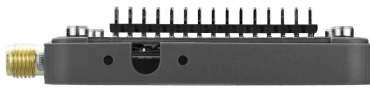


Module GPS v2.1

SKU:M003-V21





Description

Module GPS v2.1 is a high-performance GNSS global positioning module that integrates the AT6668 high-performance chip to provide accurate and reliable satellite positioning services. The module supports multi-frequency and multi-mode GNSS signal reception and is compatible with multiple satellite navigation systems, including GPS, BD2, BD3, GLONASS, GALILEO, and QZSS. It enables high-precision multi-system joint positioning or single-system independent positioning with excellent anti-interference capabilities. In weak signal areas, it can quickly obtain higher-precision location information. The module comes standard with an external **SMA antenna**. In addition, it features a **DIP switch** that allows flexible switching of TX/RX communication pins, and precise time synchronization via PPS signal output. It is suitable for high-precision positioning applications such as in-vehicle navigation, IoT positioning devices, remote monitoring, smart cities, home, and industrial automation. Compared with the previous Module GPS v2.0, this product has optimized interface compatibility to support CoreMP135, and the UART pin options have been increased from four to five.

Features

- Supports multiple satellite navigation systems (GPS/QZSS/BD2/BD3/GAL/GLO)
- Multi-frequency multi-system reception
- Multi-channel
- Low power consumption
- Precise time synchronization support
- Supports module stacking
- Development Platform
 - UiFlow1
 - UiFlow2
 - Arduino IDE

Includes

- 1 x Module GPS v2.1
- 1 x External active GPS/BD antenna (length: 1m)

Applications

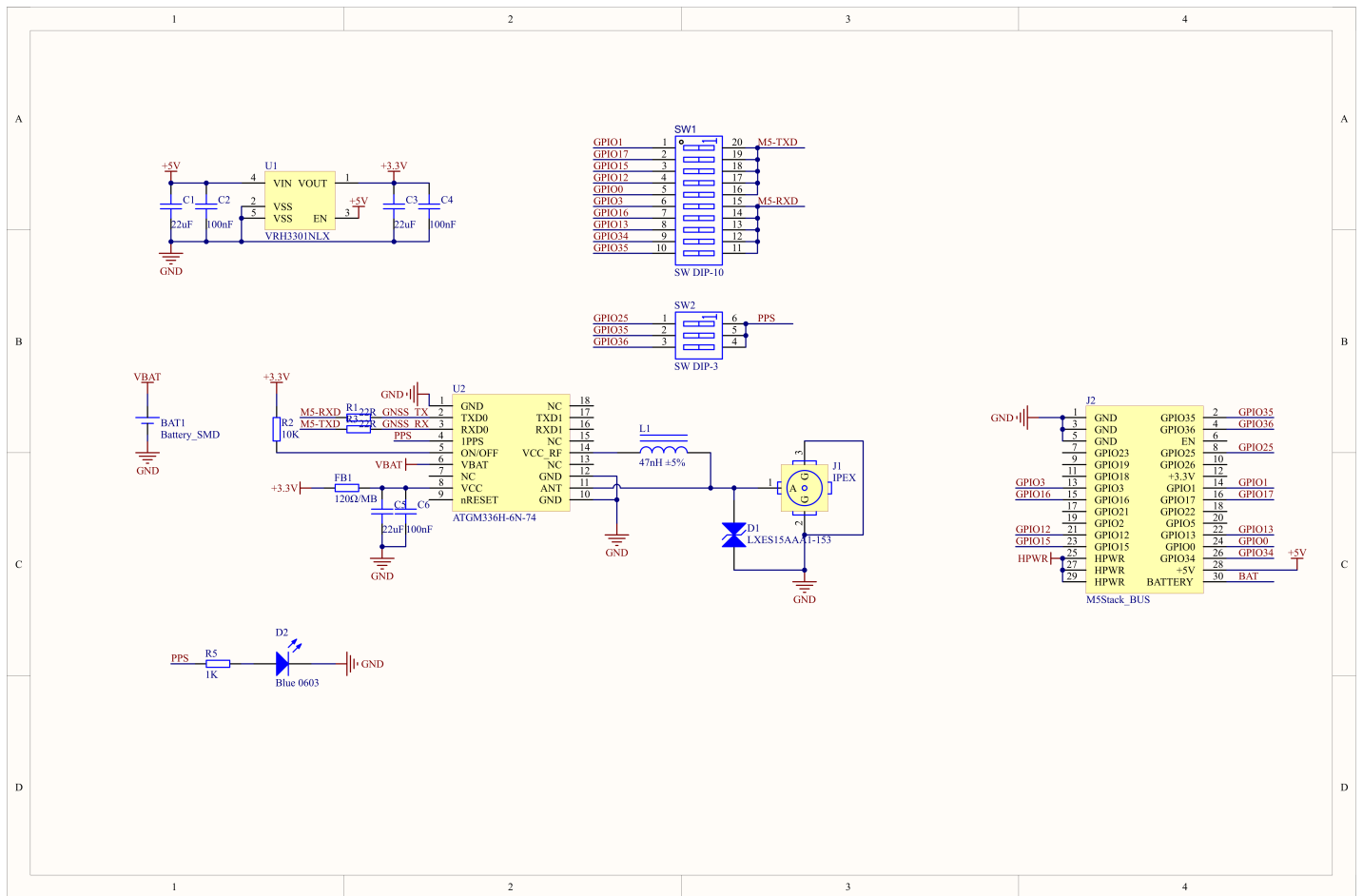
- In-vehicle positioning and navigation

- IoT positioning devices
- Industrial automation and robotics positioning
- High-precision surveying and GIS

| Specifications

Specification	Parameter
SoC	AT6668
Supported GNSS	GPS/QZSS/BD2/BD3/GAL/GLO
Frequency Bands	BDS: B1I+B1C GPS/QZSS/SBAS: L1 GALILEO: E1 GLONASS: R1
Channels	50 channels
Positioning Accuracy	<1.5m (CEP50)
Update Rate	Up to 10Hz
Protocol	NMEA0183 4.1
Sensitivity	Tracking: -162dBm Acquisition: -160dBm Cold start: -148dBm Hot start: -156dBm
Start Time	Cold start: 23s Hot start: 1s
Power Consumption	Standby current: DC 5V/29.43uA Operating current: DC 5V/28.35mA
Antenna Frequency	1555MHz ~ 1580MHz
Super Capacitor	20000uF DC 3.3V
Product Size	54.0 x 63.6 x 13.1mm
Product Weight	16.0g
Package Size	123.0 x 65.0 x 22.0mm
Gross Weight	78.3g

Schematics



PinMap

DIP Switch Pin Precautions

Since the G12 pin of the ESP32 is a Strapping pin, when used with the Basic host, do not toggle the DIP switch corresponding to G12 to the ON position, otherwise the device will fail to start properly. Meanwhile, the G25 pin is multiplexed with the speaker pin, so only one of them can be used at a time.

When used with **Core2**, the **G2** pin is multiplexed with the speaker pin, and only one of them can be used at a time.

M5-Bus

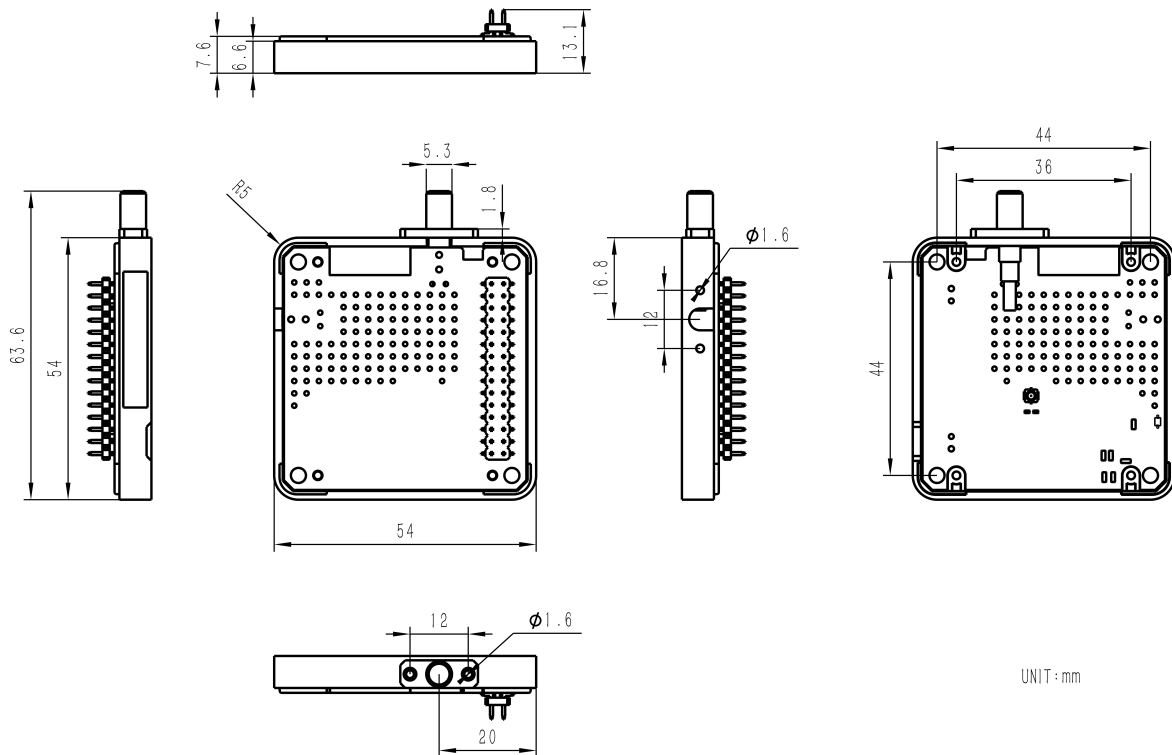
Switch

The pins marked **SW** in the M5-Bus below can be switched via DIP switches to adapt to different host devices.

PIN	LEFT	RIGHT	PIN
GND	1	2	GNSS_TX/PPS (SW)
GND	3	4	PPS(SW)
GND	5	6	
	7	8	PPS(SW)
	9	10	
	11	12	
GNSS_TX(SW)	13	14	GNSS_RX(SW)
GNSS_TX(SW)	15	16	GNSS_RX(SW)
	17	18	
	19	20	
GNSS_RX(SW)	21	22	GNSS_TX(SW)
GNSS_RX(SW)	23	24	GNSS_RX(SW)
HPWR	25	26	GNSS_TX(SW)
HPWR	27	28	5V
HPWR	29	30	BAT

| Model Size

- [Module GPS v2.1 Model Size PDF](#)



Datasheets

- [ATGM336H-6N](#)
- [VRH3301NLX](#)
- [CASIC Multi-mode Satellite Navigation Receiver Protocol Specification](#)

Softwares

Quick Start

- [Module GPS v2.1 Arduino Guide](#)

Arduino

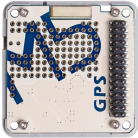
- [Module GPS v2.1 Arduino Library](#)

Video

- [Module GPS v2.1 Product Introduction](#)

[M003-V21_GPS_Module_V2.1_video.mp4](#)

Product Comparison

Product Compare			
	Module GPS v2.1	Module GPS v2.0	Module GPS
GPS Module	AT6668	AT6668	NEO-M8N
Supported GNSS	BD2/BD3/GPS/GLO/GAL/QZSS	BD2/BD3/GPS/GLO/GAL/QZSS	GPS/GLO/GAL/BeiDou
Positioning Accuracy	<1.5m (CEP50)	1.5m	2.5m
Sensitivity	Tracking: -162dBm Acquisition: -160dBm Cold start: -148dBm Hot start: -156dBm	Tracking: -162dBm Acquisition: -160dBm Cold start: -148dBm	Tracking: -167dBm Acquisition: -160dBm Cold start: -148dBm
DIP Switch Pin Swap	Five selectable UART pin groups, compatible with CoreMP135, stronger compatibility	Four selectable UART pin groups, not compatible with CoreMP135	Fixed pins, no DIP switch pin swapping