of 5 mΩ 7 W for the current sensing placed inline with the motor phases.

The STDES-AKI003V1 allows the insulated current sensors (ICS) for phase currents reading via a dedicated 20-pin connector for sigma-delta streams compatible with the STM32H7B3I-EVAL board.

A customized version of X-CUBE-MCSDK firmware exploiting the sigma-delta hardware and filtering capabilities of the STM32H7B3I-EVAL is available.

The STDES-AKI003V1 three-phase sigma-delta current sensing board is a fully assembled board developed for performance evaluation only, not available for sale.

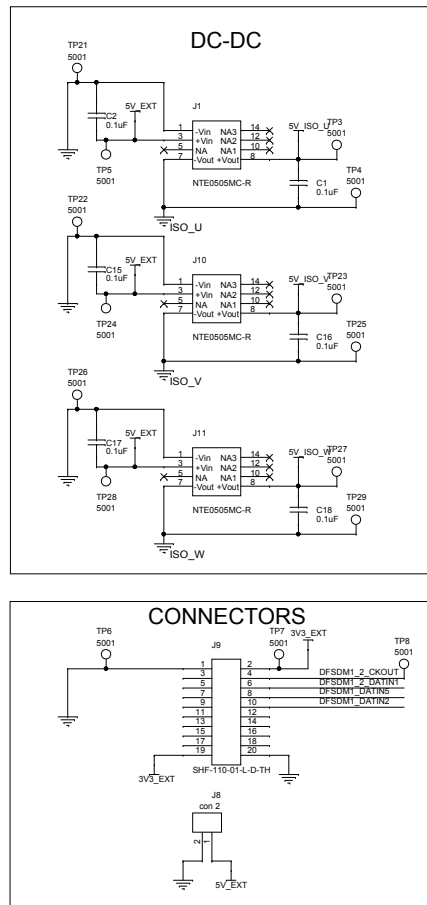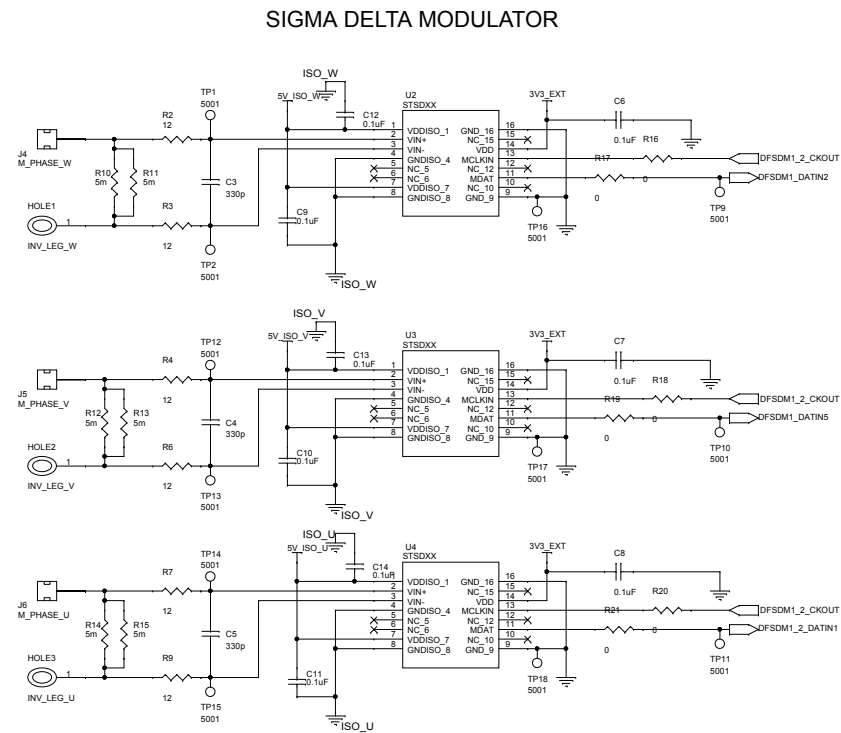| Product summary	
Sigma-delta current sensing solution for industrial drive applications	STDES-AKI003V1
Firmware for STDES-AKI003V1	STSW-AKI003
16-bit isolated sigma-delta modulator, single-ended and LVDS interfaces	ISOSD61
Complete demonstration and development platform for the Arm® Cortex®-M7-based STM32H7B3LIH6QU microcontroller	STM32H7B3I-EVAL
Applications	Motor control

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For further information contact your local STMicroelectronics sales office.

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1 Schematic diagrams

Figure 1. STDES-AKI003V1 circuit schematic

Revision history

Table 1. Document revision history

Date	Revision	Changes
14-Sep-2021	1	Initial release.

IMPORTANT NOTICE – PLEASE READ CAREFULLY