

## 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	<b>STDES-AKI003V1</b>
Firmware for STDES-AKI003V1	<b>STSW-AKI003</b>
16-bit isolated sigma-delta modulator, single-ended and LVDS interfaces	<b>ISOSD61</b>
Complete demonstration and development platform for the Arm® Cortex®-M7-based STM32H7B3LIH6Q U microcontroller	<b>STM32H7B3I-EVAL</b>
Applications	<b>Motor control</b>

## Schematic diagrams

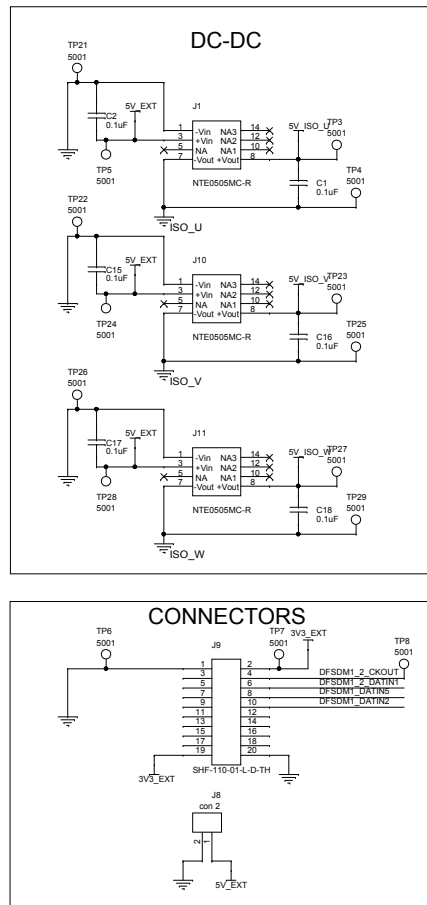
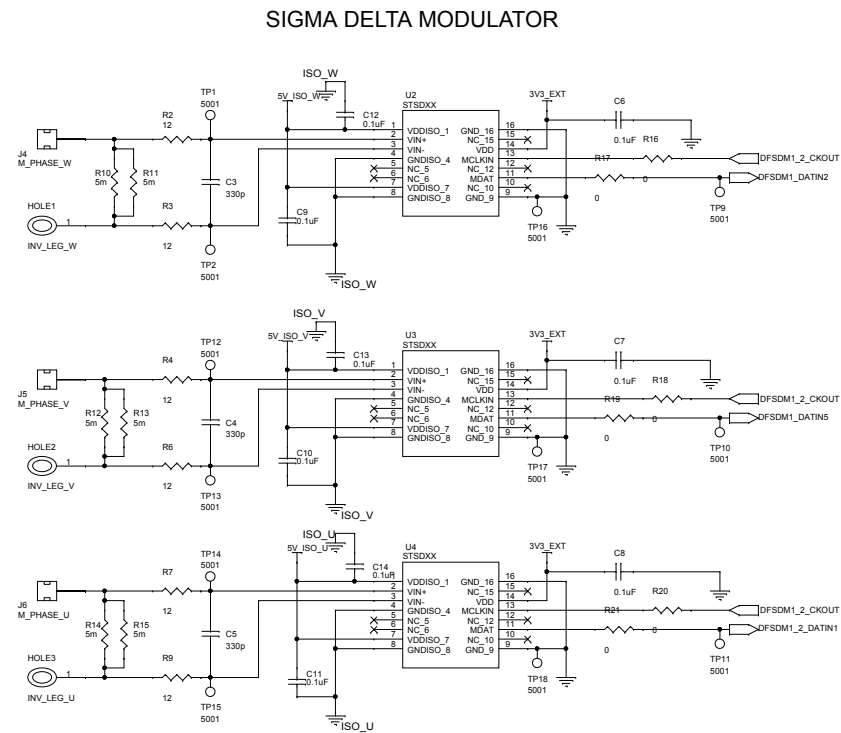


Figure 1. STDES-AKI003V1 circuit schematic

INV  
W  
V  
U



## Revision history

**Table 1. Document revision history**

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

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