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 26 Click

PID: MIKROE-6544

GNSS 26 Click is a compact add-on board designed to provide accurate timing and standard precision positioning for advanced embedded applications. It is based on the LC26G-T (AA), a single-band multi-constellation GNSS receiver module from Quectel that supports GPS, GLONASS, Galileo, BDS, and QZSS systems. It features high sensitivity tracking down to -165dBm, nanosecond-level UTC synchronization, AGNSS support for accelerated cold starts, and timing integrity through RAIM and phase uncertainty estimation. It operates at 1.8V, but also includes a coin-cell battery for backup power enabling standalone operation with fast reacquisition. Communication with the host MCU is possible via UART or I2C (in peripheral mode only). GNSS 26 Click is ideal for high-precision base station timing in 5G ORAN networks, power grid monitoring, and other industrial applications requiring reliable and stable timing.

For more information about **GNSS 26 Click** visit the official product page.

How does it work?

GNSS 26 Click is based on the LC26G-T (AA), a single-band multi-constellation GNSS receiver module from Quectel that provides accurate timing and standard precision positioning by leveraging advanced satellite navigation capabilities (GPS, GLONASS, Galileo, BDS, and QZSS systems). Designed for applications requiring high stability and accuracy, the module delivers nanosecond-level synchronization with Coordinated Universal Time (UTC), making it particularly suited for precision timing use cases. The integrated low-noise amplifier ensures high sensitivity with tracking levels down to -165dBm and acquisition sensitivity of -148dBm, enabling fast and reliable signal acquisition even in urban or obstructed environments. By using multiple constellations, the LC26G-T (AA) offers improved satellite visibility and resilience, allowing for accurate positioning and consistent performance at altitudes up to

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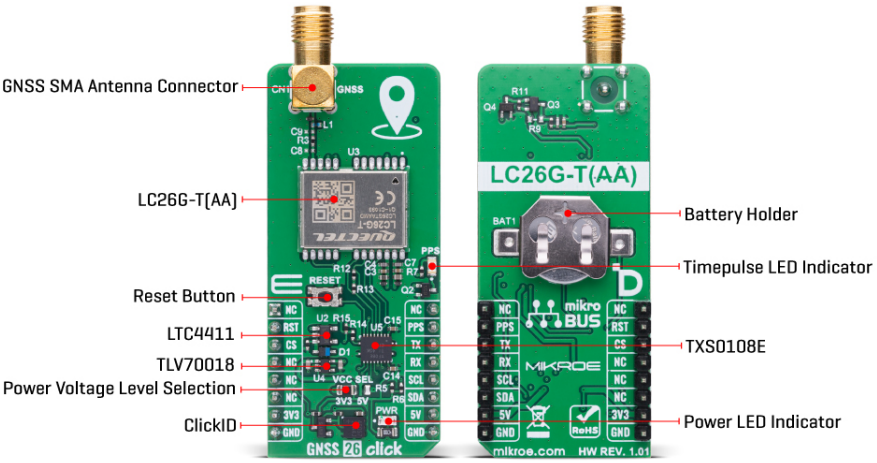
10km.



The module also incorporates Receiver Autonomous Integrity Monitoring (RAIM) and continuous phase uncertainty estimation, contributing to reliable and trustworthy timing outputs. Its high dynamic range radio architecture includes both analog and digital interference mitigation, enhancing signal robustness. Furthermore, the AGNSS feature significantly reduces Time to First Fix (28 seconds in cold start conditions), enabling the module to quickly acquire a position even when location, time, and frequency data are initially unknown. This high-performance GNSS solution is well-suited for base station timing in emerging 5G ORAN networks and for industrial applications such as power grid monitoring and synchronization.

The LC26G-T (AA) operates at a regulated voltage of 1.8V, provided by the onboard TLV70018 low-dropout (LDO) voltage regulator, ensuring stable power delivery to the main LC26G-T (AA) GNSS module. This regulator converts the selected mikroBUS™ power rail to the required 1.8V operating level, enabling proper functionality of the module. In addition to its primary power supply configuration, GNSS 26 Click supports standalone operation through a dedicated backup power circuit. A coin-cell battery mounted on the back side of the board allows the module to retain critical timing and satellite data even when the main power supply is removed.

The GNSS 26 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. It also provides an I2C interface for communication with a host MCU in the I2C Fast speed mode (400kHz). Still, it must be noted that the I2C interface can only be operated in the peripheral mode.

Along with the communication and control pins, this Click board™ also includes a reset pin (RST) and a RESET button, enabling easy module resetting, a blue PPS LED indicator, which, in combination with the PPS pin, detects a synchronized pulse signal from the LC26G-T (AA) once per second. 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 operate with both 3.3V and 5V logic voltage levels selected via the VCC SEL jumper. Since the LC26G-T (AA) module operates at 1.8V, logic-level translator, the TXS0108E, is also used for proper operation and an accurate signal-level translation. 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.

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Specifications

Type	GPS/GNSS
Applications	Ideal for high-precision base station timing in 5G ORAN networks, power grid monitoring, and other industrial applications requiring reliable and stable timing
On-board modules	LC26G-T (AA) - single-band multi-constellation GNSS receiver module from Quectel
Key Features	High-sensitivity tracking and acquisition, nanosecond-level UTC synchronization, support for GPS, GLONASS, Galileo, BDS, and QZSS constellations, AGNSS support with 28s cold start TTFF, Receiver Autonomous Integrity Monitoring (RAIM), continuous phase uncertainty estimation, high dynamic range radio with analog and digital interference mitigation, backup power via coin-cell battery, UART and I2C peripheral mode communication interfaces, and more
Interface	I2C,UART
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 GNSS 26 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	NC	
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	**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
LD2	PPS	-	Timepulse LED Indicator
JP1	VCC SEL	Left	Power Voltage Level

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			Selection 3V3/5V: Left position 3V3, Right position 5V
T1	RESET	-	Reset Button

GNSS 26 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	3.3	-	5	V
Operating Frequency	1575.42	-	1605.375	MHz
Tracking Sensitivity	-	-165	-	dBm
Acquisition Sensitivity	-	-148	-	dBm
Time to First Fix (Cold Start)	-	28	-	sec

Software Support

GNSS 26 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 26 Click by reading and displaying the GNSS coordinates.

Key Functions

- gnss26_cfg_setup This function initializes Click configuration structure to initial values.
- gnss26_init This function initializes all necessary pins and peripherals used for this Click board.
- gnss26_generic_read This function reads a desired number of data bytes by using UART or I2C serial interface.
- gnss26_parse_gga This function parses the GGA data from the read response buffer.
- gnss26_get_pps_pin This function returns the pulse per second (PPS) pin logic state.

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.

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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

GNSS 26 click example package

GNSS 26 click schematic v101

GNSS 26 click 2D and 3D files v101

LC26G-T (AA) datasheet