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Navika-450

High Performance IRNSS Based Module

Features

- Stand-alone 13 channels L5-IRNSS positioning module
- Fast fix times
- Accurate 1PPS output
- 40mm x 40mm module form-factor
- Type 18 message decoding from each IRNSS satellite
- Active port for external antenna interface
- Antenna supply of 3V DC
- Single 3.3V input supply voltage
- Simple 20 Pin Interface connector
- Supports similar to NMEA message protocol for IRNSS
- Industry standard peripherals
 - ▲ I2C
 - ▲ UART
 - ▲ SPI
 - ▲ GPIO
- Fully ROHS compliant



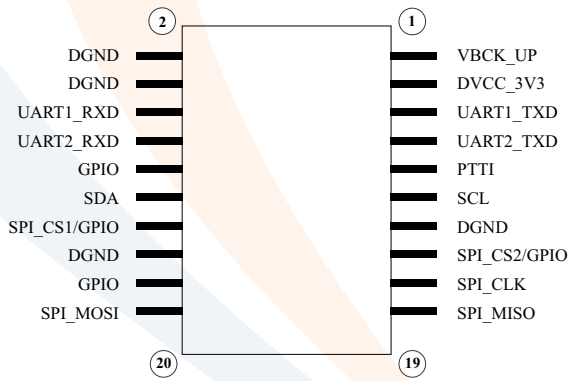
Navika-450
(40mm x 40mm)

Product Description

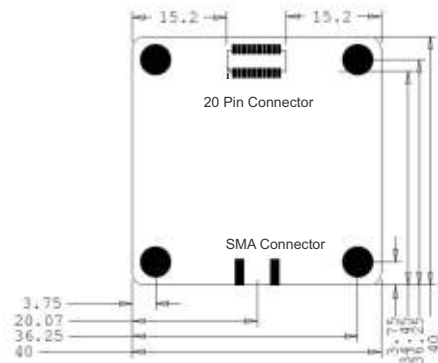
The Navika-450 is a L5-IRNSS receiver module. Its acquisition and tracking sensitivity ensures continuous location availability under poor visibility conditions. Navika-450 is a 40mm x 40mm module catering to applications that demand positioning and timing information.

Navika-450 can be interfaced to IRNSS external antenna over its antenna port. The module supports rich set of interfaces like SPI port, I2C port, and two UART ports allow the module to be interfaced in a variety of ways to the outside world. The module also supports general purpose I/O's that can be used to drive LED's or digital input-output ports.

Navika-450 supports NMEA message protocol for IRNSS to communicate the location and timing information to outside world.



Connector Diagram



Bottom View

20 Pin connector:

Pin	Signal Name	Electrical Details	Description
1	VBCK_UP	3.0V, 20uA	External supply for battery backup circuit If not supplied, module always starts in Cold start
2	DGND		Ground
3	DVCC_3V3	3.3 V, 250 mA	Input power supply
4	DGND		Ground
5	UART1_TXD	Output, CMOS	UART 1 Transmit port
6	UART1_RXD	Input, CMOS	UART 1 Receive port
7	UART2_TXD	Output, CMOS	UART 2 Transmit port
8	UART2_RXD	Input, CMOS	UART 2 Receive port
9	PTTI	Output, CMOS	Time Pulse (1PPS)
10	GPIO	Input / Output, CMOS	Reserved
11	SCL	CMOS	I2C clock
12	SDA	CMOS	I2C data
13	DGND		Ground
14	SPI_CS1/GPIO	CMOS	SPI chip select 1 or Reserved for GPIO
15	SPI_CS2/GPIO	CMOS	SPI chip select 2 or Reserved for GPIO
16	DGND		Ground
17	SPI_CLK	CMOS	SPI Clock
18	GPIO	Input / Output, CMOS	Reserved
19	SPI_MISO	CMOS	SPI MISO
20	SPI_MOSI	CMOS	SPI MOSI

Specifications of Navika-450 Module

Performance Characteristics

Channel : 13 channel IRNSS- L5 frequency
(1175.46 MHz)

Sensitivity (wrt Active antenna)

Acquisition : -145 dBm
Reacquisition : -155 dBm
Tracking : -160 dBm

Time to First Fix (antenna under open sky)

Cold start : 75 (Typical), Open Sky

Accuracy (antenna under open sky)

Position : 20 m, 2σ
Velocity : 0.5 m/s, 2σ
1PPS : 50 ns, RMS

Update rate

Update rate : 1 Second

Dynamics

Velocity : 515 m/s
Acceleration : 4g

Host Communication

Interface : UART
Baud Rate : 15200 (default)
Message format : NMEA modified for IRNSS;
Raw NavIC subframe data

Environmental Characteristics

Altitude : 18000 m
Operational Temp : -40°C to +85°C
Storage Temp : -40°C to +85°C
Humidity : 95% non-condensing

Output Messages

User Date, Time, Latitude, Longitude, Altitude, Speed, Heading, Satellite Elevation and Azimuth, C/N, HDOP, PDOP, GDOP
Type 18 message extracted from each satellite

Software Upgrade feature

Firmware upgrade: Upgrade through GUI

Ordering Part Number

Part Number: Navika-450