Diff Press 4 Click

PID: MIKROE-5868

Diff Press 4 Click is a compact add-on board that can measure differential pressure. This board features the SM9336-BCE-S-250-000, a digital pressure and altimeter sensor module from TE Connectivity. The SM9336-BCE-S-250-000 has a configurable host interface that supports I2C serial communication and measures pressure in a wide range with an accuracy of 3%. It comes as calibrated and temperature-compensated with high reliability/long-term stability. It operates in a compensated temperature range of -20°C to 85°C, ensuring stable operation under extreme conditions. This Click board™ makes the perfect solution for the development of weather station equipment, industrial, consumer applications, and similar applications that rely on accurate and reliable pressure monitoring.

How does it work?

Diff Press 4 Click is based on the SM9336-BCE-S-250-000, a digital pressure and altimeter sensor module from TE Connectivity. It uses state-of-the-art MEMS pressure transducer technology and CMOS mixed signal processing technology to produce digital, fully conditioned, multi-order pressure and temperature-compensated measurements. The sensor comes in the JEDEC standard SOIC-16 package with dual vertical porting that can accept ⌀2.2 hoses, where one of them is a high-pressure side, while the other is designated as the vacuum side. It can measure differential pressure from -250Pa up to 250Pa with a total error band after Autozero under 1%.

![MIKROE Time-saving embedded tools]

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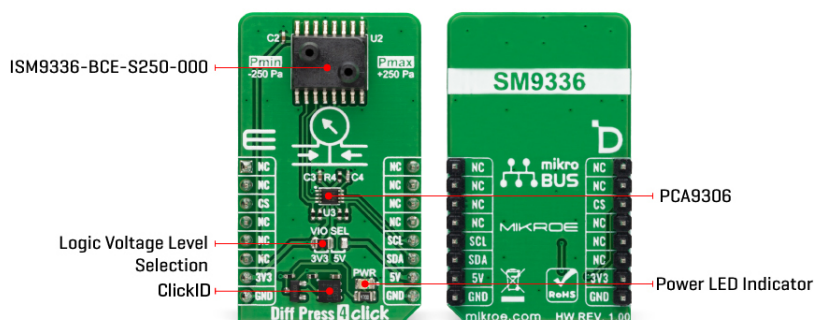
Diff Press 4 Click can use a standard 2-wire I2C interface to communicate with the host MCU, where you can read both the pressure and the temperature measurements. As the SM9336-BCE-S-250-000 sensor works on 3.3V, this Click board™ comes equipped with the PCA9306, a dual bidirectional I2C bus and SMBus voltage-level translator from Texas Instruments, which allows the use of this Click board™ with systems with 5V logic level.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VIO SEL jumper. This way, both 3.3V and 5V capable MCUs can use the communication lines properly. Also, this Click board™ comes equipped with a library containing easy-to-use functions and an example code that can be used as a reference for further development.

Specifications

Type	Pressure
Applications	Can be used for the development of weather station equipment, industrial, consumer applications, and similar applications that rely on accurate and reliable pressure monitoring
On-board modules	SM9336-BCE-S-250-000 - digital pressure and altimeter sensor module from TE Connectivity
Key Features	Wide differential pressure range, low total error band after Autozero, 16-bit I2C digital interface, pressure calibrated and temperature compensated output, MEMS pressure transducer technology, and more
Interface	I2C
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on Diff Press 4 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikro™ BUS		Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	NC	
ID COMM	**CS**	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	**5V**	Power Supply
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
JP1	VIO SEL	Left	Logic Level Voltage Selection 3V3/5V: Left position 3V3, Right position 5V

Diff Press 4 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Pressure Management Range	-250	-	+250	Pa
Resolution	-	16	-	bit

Software Support

We provide a library for the Diff Press 4 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 Diff Press 4 Click driver.

Key functions

- diffpress4_get_measurement_data Diff Press 4 gets the raw data function.

- diffpress4_get_status Diff Press 4 get status function.

- diffpress4_get_raw_data Diff Press 4 gets the raw data function.

Example Description

This example demonstrates the use of Diff Press 4 Click board™ by reading and displaying the differential pressure and sensor 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.DiffPress4

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

Click board™ Catalog

Click boards™

ClickID

Downloads

Diff Press 4 click example on Libstock

SM9336-BCE-S-250-000 datasheet

PCA9306 datasheet

Diff Press 4 click schematic

Diff Press 4 click 2D and 3D files