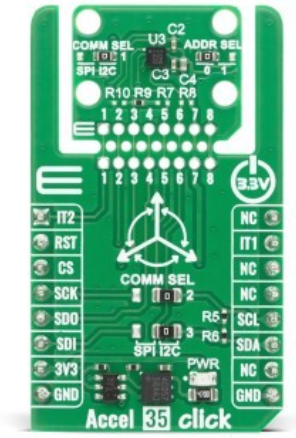
MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

Accel 35 Click



PID: MIKROE-6828

Accel 35 Click is a compact add-on board designed for measurements of linear acceleration, device orientation, and movement-triggered functions in low-power embedded applications. It is based on the LIS2DE12, an ultra-low-power “femto” family accelerometer from STMicroelectronics that supports user-selectable ±2g/±4g/±8g/±16g ranges and output data rates from 1Hz to 5.3kHz over I2C or SPI interfaces. The board features advanced capabilities such as 6D/4D orientation detection, embedded FIFO buffering, and an internal temperature sensor, alongside the innovative Click Snap format that allows the sensing part to operate as a detachable, independently mountable unit. Accel 35 Click is ideal for motion-activated functions, gesture control, display orientation, pedometer designs, gaming input devices, and impact or vibration detection applications.

For more information about **Accel 35 Click** visit the official product page.

How does it work?

Accel 35 Click is based on the LIS2DE12, a high-performance three-axis linear accelerometer from STMicroelectronics belonging to the company’s “femto” family, engineered to deliver reliable motion data with minimal power consumption. The LIS2DE12 supports user-selectable full-scale ranges of ±2g, ±4g, ±8g, and ±16g, enabling adaptation for applications that require either fine sensitivity or the ability to capture high-impact events. It provides output data rates from 1Hz up to 5.3kHz, ensuring accurate measurement of both slow and fast motion dynamics across all three axes. The sensor integrates an 8-bit data output interface and supports both I2C and SPI digital communication standards, allowing easy integration with a wide range of host microcontrollers.

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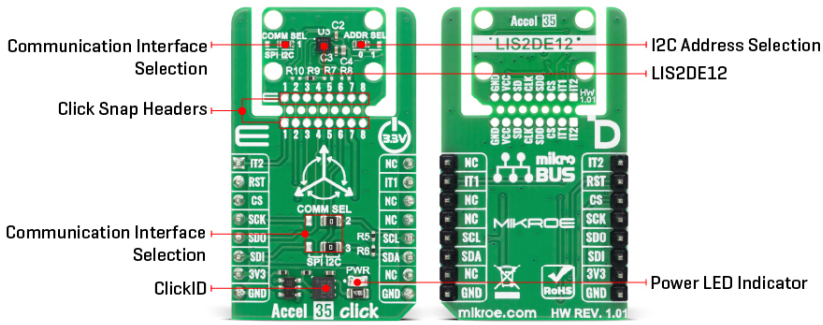

Advanced internal features of the LIS2DE12 include 6D/4D orientation detection for tracking device position, an embedded FIFO that offloads the host MCU by buffering acceleration samples, and an internal temperature sensor that provides auxiliary environmental data. These capabilities make Accel 35 Click suitable for a wide range of motion-based functions, including shake recognition, motion-activated device behavior, and display orientation control. It also enables practical implementation of pedometer functions, gesture-based interfaces, gaming and VR input devices, and reliable detection or logging of impacts and sudden movements.

This Click board™ is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor/IC/module area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the LIS2DE12 can operate autonomously by accessing its signals directly on the pins marked 1-8. Additionally, the Snap part includes a specified and fixed screw hole position, enabling users to secure the Snap board in their desired location.

This board supports communication with the host MCU through either SPI (maximum clock frequency of 10MHz) or I2C (maximum clock frequency of 400kHz) interfaces, with I2C being the default option. The communication interface is selected by adjusting the COMM SEL jumper to the desired position. To enhance flexibility, particularly with the detachable Snap section of the Click Snap format, an additional COMM SEL jumper is available. This jumper functions the same as the COMM SEL, allowing for independent communication interface selection when the Snap section is used independently.

To ensure proper functionality, all COMM jumpers must be set to the same interface. For those using the I2C interface, the board also provides an ADDR SEL jumper, enabling users to configure the I2C address as needed for their specific application. In addition to the interface pins, the board includes two configurable interrupt pins, IT1 and IT2, to trigger interrupts by detecting two independent inertial wake-up/free-fall events as well as by the position of the device itself.

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. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

Click Snap

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Click Snap is an innovative feature of our standardized Click add-on boards, designed to bring greater flexibility and optimize your prototypes. By simply snapping the PCB along predefined lines, you can easily detach the main sensor/IC/module area, reducing the overall size, weight, and power consumption - ideal for the final phase of prototyping. For more details about Click Snap, visit the official page dedicated to this feature.

Specifications

Type	Acceleration,Motion
Applications	Ideal for motion-activated functions, gesture control, display orientation, pedometer designs, gaming input devices, and impact or vibration detection applications
On-board modules	LIS2DE12 - ultra-low-power 3-axis femto accelerometer from STMicroelectronics
Key Features	Three-axis accelerometer with selectable ranges, support for both I2C and SPI communication, 8-bit digital output, integrated 6D/4D orientation detection, an embedded FIFO for buffered sampling, an internal temperature sensor, dual interrupt outputs for inertial wake-up and free-fall detection, Click Snap, and more
Interface	I2C,SPI
Feature	Click Snap,ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	1.8V,3.3V

Pinout diagram

This table shows how the pinout on Accel 35 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS				Pin	Notes
Interrupt 2	**IT2**	1	AN	PWM	16	NC	
ID SEL	**RST**	2	RST	INT	15	**IT1**	Interrupt 1
SPI Select / ID COMM	**CS**	3	CS	RX	14	NC	
SPI Clock	**SCK**	4	SCK	TX	13	NC	
SPI Data OUT	**SDO**	5	MISO	SCL	12	**SCL**	I2C Clock
SPI Data IN	**SDI**	6	MOSI	SDA	11	**SDA**	I2C Data
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

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LD1	PWR	-	Power LED Indicator
JP1	COMM SEL 1	Right	mikroBUS-Side Communication Interface Selection SPI/I2C: Left position SPI, Right position I2C
JP2-JP3	COMM SEL 2-3	Right	Snap-Side Communication Interface Selection SPI/I2C: Left position SPI, Right position I2C
JP4	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

Accel 35 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	1.8 / 3.3	-	V
Measurement Range	±2	-	±16	g
Sensitivity	15.6	-	187.5	mg/digit

Software Support

Accel 35 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 the Accel 35 Click board by reading acceleration and temperature data from the onboard 3-axis accelerometer. The measured values are displayed via the UART terminal.

Key Functions

- accel35_cfg_setup This function initializes Click configuration structure to initial values.
- accel35_init This function initializes all necessary pins and peripherals used for this Click board.
- accel35_default_cfg This function executes a default configuration of Accel 35 Click board.
- accel35_get_data This function retrieves acceleration and temperature data from the device.

Application Init

Initializes the logger and the Click board and applies the default configuration.

Application Task

Reads the acceleration values in X, Y, and Z axis as well as the internal temperature, then displays the results on the UART terminal.

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Application Output

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

- 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

Accel 35 click example package

Accel 35 click 2D and 3D files v101

LIS2DE12 datasheet

Accel 35 click schematic v101

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