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Navika-132 – GPS-SBAS Module with Integrated Antenna

Features

- GPS-SBAS positioning module
- 40mm x 40mm module with integrated antenna
- More than 16K Correlators for fast acquisition and robust tracking
- Fast Time-To-First-Fix
- Single 5.0V input supply
- 8-pin shrouded header for inter-connect
- NMEA0183 compatible message format for host communication
- Support for WGS84 and Indian Datums through custom message
- Supports UART @ RS-232 level

Navika-132
(40mm x 40mm)

Product Description

Navika-132 is a self-contained GPS-SBAS module that is ready-to-use in end applications. It is designed for products where an internal or concealed antenna is a key requirement. It can also be used in applications to minimize design efforts.

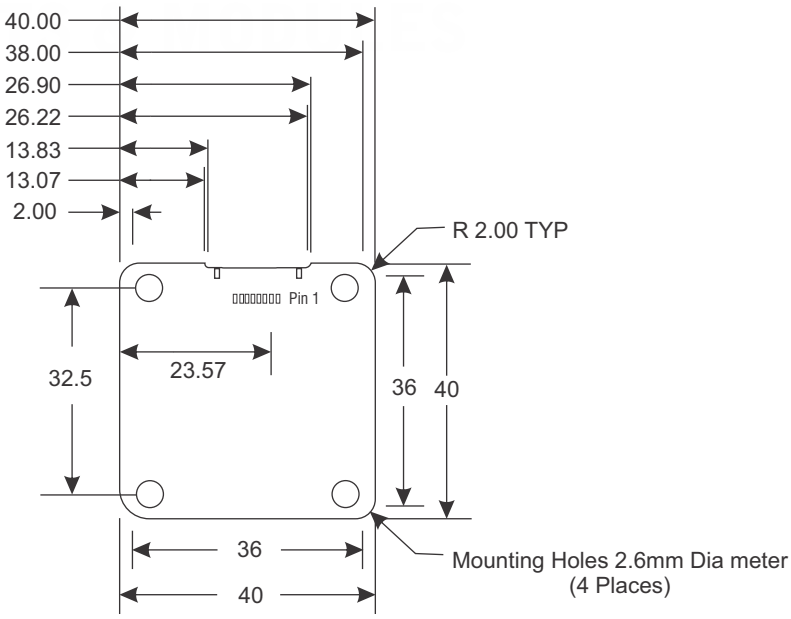
Navika-132 integrates a GPS patch antenna and the electronics onto a single PCB to realize a 40mm x 40mm high performance GPS-SBAS receiver module.

The electrical interface is provided through an 8-pin shrouded header connector allowing connectivity to the application hardware.

Navika-132 requires very few external interfaces. A single 5.0V power supply is all it takes to get the module up and running in cold start. A standard RS-232 UART interface allows the user to communicate application board or directly to a PC.

Navika-132 supports NMEA-0183 message protocol to communicate the location information. In addition, custom messages convey additional information for a tighter integration with the end application.

The Navika-132 module has been designed keeping all components (except antenna) on one side of the PCB. A metallic cover shields the critical electronics from external radiations. The GPS patch antenna element is mounted on the opposite side and the feed point is soldered at the bottom of the PCB. The interface connector is placed at the center of one of the sides of the PCB at an inset to allow unhindered connection with the mating connector. Mounting holes are provided on all four corners to secure the module on the application hardware.



Navika-132 Mechanical Diagram

The pin outs and electrical details of the Navika-132 interface connector is provided below.

Pin No.	Signal name	Description	Specification
1	Vbck	Battery Backup Power Supply Input to the on-chip SRAM and Counter. The user can provide backup power on this pin if the on-board battery capacity is not enough	2.6 V to 5.5 V 20 uA
2	GND	Ground (signal and power return)	
3	VCC_5V	Mains Power Supply Input	4.5 V to 5.5 V 75mA @ 5.0V
4	UART_TX	Transmit from UART (output) The receiver transmits NMEA 0183 message from this port. The baud rate can be configured from 4800 bps to 115200 bps. Default baud rate is 19200 bps	RS-232 compatible (-9V to +9V)
5	UART_RX	Receive into UART (input) The receiver accepts configuration and commands on this port. The baud rate can be configured from 4800 bps to 115200 bps. Default baud rate is 19200 bps	RS-232 compatible (-9V to +9V)
6	NC	No connection	
7	1PPS	PTTI pulse (output) Precise pulse output every second synchronous to the GPS / UTC second boundary	CMOS (0 to 3.3V) Pulse width of 100ms with increments of 20ms
8	NC	No connection	

Navika-132 Pin-Out description

Specifications of Navika-132 Module

Performance Characteristics

Receiver	:32 channels L1-C/A code GPS-SBAS

Sensitivity

Acquisition	:-154dBm (Hot start, 1SV @ -140dBm) -158dBm (Reacquisition)
Tracking	:-162dBm (GPS)

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)	:<2.5 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	:< 1 sec
Blockage Time	:3 minutes

Navigation Solution

PVT	:2D2D/3D position, velocity, and time 183 geodetic datum supported (default) (WGS84)
Position Update Rate	:1 Hz

PC/Host Communication

Interface	:UART
Baud Rate	:19200
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

Electrical Characteristics

Current Consumption on mains	:75mA @ 5.0V

Output Messages

NMEA	:$GPGGA, $GPGSA, $GPRMC, $GPGLL, $GPGSV, $GPVTG, $GPZDA
ASCII	:Version, Receiver Configuration

Input Messages

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

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