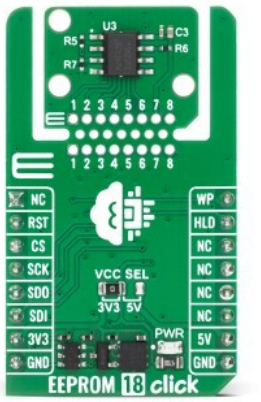
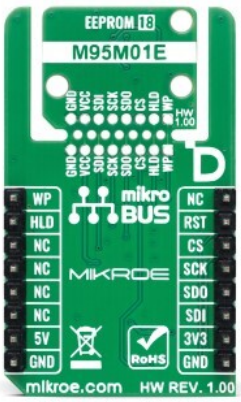
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EEPROM 18 Click





PID: MIKROE-7052

EEPROM 18 Click is a high-endurance non-volatile memory board for storing configuration data, logs, and parameters in embedded systems. It features the M95M01E-FMN6TP 1-Mbit SPI EEPROM from STMicroelectronics, providing 128Kbytes of storage organized into 512 pages of 256 bytes. Byte and page writes, sequential reads, integrated error correction, configurable block protection, and a permanently lockable 256-byte identification page ensure reliable data handling. WP and HLD control pins support write protection and communication management, while ClickID, Click Snap, and selectable 3.3V or 5V operation simplify integration. It is suitable for industrial automation, IoT devices, consumer electronics, data logging, and configuration storage.

For more information about **EEPROM 18 Click** visit the official product page.

How does it work?

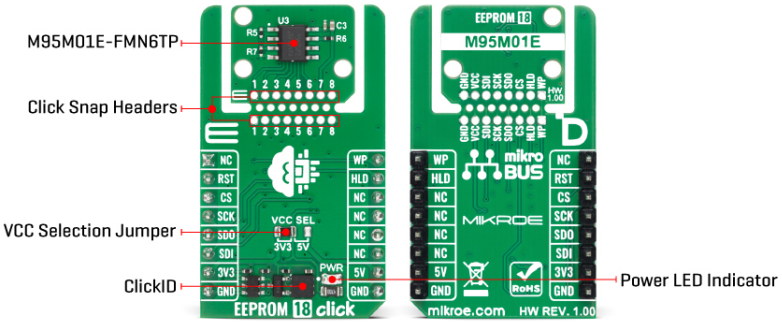
EEPROM 18 Click is based on the M95M01E-FMN6TP, a 1-Mbit serial SPI bus EEPROM from STMicroelectronics. The memory is organized as 131,072 words of 8 bits, providing 128Kbytes of non-volatile storage divided into 512 pages of 256 bytes each. The M95M01E-F supports individual byte writes and page writes of up to 256 bytes within a single self-timed write cycle, with a maximum write time of 3.5ms. During sequential read operations, the internal address counter increments automatically, allowing the complete memory array to be read using a single command. When a page write reaches the 256-byte page boundary, the address counter wraps to the beginning of the same page, so write operations should be arranged to remain within the selected page.

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In addition to the main memory array, the M95M01E-F provides a separate 256-byte identification page for storing serial numbers, calibration values, security parameters, or other application-specific information. This page can be read and rewritten until it is permanently locked in read-only mode. Integrated error correction code logic operates transparently on groups of four bytes, detecting and correcting single-bit errors during read operations to improve data reliability. The device provides more than four million write cycles at +25°C, more than 1.2 million write cycles at +85°C, and more than 200 years of data retention. Additional protection is provided through non-volatile block-protection bits, which can protect the upper quarter, upper half, or the entire memory array, while the write-enable latch ensures that memory-altering instructions are executed only after an explicit write-enable command. The device also features low-power standby operation, Schmitt-trigger inputs for noise filtering, enhanced ESD and latch-up protection, and an operating temperature range from -40°C to +85°C.

EEPROM 18 Click communicates with the host MCU through the SPI interface and supports SPI modes with CPOL and CPHA settings of (0,0) or (1,1). The SCK pin provides the serial clock, COPI carries instructions, addresses, and write data from the host to the EEPROM, CIPO returns memory and status-register data, while the CS pin selects the device and initiates each command sequence. All instructions, addresses, and data are transferred with the most significant bit first. The maximum SPI clock frequency depends on the selected supply voltage: up to 10MHz when the device operates at 3.3V and up to 16MHz when it operates at 5V. Besides the standard SPI lines, the board uses the PWM pin as WP and the INT pin as HLD. The WP pin controls the EEPROM write-protect input and, together with the SRWD status-register bit, can prevent changes to the block-protection configuration. The HLD pin can pause an active SPI transaction without deselecting the EEPROM or resetting the serial sequence, placing the CIPO output in a high-impedance state while the hold condition is active. CS, WP, and HLD are equipped with pull-up resistors to keep them inactive when not driven. The RST pin controls the onboard ClickID multiplexer, which switches the CS line between the main EEPROM and the ClickID identification circuitry.

This Click board is designed in the Click Snap form factor, allowing the section containing the M95M01E-F to be detached along the predefined break lines and used as a compact standalone memory module. After detachment, power, ground, SPI, WP, and HLD signals remain accessible through the numbered connection pads, while the fixed screw-hole position allows the module to be secured at the required location. The detachable section also includes local 100nF and 10µF decoupling capacitors for stable operation. EEPROM 18 Click incorporates the ClickID feature for automatic board identification on compatible host systems and includes a green

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PWR LED that indicates the presence of the selected supply voltage.

EEPROM 18 Click supports both 3.3V and 5V power rails. The desired supply and SPI logic level for the M95M01E-F are selected through the VCC SEL jumper, which is set to the 3.3V position by default, while the ClickID circuitry is powered from the 3.3V rail. EEPROM 18 Click comes with a mikroSDK-compliant library containing easy-to-use functions and a ready-to-use code example that can be downloaded and used as a reference for initialization, memory write, and memory read operations.

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	EEPROM
Applications	Ideal for applications such as configuration data storage, event logging, parameter retention, industrial automation, IoT devices, consumer electronics, and other embedded systems requiring reliable non-volatile memory
On-board modules	M95M01E-FMN6TP - 1-Mbit serial SPI bus EEPROM with a lockable 256-byte identification page from STMicroelectronics
Key Features	1-Mbit SPI EEPROM, 128Kbytes of non-volatile storage, 256-byte page writes, sequential reads, SPI speeds up to 16MHz, integrated ECC, lockable 256-byte identification page, over four million write cycles, more than 200 years of data retention, configurable block protection, WP and HLD controls, selectable 3.3V/5V operation, ClickID, Click Snap, and more
Interface	GPIO,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 18 Click corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

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Notes	Pin	mikroBUS				Pin	Notes
	NC	1	AN	PWM	16	**WP**	Write Protect
ClickID Reset	**RST**	2	RST	INT	15	**HLD**	Hold
Chip Select	**CS**	3	CS	RX	14	NC	
Serial Clock	**SCK**	4	SCK	TX	13	NC	
Controller In, Peripheral Out	**CIPO**	5	MISO	SCL	12	NC	
Controller Out, Peripheral In	**COPI**	6	MOSI	SDA	11	NC	
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	Interface Voltage Selection

EEPROM 18 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operating Temperature	-40	-	85	°C

Software Support

EEPROM 18 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 18 Click board by writing specified data to the memory and reading it back.

Key Functions

- eeprom18_cfg_setup This function initializes Click configuration structure to initial values.
- eeprom18_init This function initializes all necessary pins and peripherals used for this Click board.
- eeprom18_write_memory This function writes a desired number of data bytes to the EEPROM memory starting from the selected address.
- eeprom18_read_memory This function reads a desired number of data bytes from the EEPROM memory starting from the selected address.
- eeprom18_write_status This function writes a byte to the status register.
- eeprom18_read_status This function reads the status register byte.

Application Init

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Initializes the driver and logger.

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.
- 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 18 Click example package

EEPROM 18 Click 2D and 3D files v100

EEPROM 18 Click schematic v100

M95M01E-FMN6TP datasheet

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