# Evelta L86 GNSS Breakout Board
User Manual

Overview

This breakout board integrates Quectel's L86 an ultra-compact GNSS module that integrates a 18.4x18.4x4.0mm patch antenna along with an external antenna connector. It uses MediaTek's new generation GNSS MT3333 chip. The board operates on 3.3V power supply and communicates with the target MCU through UART interface TX, RX, FON, and RESET pins. A V_BACK connection pin for a backup power supply is also available.

Through advanced AGPS (EASY™) orbit prediction technology and power saving mode (AlwaysLocate™ technology), the L86 module achieves high performance and fully meets industry standards. EASY™ technology enables L86 to automatically calculate and predict orbit information for up to three days, and store this information in the internal RAM memory, which can achieve low-power fast positioning even under weak indoor signals. The use of AlwaysLocate™ technology enables the L86 to automatically adjust the positioning time according to different environmental conditions and operating modes, which greatly reduces the power consumption of the module while ensuring positioning accuracy.

L86 supports the intelligent detection of antenna plug-in and short-circuit protection. It also supports automatic switching between the built-in patch antenna and the external active antenna, and the positioning is continued during the switching process.

It is especially suitable for automotive, personal tracking, industrial-grade PDA and GPS receivers and OBD applications.
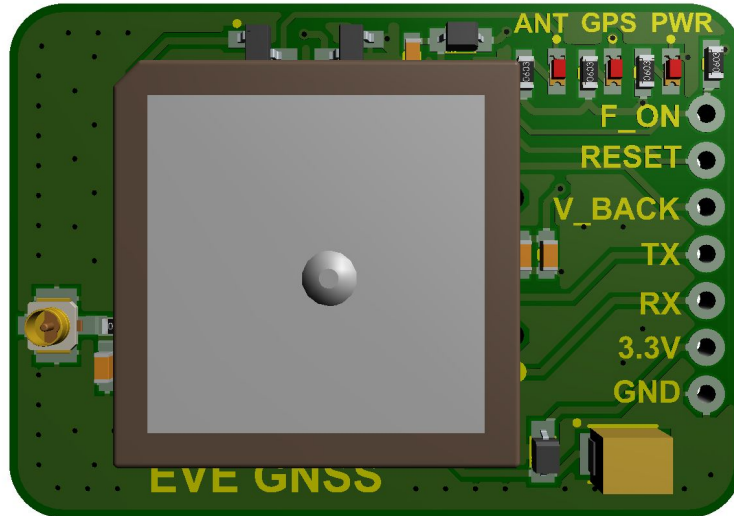
Front
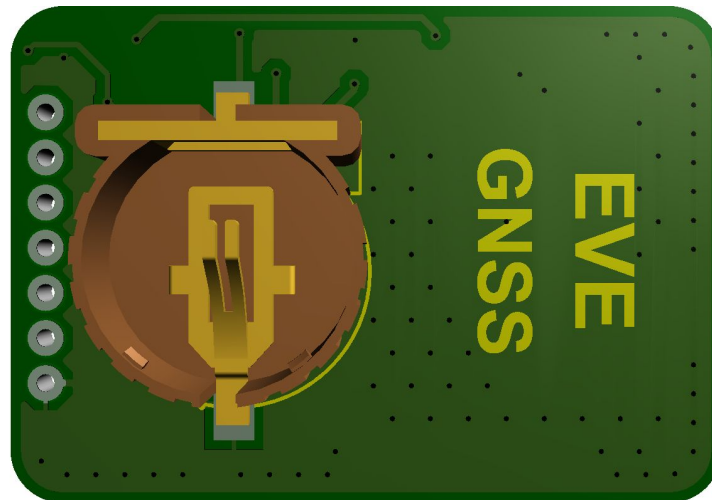
Back

Board Features
- The board uses a 3.3V power supply only
- UART communication interface
- Support multiple satellite systems: GPS, GLONASS, Galileo and QZSS
- Internal patch antenna: 18.4mm x 18.4mm x 4.0mm
- Support internal and external antenna automatic switching
- Support short circuit protection and antenna detection
- Built-in low-noise amplifier to improve receiving high sensitivity

- Support self-assisted AGPS (EASY TM technology, no external memory required)
- Very low current consumption: 26mA @tracking mode
- Multiple power saving modes: standby Mode, Backup Mode, Periodic Mode, AlwaysLocate™ Mode
- LOCUS technology, support automatic log information recording and storage
- High sensitivity: -167dBm@tracking mode, -149dBm@acquisition mode
- Number of channels: 99 capture channels, 33 tracking channels
- Support Balloon mode, positioning altitude up to 80km
- Support DGPS, SBAS (WAAS/EGNOS/MSAS/GAGAN)
- Multi-frequency active interference cancellation technology to enhance anti-interference ability
- Time service supports PPS and NMEA synchronization function
- Support the SDK commands independently developed by Quectel

Board Dimensions
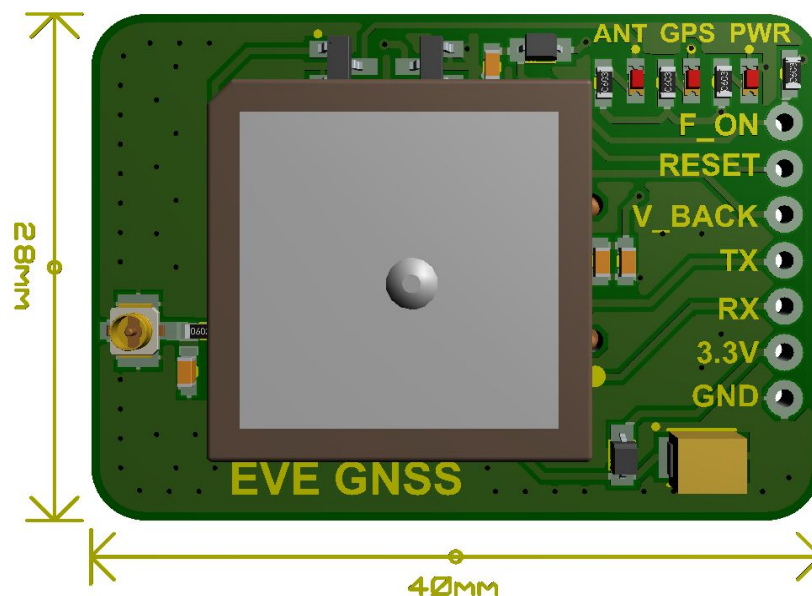
External Antenna
The GPS modules have a built in patch antenna - this antenna provides -165 dBm sensitivity and is perfect for many projects. However, if you want to place your project in a box, it might not be possible to have the antenna pointing up, or it might be in a metal shield, or you may need more sensitivity. In these cases, you may want to use an external active antenna.

Battery Backup
The GPS has a built in real time clock, which can keep track of time even when its power is lost and it doesn't have a fix yet. It can also help reduce fix times, if you expect to have a flakey power connection (say you're using solar or similar). To use the RTC, we need to attach a battery. There is a spot on the back for a CR1220 sized battery holder. You can use any 12mm coin cell.

Breakout Pinouts
3.3V - is the output from the onboard 3.3V regulator. If you have a need for a clean 3.3V output, you can use this! It can provide at least 100mA output.

GND - power and signal ground. Connect to your power supply and microcontroller ground.

TX - the pin that transmits data from the GPS module to your microcontroller or computer. It is 3.3V logic level. Data comes out at 9600 baud by default

RX - the pin that you can use to send data to the GPS. You can use a 3.3V logic level shifter. By default it expects 9600 baud data, and remember you need to send it checksummed NMEA sentences.

V_BACK is an input pin - it is connected to the GPS real time clock battery backup. We suggest using the battery spot on the back but if you have a project with a coin cell or other kind of battery that you want to use (and it's under 3.3V) you can connect it to the V_BACK pin.