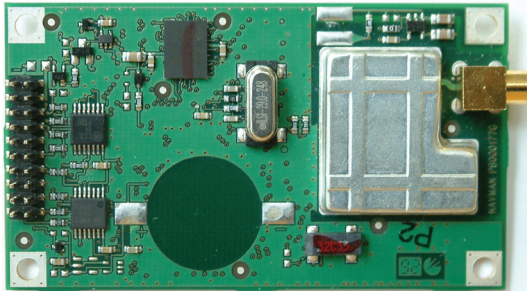


## Jupiter 12

### 12-channel GPS receiver module



#### Complete GPS solution for embedded applications

Delivering high performance with a proven design, Navman's Jupiter series of GPS receivers supports a wide range of applications including the most rugged automotive, marine, farming, telecommunications, scientific, and industrial product uses.

#### Jupiter 12 standard

Jupiter 12 is compatible with all previous Jupiter designs. Developments incorporated include lower power consumption (ideal for asset tracking), auto-sensing 3.3 V or 5 V, Flash memory for field upgrades, and improved immunity to jamming. Jupiter 12 continues to feature superior sensitivity, highly accurate performance and the option of using an active or passive antenna. The Jupiter 12 delivers 1PPS with better than 100 ns accuracy and is especially well suited for poor reception areas such as vehicle tracking in harsh urban environments.

#### Jupiter 12 DR

Precision navigation can be extremely difficult when satellite view is blocked by tall buildings or in tunnels etc. Jupiter 12 with Dead-Reckoning (DR) adds the capability to utilise external sensors, offering enhanced performance as well as maintaining accurate navigation when the GPS signal is unavailable. Jupiter 12 DR is a tightly coupled GPS solution with direct connections for speed sensor, gyro, and reverse direction inputs.

#### GPS Development units

These are available for any configuration of the Jupiter 12. Each is supplied with a complete development kit containing everything required by a GPS system integrator: GPS antenna, AC and automotive power supplies, serial cables, gyro (Jupiter DR only), DOS/Windows based interface software, and full documentation.

#### Features

- backward compatible with previous Jupiter 20 pin interface products
- 3.3 / 5 VDC supply (autosense)
- low power consumption: 85 mA, 32 mA with power management activated
- 2 MB of Flash memory
- state of the art algorithms for optimised tracking in urban environments
- improved jamming immunity
- horizontal position accuracy of better than 2.8 m CEP without differential aiding
- DR option for dead-reckoning
- on-chip LNA supports both active and passive antennas
- external battery back-up capability
- 1 PPS time accuracy of better than 100 ns

#### Related products

- Development kit TU10-D007-351

#### Related documents

- Data sheet LA010065
- Development kit: Quick start guide LA010088
- Development kit: Guide LA010089
- Designer's guide MN002000
- Labmon application note LA010103
- DR receiver: Gyro application note LA010090

## Product brief: Jupiter 12

### Product specifications

#### Receiver architecture

- 12-channel, L1 1575.42 MHz
- C/A code (1.023 MHz chip rate)
- code-plus-carrier tracking (carrier-aided tracking)
- velocity, up to 500 m/s
- acceleration, up to 5 G

#### Tracking capability

- 12 satellites simultaneously

#### Accuracy

- horizontal accuracy: better than 2.8 m (CEP), 4.9 m (2 dRMS)
- 3D accuracy: better than 5 m (SEP)
- DGPS accuracy: better than 1 m (CEP)

#### 1PPS output

- time accuracy, better than 100 ns (absolute), 40 ns (1 sigma)

#### Acquisition/re-acquisition performance

- hot start: 18 seconds (with valid almanac, time, position and ephemeris)
- warm start: 48 seconds (with valid almanac, time and position)
- cold start: 120 seconds (with no information)

#### Antenna

- on-chip LNA for use with passive antenna
- active antenna powered through receiver (100 mA max at 12 VDC max)
- 18 dB of gain, +4, -8 recommended for active antenna

#### Datums

- 189 std datums, 5 user-defined, default: WGS-84

#### On-board filtering

- L1 -75 MHz, -7 dB
- L1 +50 MHz, -20 dB

### Environmental

- operating temperature: -40°C to +85°C
- humidity: up to 95% non-condensing
- altitude: -305 m to 12 190 m

### Serial interfaces

- two serial ports available (1 for DGPS input)
- CMOS-level (autosensing, 3.3 or 5 VDC)
- programmable baud rates
- latitude, longitude, elevation, velocity, heading, time, satellite tracking status, command/control messages, raw data—Navman binary interface (compatible with Conexant/Rockwell binary interface)
- selected NMEA-0183 messages

### Electrical

#### Primary power

- 3.15 to 5.5 VDC

#### Power consumption

- 280 mW at 3.3 VDC
- 425 mW at 5 VDC (can be reduced by up to 60% in power management mode depending on user-selected values)

#### Backup power (SRAM and RTC)

- 2.5 to 5.25 VDC

#### Backup power consumption

- 12 µA at 3 VDC (typical)

### Physical

- dimensions: 40.6 x 71.1 x 12.7 mm
- weight: 25 g

### Connectors

- data/power: 20-pin (2 x 10) on 2 mm centres
- RF: right angle or vertical OSX, or right angle SMB

### Ordering information

- TU35-D410 Jupiter 12 standard
- TU35-D420 Jupiter 12 DR

For more information, to order, or to discuss your GPS solution requirements, contact your local distributor or Navman OEM.

Navman OEM  
 Web: [www.navman.com/oem](http://www.navman.com/oem)  
 Email: [oem@navman.com](mailto:oem@navman.com)

Your Navman OEM distributor: