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› ASHATA Mini GPS Module LC29H AA User Manual

ASHATA ASHATAcy2da61wxk

ASHATA Mini GPS Module LC29H AA User Manual

Model: ASHATAcy2da61wxk

1. INTRODUCTION

This manual provides detailed instructions for the ASHATA Mini GPS Module, a GNSS expansion board featuring dual-band L1 L5 positioning technology and RTK function. It is designed to assist users in setting up, operating, and maintaining the module for optimal performance.

2. PACKAGE CONTENTS

Verify that all components listed below are included in your package:

- 1 x GPS Module
- 1 x Screw Package
- 1 x Antenna
- 1 x Pin Row Base
- 1 x Locator

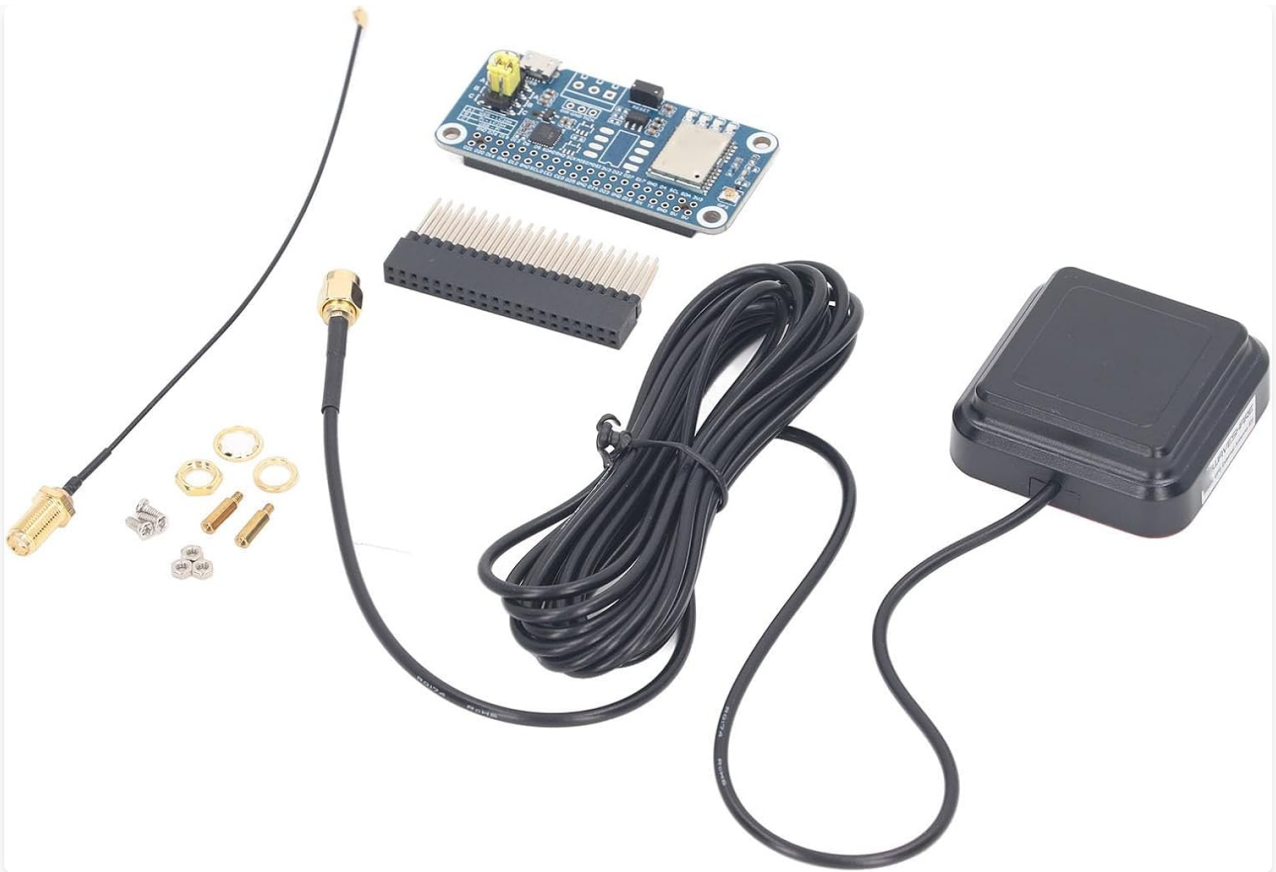


Image: The ASHATA Mini GPS Module with its accompanying accessories, including the antenna, screw package, pin row base, and locator.

3. SETUP AND INSTALLATION

3.1. Power Requirements

The module operates with an operating voltage of 5V, typically supplied via the 5V pin or USB input power. The logic voltage for communication is 3.3V or 2.8V.

3.2. Interface Connection

The GPS module is designed with a 40PIN GPIO interface, making it compatible with various development boards. It supports both UART and I2C communication interfaces.

Dual Band L1 Plus L5 Positioning Technology

Supports simultaneous tracking of L1 and L5 dual band satellite signals

Reduced multipath effects in urban canyons

Improve positioning accuracy

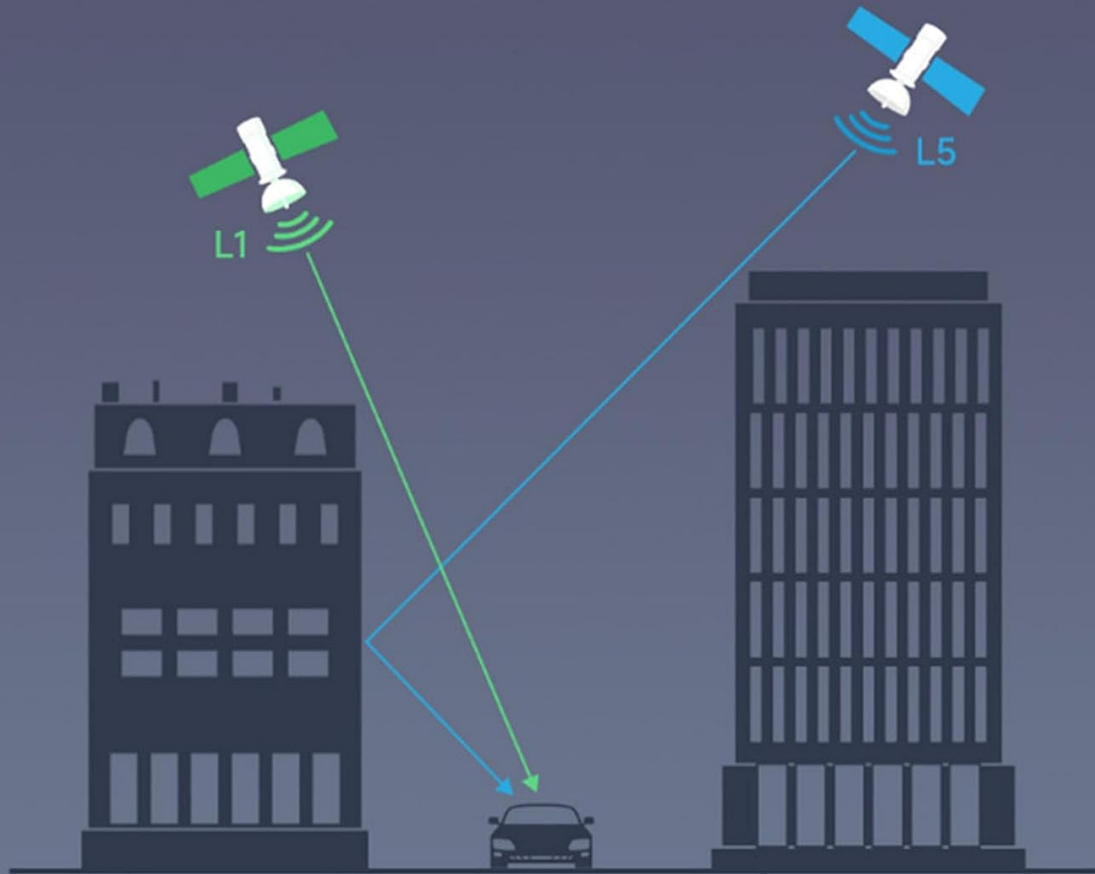


Image: The ASHATA Mini GPS Module showcasing its 40PIN GPIO interface, suitable for connection to compatible development boards like Raspberry Pi Zero or 4B.

3.3. Antenna Connection

Connect the provided antenna to the module's antenna port. Ensure a secure connection for optimal signal reception.

4. OPERATING INSTRUCTIONS

4.1. Dual-Band Positioning (L1 & L5)

The module supports simultaneous tracking of L1 and L5 dual-band satellite signals. This technology significantly reduces the multipath effect, especially in urban environments, leading to improved positioning accuracy.

Supports concurrent reception of multiple satellite systems
GPS, BDS, GLONASS, Galileo and QZSS signals are supported
At the same time, the system can maintain low power consumption

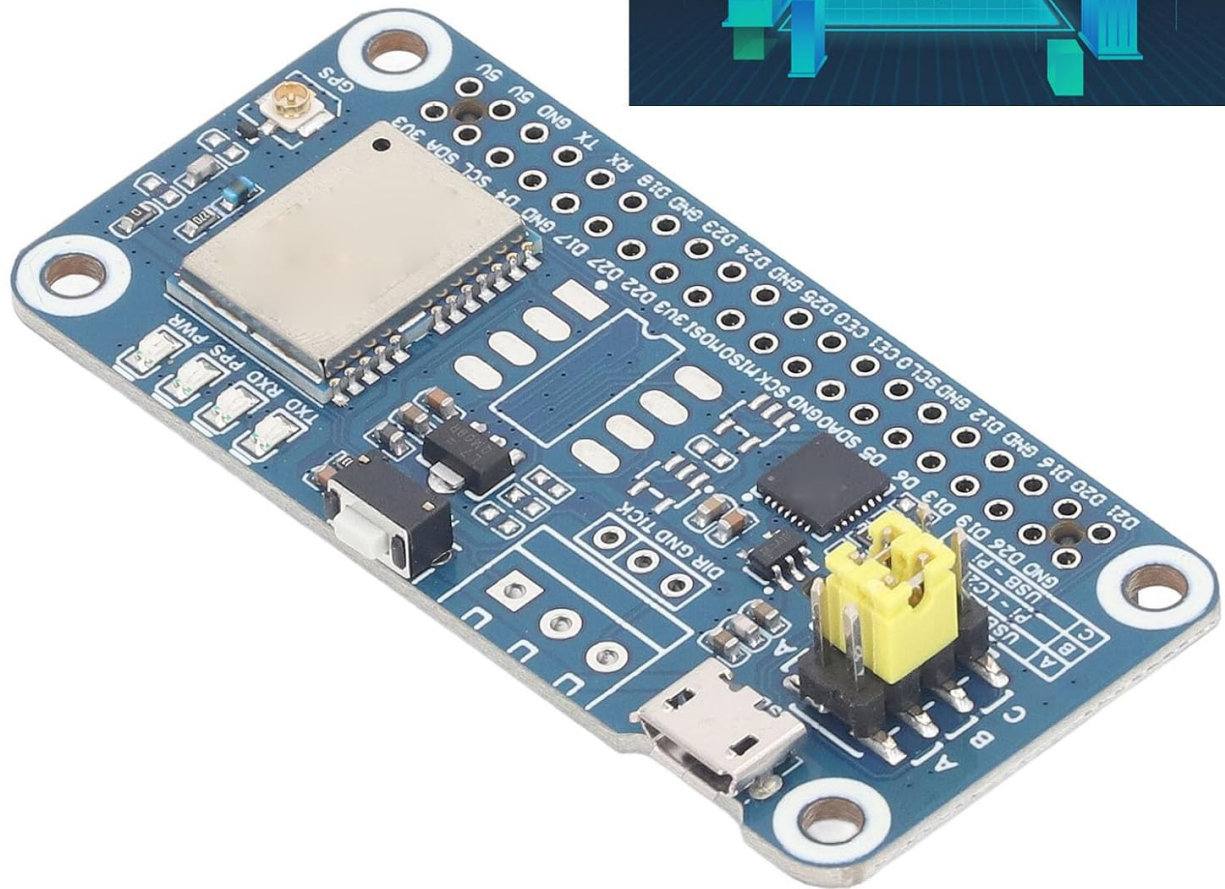


Image: A visual representation of the dual-band L1 and L5 positioning technology, showing how signals from different bands are tracked simultaneously to enhance accuracy.

4.2. Multi-Signal Reception

The module is capable of concurrently receiving signals from multiple satellite systems, including GPS, BDS, GLONASS, Galileo, and QZSS. This multi-constellation support enhances global coverage and reliability while maintaining low power consumption.

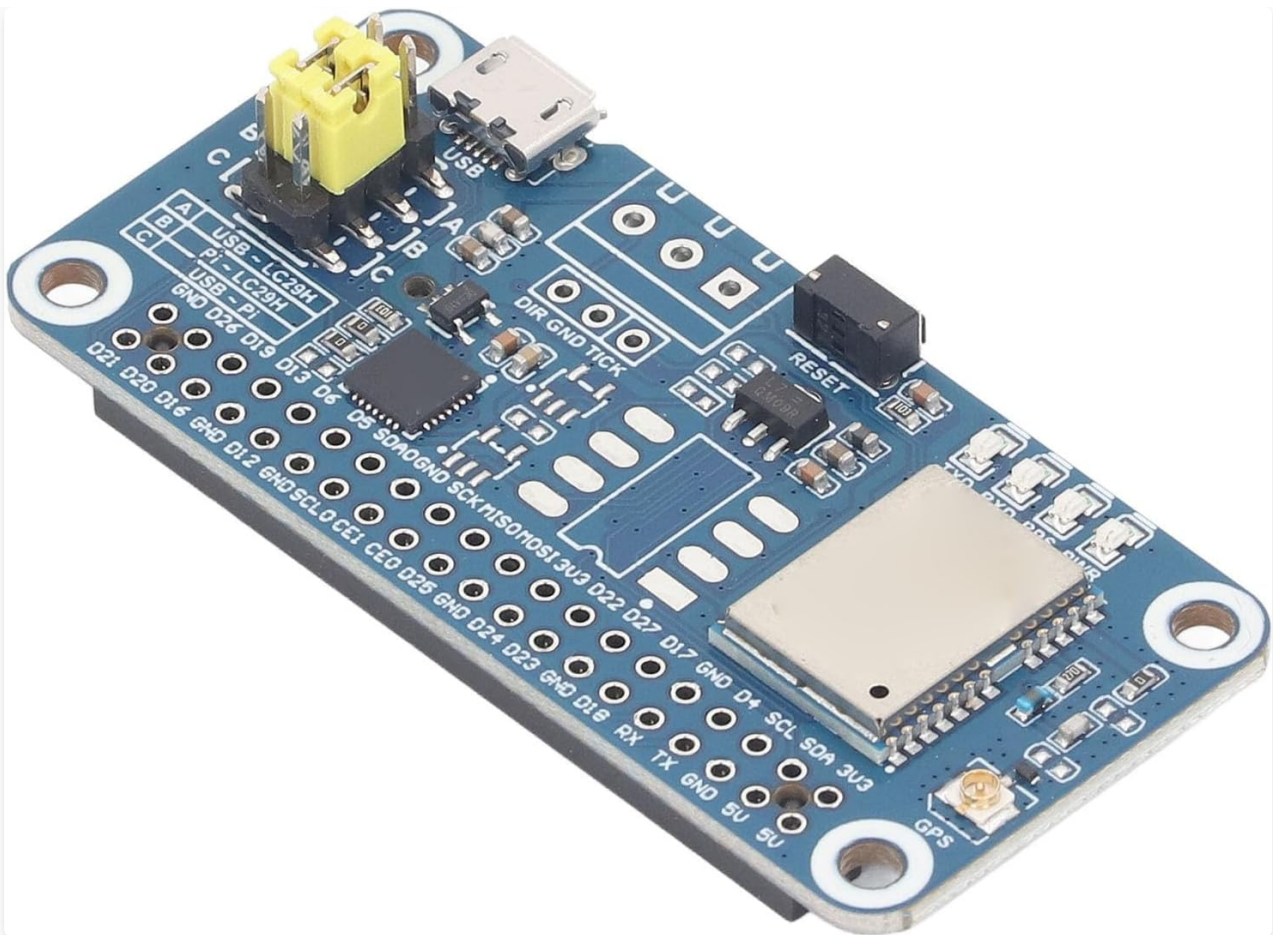


Image: An illustration depicting the module's ability to receive signals from various satellite systems simultaneously, improving positioning robustness.

4.3. Enhanced Positioning Systems (SBAS)

The GNSS expansion board supports positioning enhanced systems such as WAAS, EGNOS, MSAS, and GAGAN. These Satellite-Based Augmentation Systems (SBAS) further improve positioning performance and accuracy within their service areas.

4.4. EASY Technology

The module incorporates EASY technology, which allows for positioning even without an immediate signal by utilizing stored information like ephemeris and almanacs. This feature significantly improves the Time To First Fix (TTFF) and overall positioning speed.

AGNSS is supported

Reduce the first cold start powered positioning time (TTFF) to 5 seconds



Image: A diagram explaining how AGNSS (Assisted GNSS) support reduces the cold start powered positioning time (TTFF) to approximately 5 seconds.

4.5. Anti-Interference Performance

Equipped with a built-in low noise amplifier and acoustic surface filter, the module achieves high sensitivity (-165dBm) and enhanced anti-interference performance, effectively suppressing or eliminating narrowband signals (e.g., WiFi, 2G, 3G, 4G, 5G) to ensure navigation accuracy.

Supports multi frequency active interference cancellation

Effectively suppress or eliminate narrowband signal (WiFi, 2, 3, 4, 5G) interference
Ensure navigation accuracy

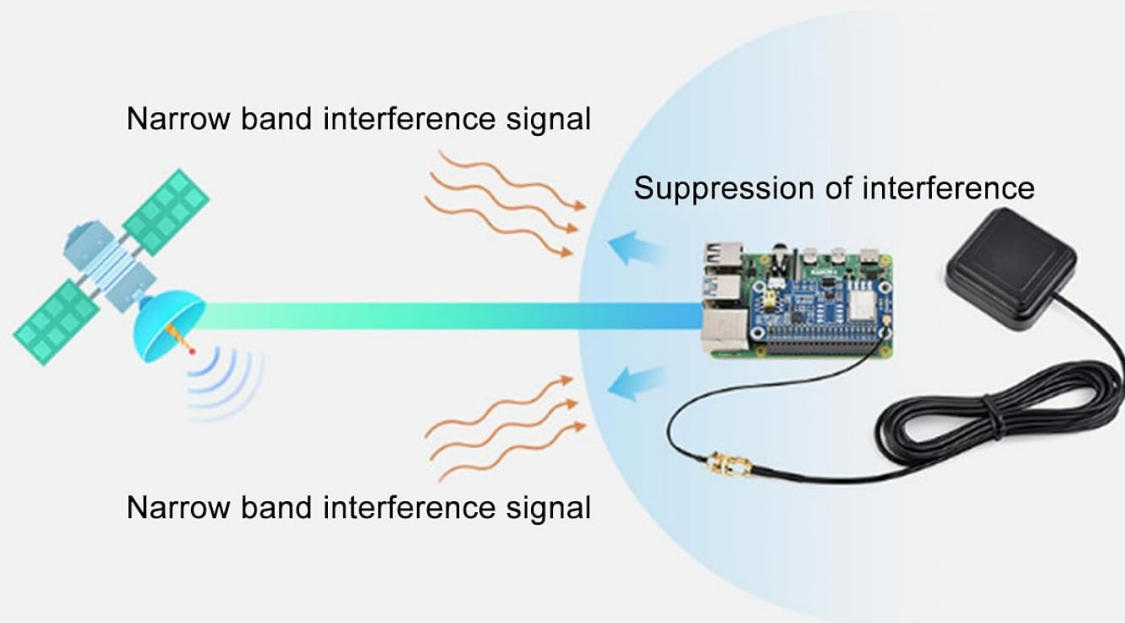


Image: An illustration demonstrating the module's multi-frequency active interference cancellation capability, which suppresses narrowband signals to maintain navigation accuracy.

5. MAINTENANCE

To ensure the longevity and optimal performance of your ASHATA Mini GPS Module, follow these general maintenance guidelines:

- **Keep Clean:** Regularly clean the module with a soft, dry cloth. Avoid using harsh chemicals or abrasive materials.
- **Protect from Elements:** Keep the module away from excessive moisture, dust, and extreme temperatures.
- **Handle with Care:** Avoid dropping or subjecting the module to strong impacts, which can damage internal components.
- **Proper Storage:** When not in use, store the module in a cool, dry place, preferably in its original packaging or an anti-static bag.

6. TROUBLESHOOTING

If you encounter issues with your ASHATA Mini GPS Module, refer to the following common troubleshooting steps:

- **No Signal/Poor Accuracy:**
 - Ensure the antenna is securely connected and has a clear view of the sky.
 - Verify that there are no obstructions (e.g., buildings, dense foliage) blocking satellite signals.
 - Check for potential sources of electromagnetic interference nearby.
- **Module Not Powering On:**
 - Confirm that the 5V power supply is correctly connected and providing sufficient power.
 - Check all cable connections for looseness or damage.
- **Communication Issues (UART/I2C):**
 - Verify that the correct baud rate (default 115200 bps) is configured on your host device.
 - Ensure the logic voltage levels (3.3V/2.8V) are compatible with your host device.
 - Check the wiring for UART (TX/RX) or I2C (SDA/SCL) connections.

If the problem persists after attempting these steps, please contact customer support for further assistance.

7. SPECIFICATIONS

Feature	Description
Item Type	GPS Module
Material	PCB
Signal Bands	GPS, QZSS L1C, A L5, BDS B1I, B2a, Galileo E1, E5a, GLONASS L1
Support SBAS	WAAS, EGNOS, MSAS, GAGAN
Capture Time (Cold Start)	26S
Capture Time (Hot Start)	1S
Capture Sensitivity	-145dBm (LC29H(AA)), -147dBm (LC29H(AA), LC29H(BS))
Tracking Sensitivity	-165dBm
Recapture Sensitivity	-159dBm
Positioning Accuracy	1m CEP(PVT), 0.01m Plus 1ppm CEP(RTK)
Maximum Altitude	10000M
Maximum Speed	500m/s

Logic Voltage	3.3/2.8V
Communicate Interface	UART, I2C
Baud Rate	9600-3000000bps (Default 115200)
Update Rate	Maximum 1Hz at RTK, GPS Mode (Default 1HZ)
Communicate Protocol	NMEA 0183 V4.10, RTCM 3.X, PAIR
Operating Voltage	5V (From 5V Pin Or USB Input Power)
Current Consumption	Less Than 40mA at 5V (Continue Mode)
Item Weight	5.7 ounces
Model Number	ASHATAcy2da61wxk
Manufacturer	ASHATA
First Available	October 20, 2023

8. WARRANTY INFORMATION

Specific warranty terms for the ASHATA Mini GPS Module are provided by the manufacturer or the seller at the time of purchase. Please refer to your purchase documentation or contact the seller directly for detailed warranty information, including coverage period and conditions.

9. CUSTOMER SUPPORT

For technical support, inquiries, or assistance with your ASHATA Mini GPS Module, please contact the manufacturer, ASHATA, or the authorized seller from whom you purchased the product. Provide your model number (ASHATAcy2da61wxk) and ASIN (B0CLGW125J) when seeking support to expedite the process.