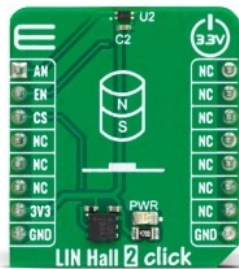


LIN Hall 2 Click



PID: MIKROE-5932

LIN Hall 2 Click is a compact add-on board representing a linear Hall-effect sensing solution. This board features the [TMAG5253](#), a low-power linear Hall-effect sensor from [Texas Instruments](#). The sensor responds proportionally to the magnetic flux density with a magnetic sensitivity range of $\pm 80\text{mT}$ and outputs proportional analog voltage. The sensor comes with a sensitivity compensation to support the temperature drift of a Neodymium magnet. This Click board™ makes the perfect solution for the development of highly accurate rotary and linear position detection in automotive and industrial applications.

LIN Hall 2 Click is fully compatible with the mikroBUS™ socket and can be used on any host system supporting the [mikroBUS™](#) standard. It comes with the [mikroSDK](#) open-source libraries, offering unparalleled flexibility for evaluation and customization. What sets this Click board™ apart is the groundbreaking [ClickID](#) feature, enabling your host system to seamlessly and automatically detect and identify this add-on board.

How does it work?

LIN Hall 2 Click is based on the TMAG5253, a low-power linear Hall-effect sensor from Texas Instruments. This device uses a ratiometric architecture to eliminate errors from VCC tolerance, as the external analog-to-digital converter (ADC) uses the same VCC for its reference. Additionally, the device features magnet temperature compensation for NdFeB and Ferrite to counteract the magnetic sensitivity drifts across a wide temperature range. It fully integrates the signal conditioning, temperature compensation circuits, mechanical stress cancellation, and output driver. The TMAG5253 is sensitive to the magnetic field component perpendicular to the sensor's top side. It also has a bipolar sensitivity where the north and south magnetic poles produce unique output voltages.

Mikroe produces entire development toolchains for all major microcontroller architectures.

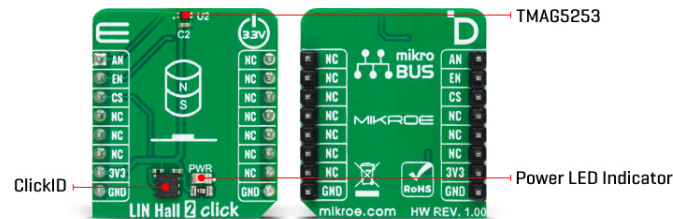
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.



ISO 27001: 2013 certification of informational security management system.
 ISO 14001: 2015 certification of environmental management system.
 OHSAS 18001: 2008 certification of occupational health and safety management system.



ISO 9001: 2015 certification of quality management system (QMS).



LIN Hall 2 Click uses an analog-to-digital converter (ADC) of the host MCU to read the analog values of the TMA5253. The enable EN pin allows you to put the device in an ultra-low power (nA) mode when needed.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. Also, it comes equipped with a library containing functions and an example code that can be used as a reference for further development.

Specifications

Type	Magnetic
Applications	Can be used for the development of highly accurate rotary and linear position detection in automotive and industrial applications
On-board modules	TMA5253 - low-power linear Hall-effect sensor from Texas Instruments
Key Features	Low power consumption, low-noise output, ratiometric analog output proportional to VCC, fast power-on time, wide magnetic sensitivity range, sensitivity compensation to support temperature drift for Neodymium magnet, and more
Interface	Analog
Feature	ClickID
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on LIN Hall 2 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

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Notes	Pin					Pin	Notes
Analog Output	AN	1	AN	PWM	16	NC	
Chip Enable	EN	2	RST	INT	15	NC	
ID COMM	CS	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	3.3V	7	3.3V	5V	10	NC	
Ground	GND	8	GND	GND	9	GND	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator

LIN Hall 2 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Magnetic Sensitivity Range	-80	-	+80	mT

Software Support

We provide a library for the LIN Hall 2 Click as well as a demo application (example), developed using MIKROE [compilers](#). The demo can run on all the main MIKROE [development boards](#).

Package can be downloaded/installed directly from NECTO Studio Package Manager(recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

Library Description

This library contains API for LIN Hall 2 Click driver.

Key functions

- `linhall2_read_an_pin_voltage` LIN Hall 2 read AN pin voltage level function.
- `linhal2_set_en_pin` LIN Hall 2 set EN pin state function.
- `linhal2_get_flux_density` LIN Hall 2 read flux density function.

Example Description

This is an example which demonstrates the use of LIN Hall 2 Click board by measuring magnetic field density and showing it in mT as well as detecting the orientation of the magnet.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended), downloaded from our [LibStock™](#) or found on [Mikroe github account](#).

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Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.LINHall2

Additional notes and informations

Depending on the development board you are using, you may need [USB UART click](#), [USB UART 2 Click](#) or [RS232 Click](#) to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MIKROE [compilers](#).

mikroSDK

This Click board™ is supported with [mikroSDK](#) - MIKROE Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the [LibStock](#) and installed for the compiler you are using.

For more information about mikroSDK, visit the [official page](#).

Resources

[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[LIN Hall 2 click example on Libstock](#)

[LIN Hall 2 click 2D and 3D files](#)

[TMAG5253 datasheet](#)

[LIN Hall 2 click schematic](#)

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