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GPS 6 Click

PID: MIKROE-5115

GPS 6 Click is a compact add-on board that provides users with positioning, navigation, and timing services. This board features the A2200-A, a GPS receiver module that enables fast acquisition and tracking with SiRFstar IV technology from Lantronix. This small-form-factor module operates with a frequency of 1,575GHz with accuracy from 2 up to 2.5m and fully addresses the demand for the lowest power consumption. The removal of jammers guarantees operation even in hostile environments. High sensitivity during acquisition or while tracking allows for use in many different backgrounds and under the most challenging operating conditions. This Click board™ is suitable for a broad spectrum of GPS applications where performance, cost, and time to market are prime considerations.

GPS 6 Click is supported by a mikroSDK compliant library, which includes functions that simplify software development. This Click board™ comes as a fully tested product, ready to be used on a system equipped with the mikroBUS™ socket.

How does it work?

GPS 6 Click as its foundation uses the A2200-A, a high-performance Global Positioning System (GPS) module from Lantronix. This GPS module enables fast acquisition and tracking built on the SiRFstar IV technology. It operates with a frequency of 1,575GHz with accuracy from 2 to 2.5m and fully addresses the demand for the lowest power consumption. It is characterized by high sensitivity of -148dBm during acquisition or while tracking (navigation sensitivity of -160dBm and tracking sensitivity of -163dBm) besides removing jammers during acquisition, allowing usage in many different environments and under harsh operating conditions.

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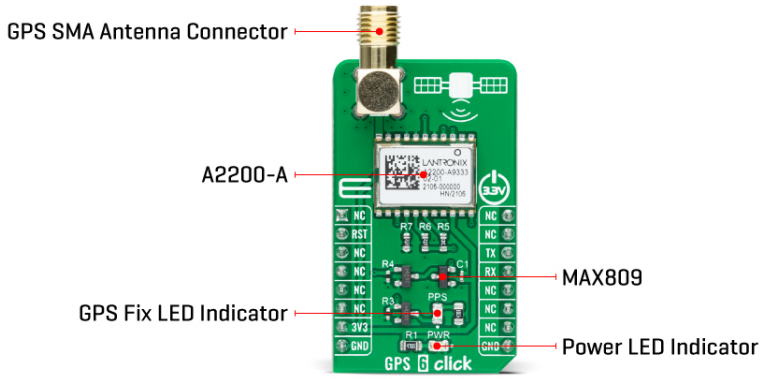

This Click board™ is configured in the Self-Start mode of operation by ON_OFF and WAKEUP pins connected together. The entire power operation will be activated in Self-Start mode once the 3V3 power rail is applied.

The A2200-A communicates with MCU using the UART interface with commonly used UART RX and TX pins as its communication protocol operating at 115200bps by default configuration to transmit and exchange data with the host MCU. It also possesses an active-low reset signal routed on the RST pin of the mikroBUS™ socket that activates a hardware reset of the A2200-A. On this line, the MAX809 is also connected, which performs a single function; it asserts a reset signal whenever the 3V3 supply voltage declines below a preset threshold.

In addition to precise positioning, GPS also allows for accurate timing due to the synchronized atomic clocks in the GPS satellites. While the current date and time are transmitted in NMEA sentences (UTC), a precise and accurate timing signal is provided via the 1PPS pin of the A2200 GPS receiver and indicated via a red LED indicator marked as PPS.

GPS 6 Click possesses the SMA antenna connector with an impedance of 50Ω, which can be used to connect the appropriate passive antenna that Mikroe has in its offer for improved range and received signal strength.

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. However, the Click board™ comes equipped with a library containing functions and an example code that can be used, as a reference, for further development.

Specifications

Type	GPS/GNSS
Applications	Can be used for a broad spectrum of GPS applications where performance, cost, and time to market are prime considerations
On-board modules	A2200-A - high-performance Global Positioning System (GPS) module from Lantronix
Key Features	Complete GPS module, direct passive antenna support, jamming detection and removal, best acquisition and tracking sensitivity, low power

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	consumption, and more
Interface	UART
ClickID	No
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 GPS 6 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	NC	
	NC	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	-	GPS Fix LED Indicator

GPS 6 Click electrical specifications

Description	Min	Typ	Max	Unit
Supply Voltage	-	3.3	-	V
Operating Frequency Range	-	1.575	-	MHz
Position Accuracy	2	-	2.5	m
Tracking Sensitivity	-	-163	-	dBm
Navigation Sensitivity	-	-163	-	dBm
Acquisition Sensitivity	-	-148	-	dBm
Operating Temperature Range	-40	+25	+85	°C

Software Support

We provide a library for the GPS 6 Click as well as a demo application (example), developed using MikroElektronika compilers. The demo can run on all the main MikroElektronika development boards.

Package can be downloaded/installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

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Library Description

This library contains API for GPS 6 Click driver.

Key functions

- gps6_enable_device This function enables device by setting the RST pin to LOW logic state.
- gps6_generic_read This function reads a desired number of data bytes by using UART serial interface.
- gps6_parse_gpgga This function parses the GPGGA data from the read response buffer.

Example Description

This example demonstrates the use of GPS 6 Click boards™ by reading and displaying the GPS coordinates.

The full application code, and ready to use projects can be installed directly from NECTO Studio Package Manager(recommended way), downloaded from our LibStock™ or found on Mikroe github account.

Other Mikroe Libraries used in the example:

- MikroSDK.Board
- MikroSDK.Log
- Click.GPS6

Additional notes and informations

Depending on the development board you are using, you may need USB UART click, USB UART 2 Click or RS232 Click to connect to your PC, for development systems with no UART to USB interface available on the board. UART terminal is available in all MikroElektronika compilers.

mikroSDK

This Click board™ is supported with mikroSDK - MikroElektronika Software Development Kit. To ensure proper operation of mikroSDK compliant Click board™ demo applications, mikroSDK should be downloaded from the LibStock and installed for the compiler you are using.

For more information about mikroSDK, visit the official page.

Resources

mikroBUS™

mikroSDK

Click board™ Catalog

Click Boards™

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Downloads

GPS 6 click example on Libstock

MAX809 datasheet

A2200-A datasheet

GPS 6 click 2D and 3D files

GPS 6 click schematic

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