Fastrax UP501 GPS Antenna Module

- Fastrax UP500 compatible form factor
- Embedded GPS antenna
- Low power consumption
- Ultra High Sensitivity with MTK MT3329

GPS receiver for many Applications

Fastrax UP501 GPS receiver module with embedded GPS antenna enables ultra high performance navigation in the most stringent applications and solid fix even in harsh GPS visibility environments.

The Fastrax UP501 receiver with embedded antenna is ideally suited for navigation systems, asset tracking devices and battery operated consumer products like personal navigation devices, handheld computers, cameras, and sports accessories. Fastrax UP501 is also an ideal receiver for GPS mouse applications, due to its compact design and easy interfacing.

Market Leading Performance

Extremely good acquisition sensitivity enables fast position fix in harsh urban canyons or blocking environments, removing the need for external antenna.

Internal backup battery (optional) will allow very fast TTFF even when the module has been completely powered off by the host system. This will enable custom and extremely efficient power save modes without compromising TTFF performance.

Very high sensitivity and internal jammer detection compensates the possible negative effect of host system EMI, enabling post-installations in multiple applications.

Fastrax UP501 Key Features:

- Low power consumption: 75mW @ 3.0V
- Ultra High Sensitivity:
  - –148dBm (Cold Start Acquisition)
  - –165 dBm (Navigation)
- Jammer detection and reduction
- Tiny form factor – 22mm x 22mm x 8mm
- Embedded patch antenna 18.4 x 18.4 x 4.2 mm
- NMEA protocols (default speed: 9600bps)
- One serial port (default: CMOS level, option: RS232)
- 1PPS output
- Up to 10Hz fix rate
- WAAS/EGNOS support
- Optional internal backup battery
- MediaTek MT3329, 66-channel receiver

Cutting component costs

Space and costs are reduced due to the cutting-edge technology in the Fastrax UP501 receiver. On board high efficiency switch mode regulator and extensive supply range allow direct power supply from Li-Ion or Li-Polymer batteries.

Performance upgrade for UP500

The UP501 is a pin-to-pin electrically and mechanically compatible performance enhanced upgrade for existing UP500 users. The UP501 has built-in PCB-mounting flanges and standard 2.54mm IO-pin pitch for easy integration on various host systems.

For new antenna module customers Fastrax UP501 provides market leading GPS performance in field proven form factor.

Available Fastrax UP501 standard module versions are listed in the table below:

<table>
<thead>
<tr>
<th>UP501 version</th>
<th>On-board backup battery</th>
<th>Dual SAW filter</th>
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<tbody>
<tr>
<td>UP501</td>
<td>No</td>
<td>No</td>
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<tr>
<td>UP501B</td>
<td>Yes</td>
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<td>UP501D</td>
<td>No</td>
<td>Yes</td>
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</tbody>
</table>
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Specifications

General: L1 frequency, C/A code (SPS)

22 tracking + 66 search channels

Update rate: 1 fix/s (user configurable, up to 10 fix/s)

Accuracy:

Position: 1.8m (CEP95)

Velocity: 0.1m/s

Time: +/-50ns (RMS)

TTFF:

Cold Start (out of the box): 34s typ.

Warm Start: 34s typ.

Hot start: 1s typ.

Sensitivity:

 Acquisition (cold): -148dBm (1)

Re-acquisition: -158dBm (1)

Navigation: -165dBm (1)

Power Drain (3.0V):

Navigating 1 fix/s: 75mW typ.

Backup state: < 15uW typ.

Operating voltage:

Main Supply: +3.0V .. 4.2V (2)

Backup Supply: +2.0V .. 4.2V (2)

IF Connector: 2.54mm pitch, 1x6pin grid

I/O ports:

Pin1: Serial port RX

Pin3: Ground

Pin2: Serial port TX

Pin4: Main supply

Pin5: Backup supply

Pin6: 1PPS output

Protocol: NMEA 0183, 9600 baud

Chip set: MediaTek MT3329

Dimensions: 22mm x 22mm x 8mm

Weight: 9 g

Operating temperature: -40C..+85C

Storage temperature: -40C..+85C

TTFF:

Cold Start (out of the box): 34s typ.

Warm Start: 34s typ.

Hot start: 1s typ.

Standard Options:

Dual SAW filter front end

Internal Backup battery

Notes:

(1) Measured by conductive measurement setup.

(2) Extended VDD range up to +5.5V (UP500 equivalent max.) can be made available upon request. Please contact Fastrax sales for details.

Dimension drawing:

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