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Pressure 17 Click

PID: MIKROE-4944

Pressure 17 Click is a compact add-on board that contains a board-mount pressure sensor. This board features the BM1390GLV-Z, a high-precision piezoresistive pressure sensor from Rohm Semiconductor. The BM1390GLV-Z comes with a configurable host interface that supports I2C serial communication and measures pressure in a range from 300hPa up to 1300hPa with an accuracy of ±1hPa. It also has a built-in temperature compensation function that internally performs temperature compensation for MEMS inside the chip, so it's easy to get pressure information, built-in FIFO, and operation in a temperature range of -40°C to 85°C, which ensures stable operation under extreme conditions. This Click board™ is suitable for pressure measurements in automotive applications, industrial and consumer applications.

Pressure 17 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?

Pressure 17 Click as its foundation uses the BM1390GLV-Z, ultra-compact piezoresistive pressure sensor from Rohm Semiconductor. This MEMS-based absolute pressure sensor includes a sensing element, analog to digital converter, signal processing part, and digital interface that sends the digital pressure data to the host controller. The MEMS-based sensing element measures pressure in a range from 300hPa up to 1300hPa with an accuracy of ±1hPa over a wide operating temperature range at the industry's lowest power.

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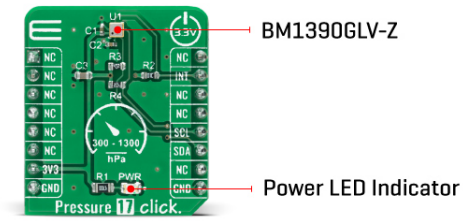

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Pressure 17 Click communicates with MCU using the standard I2C 2-Wire interface to read data and configure settings, supporting Standard Mode operation with a clock frequency of 100kHz and Fast Mode up to 400kHz. It also possesses an additional interrupt signal, routed on the INT pin of the mikroBUS™ socket labeled as INT, indicating when a specific interrupt event occurs.

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. 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	Pressure
Applications	Can be used for pressure measurements in automotive applications, industrial and consumer applications
On-board modules	BM1390GLV-Z - ultra-compact piezoresistive pressure sensor from Rohm Semiconductor
Key Features	Low power consumption, high precission, MEMS based piezo-resistive sensing principle, built-in temperature compensation function, interrupt feature, and more
Interface	I2C
Feature	No ClickID
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 Pressure 17 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
	NC	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	**SCL**	I2C Clock
	NC	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

Pressure 17 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Operating Pressure Range	300	-	1300	hPa
Absolute Pressure Accuracy	-	±1	-	hPa
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the Pressure 17 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Package can be downloaded/installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Library Description

This library contains API for Pressure 17 Click driver.

Key functions

- pressure17_get_int_pin This function returns the INT pin logic state.
- pressure17_read_data This function checks if the data is ready and then reads the pressure and temperature raw data and converts them to millibar and Celsius respectfully.
- pressure17_write_register This function writes a data byte to the selected register by

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using I2C serial interface.

Example Description

This example demonstrates the use of Pressure 17 Click board™ by reading and displaying the pressure and temperature data.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.Pressure17

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 MikroElektronika compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika 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™

Downloads

BM1390GLV-Z datasheet

Pressure 17 click 2D and 3D files

Pressure 17 click schematic

Pressure 17 click example on Libstock