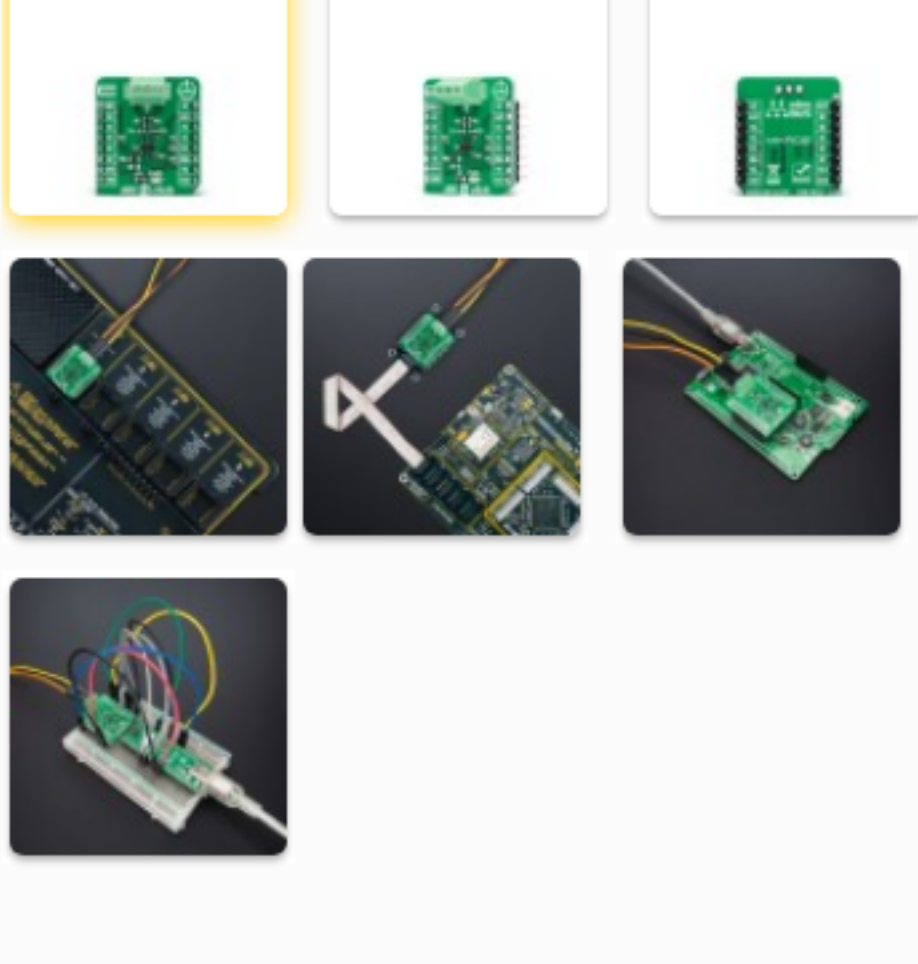
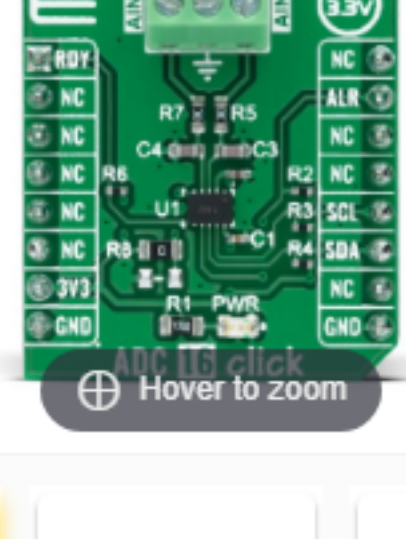


NEW



ADC 16 CLICK

PID: MIKROE-4937

Weight: 18 g

ADC 16 Click is a compact add-on board that contains a high-performance data converter. This board features the **ADS7142-Q1**, a low-power two-channel 12-bit analog-to-digital converter from **Texas Instruments**. This I2C configurable 140kSPS successive approximation register (SAR) analog-to-digital converter (ADC) can autonomously monitor signals while maximizing system power, reliability, and performance. It implements event-triggered interrupts per channel using a digital window comparator with programmable high and low thresholds, hysteresis, and event counter. This Click board™ offers high accuracy solution for the most demanding applications, from general-purpose monitoring applications (voltage, current, and temperature) to portable consumer electronics and more.

ADC 16 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.

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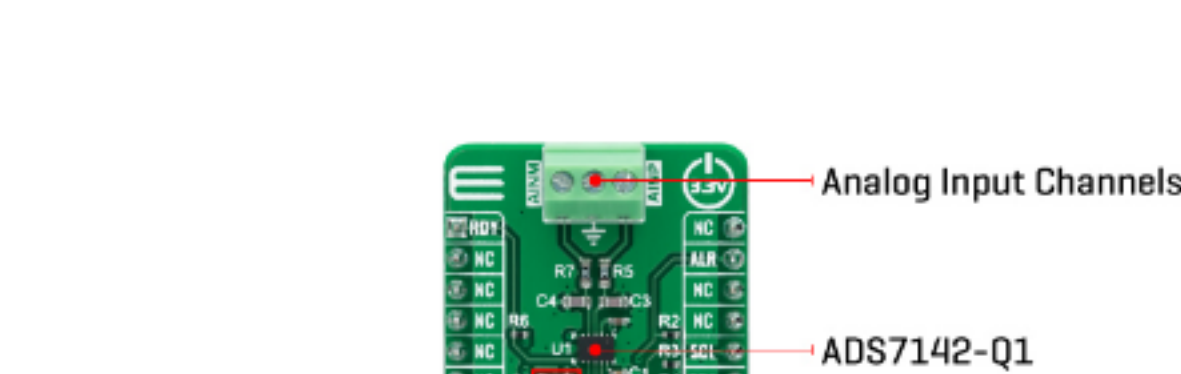
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- How does it work?
- Specifications
- Pinout diagram
- Onboard settings and indicators
- ADC 16 Click electrical specifications
- Software Support
- mikroSDK
- Resources
- Downloads

HOW DOES IT WORK?

ADC 16 Click as its foundation uses the ADS7142-Q1, a high-performance two-channel analog-to-digital converter (ADC) from Texas Instruments. The ADS7142-Q1 represents a dual-channel, 12-bit programmable sensor monitor with an integrated 140kSPS SAR-ADC, input multiplexer, digital comparator, data buffer, accumulator, and internal oscillator. The input multiplexer can be configured as two single-ended channels, one single-ended channel with remote ground sensing, or one pseudo-differential channel where the input can swing to approximately half the value of its analog supply input.



ADC 16 Click communicates with MCU using the standard I2C 2-Wire interface to read data and configure settings. Besides, the ADS7142-Q1 allows choosing the least significant bit (LSB) of its I2C slave address using the SMD resistors labeled R8 and R9. This Click board™ also implements event-triggered interrupts per channel, labeled as RDY and ALR and routed on the AN and INT pins of the mikroBUS™ socket, using a digital window comparator with programmable high and low thresholds, hysteresis, and event counter.

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	ADC
Applications	Can be used from general-purpose monitoring applications (voltage, current, and temperature) to portable consumer electronics and more
On-board modules	ADS7142-Q1 - high-performance two-channel analog-to-digital converter (ADC) from Texas Instruments
Key Features	Two single-ended channels/One single-ended channel with remote ground sensing/One pseudo-differential channel, low power consumption, 12-bit noise-free resolution, 140kSPS sampling rate, efficient host sleep and wake-up feature, false trigger prevention, and more
Interface	I2C
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 ADC 16 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	mikroBUS		Pin	Notes	
Data Ready Interrupt	RDY	1	AN	PWM	16	NC
	NC	2	RST	INT	15	ALR
	NC	3	CS	RX	14	NC
	NC	4	SCK	TX	13	NC
	NC	5	MISO	SCL	12	SCL
	NC	6	MOSI	SDA	11	SDA
Power Supply	3.3V	7	3.3V	5V	10	NC
Ground	GND	8	GND	GND	9	GND

ONBOARD SETTINGS AND INDICATORS

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
R8	R8	Populated	I2C Address Selection Resistor
R9	R9	Unpopulated	I2C Address Selection Resistor

ADC 16 CLICK ELECTRICAL SPECIFICATIONS

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Analog Input Voltage	0	-	3.3	V
Resolution	-	12	-	bits
Operating Temperature Range	-40	+25	+120	°C

SOFTWARE SUPPORT

We provide a library for the ADC 16 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 ADC 16 Click driver.

Key functions

- adc16_single_register_write** This function writes a single data to the selected register.
- adc16_single_register_read** This function reads a single data from the selected register.
- adc16_get_voltage** This function reads the voltage from two analog input single-ended channels.

Example Description

This example demonstrates the use of ADC 16 Click board™ by reading the voltage from the two analog input channels.

```
void application_task ( void )
{
    float ain0_voltage, ain1_voltage;
    if ( ADC16_OK == adc16_get_voltage ( &adc16, &ain0_voltage, &ain1_voltage ) )
    {
        log_printf ( &logger, " AIN0 voltage: %.3f V r\n", ain0_voltage );
        log_printf ( &logger, " AIN1 voltage: %.3f V r\n", ain1_voltage );
        Delay_ms ( 100 );
    }
}
```

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:

- MikroSDKBoard
- MikroSDKLog
- ClickADC16

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

- [Click board™ Catalog](#)
- [Click boards™](#)
- [mikroBUS™](#)
- [mikroSDK](#)

DOWNLOADS

- [ADC 16 click example on Libstock](#)
- [ADC 16 click 2D and 3D files](#)
- [ADC 16 click schematic](#)
- [ADS7142-Q1 datasheet](#)

YOU MIGHT ALSO NEED

EasyPIC v8 \$249.00	Fusion for ARM v8 \$449.00	Fusion for STM32 v8 \$299.00	Fusion for TIVA v8 \$299.00	Fusion for KINETIS \$299.00
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RESOURCES

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