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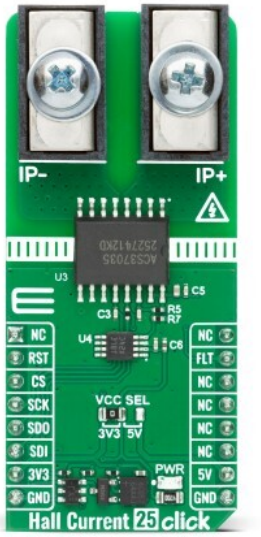
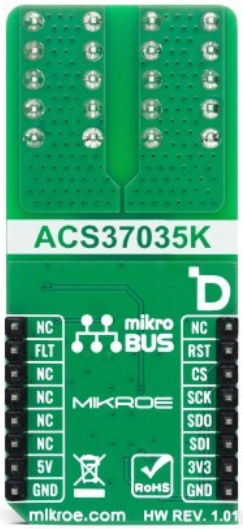
Hall Current 25 Click





PID: MIKROE-6916

Hall Current 25 Click is a compact add-on board designed to provide isolated bidirectional current measurement for real-time monitoring, feedback, and protection in embedded and industrial power systems. This board is based on the ACS37035KLACTR-065B3, a Hall-effect current sensor from Allegro MicroSystems, which combines a low-resistance internal primary conductor with differential magnetic sensing to reduce power loss and improve immunity to external magnetic fields. The board supports current measurement up to ±65A with 20mV/A sensitivity, 1MHz bandwidth, and 0.45µs typical response time, while its onboard ADC converts the sensor output for SPI communication and the FLT pin provides overcurrent indication. It is ideal for motor control systems, load management, switch-mode power supplies, power monitoring, and industrial protection system designs.

For more information about **Hall Current 25 Click** visit the official product page.

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 25 Click is based on the ACS37035KLACTR-065B3 from Allegro MicroSystems, a

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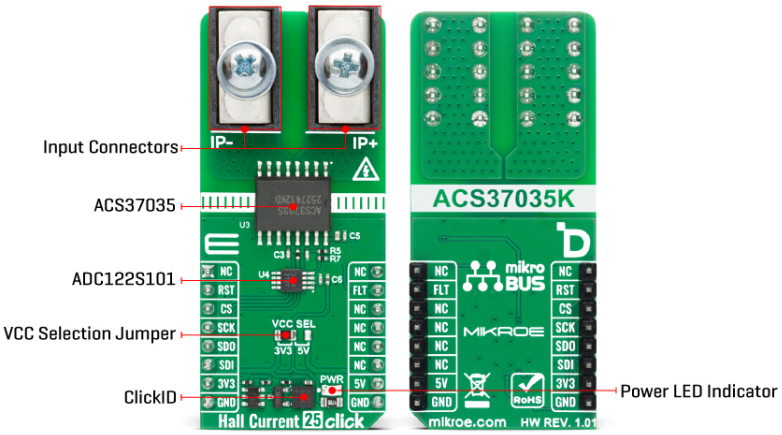
Hall-effect current sensor designed for isolated bidirectional current measurement. The sensor integrates a low-resistance primary conductor and a monolithic Hall sensing IC in a compact SOICW-16 package, allowing the measured current to flow through the IP+ and IP- path while the signal side remains electrically isolated. Current flowing through the internal copper conductor generates a magnetic field that is sensed differentially and converted into a proportional analog voltage on the VOUT pin. This version supports a ±65A current sensing range with a typical sensitivity of 20mV/A, making the board suitable for monitoring both positive and negative current flow in embedded applications.



The ACS37035 is optimized for current monitoring and control loops, offering a 1MHz signal bandwidth and a typical response time of 0.45µs. Its differential Hall sensing architecture improves immunity to external magnetic fields, while the 1mΩ internal conductor resistance helps reduce power loss and self-heating in the measured current path. The device also features low output offset, ratiometric operation, factory calibration, and operation over the -40°C to +125°C temperature range. In addition to current measurement, it includes a programmable overcurrent detection function with an open-drain FAULT output, providing hardware indication for overload or short-circuit conditions with a typical response time of 0.5µs.

Hall Current 25 Click communicates with the host MCU through the SPI interface by using an onboard ADC122S101 ADC converter to digitize the analog output voltage from the current sensor. The SPI lines are routed to the mikroBUS™ CS, SCK, CIPO, and COPI pins, allowing the host MCU to read the converted current measurement data through a standard digital interface instead of directly sampling the analog output. The mikroBUS™ INT pin is used for the FLT signal, which indicates the overcurrent fault condition from the ACS37035. The RST pin is connected to the ClickID multiplexer, while the CS pin is also shared with ClickID functionality, enabling automatic board identification in supported systems.

This Click board™ includes a PWR LED indicator that shows the presence of the selected board supply, as well as a VCC SEL jumper for selecting the board's power and logic voltage level. The measured current is routed through the dedicated IP+ and IP- power connectors, which provide a practical connection point for inserting the board into the current path being monitored. The onboard ADC converter, ClickID circuitry, and supporting passive components make the board easier to integrate into embedded designs where current feedback and overcurrent indication are required without adding external signal-conditioning hardware.

Hall Current 25 Click can operate with either 3.3V or 5V supply and logic voltage levels,

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selected through the onboard VCC SEL jumper. It is suitable for applications such as motor control, load detection and management, switch-mode power supplies, power monitoring, protection systems, industrial equipment, IoT devices, medical instrumentation, utility meters, data loggers, appliances, and consumer electronics. This Click board™ comes with a library containing easy-to-use functions and a code example that can be used as a reference for further development and is available for download.

Specifications

Type	Current sensor
Applications	Ideal for motor control systems, real-time current monitoring, overcurrent protection, energy management systems, and industrial protection systems
On-board modules	ACS37035KLACTR-065B3 - Hall-effect current sensor from Allegro MicroSystems
Key Features	Isolated bidirectional current measurement up to ±65A, 20mV/A typical sensitivity, 1MHz signal bandwidth and 0.45µs typical response time, Differential Hall sensing for improved immunity to external magnetic fields, ClickID support, and more
Interface	GPIO,SPI
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V,5V

Pinout diagram

This table shows how the pinout on Hall Current 25 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	NC	
ClickID Multiplexer	**RST**	2	RST	INT	15	**FLT**	FLT
SPI CS and ClickID	**CS**	3	CS	RX	14	NC	
SPI Clock	**SCK**	4	SCK	TX	13	NC	
SPI Data Master In	**CIPO**	5	MISO	SCL	12	NC	
SPI Data Master Out	**COPI**	6	MOSI	SDA	11	NC	
Power Supply	**3.3V**	7	3.3V	5V	10	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED indicator showing the presence

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			of the selected board supply
JP1	VCC SEL	Left	Power/logic voltage level selection 3.3V/5V: left position 3.3V, right position 5V
IP + and IP -	IP + and IP -	-	Power connectors for current measurement

Hall Current 25 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operating temperature	-40	-	125	°C
Current Sensing Range	-20	-	20	A

Software Support

Hall Current 25 Click demo application is developed using the NECTO Studio, ensuring compatibility with mikroSDK's open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a mikroBUS™ socket.

Example Description

This example demonstrates the use of Hall Current 25 Click board by reading and displaying the input current measurements.

Key Functions

- hallcurrent25_cfg_setup This function initializes Click configuration structure to initial values.
- hallcurrent25_init This function initializes all necessary pins and peripherals used for this Click board.
- hallcurrent25_calib_offset This function calibrates the zero current offset value.
- hallcurrent25_calib_resolution This function calibrates the data resolution at a known load current.
- hallcurrent25_read_current This function reads the input current level [A].

Application Init

Initializes the driver and calibrates the zero current offset and data resolution at 3A load current.

Application Task

Reads the input current measurements and displays the results on the USB UART approximately once per second.

Application Output

This Click board can be interfaced and monitored in two ways:

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- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following this tutorial.
- UART Terminal - Monitor data via the UART Terminal using a USB to UART converter. For detailed instructions, check out this tutorial.

Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the NECTO Studio. The application code can also be found on the MIKROE GitHub account.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

ClickID

Downloads

Hall Current 25 click example package

Hall Current 25 click 2D and 3D files v101

Hall Current 25 click schematic v101

ACS37035 datasheet

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