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Accel 30 Click





PID: MIKROE-5550

Accel 30 Click is a compact add-on board that contains an acceleration sensor. This board features the MC3635, an ultra-low power, low-noise, integrated digital output 3-axis accelerometer from MEMSIC. The MC3635 allows selectable full-scale acceleration measurements in ranges of ±2g, ±4g, ±8g, ±12g, or ±16g in three axes with a configurable host interface that supports both SPI and I2C serial communication. It also supports high-resolution, low-power operating modes and interrupt feature for various events allowing maximum flexibility to meet multiple use case needs. This Click board™ is suitable for consumer product motion sensing, user interface control, gaming, electronic compass tilt compensation, and more.

Accel 30 Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

Accel 30 Click is based on the MC3635, a highly reliable digital triaxial acceleration sensor from MEMSIC. The MC3635 is highly configurable with a programmable acceleration range of ±2g, ±4g, ±8g, ±12g, or ±16g, and an internal sample rate from 14 to 1300 samples/second. It contains a 12-bit 32-sample FIFO with a programmable watermark and can be put into several operational modes, such as Sleep/Standby/Sniff/Swake/Cwake/Trig, depending upon the desired sensing application. In addition to all these features, the MC3635 is characterized by excellent temperature stability, low noise, and low power consumption.

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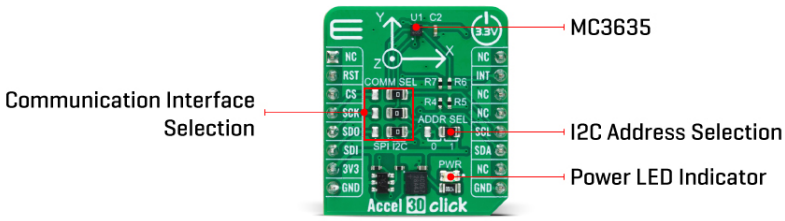

This Click board™ allows using both I2C and SPI interfaces at a maximum frequency of 1MHz for I2C and 8MHz for SPI communication. Selection is made by positioning SMD jumpers marked COMM SEL to the appropriate position. All jumpers must be on the same side, or the Click board™ may become unresponsive. When the I2C interface is selected, the MC3635 allows the choice of its I2C slave address, using the ADDR SEL SMD jumper set to an appropriate position marked 0 and 1. In addition to communication pins, this board also possesses an additional interrupt pin, routed to the INT pin on the mikroBUS™ socket, to signal MCU that an event, such as specific tap or sample acquisition conditions, has happened.

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

Specifications

Type	Acceleration,Motion
Applications	Can be used for consumer product motion sensing, user interface control, gaming, electronic compass tilt compensation, and more
On-board modules	MC3635 - digital triaxial acceleration sensor from MEMSIC
Key Features	Low power consumption, low noise, selectable full-scale acceleration, configurable host interface, high resolution, various operating modes, interrupt, programmable sample rate, and more
Interface	I2C,SPI
ClickID	Yes
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

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Pinout diagram

This table shows how the pinout on Accel 30 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	
	NC	2	RST	INT	15	**INT**	Interrupt
SPI Chip Select	**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
LD1	PWR	-	Power LED Indicator
JP1	ADDR SEL	Right	I2C Address Selection 0/1: Left position 0, Right position 1
JP2-JP4	COMM SEL	Right	Communication Interface Selection SPI/I2C: Left position SPI, Right position I2C

Accel 30 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Acceleration Range	±2	-	±16	g
Acceleration Resolution	8	10	12	bits
Sensitivity	8	-	4096	LSB/g
Sample Rate	14	-	1300	samp/sec

Software Support

We provide a library for the Accel 30 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 Accel 30 Click driver.

Key functions

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- accel30_get_axis Accel 30 get accel data function.
- accel30_set_resolution_ctrl Accel 30 set resolution control function.
- accel30_set_mode Accel 30 set operating mode function.

Example Description

This library contains API for Accel 30 Click driver. The library initializes and defines the I2C or SPI bus drivers to write and read data from registers. The library also includes a function for reading X-axis, Y-axis, and Z-axis data.

The complete 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.Accel30

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. A UART terminal is available in all Mikroe compilers.

mikroSDK

This Click board™ is supported with mikroSDK - Mikroe Software Development Kit, which needs to be downloaded from the LibStock and installed for the compiler you are using to ensure proper operation of mikroSDK compliant Click board™ demo applications.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

ClickID

Downloads

Accel 30 click example on Libstock

Accel 30 click 2D and 3D files

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MC3635 datasheet

Accel 30 click schematic

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