

# Hall Current 19 Click



PID: MIKROE-6097

Hall Current 19 Click is a compact add-on board designed for precise current sensing in various applications. This board features the CZ3AG2, a coreless current sensor from AKM Semiconductor. The CZ3AG2 offers high-accuracy and high-speed current sensing using Hall sensor technology, with features like stray magnetic field reduction and dual overcurrent detection. This Click board™ supports a wide current range from 7A to 17.5A and operates with both 3.3V and 5V logic levels. Ideal for industrial AC drives, servo motors, UPS systems, inverters, and power conditioners, Hall Current 19 Click ensures reliable performance and protection.

**DO NOT TOUCH THE BOARD WHILE THE LOAD IS CONNECTED!**

**Note:** This Click board™ needs to be used by trained personnel only while applying high voltages. Special care should be taken when working with hazardous voltage levels.

## How does it work?

Hall Current 19 Click is based on the CZ3AG2, a coreless current sensor from AKM Semiconductor. This sensor uses Hall sensor technology to provide an analog voltage output proportional to the AC/DC current on the AN pin of the mikroBUS™ socket. Using a Group III-V semiconductor thin film as the Hall element, the CZ3AG2 ensures high-accuracy and high-speed current sensing. It also includes functions for reducing stray magnetic fields and dual

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.

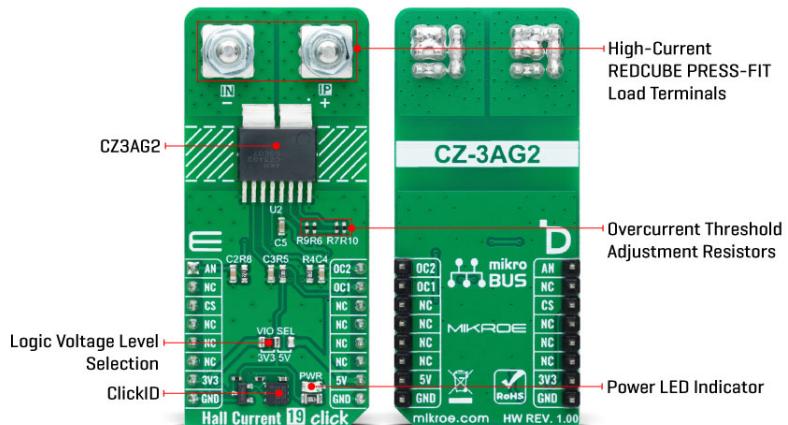


ISO 27001: 2013 certification of informational security management system.  
 ISO 14001: 2015 certification of environmental management system.  
 OHSAS 18001: 2008 certification of occupational health and safety management system.



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

overcurrent detection. Being UL 61800-5-1 safety compliant, the CZ3AG2-based Hall Current 19 Click is perfect for industrial AC drives, servo motors, UPS systems, general inverters, and power conditioners.



As mentioned, this Click board™ is equipped with dual overcurrent detection capabilities on the OC1 and OC2 pins of the mikroBUS™ socket. Using voltage dividers R6/R9 and R7/R10, it sets precise current limits ranging from 7A to 17.5A. This ensures that any current value falling outside this specified range will be promptly detected by the overcurrent detectors, providing reliable protection and accurate measurement.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VIO SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

## Specifications

|                  |   |
|------------------|---|
| Type             | Current sensor  |
| Applications     | Ideal for industrial AC drives, servo motors, UPS systems, inverters, and power conditioners  |
| On-board modules | CZ3AG2 - coreless current sensor from AKM Semiconductor   |
| Key Features     | Coreless current sensor based on Hall sensor technology, high-accuracy, high-speed, both AC and DC current measurement, built-in stray magnetic field reduction, dual overcurrent detection, UL 61800-5-1 safety compliant, operates with both 3.3V and 5V logic voltage levels, and more |
| Interface        | Analog, GPIO  |
| Feature          | ClickID   |
| Compatibility    | mikroBUS™   |
| Click board size | L (57.15 x 25.4 mm)   |

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).

|               |            |
|---------------|------------|
| Input Voltage | 3.3V or 5V |
|---------------|------------|

## Pinout diagram

This table shows how the pinout on Hall Current 19 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

| Notes         | Pin         |  |      |     |    | Pin        | Notes                   |
|---------------|-------------|---|------|-----|----|------------|-------------------------|
| Analog Output | <b>AN</b>   | 1   | AN   | PWM | 16 | <b>OC2</b> | Overcurrent Detection 2 |
|               | NC          | 2   | RST  | INT | 15 | <b>OC1</b> | Overcurrent Detection 1 |
| ID COMM       | <b>CS</b>   | 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  | <b>3.3V</b> | 7   | 3.3V | 5V  | 10 | <b>5V</b>  | Power Supply            |
| 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  |
| JP1   | VIO SEL | Left    | Logic Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V |

## Hall Current 19 Click electrical specifications

| Description    | Min | Typ | Max  | Unit |
|----------------|-----|-----|------|------|
| Supply Voltage | 3.3 | -   | 5    | V    |
| Current Range  | 7   | -   | 17.5 | A    |

## Software Support

We provide a library for the Hall Current 19 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 Current 19 Click driver.

### Key functions

- `hallcurrent19_get_oc2` This function is used to get state of the overcurrent 2 detection of the Hall Current 19 Click board.

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).

- `hallcurrent19_set_zero_ref` This function sets the zero voltage reference of the Hall Current 19 Click board.
- `hallcurrent19_get_current` This function reads and calculate input current value of the Hall Current 19 Click board.

## Example Description

This example demonstrates the use of Hall Current 19 Click board™ by reading and displaying the current measurements.

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.HallCurrent19

## 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 Current 19 Click example on Libstock](#)

[Hall Current 19 Click 2D and 3D files v100](#)

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).

[CZ3AG2 Datasheet](#)[Hall Current 19 click schematic v100](#)

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).

# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mikroe:](#)

[MIKROE-6097](#)