KTH5701 EVB Manual

Technical Support
sales.global@conntek.com.cn

2026- 4- 21

Disclaimer

The information in this document is provided by Quanzhou KTsense Microelectronics Co., Ltd. (泉州昆泰芯微电子科技有限公司) (hereafter referred to as "KTsense Micro") on an "as is" basis for informational purposes only. KTsense Micro does not guarantee the accuracy of the information contained herein or the outcomes of its implementation. KTsense Micro assumes no liability for any errors or inaccuracies that may be present in this document. Users assume full responsibility for the application of the practices outlined in this document.

KTsense Micro owns the registered trademark CONNTEK, under which the CONNTEK brand sensors are marketed.

This document comes without any warranties, express or implied, including but not limited to warranties of merchantability, satisfactory quality, non-infringement, and fitness for a particular purpose. KTsense Micro, along with its employees, agents, and affiliates, is not liable for any losses arising from the use or reliance on this document.

This document is subject to change without prior notice and should not be construed as a commitment by KTsense Micro. Users should ensure they have the latest version of the relevant information before placing orders or integrating the product into their systems.

Users must evaluate the suitability of the product described in this document for their specific applications, including the required level of reliability and fitness for purpose.

This document and the described product may be subject to export control regulations. Export may require prior authorization from the competent authorities. The product is not intended, authorized, or warranted for use in applications requiring extended temperature ranges or unusual environmental conditions. High reliability applications, such as medical life-support or aviation systems, are specifically excluded.

The product may not be used for the development, production, maintenance, or storage of:

1. Chemical, biological, or nuclear weapons, including missile systems for such weapons.
2. Civil firearms, including spare parts or ammunition.
3. Defense-related products or materials for military or law enforcement use.
4. Applications that could cause serious harm to persons or property and that can be used as a means of violence in armed conflicts or similar situations.

No licenses or rights to any intellectual property of KTsense Micro or third parties are granted.

If this document is marked as "confidential"or similar, or if the content is reasonably understood to be confidential, the recipient must not disclose any part of the document to third parties without the express written consent of KTsense Micro. The recipient must take all necessary measures to maintain the confidentiality of the document, using at least the same degree of care as they use to protect their own confidential information, but no less than a reasonable degree of care. The recipient may only disclose the document to employees on a need-to-know basis, provided they are bound by confidentiality terms similar to those in this disclaimer. The document may only be used for the purpose for which it was received and may not be used for commercial purposes or to the detriment of KTsense Micro or its customers. These confidentiality obligations will last indefinitely but in any case, for no less than 10 years from the receipt of the document.

This disclaimer is governed by the laws of China, and any disputes arising from it will be subject to the exclusive jurisdiction of the courts in Shenzhen, China.

The invalidity of any provision in this disclaimer does not affect the validity of the remaining provisions. Previous versions of this document are repealed.

Copyright

Contact Information

For the latest version of this document, go to our website at https://en.conntek.com.cn/.

For additional information, please contact our Direct Sales team and get help for your specific needs:

Region	Contact Information
Overseas	Email: sales.global@conntek.com.cn
China	Email: sales@conntek.com.cn

Table of Contents

1 Introduction

The KTH5701_EVB board is designed for performance evaluation and testing of the CONNTEK KTH5701 3D Hall magnetic sensor. It supports both SPI and I²C communication interfaces. This document describes how to use the board in detail.

2 Hardware Overview

The KTH5701_EVB hardware includes the 3D Hall sensor, decoupling capacitors, I²C pull-up resistors, and pin-header connectors.

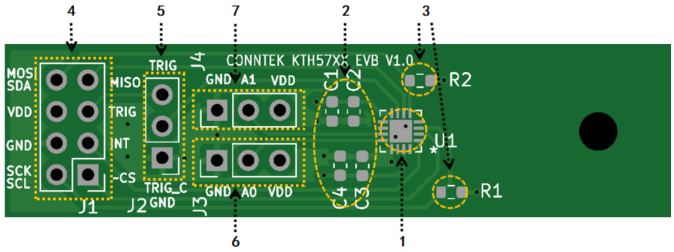

Figure 1 Board Top View

The component descriptions on the board are listed below.

Table 1 Board Component Function List

No.	Ref.	Component	Description
1	U1	KTH5701	3D Hall magnetic sensor IC
2	C1, C2, C3, C4	Decoupling capacitors	Power filtering; C1/C4 are 10 μF, C2/C3 are 100 nF
3	R1, R2	Pull-up resistors	I²C bus (SDA/SCL) pull-up resistors, 4.7 kΩ
4	J1	2×4 header	Main signal connector for SPI/I²C, power, and interrupt signals
5	J2	1×3 header	Jumper to connect TRIG to J1 or GND
6	J3	1×3 header	I²C address pin A0 configuration, selectable between GND and VDD
7	J4	1×3 header	I²C address pin A1 configuration, selectable between GND and VDD

3 Schematic

The figure below shows the complete schematic of the KTH5701_EVB board.

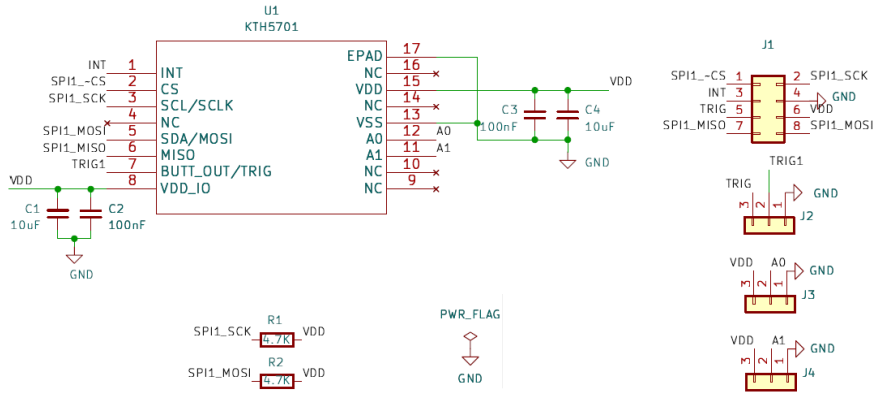

Figure 2 KTH5701_EVB Schematic

4 Mechanical Dimensions

The figure below shows the EVB dimensions. The overall board size is 54.2 mm × 14 mm, and the sensor is placed 20.5 mm from the board edge.

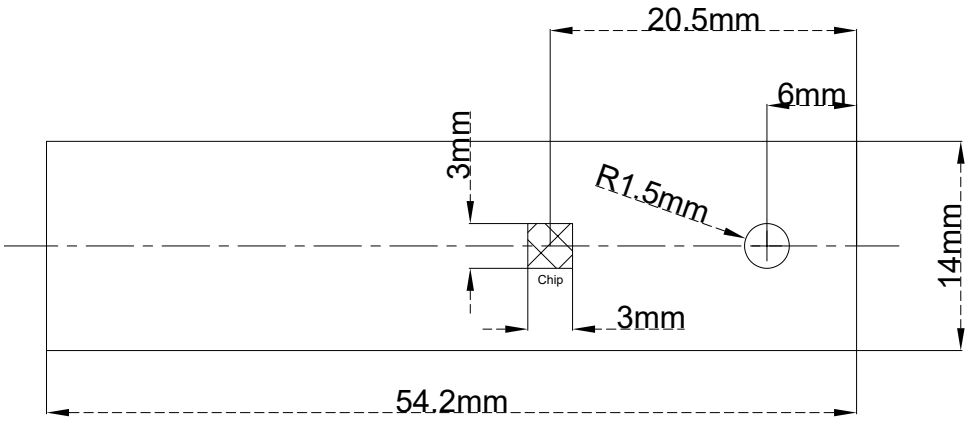

Figure 3 Board Mechanical Drawing

5 Connector Pin Definitions

5.1 J1 Main Signal Connector

J1 is a 2×4 header (2.54 mm pitch) for the main communication and power signals of KTH5701. Each pin function is marked on the PCB silkscreen.

Table 2 J1 Pin Definitions

Pin	PCB Label	Function Description
J1.1	MOSI/SDA	SPI master-out/slave-in signal, multiplexed with I²C data
J1.2	MISO	SPI master-in/slave-out signal
J1.3	VDD	Sensor supply voltage (2.8V∼5.5V)
J1.4	TRIG	Single measurement trigger input, active high; multiplexed with BUTT_OUT button-detection function (configured via J2)
J1.5	GND	Sensor ground
J1.6	INT	Interrupt output signal
J1.7	SCK/SCL	SPI clock signal, multiplexed with I²C clock
J1.8	∼CS	SPI chip select signal (active low)

5.2 J2 TRIG Jumper

J2 is a 1×3 header used to configure the TRIG pin connection of KTH5701.

Table 3 J2 Jumper Definitions

Jumper Position	Function Description
Pin1–Pin2	Connects TRIG to J1 for external host control
Pin2–Pin3	Connects TRIG to GND

5.3 J3/J4 I²C Address Jumpers

J3 and J4 are 1×3 headers used to configure the I²C slave address pins A0 and A1 of KTH5701.

Table 4 J3 (A0) / J4 (A1) Jumper Configuration

Connector	Jumper Position	Function Description
J3 (A0)	Pin1–Pin2	A0 connected to VDD (A0 = 1)
	Pin2–Pin3	A0 connected to GND (A0 = 0)
J4 (A1)	Pin1–Pin2	A1 connected to VDD (A1 = 1)
	Pin2–Pin3	A1 connected to GND (A1 = 0)

I²C address calculation: The 7-bit I²C slave address of KTH5701 is determined by A0 and A1 pin levels. J3 (A0) and J4 (A1) provide four configurable slave addresses. Refer to the KTH5701 datasheet for the exact address values.

6 Functional Description

6.1 I²C Communication

6.1.1 Connection

Connect VDD and GND on J1 to the power supply (2.8V∼5.5V), and connect SDA (J1.1) and SCL (J1.7) to the host controller. The board integrates 4.7 kΩ I²C pull-up resistors R1 and R2.

6.1.2 Address Configuration

Set jumper levels on J3 and J4 to configure the I²C slave address pins A0 and A1.

6.1.3 Procedure

1. Set J3 (A0) and J4 (A1) jumper levels to determine the I²C slave address
2. Connect J1 VDD, GND, SDA (J1.1), and SCL (J1.7) to the host controller
3. After power-up, perform register read/write operations on KTH5701 through I²C

Note: In I²C mode, J1.2 (MISO) and J1.8 (∼CS) are not used.

6.2 SPI Communication

6.2.1 Connection

Connect VDD and GND on J1 to the power supply (2.8V∼5.5V), and connect MOSI (J1.1), MISO (J1.2), SCK (J1.7), and ∼CS (J1.8) to the host controller.

6.2.2 Procedure

1. Connect J1 VDD, GND, MOSI (J1.1), MISO (J1.2), SCK (J1.7), and ∼CS (J1.8) to the host controller
2. After power-up, perform register read/write operations on KTH5701 through SPI
3. ∼CS is active low; the host should pull ∼CS low before communication

Important: SPI and I²C share J1.1 (SDA/MOSI) and J1.7 (SCL/SCK). Only one communication interface can be used at a time. Verify wiring before switching modes.

7 FAQ

Q1: Communication fails after power-up.

- Check whether VDD and GND are correctly connected, and confirm supply voltage is within 2.8V∼5.5V
- In I^2C mode, verify that J3 (A0)/J4 (A1) address settings match the host side
- In SPI mode, verify that ∼CS is correctly driven low
- Confirm signal wiring: SDA/MOSI on J1.1 and SCL/SCK on J1.7

Q2: I^2C communication is unstable.

- Confirm R1 and R2 pull-up resistors are populated (4.7 kΩ)
- Check for I^2C address conflicts on the bus
- Lower the I^2C clock speed for testing