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

Pressure 23 Click - 07BA





PID: MIKROE-6207

Pressure 23 Click - 07BA is a compact add-on board for accurate and reliable absolute pressure and temperature measurements in harsh environments. This board features the MS5849-07BA, an ultra-compact, chlorine-resistant sensor from TE Connectivity that delivers 24-bit resolution data via I2C or SPI interfaces. It operates within pressure ranges of 0.4 to 7 bar, features a chlorine-resistant gel coating, and measures temperatures from -20 to +85°C. The sensor's grounded metal ring provides robust protection and secure O-ring mounting, while the flexible communication options allow for optimized performance. Ideal for industrial, environmental, and automotive applications requiring precise pressure and temperature monitoring.

How does it work?

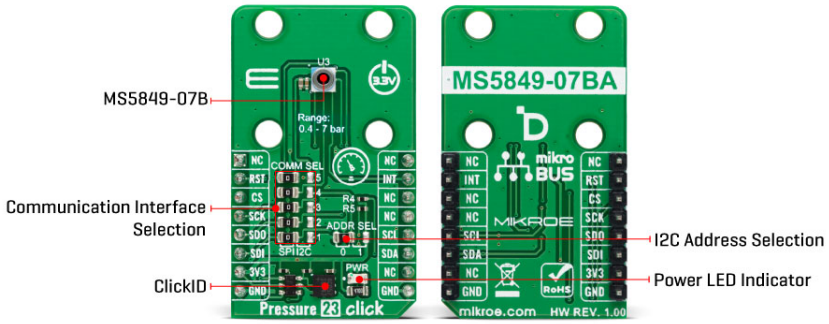
Pressure 23 Click - 07BA is based on the MS5849-07BA, an ultra-compact, chlorine-resistant absolute pressure sensor developed by TE Connectivity. This high-performance sensor delivers precise absolute pressure measurements with a 24-bit resolution and transmits the data digitally via I2C or SPI interfaces. It is engineered to operate within pressure ranges from 0.4 to 7 bar and features a media-protected design with a chlorine-resistant gel coating, making it ideal for harsh environments. Additionally, it measures temperature over a wide range from -20 to +85°C and makes an excellent choice for applications requiring reliable and precise pressure and temperature measurements in challenging environments.

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The MS5849-07BA sensor combines a piezoresistive pressure cell with an amplifier A/D interface IC, all enclosed in a robust QFN package. This package includes a grounded metal ring that shields the electronic components and facilitates secure O-ring mounting. The sensor processes the measured pressure and temperature signals, converting them into a 24-bit data word. It also stores six unique coefficients that enable highly accurate software correction for both pressure and temperature measurements when processed by a host microcontroller unit (MCU).

As mentioned, Pressure 23 Click - 07BA can communicate with the host MCU using the 4-Wire SPI serial interface and the I2C interface. The SPI interface supports clock frequencies up to 10MHz, while the I2C clock supports up to 3.4MHz. The desired communication interface can be chosen over the 5 COMM SEL jumpers, where the SPI is set by default. If your goal is the I2C, you can select the I2C address over the ADDR SEL jumper (0 set by default). The chosen communication interface provides flexibility in configuring the oversampling rate and optimizing both speed and power consumption based on application requirements. Besides communication pins, this board also uses an interrupt INT pin, which will be raised for different conditions, such as pressure and temperature thresholds, finished ADC conversion, and more.

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. Also, it 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	Ideal for industrial, environmental, and automotive applications requiring precise pressure and temperature monitoring
On-board modules	MS5849-07BA - ultra-compact chlorine-resistant absolute pressure sensor from TE Connectivity
Key Features	High-resolution pressure sensor, fast conversion, 24-bit ADC, built-in automatic conversion, signaling state by interrupt, programmable filter, built-in FIFO, wide

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	operating pressure range, selectable interface, and more
Interface	I2C,SPI
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on Pressure 23 Click - 07BA 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 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	ADDR SEL	Left	I2C Address Selection 0/1: Left position 0, Right position 1
JP2-JP6	COMM SEL	Left	Communication Interface Selection SPI/I2C: Left position SPI, Right position I2C

Pressure 23 Click - 07BA electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Operating Pressure Range	400	-	7000	mbar
Absolute Accuracy (High Pressure)	-50	-	+50	mbar
Resolution	-	24	-	bit

Software Support

We provide a library for the Pressure 23 07BA Click as well as a demo application (example), developed using MIKROE compilers. The demo can run on all the main MIKROE development boards.

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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 Pressure 23 07BA Click driver.

Key functions

- pressure2307ba_get_measurement_data Pressure 23 07BA gets the measurement data function.
- pressure2307ba_get_calibration_data Pressure 23 07BA gets the calibration data function.
- pressure2307ba_read_adc Pressure 23 07BA ADC data reading function.

Example Description

This example demonstrates the use of Pressure 23 07BA Click board™ by reading and displaying the pressure and temperature measurements.

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.Pressure2307BA

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. 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

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Downloads

Pressure 23 click - 07BA example on Libstock

Pressure 23 click - 07BA 2D and 3D files v100

Pressure 23 click - 07BA schematic v100

MS5849-07BA datasheet

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