

# FREYJA GNSS Receiver

## Data Specifications

### GNSS

#### Signal Tracking<sup>1</sup>

GPS (L1C/A, L1C, L2P(Y), L2C, L5)  
 BDS (B1I, B2I, B3I, B1C, B2a, B2b)  
 GLONASS (L1, L2, L3)  
 Galileo (E1, E5a, E5b, E6)  
 QZSS (L1, L2, L5, L6\*)  
 NavIC(L5)  
 SBAS(L1, L2, L5)  
 PPP(B2b-PPP, Galileo E6-HAS)

**No. of Channels** 1408

### POSITIONING PERFORMANCE<sup>2</sup>

#### High-precision static GNSS Surveying Static and Fast Static

#### Post Processing Kinematic (PPK / Stop & Go)

H:2.5mm + 0.1 ppm RMS / V:3.5mm + 0.4 ppm RMS  
 H:2.5mm + 0.5 ppm RMS / V:5mm + 0.5 ppm RMS  
 H:8mm + 1 ppm RMS / V:15mm + 1 ppm RMS  
 Initialization time: Typically 10 min for base and 5 min for rover  
 Initialization reliability: Typically >99.9%

#### PPP

#### Code Differential GNSS Positioning

H:10cm / V:20cm  
 H:±0.25m+1ppmRMS / V:±0.5m+1ppmRMS  
 SBAS:0.5m(H), 0.85m(V)

#### Real Time Kinematic (RTK)

H:8mm+1ppm RMS / V:15mm+1 ppm RMS  
 Initialization time: Typically <10 s  
 Initialization reliability: Typically > 99.9%

#### Positioning rate

#### Time to first Fix

#### Hi-Fix<sup>3</sup>

#### Tilt Survey Performance<sup>4</sup>

1Hz, 5Hz and 10Hz  
 Cold start:< 45s | Hot start:< 30s | Signal re-acquisition:< 2 s  
 H:RTK+10mm / minute RMS / V:RTK+20mm / minute RMS  
 Additional horizontal pole-tilt uncertainty typically less than  
 8mm +0.7 mm / °tilt (0° ~ 60°)

### COMMUNICATION

#### I/O Interface

#### WiFi

#### Bluetooth

#### NFC

#### Internal UHF Radio

1 × USB type C port; 1 × SMA antenna port  
 Frequency 2.4GHz, Supports 802.11 b/g/n  
 4.2 / 2.1+EDR, 2.4GHz  
 Near Field Communication for device touch pairing  
 Frequency: 410-470MHz | Channel: 116 (16 scalable)  
 Transmitting power: 0.5W / 1W / 2W adjustable  
 Working Range: Typically 3~5km, optimal 8~15km  
 Supports multi-communication protocols: HI-TARGET,  
 TRIMTALK450S, TRIMMARK III, TRANSEOT, SATEL-3AS, etc.

### ELECTRICAL

#### Internal battery<sup>5</sup>

Internal 7.2V / 6900mAh lithium-ion rechargeable battery  
 RTK Rover (UHF/Cellular): up to 24 hours\*

#### External power

Charging:using standard smartphone chargers or external  
 power banks.(Support 5V 2.8A Type-C USB external charging)

### PHYSICAL

#### Weight

≤ 0.8kg(includes battery)

#### Dimensions (W x H)

132mm×67mm

#### Operation temperature

-30°C to +70°C

#### Storage temperature

-40°C to +80°C

#### Humidity

100% non-condensing

#### Water/dustproof

IP67 dustproof, protected from temporary immersion to  
 depth of 1.0m (3.28ft)

Designed to survive a 2m(6.56ft) natural fall onto concrete

#### Free fall

### CONTROL PANEL

#### LED Lamp

Satellite, Signal, Power

#### Physical button

1

### SYSTEM CONFIGURATION

#### Storage

16GB ROM internal storage

#### Output rate

1Hz-20Hz

#### Output format

ASCII: NMEA-0183

#### Static data format

GNS, Rinex

#### Network Mode

VRS, FKP, MAC; supports NTRIP protocol

#### Real Time Kinematic (RTK)

CMR, RTCM 2.x, RTCM 3.x



# FREYJA GNSS Receiver



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\*Description and Specifications are subject to change without notice.

1.QZSS L6 can be provided by firmware upgrade.

2.The measurement accuracy, precision, reliability and initialization time depend on various factors, including tilt angle, number of satellites, geometric distribution, observation time, atmospheric conditions and multi-path validation, etc. The data are derived under normal conditions.

3.Accuracies are dependent on GNSS satellite availability. Hi-Fix Positioning ends after 5 minutes without differential data.Hi-Fix is not available in all regions, check with your local sales representative for more information.

4.Irregular operations such as rapid rotation and high-intensity vibration may affect the inertial navigation accuracy.

5.The battery operating time is related to the operating environment, operating temperature and battery life.

SatLab Freyja GNSS RTK is a progressive receiver that creates a new RTK experience for land surveyors. With its comprehensive features, it can perfectly handle the situations encountered in all kinds of surveying work, minimizing the burden from the physicality and extending the functionality of fieldwork. By increasing productivity by 25%, Freyja offers an accurate and efficient solution.

### Key Features



### Applications

- Monitoring
- Land Survey
- Agriculture
- Mapping
- Landfill
- Sensor
- Topography and As-built
- Hydrographic
- UAV Base Station



### Handiness and Convenience

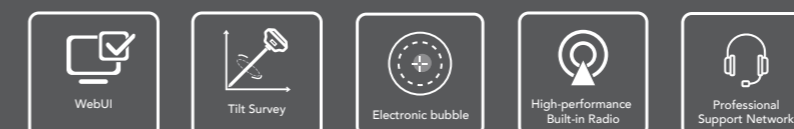
Refinement of design makes it rugged and compact with only 770g. A more durable battery ensures operating time reaches more than 24 hours. Durability and portability are optimized for surveyors who carry them around a lot in the fieldwork.

### Accuracy and Precision

Matured RTK technology promises positioning reliability. New GNSS Antenna, full-constellation and all satellite signal tracking technology lay the solid foundation-precision of fieldwork.

### Adaptability and Stability

Equipped with the latest tilt compensation algorithm and built-in high-performance 9-axis Inertial Measurement Unit (IMU), the measurement for hard-to-reach points is simple but precise with the high-performance tilt survey. Quality results are guaranteed even if you lose the signal while under extreme circumstances with great anti-interference ability.



**TECHNICAL SUPPORT**  
Satlab offers online resources and a professional support network available worldwide.