GNX-1000 INTEGRATION MANUAL

For System Engineers & Developers

1. INTRODUCTION

The GNX-1000 GNSS sensor module is designed for easy integration into embedded systems, robotics platforms, and mission-critical navigation solutions. This manual provides step-by-step guidance for hardware connection, firmware communication, and host system interfacing.

2. HARDWARE OVERVIEW

- Dimensions: 24mm x 24mm x 4mm
- Operating Voltage: 3.3V to 5V
- Connector: MMCX for external GNSS antenna
- Interfaces: UART, SPI, I2C
- Mounting: PCB solderable module with gold-plated pads

3. PINOUT DESCRIPTION

The GNX-1000 includes a series of gold-plated pads for electrical interfacing. The key signals are:

- VCC: Power supply input (3.3V to 5V)
- GND: Ground
- TXD/RXD: UART transmit/receive
- SCL/SDA: I2C clock/data lines
- SPI_MOSI/SPI_MISO/SPI_CLK/SPI_CS: SPI interface lines
- 1PPS: Pulse-per-second output (optional timing signal)

4. INTERFACE CONFIGURATION

The default communication interface is UART at 115200 bps, 8 data bits, no parity, 1 stop bit. Alternative interfaces (I2C, SPI) can be enabled through firmware configuration.

Communication packets follow the NMEA 0183 standard and custom binary protocol for enhanced control.

5. POWER MANAGEMENT

The module operates with ultra-low power consumption (<50mW) and can be powered by battery-operated platforms. A deep sleep mode is available and can be toggled via a GPIO pin or software command.

6. RTK INTEGRATION

The GNX-1000 supports RTK corrections via RTCM 3.x protocol. Correction data can be fed into the module through UART or I2C. Base station connectivity or NTRIP client compatibility is supported for live corrections.

7. MOUNTING GUIDELINES

For optimal performance, place the GNX-1000 on the top layer of the PCB, away from highfrequency signals. Use ground planes and route RF lines with controlled impedance. Attach the GNSS antenna via MMCX with minimal loss coax cable.

8. TROUBLESHOOTING

- No satellite lock: Ensure clear sky visibility and correct antenna connection.
- No data output: Check UART wiring and baud rate settings.
- High power draw: Confirm input voltage is within limits.
- RTK not working: Verify correction stream format and interface configuration.

9. CONTACT & SUPPORT

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