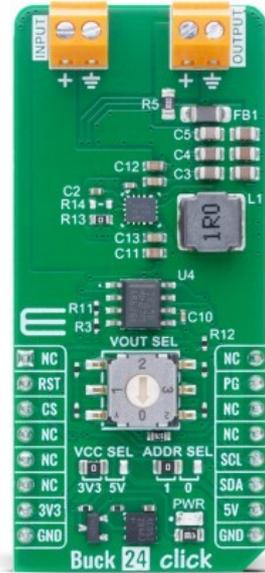


## Buck 24 Click



PID: MIKROE-6705

**Buck 24 Click** is a compact add-on board designed to provide low-noise and low-ripple DC/DC conversion for powering sensitive electronic systems. It is based on the [TPS62916](#) synchronous buck converter from [Texas Instruments](#), which integrates a filtered internal reference and ferrite bead filter compensation to achieve performance comparable to low-noise LDO regulators. The board supports an input voltage range from 3V to 17V and features a four-position switch that allows users to select among preset output voltages of 1V, 1.8V, 2.5V, and 3.3V. In addition, it integrates the [INA219](#) current and power monitor, also from Texas Instruments, which enables accurate real-time monitoring of voltage, current, and power via an I2C interface. The Buck 24 Click is ideal for applications in telecom infrastructure, aerospace and defense systems, precision test and measurement, and medical equipment where stable and noise-free power is critical.

For more information about **Buck 24 Click** visit the official [product page](#).

### How does it work?

Buck 24 Click is based on the TPS62916, a low-noise and low-ripple synchronous buck converter from Texas Instruments. This highly efficient converter operates as a fixed-frequency current-mode device and integrates a filtered internal reference, allowing it to achieve a clean output performance comparable to low-noise LDO regulators. To further minimize output voltage ripple, the device relies on a default 1MHz switching frequency, which can also be configured to 1.4MHz or 2.2MHz by adjusting the external resistors R13 and R14. One of its defining features is the integrated ferrite bead filter compensation that enhances noise suppression, making it ideal for sensitive electronic environments.

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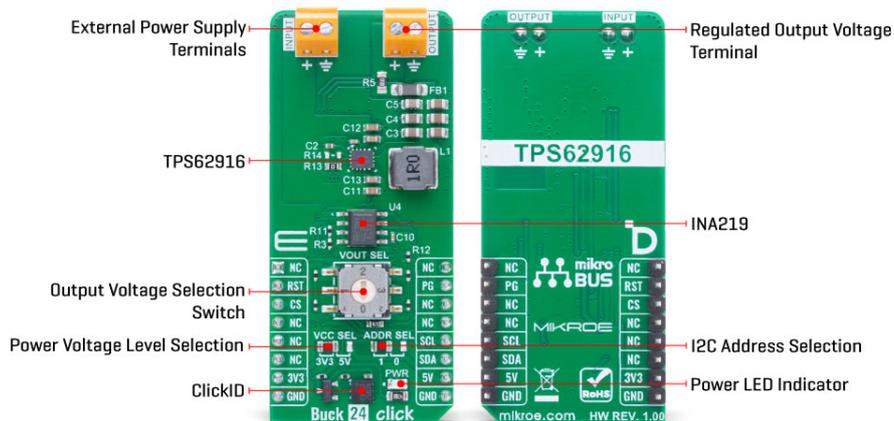
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The board supports a wide input voltage range from 3V up to 17V supplied through INPUT terminal, enabling compatibility with a variety of standard power sources. With its robust performance and low-noise characteristics, Buck 24 Click is purpose-built for demanding sectors including telecom infrastructure, aerospace and defense systems such as radar and avionics, precision test and measurement equipment, and critical medical devices, where even minor power fluctuations can significantly impact overall system accuracy and performance.

This Click board™ features a four-position switch that allows users to select the desired regulated output voltage at the OUTPUT terminal, providing flexibility for different application needs. The switch positions correspond to four preset voltage levels: 1V at position 0, 1.8V at position 1, 2.5V at position 2, and 3.3V at position 3. In addition to the TPS62916, Buck 24 Click also integrates the INA219, a bidirectional current and power monitor from Texas Instruments designed to provide accurate real-time measurements of output voltage, current, and power. The INA219 communicates with the host MCU through an I2C interface, supporting both Fast Mode and High-Speed Mode.

Additionally, the board includes two pins for enhanced operation and monitoring. The RST pin serves as a device-enable control, allowing the user to activate or deactivate the buck converter as needed, while the PG pin functions as open-drain power-good output which provides real-time indication of any voltage irregularities or faults (undervoltage conditions).

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.

## Specifications

Type	Buck
Applications	Ideal for applications in telecom infrastructure, aerospace and defense systems, precision test and measurement, and medical equipment
On-board modules	TPS62916 - low noise and low ripple buck converter with integrated ferrite bead filter compensation from Texas Instruments
Key Features	Wide input voltage range, low-noise and low-

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	ripple synchronous buck conversion with integrated ferrite bead filter compensation, selectable switching frequency, four-position switch for preset output voltages, integrated INA219 bidirectional current and power monitor, open-drain power-good output, and more
Interface	I2C
Feature	ClickID
Compatibility	mikroBUS™
Click board size	L (57.15 x 25.4 mm)
Input Voltage	3.3V or 5V, External

## Pinout diagram

This table shows how the pinout on Buck 24 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	
Device Enable	<b>RST</b>	2	RST	INT	15	<b>PG</b>	Power-Good Indicator
ID COMM	<b>CS</b>	3	CS	RX	14	NC	
	NC	4	SCK	TX	13	NC	
	NC	5	MISO	SCL	12	<b>SCL</b>	I2C Clock
	NC	6	MOSI	SDA	11	<b>SDA</b>	I2C Data
Power Supply	<b>3.3V</b>	7	3.3V	5V	10	<b>5V</b>	Power Supply
Ground	<b>GND</b>	8	GND	GND	9	<b>GND</b>	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	Left	I2C Address Selection 1/0: Left position 1, Right position 0
SW1	VOUT SEL	Lower	Output Voltage Selection Switch 1/0: Lower position 1V, Left position 1.8V, Upper position 2.5V, Right position 3.3V

## Buck 24 Click electrical specifications

Description	Min	Typ	Max	Unit
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Supply Voltage	3.3	-	5	V
External Power Supply Voltage	3	12	17	V
Output Voltage	1/1.8/2.5/3.3			V

## Software Support

[Buck 24 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 Buck 24 Click board by monitoring the output voltage, current, and power via I2C communication. It also checks the Power-Good (PG) status pin to detect undervoltage conditions.

### Key Functions

- `buck24_cfg_setup` This function initializes Click configuration structure to initial values.
- `buck24_init` This function initializes all necessary pins and peripherals used for this Click board.
- `buck24_default_cfg` This function executes a default configuration of Buck 24 Click board.
- `buck24_get_pg_pin` This function reads the logic level of the PG (power-good) pin.
- `buck24_read_data_avg` This function reads multiple samples of measurement data and returns their average values.

### Application Init

Initializes the logger and the Click board driver, and applies the default configuration.

### Application Task

Checks if the Power-Good (PG) pin is active and logs an undervoltage warning if triggered. Reads and logs the average voltage, current, and power values from the device every 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

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[mikroBUS™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

## Downloads

[INA219 datasheet](#)

[Buck 24 click example package](#)

[Buck 24 click 2D and 3D files v100](#)

[TPS62916 datasheet](#)

[Buck 24 click schematic v100](#)

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