

# Navika-251

## High Performance GPS-GLONASS and SBAS Module

### Features

- Stand-alone GPS-GLONASS and SBAS(GAGAN) positioning module
- High performance Correlator for ultra low signal detection and tracking
- 19mm x 19mm module form factor
- Extremely fast fix times
- GPS-only, GLONASS-only and GPS-GLONASS position output
- Precise Time output
- TRAIM assures reliable PPS
- Common GPS and GLONASS antenna interface with short / open circuit indication
- Single 3.3V input supply
- NMEA0183 compatible message format, Custom ASCII and Select TSIP messages



Navika-251  
(19mm x 19mm)

### Product Description

The Navika-251 is a 19mmx19mmx2.54mm module combining the advantages of multiple GNSS constellations. By making use of GPS and GLONASS signals, the Navika-251 provides better availability and accuracy of position as compared to a stand-alone GPS or GLONASS module.

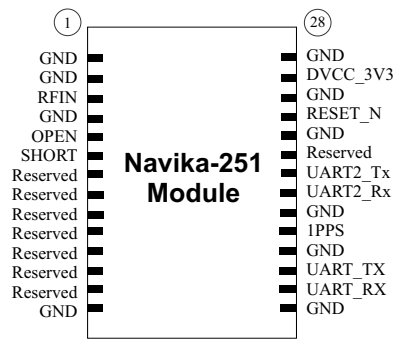
Navika-251 caters to applications that demand high performance where a GPS-only module cannot deliver. Navika-251 supports quicker positioning in hot start and reacquisition while providing faster location under warm and cold start modes too.

Navika-251 can be interfaced to active GPS-GLONASS

antenna. The Antenna protection / detections circuit is external to the module and status is given to the module for transmission in a message.

The module provides 28-pin with surface mount package. The key interfaces are the main power supply input, UART transmit, UART receive, and 1PPS output.

Navika-251 supports NMEA-0183 message protocol to communicate the location information and select TSIP messages. In addition, Navika proprietary messages convey additional information for a tighter integration with the end application.



Navika-251- Pin Diagram

## Specifications of Navika-251 Module

### Performance Characteristics

Receiver :62 channels L1-C/A code GPS-GLONASS, SBAS(GAGAN)

### Sensitivity

Acquisition (both GPS and GLONASS) :-155dBm (Hot start, 1SV @ -140dBm)  
 -160dBm (Reacquisition)  
 Tracking :-163dBm (GPS) /  
 -159dBm (GLONASS)

### Time to First Fix

Hot Start (with valid ephemeris, almanac, position and time estimate) :2-3 sec (typical) switch OFF/ON cycle less than 1 hour  
 Warm Start(with almanac, position and time estimate) :30 sec (typical)  
 Cold Start (without almanac, time, or position) :35 sec (typical)

*Note: Active antenna kept under open sky with HDOP<2 and C/N0 > 40dB-Hz*

### Accuracy

Position (Horizontal) :3.5 m (RMS)  
 Velocity :0.1 m/sec (90% without S/A)  
*Note: Active antenna kept under open sky with HDOP<2 and C/N0 > 40dB-Hz*

### Reacquisition

Signal :< 1 sec  
 Position :< 3 sec  
 Blockage Time :1 minutes

### Electrical Characteristics

Total Current Consumption :150mA @ 3.3V

### Ordering Information

Part Number : Navika-251

### Timing

1PPS :< +/- 10ns, RMS without errors  
 Pulse Width :386us (adjustable between 386us to 500ms in steps of 386us)  
 Pulse Edge :Rising (configurable)  
 Pulse Delay :0ns (adjustable between -999 to +999ns)

### Navigation Solution

PVT :2D/3D position, velocity, and Time (default) (WGS84)  
 Position Update Rate :1 Hz

### PC/Host Communication

Interface :UART  
 Baud Rate :115200 (by default)  
 Message Formats :NMEA0183 Ver. 3.01 ASCII as well as proprietary Messages

### Environmental Characteristics

Operational Temperature Range (Ambient) :-40°C to +85°C  
 Storage Temperature Range :-40°C to +85°C  
 Humidity :95% non-condensing +30°C to 60°C  
 Altitude :18,000 meters

### Output Messages

NMEA :GPGSA, GLGSA, GPGSV, GPGGA, GPZDA, GPRMC  
 TSIP :Antenna status, almanac status and 1PPS configuration

### Input Messages

ASCII :NMEA message control and configuration, Elevation mask, DOP settings, Factory reset, Restart, 1PPS configuration