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Navika-550

High Performance IRNSS+GPS+GAGAN Module

Features

- 64 Channels IRNSS-GPS-SBAS Receiver
- Fast fix times
- Accurate 1PPS output
- 40mm x 40mm module form-factor
- Type 18 message decoding from each IRNSS satellite
- Two active port for external IRNSS, GPS antenna interface
- Antenna supply of 3V DC
- Single 3.3V input supply voltage
- Simple 20 Pin Interface connector
- Supports NMEA-0183/Proprietary message protocol
- Industry standard peripherals
 - ▲ I2C
 - ▲ UART
 - ▲ SPI
 - ▲ GPIO
- Fully ROHS compliant



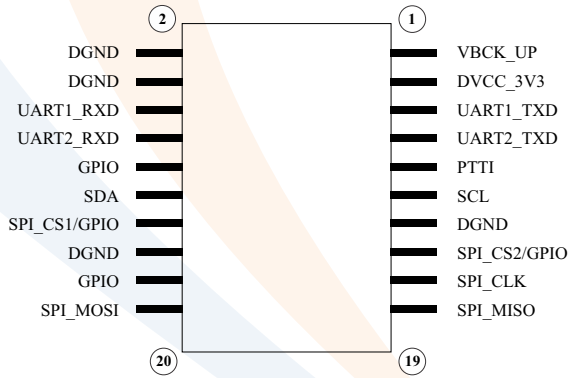
Navika-550
(40mm x 40mm)

Product Description

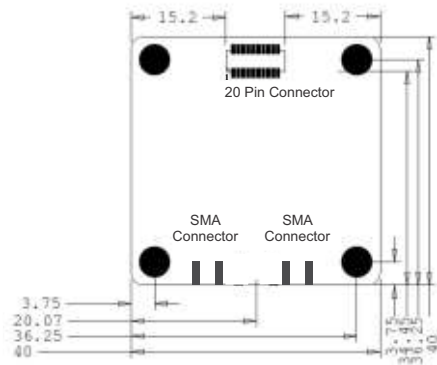
The Navika-550 is a GNSS module combining the advantages of multiple constellations. By making use of IRNSS and GPS signals, Navika-550 provides better availability and accuracy position and timing information as compared to standalone IRNSS or GPS module. Its superior acquisition and tracking sensitivity ensures continuous location availability under poor visibility conditions. Navika-550 is a 40mm x 40mm module catering to applications that demand high performance where GPS-only module cannot deliver.

Navika-550 can be interfaced to external IRNSS and GPS antennas over its dedicated antenna ports. The module supports a rich set of interfaces like SPI port, I2C port, and two UART ports that 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-550 supports NMEA message protocol for IRNSS to communicate the location and timing information to outside world.



Connector Diagram



Dimensions

20 Pin connector:

Pin	Signal Name	Electrical Details	Description
1	VBCK_UP	2.5V to 5.5V	External supply for battery backup circuit If not supplied, module always starts in Cold start
2	DGND		Ground
3	DVCC_3V3	3.3 V, 220mA	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-550 Module

Performance Characteristics

Channels	: 32 IRNSS Channels (1175.46 MHz)
	: 32 GPS-SBAS Channels (1575.42 MHz)

Sensitivity (wrt Active antenna)

IRNSS:

Acquisition	: -145 dBm
Reacquisition	: -157 dBm
Tracking	: -160 dBm

GPS:

Acquisition	: -148 dBm
Reacquisition	: -160 dBm
Tracking	: -163 dBm

Time to First Fix (antenna under open sky)

Hot Start (with valid ephemeris, almanac, position and time estimate)	: 2-3 sec (typical) cycle less than 1 hour
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Cold start (without almanac, time or position)	: <30 sec (typical)
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Accuracy (antenna under open sky)

Position	: 3 m, 1 σ
Velocity	: 0.1 m/s, 1 σ
1PPS	: 50 ns, RMS

Navigation Solution

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

Dynamics

Velocity	: 515 m/s
Acceleration	: 4g

Host Communication

Interface	: UART
Baud Rate	: 115200 (default)
Message format	: NMEA-0183/ Proprietary message protocol

Electrical Characteristics

Input Power Supply	: 3.3V \pm 5%
Total Current Consumption	: 220mA @ 3.3V
Battery Backup Voltage (VBCK_UP)	: 2.5V to 5.5V
Current	: 20 μ A @ 3V

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

NMEA	: \$GP, \$IR, \$GN messages
ASCII	: Version, Receiver Configuration, Antenna Status, PPS mode

Input Messages

ASCII	: NMEA message control and Configuration, Elevation Mask Factory reset, 1PPS configuration
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Software Upgrade feature

Firmware upgrade: Upgrade through GUI

Ordering Part Number

Part Number: Navika-550