

GNSS 4 click

MIKROE-2045



GNSS 4 click carries [SAM-M8Q](#) patch antenna module from u-blox.

The click is designed to run on a 3.3V power supply. It communicates with the target microcontroller over I2C or UART interface.

What is GNSS?

GNSS stands for Global Navigation Satellite System, an umbrella term that describes both the United States GPS, the Russian GLONASS global positioning systems and European Galileo.

SAM-M8Q module

The SAM-M8Q module utilizes concurrent reception of up to three GNSS systems (GPS/Galileo and GLONASS), recognizes multiple constellations simultaneously and provides outstanding positioning accuracy in scenarios where urban canyon or weak signals are involved.

Patch antenna

The GNSS patch antenna is RHCP (right hand circular polarization) and has a peak gain of 3 dBic. The patch antenna is insensitive to surroundings and has high tolerance against frequency shifts.

Power management

u-blox M8 technology offers a power-optimized architecture with built-in autonomous power saving functions to minimize power consumption at any given time. Furthermore, the receiver can be used in two operating modes: Continuous mode for best performance or Power Save Mode for optimized power consumption.

Good in hostile environments

Thanks to all these features the SAM-M8Q module is good in GNSS-hostile environments - indoor spaces, urban canyons (when a street is flanked by buildings on both sides), etc.

AssistNow service

The u-blox SAM-M8Q module can also benefit from the u-blox AssistNow assistance service. The Online service provides GNSS broadcast parameters, e.g. ephemeris, almanac plus time or rough position to reduce the receiver's time to first fix significantly and improve acquisition sensitivity.

The extended validity of AssistNow Offline data (up to 35 days) and AssistNow Autonomous data (up to 3 days) provide faster acquisition after a long off time.

How it works

A constellation of satellites sends a continuous signal towards Earth. Onboard every satellite is an atomic clock, and all of them are synchronized, thanks to a reference time scale defined by the whole system. So, that the signals coming from the different satellites of the same constellation share the same reference time scale.

If the user wants to utilize GNSS to determine a position, they must have an antenna that receives the signals coming from the satellites, and a receiver that translates these signals. The antenna position will be deduced from the measurements of the time delay between the emission time (satellite) and the reception time (receiver) for at least 4 signals coming from different satellites.

Specifications

Type	GPS
Applications	Asset tracking, for navigation devices based on GPS and GLONASS, road navigation devices, public transport, wearable devices, etc.
On-board modules	SAM-M8Q from u-blox
Key Features	High accuracy, I2C and UART interface, 3.3V power supply
Key Benefits	Good in hostile environments
Interface	GPIO,I2C,UART
Input Voltage	3.3V
Click board size	M (42.9 x 25.4 mm)

Pinout diagram

This table shows how the pinout on **GNSS 4 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	
Active Low	RST_N	2	RST	INT	15	NC	
	NC	3	CS	TX	14	TXD	UART transmit
	NC	4	SCK	RX	13	RXD	UART receive
	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	NC	
Ground	GND	8	GND	GND	9	GND	Ground