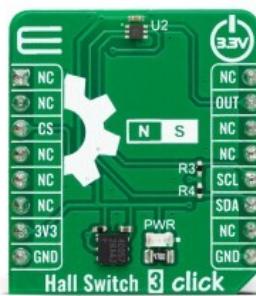


# Hall Switch 3 Click



PID: MIKROE-6017

**Hall Switch 3 Click** is a compact add-on board representing a magnetic field-activated switch. This board features the [NMH1000](#), a Hall-effect magnetic switch from [NXP Semiconductor](#). It is a low-voltage, low-current, and low-output data rate device with a very small size. The switch is most sensitive to a vertical field passing through the top-bottom surfaces, orthogonal to the plane of the Hall Switch 3 Click board™. This Click board™ makes the perfect solution for the development of electronic system wake-up, home automation systems (door or window open/close), contactless switches, lids or tray position detecting switches, proximity detection applications, and more.

Hall Switch 3 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?

Hall Switch 3 Click is based on the NMH1000, a Hall-effect magnetic switch from NXP Semiconductor. The switch processes its input over the functional blocks that consist of a configurable state machine, an analog-to-voltage conversion of the input, and a comparison to generate the bi-state output. The output is arranged in a linear succession. The NMH1000 has a transducer that generates a small charge proportional to the proximal magnetic flux density. The Hall-effect charge is converted to voltage and compared with the pre-defined threshold voltage. This determines the state of the switch's output.

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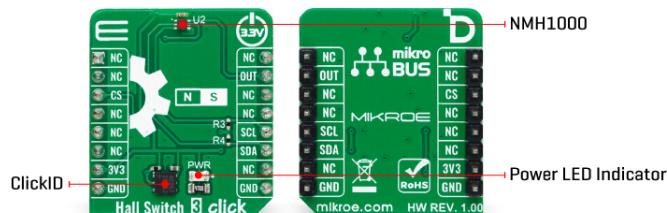
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ISO 27001: 2013 certification of informational security management system.  
 ISO 14001: 2015 certification of environmental management system.  
 OHSAS 18001: 2008 certification of occupational health and safety management system.



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



Hall Switch 3 Click uses a standard 2-wire I2C interface to communicate with the host MCU, supporting a clock frequency of up to 1MHz. The output of the switch, according to the pre-defined threshold, is available over the output OUT pin.

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 electronic system wake-up, home automation systems (door or window open/close), contactless switches, lids or tray position detecting switches, proximity detection applications, and more
On-board modules	NMH1000 - a Hall-effect magnetic switch from NXP Semiconductor
Key Features	Selectable threshold, selectable sample rate, output indicates of absence of a magnetic field as compared to an internally set threshold, consists of a state machine, analog-to-voltage conversion, generation of a bi-state output, arranged in linear succession, and more
Interface	I2C
ClickID	Yes
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

## Pinout diagram

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This table shows how the pinout on Hall Switch 3 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikro™ BUS					Pin	Notes
		1	AN	PWM	16	NC		
	NC	2	RST	INT	15	<b>OUT</b>	Hall Switch Output	
ID COMM	<b>CS</b>	3	CS	RX	14	NC		
	NC	4	SCK	TX	13	NC		
	NC	5	MISO	SCL	12	<b>SCL</b>	I2C Clock	
	NC	6	MOSI	SDA	11	<b>SDA</b>	I2C Data	
Power Supply	<b>3.3V</b>	7	3.3V	5V	10	NC		
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	Ground	

## Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator

## Hall Switch 3 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Magnetic Field Threshold	$\pm 100$	-	$\pm 230$	G
Sensitivity	-	1.75	-	G/LSB

## Software Support

We provide a library for the Hall Switch 3 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 Hall Switch 3 Click driver.

### Key functions

- `hallswitch3_get_mag_data` This function is used to indicates a relative magnetic field strength.
- `hallswitch3_set_out_data_rate` This function provides the capability for the user to override the fixed sample rate controlling the sleep-compare-Vout cycle time.
- `hallswitch3_get_status` This function reads a status reporting of modes and selections.

## Example Description

This example demonstrates the use of Hall Switch 3 Click board™ by reading and displaying

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the magnetic field strength value.

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](#).

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.HallSwitch3

### 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

[Hall Switch 3 click example on Libstock](#)

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

[Hall Switch 3 click schematic](#)

[NMH1000 datasheet](#)

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