

Pressure 14 Click



PID: MIKROE-4424

Pressure 14 Click is a compact add-on board that contains a board-mount pressure sensor. This board features the ABP2LANT060PG2A3XX, a piezoresistive silicon pressure sensor offering a digital output for reading pressure over the specified full-scale pressure span and a temperature range from Honeywell Sensing and Productivity Solutions. This I2C configurable sensor is calibrated and temperature compensated for sensor offset, sensitivity, temperature effects, and accuracy errors, including non-linearity, repeatability, and hysteresis, using an on-board ASIC. This Click board™ is suitable for pressure measurements in automotive applications, industrial and consumer applications.

Pressure 14 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 14 Click is based on the ABP2LANT060PG2A3XX, a piezoresistive silicon pressure sensor offering a digital output for reading pressure over the specified full-scale pressure span from Honeywell Sensing and Productivity Solutions. Its characterized by long-term stability and accuracy, ultra-low power consumption, a wide pressure range from 0 to 60 psi, and its compatibility with plenty of liquid media. Also, it is a perfect choice for pressure measurements in automotive applications, industrial and consumer applications.

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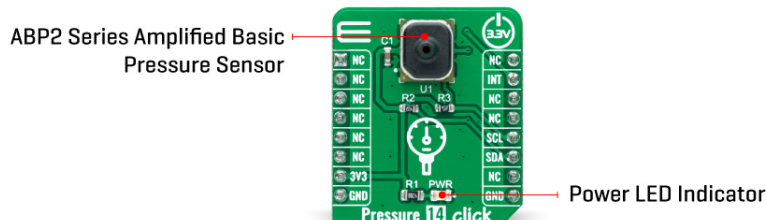
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The ABP2LANT060PG2A3XX defines an I2C configurable ABP2 Series Amplified Basic pressure sensor calibrated and temperature compensated for sensor offset, sensitivity, temperature effects, and accuracy errors. ABP2 series represents flexible and versatile sensors at which the calibrated output values for pressure and temperature updates at approximately 200 Hz. The liquid media option includes an additional silicone-based gel coating to protect the electronics under pressure port, enabling usage with non-corrosive liquids (e.g., water and saline) and in applications where condensation can occur.

Pressure 14 Click communicates with MCU using the standard I2C 2-Wire interface and supports both Standard and Fast Mode with a transfer rate of 100 and 400kbit/s. Following the address and read bit from the MCU, the ABP2 Series digital pressure sensors can output up to 7 bytes of data, using a default I2C address of 40 (28h). Also, it uses an additional pin, the INT pin of the mikroBUS™ socket, used as an 'end-of-conversion' indicator. This pin sets HIGH when measurement and calculation have been completed, and then the data is ready to be clocked out.

This Click board™ is designed to be operated only with a 3.3V logic voltage level. A proper logic voltage level conversion should be performed before the Click board™ is used with MCUs with different logic levels. However, the Click board™ comes equipped with a library that contains 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	ABP2LANT060PG2A3XX - piezoresistive silicon pressure sensor offering a digital output for reading pressure over the specified full-scale pressure span from Honeywell Sensing and Productivity Solutions.
Key Features	Ultra-low power consumption, calibrated and temperature compensated/amplified for sensor offset, sensitivity, temperature effects, high accuracy, liquid media capable, and

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	more.
Interface	I2C
ClickID	No
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 Pressure 14 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 14 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Pressure Measurement Range	0	-	60	psi
Accuracy	-	-	±0.25	%FSS BFSL
Resolution	14	-	-	bits
Operating Temperature Range	-40	+25	+110	°C

Software Support

We provide a library for the Pressure 14 Click on our [LibStock](#) page, as well as a demo application (example), developed using MikroElektronika [compilers](#). The demo can run on all the main MikroElektronika [development boards](#).

Library Description

The library covers all the necessary functions to control Pressure 14 Click board™. Library performs a standard I2C interface communication.

Key functions:

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- void pressure14_measure_cmd (void) - Output Measurement Command function.
- void pressure14_read_press_and_temp (uint8_t *status_byte, uint32_t *pressure_data, uint32_t *temp_data); - Read pressure and temperature function.
- float pressure14_get_pressure (uint32_t pressure_raw, uint8_t conv_unit) - Calculate pressure function.

Examples description

The application is composed of three sections :

- System Initialization - Initializes I2C and UART LOG and sets INT pin as input.
- Application Initialization - Initialization driver enables I2C.
- Application Task - This is an example that demonstrates the use of the Pressure 14 Click board™. In this example, the output measurement command is sent first forcing the ABP2 pressure sensor to exit standby mode and enter operating mode. The device busy state is evaluated via the end-of-conversion pin (INT) following the pressure and temperature data acquisition and calculation. The results are being sent to the Usart Terminal. This task repeats every 5 sec.

The full application code, and ready to use projects can be found on our [LibStock](#) page.

Other mikroE Libraries used in the example:

- I2C
- UART

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. The terminal available in all MikroElektronika [compilers](#), or any other terminal application of your choice, can be used to read the message.

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

[Pressure 14 click 2D and 3D files](#)

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[ABP2LANT060PG2A3XX datasheet](#)

[Pressure 14 click example on Libstock](#)

[Pressure 14 click schematic](#)

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