

ADC 11 Click



PID: MIKROE-4593

ADC 11 Click is a compact add-on board that contains a high-performance data converter. This board features the [LTC1864](#), a 16-bit 250ksps analog-to-digital converter from [Analog Devices](#). With a typical supply current of only 850 μ A at the maximum sampling frequency, the LTC1864 is among the lowest power consumption ADCs available. After conversion, the LTC1864 goes into a low-power Sleep mode, further reducing the supply current. That's why it can run at proper micro-power levels in applications that do not require the maximum sampling rate of the LTC1864. This Click board™ is suitable for high-speed data acquisition, low power battery-operated instrumentation, isolated and remote data acquisition, and many other applications.

ADC 11 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?

ADC 11 Click as its foundation uses the LTC1864, a 16-bit successive approximation A/D converter with a sample-and-hold feature that operates on a single 5V supply from Analog Devices. The supply current, which can be the only 850 μ A at 250ksps, drops at lower speeds because the LTC1864 automatically power-down between conversions. The high impedance analog input and the ability to operate with reduced spans down to 1V full scale allow direct connection to signal sources in many applications, eliminating the need for external gain stages. Equipped with the 3-wire SPI serial interface and extremely high sample rate-to-power ratio, this Click board™ represents an ideal solution for compact, low power, high-speed systems.

Mikroe produces entire development toolchains for all major microcontroller architectures.

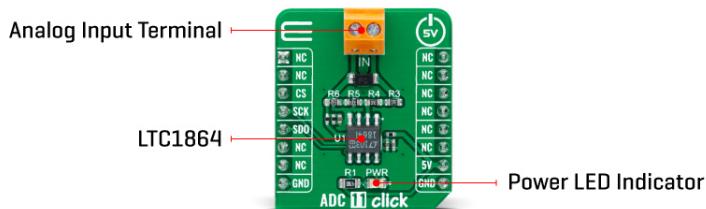
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ADC 11 click communicates with MCU through the simple 3-wire serial I/O compatible with industry-standard SPI interface. The LTC1864 has an internal conversion clock so that the clock rate does not affect the conversion. This fact allows the clock rate to run to 20MHz without concern for sample-and-hold droop at low clock frequencies or clocking the ADC too fast at high clock frequencies. The data transfer requires only 16 clock cycles which minimize the amount of time necessary to transfer the data. The entire conversion can be transferred in only 800ns if the conversion clock runs at the maximum rate of 20MHz.

This Click board™ operates only with a 5V logic voltage level. The board must perform appropriate logic voltage level conversion before use with 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 for high-speed data acquisition, low power battery-operated instrumentation, isolated and remote data acquisition, and many other applications.
On-board modules	LTC1864 - 16-bit successive approximation A/D converter with a sample-and-hold feature that operates on a single 5V supply from Analog Devices
Key Features	One channel 16bit 250ksps ADC, single 5V supply, low supply current, auto-shutdown feature, SPI compatible interface, and more.
Interface	SPI
ClickID	No
Compatibility	mikroBUS™
Click board size	S (28.6 x 25.4 mm)
Input Voltage	5V

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Pinout diagram

This table shows how the pinout on ADC 11 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		
SPI Chip Select	CS	3	CS	RX	14	NC		
SPI Clock	SCK	4	SCK	TX	13	NC		
SPI Data OUT	SDO	5	MISO	SCL	12	NC		
	NC	6	MOSI	SDA	11	NC		
	NC	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

ADC 11 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	5	-	V
Analog Input Supply Voltage	0	-	5	V
Resolution	16	-	-	bits
Sampling Rate	-	-	250	ksps
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the ADC 11 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 11 Click driver.

Key functions:

- `adc11_cfg_setup` - Config Object Initialization function.
- `adc11_init` - Initialization function.
- `adc11_default_cfg` - Initialization function.

Examples description

This library contains API for ADC 11 Click driver. The library contains drivers for measuring ADC

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values and for calculation voltage.

The demo application is composed of two sections :

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.Adc11

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

[ADC 11 click 2D and 3D files](#)

[LTC1864 datasheet](#)

[ADC 11 click schematic](#)

[ADC 11 click example on Libstock](#)

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