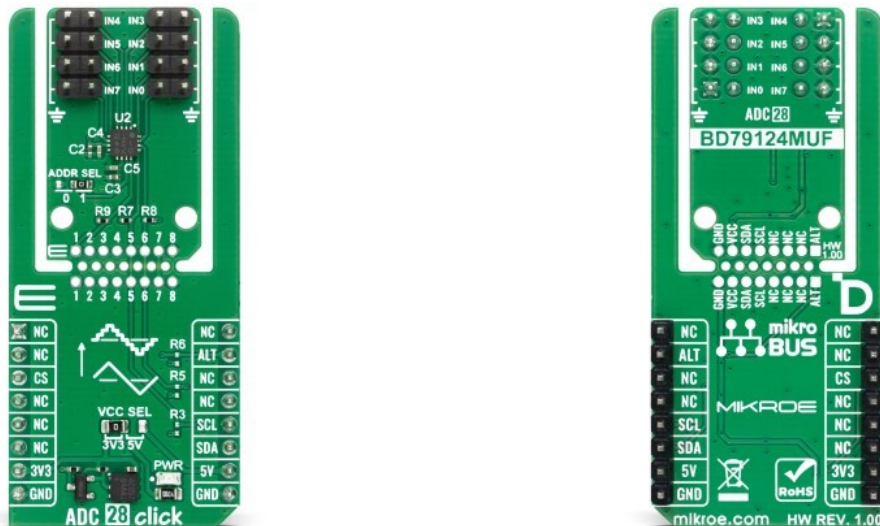


ADC 28 Click



PID: MIKROE-6943

ADC 28 Click is a compact add-on board designed for multi-channel analog signal acquisition, voltage monitoring, and general-purpose A/D conversion. This board is based on the [BD79124MUF-C](#), a 12-bit 8-channel successive approximation A/D converter from [Rohm Semiconductor](#). It features eight single-ended analog input channels, 12-bit conversion resolution, a maximum sampling rate of 0.14MSPS, low power consumption, and AEC-Q100 automotive-grade qualification for operation in demanding environments. ADC 28 Click communicates with the host MCU through a high-speed two-wire I2C interface supporting speeds up to 3.4MHz, with an alert interrupt signal for conversion-ready indication, and Click Snap support. It is suitable for cluster displays, infotainment systems, battery management systems, automotive monitoring, industrial control, and embedded analog acquisition applications.

For more information about **ADC 28 Click** visit the official [product page](#).

How does it work?

ADC 28 Click is based on the BD79124MUF-C, a 12-bit 8-channel successive approximation A/D converter from Rohm Semiconductor. The BD79124MUF-C provides eight single-ended analog input channels, allowing the host MCU to acquire multiple analog signals through a single converter device. It supports a maximum sampling rate of 0.14MSPS, which makes it suitable for low- to medium-speed measurement tasks where stable and accurate analog-to-digital conversion is required rather than high-speed signal capture. Its low power consumption makes the board appropriate for power-sensitive embedded systems, while its AEC-Q100 automotive-grade qualification supports use in demanding automotive environments. With its 12-bit conversion resolution, ADC 28 Click enables digitization of analog input levels for applications

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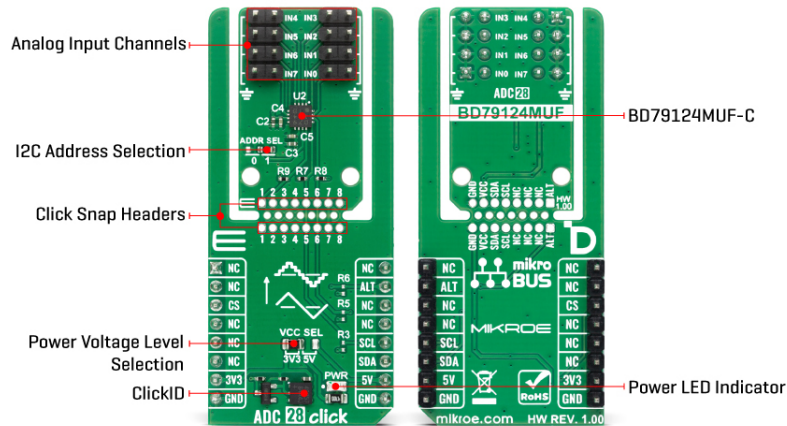


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such as cluster displays, infotainment systems, battery management systems (BMS), automotive monitoring units, industrial control interfaces, and embedded applications that require acquisition of several analog signals.



This Click board™ is designed in a unique format supporting the newly introduced MIKROE feature called "Click Snap." Unlike the standardized version of Click boards, this feature allows the main sensor/IC/module area to become movable by breaking the PCB, opening many new possibilities for implementation. Thanks to the Snap feature, the BD79124MUF-C can operate autonomously by accessing its signals directly on the pins marked 1-8. Additionally, the Snap part includes a specified and fixed screw hole position, enabling users to secure the Snap board in their desired location.

Communication with the host MCU is performed through a high-speed two-wire I2C serial interface supporting communication at speeds up to 3.4MHz. Its I2C address can be easily configured via onboard jumpers marked ADDR SEL in the Snap area, allowing multiple devices to coexist on the same bus. In addition to the I2C communication pins, ADC 28 Click also uses an ALT pin, which serves as an alert interrupt signal. This alert pin becomes active when a new conversion result is available, signaling the host MCU that data is ready to be read.

This Click board™ can operate with either 3.3V or 5V logic voltage levels selected via the VCC 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.

Click Snap

Click Snap is an innovative feature of our standardized Click add-on boards, designed to bring greater flexibility and optimize your prototypes. By simply snapping the PCB along predefined lines, you can easily detach the main sensor/IC/module area, reducing the overall size, weight, and power consumption - ideal for the final phase of prototyping. For more details about Click Snap, visit the [official page](#) dedicated to this feature.

Specifications

Type	ADC
Applications	Ideal for cluster displays, infotainment

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	systems, battery management systems, automotive monitoring, industrial control, and embedded analog acquisition applications
On-board modules	BD79124MUF-C - 12-bit 8-channels A/D convertor from Rohm Semiconductor
Key Features	12-bit 8-channel successive approximation A/D converter, eight single-ended analog input channels, low power consumption, AEC-Q100 automotive-grade qualification, high-speed two-wire I2C interface, alert interrupt signal for conversion-ready indication, Click Snap support, and more
Interface	I2C
Feature	Click Snap, ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V

Pinout diagram

This table shows how the pinout on ADC 28 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin					Pin	Notes
	NC	1	AN	PWM	16	NC	
	NC	2	RST	INT	15	ALT	Alert Interrupt
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	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V
JP2	ADDR SEL	Right	I2C Address Selection 0/1: Left position 0, Right position 1

ADC 28 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V

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Resolution	-	12	-	bit
Analog Input Voltage	0	-	VCC	V
Sampling Rate	-	-	0.14	MSPS

Software Support

[ADC 28 Click](#) demo application is developed using the [NECTO Studio](#), ensuring compatibility with [mikroSDK](#)'s open-source libraries and tools. Designed for plug-and-play implementation and testing, the demo is fully compatible with all development, starter, and mikromedia boards featuring a [mikroBUS™](#) socket.

Example Description

This example demonstrates the use of the ADC 28 Click board by reading voltage levels from all 8 single-ended analog input channels (CH0-CH7) and displaying the results via UART.

Key Functions

- `adc28_cfg_setup` This function initializes Click configuration structure to initial values.
- `adc28_init` This function initializes all necessary pins and peripherals used for this Click board.
- `adc28_default_cfg` This function executes a default configuration of ADC 28 Click board.
- `adc28_read_raw_adc` This function reads the RAW ADC measurement.
- `adc28_read_voltage` This function reads the ADC result from the selected channel and converts it to a voltage level.
- `adc28_get_alert_pin` This function returns the logic state of the ALT (ALERT) pin.

Application Init

Initializes the driver and performs the Click default configuration.

Application Task

Reads the voltage from each channel (CH0 to CH7) and displays the results on the USB UART once per second.

Application Output

This Click board can be interfaced and monitored in two ways:

- Application Output - Use the "Application Output" window in Debug mode for real-time data monitoring. Set it up properly by following [this tutorial](#).
- UART Terminal - Monitor data via the UART Terminal using a [USB to UART converter](#). For detailed instructions, check out [this tutorial](#).

Additional Notes and Information

The complete application code and a ready-to-use project are available through the NECTO Studio Package Manager for direct installation in the [NECTO Studio](#). The application code can also be found on the MIKROE [GitHub](#) account.

Resources

[mikroBUS™](#)

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[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

Downloads

[ADC 28 click example package](#)

[ADC 28 click 2D and 3D files v100](#)

[BD79124MUF-C datasheet](#)

[ADC 28 click schematic v100](#)

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