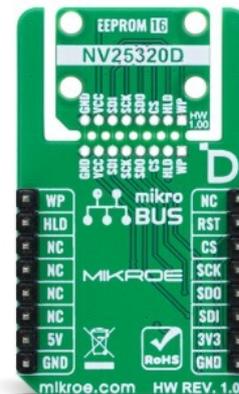
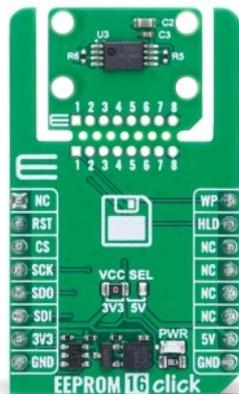


## EEPROM 16 Click



PID: MIKROE-6591

**EEPROM 16 Click** is a compact add-on board designed for reliable non-volatile memory storage in automotive and industrial systems. This board features the [NV25320LV](#), a 32Kb Serial EEPROM from [onsemi](#), organized as 4K x 8 bits. It uses SPI communication, supports both software and hardware write protection, and includes a 32-byte page write buffer for efficient data handling. Engineered with Byte Level On-Chip Error Correction Code (ECC), it ensures high data integrity and offers up to 200 years of data retention. Thanks to the Click Snap feature, size, weight, and power consumption can be reduced for final-phase prototyping. EEPROM 16 Click is an ideal solution for control units and modules across various automotive applications, including engine control, airbag systems, ABS/ESP, light management, and infotainment systems, where secure and persistent data storage is critical.

For more information about **EEPROM 16 Click** visit the official [product page](#).

### How does it work?

EEPROM 16 Click is based on the NV25320LV, a 32Kb Serial EEPROM from onsemi organized internally as 4K x 8 bits designed to provide reliable non-volatile memory storage for automotive and industrial applications. Engineered with Byte Level On-Chip Error Correction Code (ECC), the NV25320LV ensures high reliability, making it ideal for demanding environments where data accuracy is paramount. An additional Identification Page offers extra storage space that can be permanently write-protected, providing a secure area for storing system-specific data such as serial numbers or configuration parameters. Built on low-power CMOS technology, the device operates efficiently while maintaining long-term data stability, with an impressive data retention period of up to 200 years. Its self-timed write cycle further simplifies memory management, allowing autonomous completion of write operations without

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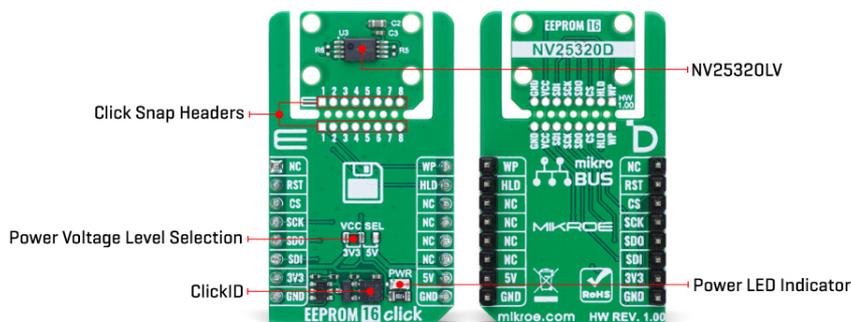


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external supervision.



The NV25320LV stands out with its 32-byte page write buffer, allowing efficient data writing operations, and supports both software and hardware write protection mechanisms. These include options for securing either specific memory regions or the entire memory array, enhancing data integrity and safeguarding critical information. EEPROM 16 Click is an excellent solution for a range of automotive control units and modules, including door modules, body computers, energy management units, immobilizer systems, wiper modules, park assist systems, light management units, electronic parking brakes, engine start/stop control units, engine control units, ABS/ESP systems, airbags, electric steering control units (ESL), and integrated navigation and infotainment systems. Its combination of robust protection features, high reliability, and flexible interfacing makes it a dependable choice for applications requiring secure and persistent data storage under rigorous operating conditions.

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 IC area to become movable by breaking the PCB, opening up many new possibilities for implementation. Thanks to the Snap feature, the NV25320LV 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.

EEPROM 16 Click communicates with MCU through a standard SPI interface supporting the two most common SPI modes, SPI Mode 0 and 3, and a maximum clock frequency of up to 20MHz. Furthermore, the board features a HOLD function, marked as HLD and routed on the default position of the INT pin of the mikroBUS™ socket. The hold function allows the suspension of serial communications without disrupting ongoing operations. The board also has a Write Protect feature, marked as WP and routed on the default position of the PWM of the mikroBUS™ socket, that safeguards all registers and memory from unintended write operations through both hardware and software mechanisms.

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

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**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	EEPROM
Applications	Ideal for control units and modules across various automotive applications, including engine control, airbag systems, ABS/ESP, light management, and infotainment systems
On-board modules	NV25320LV - 32Kb Serial EEPROM from onsemi
Key Features	32Kb Serial EEPROM memory, organized as 4K x 8 bits, SPI communication interface, Byte Level On-Chip Error Correction Code (ECC), software and hardware write protection for partial or full memory array, self-timed write cycle, low-power CMOS technology with 200-year data retention, Click Snap feature, and more
Interface	SPI
Feature	Click Snap, ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V or 5V

## Pinout diagram

This table shows how the pinout on EEPROM 16 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	<b>WP</b>	Write Protect
ID SEL	<b>RST</b>	2	RST	INT	15	<b>HLD</b>	Communication Pause
SPI Select / ID COMM	<b>CS</b>	3	CS	RX	14	NC	
SPI Clock	<b>SCK</b>	4	SCK	TX	13	NC	
SPI Data OUT	<b>SDO</b>	5	MISO	SCL	12	NC	
SPI Data IN	<b>SDI</b>	6	MOSI	SDA	11	NC	
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
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LD1	PWR	-	Power LED Indicator
JP1	VCC SEL	Left	Power Voltage Level Selection 3V3/5V: Left position 3V3, Right position 5V

## EEPROM 16 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Memory Size	-	-	32	Kb
Data Retention	200	-	-	Years

## Software Support

[EEPROM 16 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 EEPROM 16 Click board by writing specified data to the memory and reading it back.

### Key Functions

- `eeprom16_cfg_setup` This function initializes Click configuration structure to initial values.
- `eeprom16_init` This function initializes all necessary pins and peripherals used for this Click board.
- `eeprom16_default_cfg` This function executes a default configuration of EEPROM 16 Click board.
- `eeprom16_memory_write` This function writes a desired number of data bytes starting from the selected memory address.
- `eeprom16_memory_read` This function reads a desired number of data bytes starting from the selected memory address.

### Application Init

Initializes the driver and performs the Click default configuration.

### Application Task

Writes a desired number of bytes to the memory and then verifies if it is written correctly by reading from the same memory location and displaying the memory content on the USB UART.

## 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](#).

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- 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™](#)

[mikroSDK](#)

[Click board™ Catalog](#)

[Click boards™](#)

[ClickID](#)

## Downloads

[EEPROM 16 click example package](#)

[EEPROM 16 click 2D and 3D files v100](#)

[NV25320LV datasheet](#)

[EEPROM 16 click schematic v100](#)

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