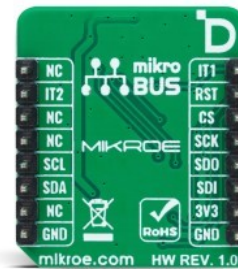# Accel 29 Click

PID: MIKROE-5671

Accel 29 Click is a compact add-on board that contains an acceleration sensor. This board features the ADXL314, a three-axis ±200g accelerometer from Analog Devices. The ADXL314 offers 16-bit digital output data with a configurable host interface that supports SPI and I2C serial communication. An integrated memory management system with a 32-level FIFO buffer can store data to minimize host processor activity and lower overall system power consumption. Low power modes enable intelligent motion-based power management with threshold sensing and active acceleration measurement at low power dissipation. This Click board™ is suitable for multiple applications such as motion-activated functions, shock detection, high-force event detection, and more.

How does it work?

Accel 29 Click is based on the ADXL314, a complete three-axis ±200g acceleration measurement system from Analog Devices, operating at low power levels. The ADXL314 measures both dynamic accelerations resulting from motion or shock and static accelerations, such as gravity. It provides digital output data formatted as 16-bit, with acceleration reported digitally through a configurable and selectable serial interface. The ADXL314 automatically modulates its power consumption proportionately to its output data rate. If additional power savings are desired, it also offers lower power modes, enabling intelligent motion-based power management with threshold sensing and active acceleration measurement at low power dissipation.

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
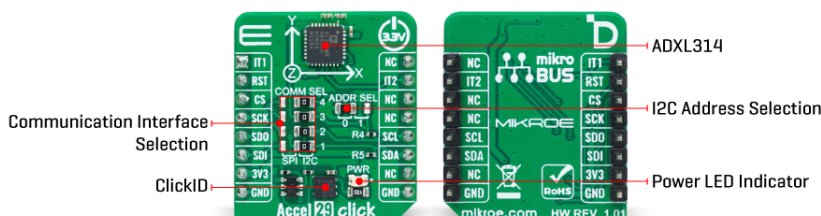
The ADXL314 is based on a polysilicon surface-micromachined structure built on top of a silicon wafer that suspends the structure over the surface of the wafer, providing resistance against forces due to applied acceleration. Deflection of the structure is measured using differential capacitors that consist of independent fixed plates and plates attached to the moving mass. Acceleration deflects the proof mass and unbalances the differential capacitor, producing a sensor output whose amplitude is proportional to acceleration. Phase-sensitive demodulation is used to determine the magnitude and polarity of the acceleration.

As mentioned, the acceleration data is accessed through I2C or SPI interface with a maximum frequency of 400kHz for I2C and 5MHz for SPI communication. The selection is made by positioning SMD jumpers labeled COMM SEL appropriately. Note that all the jumpers' positions must be on the same side, or the Click board™ may become unresponsive. While the I2C interface is selected, the ADXL314 allows choosing the least significant bit (LSB) of its I2C slave address using the SMD jumper labeled ADDR SEL.

This board also possesses two interrupts, IT1 and IT2, routed to, where by default, the AN and INT pins stand on the mikroBUS™ socket, entirely programmed by the user through a serial interface. They signal MCU that a motion event has been sensed.

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	Motion
Applications	Can be used for multiple applications such as motion-activated functions, shock detection, high-force event detection, and more
On-board modules	ADXL314 - three-axis accelerometer from Analog Devices
Key Features	±200g measurement range, low power consumption, user-selectable bandwidth, fixed 13-bit output resolution, selectable interface, embedded memory management system with

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

	FIFO technology, interrupt, and more
Interface	I2C,SPI
Feature	ClickID
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Accel 29 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
Interrupt 1	IT1	1	AN	PWM	16	NC	
ID SEL	RST	2	RST	INT	15	IT2	Interrupt 2
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
LD1	PWR	-	Power LED Indicator
JP1-JP4	COMM SEL	Right	Communication Interface Selection SPI/I2C: Left position SPI, Right position I2C
JP5	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1

Accel 29 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Acceleration Range	-	±200	-	g
Resolution	-	13	-	bits
Sensitivity	-	20.83	-	LSB/g

Software Support

We provide a library for the Accel 29 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 29 Click driver.

Key functions

- accel29_calibrate_offset This function calibrates accel offset to the specified values by setting the OFSX/Y/Z registers.

- accel29_get_avg_axes This function reads a specified number of samples for accel X, Y, and Z axis data in g and averages them.

Example Description

This example demonstrates the use of Accel 29 Click board™ by reading and displaying the accelerometer data (X, Y, and Z axis) averaged from 100 samples.

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.Accel29

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, that 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™

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

ClickID

Downloads

[Accel 29 click example on Libstock](#)

[ADXL314 datasheet](#)

[Accel 29 click 2D and 3D files v101](#)

[Accel 29 click schematic v101](#)

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Acceleration Sensor Development Tools *category:*

Click to view products by MikroElektronika *manufacturer:*

Other Similar products are found below :

2019 BRKTSTBC-A8491 1018 DEV-13629 BRKOUT-FXLN8361Q 2472 SEN0032 SEN0168 SEN0224 STEVAL-MKI174V1 MXA2500EL-B FIT0031 SEN-13963 MXP7205VW-B SEN0140 SEN0183 SEN-11446 1018901083 163 2019 2809 4097 4627 Shuttle Board 3.0 BMA530 Shuttle Board 3.0 BMA580 410-097P-KIT 410-255P-KIT KIT3376MMA7368L KX132-1211-EVK-001 KX134-1211-EVK-001 EV3419A EV3479A EV3635B EV3672B MXC4005XC-B MXC6655XA-B MIKROE-3341 MIKROE-3440 MIKROE-3464 MIKROE-4112 MIKROE-1194 MIKROE-1905 MIKROE-1942 MIKROE-2102 MIKROE-3149 MIKROE-3244 MIKROE-3259 MIKROE-4185 MIKROE-4559 MIKROE-4780