MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

GNSS MAX 3 Click

PID: MIKROE-6786

GNSS MAX 3 Click is a compact add-on board designed for low-power satellite positioning for embedded applications that require fast acquisition, high sensitivity, and consistent L1 GNSS performance. It is based on the MAX-M10N-10B, a professional-grade standard-precision GNSS receiver from u-blox built on the ultra-low-power u-blox M10 platform. It offers exceptional tracking capability across GPS, Galileo, BeiDou, and QZSS/SBAS systems, featuring enhanced RF immunity with an additional SAW filter, integrated jamming and spoofing detection, LEAP energy-saving mode, AssistNow Predictive and Live Orbits support. GNSS MAX 3 Click is ideal for asset tracking, portable devices, industrial monitoring, and any application requiring power-efficient and interference-resilient GNSS positioning.

For more information about **GNSS MAX 3 Click** visit the official product page.

How does it work?

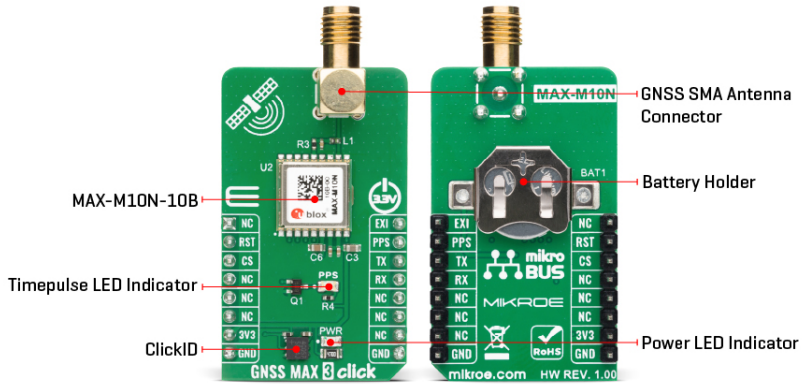
GNSS MAX 3 Click is based on the MAX-M10N-10B, a professional-grade standard-precision GNSS receiver from u-blox designed for a power-efficient satellite positioning. Built on the advanced ultra-low-power u-blox M10 GNSS platform, this module provides exceptional sensitivity, fast acquisition, and robust performance across all major L1 GNSS constellations, including GPS with QZSS and SBAS support, Galileo, and BeiDou. The MAX-M10N-10B is optimized for environments requiring the highest RF immunity and integrates an additional SAW filter in front of the LNA to ensure superior rejection of unwanted interference, making the board suitable for demanding industrial, consumer, and asset-tracking applications.

Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.

ISO 9001: 2015 certification of quality management system (QMS).

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com



Its extremely low power consumption enables long-term operation on battery-powered devices without sacrificing positional accuracy. The module supports LEAP (Low Energy Accurate Positioning) mode, which intelligently reduces energy usage depending on environmental conditions while maintaining precise location output, ensuring extended autonomy for portable solutions. Time-to-first-fix is significantly shortened using free AssistNow Predictive Orbits, achieving TTFF under two seconds, while Live Orbits downloads further enhance accuracy following cold starts.

u-blox Super-S technology provides increased RF sensitivity and improves dynamic position accuracy by up to 25%, especially beneficial when using small antennas or operating in non-line-of-sight scenarios. The MAX-M10N-10B also incorporates jamming and spoofing detection capabilities, continuously monitoring the RF environment and reporting anomalies to the host system, enabling immediate protective actions and ensuring reliable navigation data. In addition, advanced onboard filtering algorithms mitigate interference and maintain stable and accurate performance even in challenging urban or industrial conditions.

The GNSS MAX 3 Click communicates with the host MCU through a UART interface using the standard UART RX and TX pins. The default communication speed is set at 115200bps, ensuring efficient data exchange. In addition to its standard power supply configuration, this module also has a dedicated backup power circuit that enables standalone operation and data retention. A coin-cell battery mounted on the back side of the board provides continuous power to the module’s internal real-time clock (RTC) and memory, allowing it to preserve essential timing, configuration, and satellite ephemeris data even when the main supply is disconnected.

Alongside its primary communication interface pins, GNSS MAX 3 Click uses several additional control and monitoring pins that enhance module management and operational reliability. The RST pin is used to perform a hardware reset of the module, and a red PPS LED indicator, which, in combination with the PPS pin, detects a synchronized pulse signal from the MAX-M10N-10B once per second. The EXI pin (External Interrupt) serve as an external interrupt signal that can be programmed for various functions, such as waking up the module. The board also features one SMA connector for GNSS antenna that MIKROE offers, like the Active GPS Antenna for flexible and efficient connectivity options.

This Click board™ can be operated only with a 3.3V logic voltage level. The board must perform appropriate logic voltage level conversion before using MCUs with different logic levels. It also comes equipped with a library containing functions and example code that can be used as a reference for further development.

Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISOQAR REGISTERED
UKAS MANAGEMENT SYSTEMS
ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.
TÜV SÜD ISO 9001
ISO 9001: 2015 certification of quality management system (QMS).

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

Specifications

Type	GPS/GNSS
Applications	Ideal for asset tracking, portable devices, industrial monitoring, and any application requiring power-efficient and interference-resilient GNSS positioning
On-board modules	MAX-M10N-10B - professional-grade standard-precision GNSS module from u-blox
Key Features	Support for all major L1 GNSS constellations, exceptional sensitivity and fast acquisition, ultra-low-power operation u-blox M10 platform with LEAP energy-saving mode, enhanced RF immunity, advanced interference-mitigation algorithms, jamming and spoofing detection, AssistNow Predictive and Live Orbits services, and more
Interface	UART
Feature	ClickID
Compatibility	mikroBUS™
Click board size	M (42.9 x 25.4 mm)
Input Voltage	3.3V

Pinout diagram

This table shows how the pinout on GNSS MAX 3 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	**EXI**	External Interrupt
Reset	**RST**	2	RST	INT	15	**PPS**	Timepulse Indicator
ID COMM	**CS**	3	CS	RX	14	**TX**	UART TX
	NC	4	SCK	TX	13	**RX**	UART RX
	NC	5	MISO	SCL	12	NC	
	NC	6	MOSI	SDA	11	NC	
Power Supply	**3.3V**	7	3.3V	5V	10	NC	
Ground	**GND**	8	GND	GND	9	**GND**	Ground

Onboard settings and indicators

Label	Name	Default	Description
LD1	PWR	-	Power LED Indicator
LD2	PPS	-	Timepulse LED Indicator

GNSS MAX 3 Click electrical specifications

Description	Min	Typ	Max	Unit

Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.

ISO 9001: 2015 certification of quality management system (QMS).

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

Supply Voltage	-	3.3	-	V
Frequency Range	1561.098	-	1575.42	MHz
Sensitivity (Tracking and Navigation)	-	-167	-	dBm

Software Support

GNSS MAX 3 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 GNSS MAX 3 Click by reading and displaying the GNSS coordinates.

Key Functions

- gnssmax3_cfg_setup This function initializes Click configuration structure to initial values.
- gnssmax3_init This function initializes all necessary pins and peripherals used for this Click board.
- gnssmax3_reset_device This function resets the device by toggling the RST pin.
- gnssmax3_generic_read This function reads a desired number of data bytes by using UART serial interface.
- gnssmax3_parse_gga This function parses the GGA data from the read response buffer.

Application Init

Initializes the driver and logger.

Application Task

Reads the received data, parses the NMEA GGA info from it, and once it receives the position fix it will start displaying the coordinates 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

Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISOQAR REGISTERED
UKAS MANAGEMENT SYSTEMS
ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.
TÜV SÜD ISO 9001
ISO 9001: 2015 certification of quality management system (QMS).

MIKROELEKTRONIKA D.O.O, Batajnički drum 23, 11000 Belgrade, Serbia
VAT: SR105917343 Registration No. 20490918
Phone: + 381 11 78 57 600 Fax: + 381 11 63 09 644 E-mail: office@mikroe.com
www.mikroe.com

mikroBUS™

mikroSDK

Click board™ Catalog

Click boards™

ClickID

Downloads

GNSS MAX 3 click example package

GNSS MAX 3 click 2D and 3D files v100

MAX-M10N-10B datasheet

GNSS MAX 3 click schematic v100

Mikroe produces entire development toolchains for all major microcontroller architectures.
Committed to excellency, we are dedicated to helping engineers bring the project development up to speed and achieve outstanding results.

ISO 27001: 2013 certification of informational security management system.
ISO 14001: 2015 certification of environmental management system.
OHSAS 18001: 2008 certification of occupational health and safety management system.

ISO 9001: 2015 certification of quality management system (QMS).