



High Precision GNSS Receivers



ASIC

GNSS+IMU+CAMERA

Reliable Continuous  
Centimeter-level  
Real-Time Positioning



## COMPANY OVERVIEW

BYNAV specializes in the development of GNSS high-precision positioning core components, and is committed to providing reliable high-precision positioning in challenging environments. With GNSS signal processing algorithm, RTK algorithm and multi-source fusion algorithm, the company has produced a series of products such as GNSS ASIC, high-precision GNSS receivers and integrated navigation system. They are used in Unmanned Ground Vehicle, Unmanned Aerial Vehicle, Automatic Driving, Transportation, Port Automation, Driver Testing, Surveying, Precision Agriculture and Machine Control.

BYNAV's R&D team originated from the main force of China Beidou Satellite Navigation System. It has won 4 National Scientific And Technological Awards. Our team has deep technical accumulation and excellent innovation ability in the fields of high-precision satellite navigation and multi-source fusion positioning, and has applied for more than 30 national invention patents.

Our company has obtained ISO9001, High-tech Enterprise, Chinese Beidou Navigation Civil Service Qualification and other certifications, and has undertaken the "Multi-source Fusion High-precision Positioning Chip R&D and Industrialization" of Chinese special Beidou project. In 2018, the leading enterprises of Driver Testing in China have reached a cooperation with BYNAV, to provide reliable centimeter-level accuracy of positioning for the testing system.

2018 • Undertook Chinese Beidou special project "Multi-source fusion high-precision GNSS chips".

2017 • Delivered the 10,000th GNSS high-precision board.

2016 • High-precision receivers are widely used in driver testing in southwestern mountainous area of China.

2015 • Won the title of high-tech enterprise and applied for more than 30 National Invention Patents.

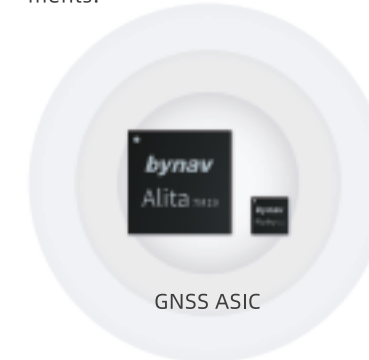
2013 • Released the first BYNAV's GNSS high-precision heading board.

Origin 2002 • Participated in the construction of BDS system and won several National Scientific And Technological Awards.



## HIGH-PRECISION PRODUCTS

With tight coupling GNSS baseband signal processing, RTK ambiguity resolution, MEMS inertial sensors and Visual Odometry sensors, we can effectively deal with signal blockage and interference, thus achieve reliable high-precision positioning in challenging environments.



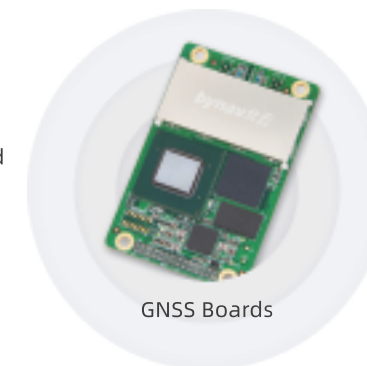
GNSS ASIC

### GNSS ASIC

Our self-designed dedicated chips receive multi-constellation multi-frequency signals such as BDS, GPS, GLONASS and GALILEO. Our solutions bring about less power consumption, better performance, smaller size and lower cost, and chips can be integrated into various navigation systems much more easily than FPGA-based solutions.

### GNSS Boards

High Precision Boards receive multi-constellation multi-frequency signals such as BDS, GPS, GLONASS and GALILEO, and support dual-antenna positioning and heading. Our receivers are driven by a new generation of signal tracking loop and RTK algorithms, support current and future navigation signal formats, and achieve excellent performance under dynamic conditions against signal blockage and jamming.



GNSS Boards



GNSS Receivers

### GNSS Receivers

Our receivers have built-in high precision boards, support portable charger and (optional) 4G, Bluetooth, radio, antenna and other accessories. Receivers can be widely used in driver license testing, mapping, CORS reference station, deformation monitoring, precision agriculture, UAV, engineering machinery and many other fields.

### GNSS/INS Integration System

It includes built-in GNSS high precision receiver and IMU inertial sensor, uses IMU information to assist RTK ambiguity resolution and baseband signal tracking, and optimized for vehicle applications. It can effectively deal with satellite signal interference and blockage under challenging environments, and provide reliable stable continuous high precision position and attitude for intelligent connected vehicles.




RTK + IMU



Please scan the QR code to view product details.

# GNSS RECEIVER DATASHEET

Product Variants		BY352S	BY682E	BY682S	BY681S
 Functions	Single Point Positioning	●	●	●	●
	Dual-Antenna Heading	●	●	●	-
	RTK	●	●	●	●
	Three Vector RTK	●	●	●	-
	Timing	●	●	●	●
	Reference Station Mode	●	●	●	●
	Rover Station Mode	●	●	●	●
	On-Board IMU	-	○	○	○
	Static Post-Processing	-	○	○	○
	Output of Dual-Antenna Raw Observations	Single-Antenna Raw Observations	○	○	Single-Antenna Raw Observations
NTRIP	○	○	○	○	
Signal Frequency	BDS	B1I、B2I			
	GPS	L1C/A、L2C、L2P			
	QZSS	L1C/A、L2C			
	IRNSS	-	L5		
	GLONASS	G1	G1、G2		
	BDS-3	-	○	B1C、B2a	
	Galileo	-	○	E1、E5b	
Single Point Accuracy	Horizontal	1.5m RMS			
	Vertical	2.5m RMS			
RTK Accuracy	Horizontal	1.0cm + 1ppm RMS			
	Vertical	1.5cm + 1ppm RMS			
Heading Accuracy		0.2°/m RMS			
Timing Accuracy		20ns RMS			
Velocity Measurement Accuracy		0.05m/s RMS			
Maximum Data Rate	Raw Data	10Hz	20Hz	50Hz	50Hz
	RTK	10Hz	20Hz	50Hz	50Hz
	RTK+Heading	10Hz	10Hz	20Hz	-
Time to First Fix	Cold Start	≤45s			
	Hot Start	≤30s			
RTK Initialization Time		≤10s			
Reacquisition		≤1s			
Environmental	Operating	-40℃ ~ +85℃			
	Storage	-55℃ ~ +95℃			
	Humidity	95% non-condensing			
	Vibration	GJB 150.16A-2009			
Power	Single-Antenna (Typical)	1.7W	1.8W	1.9W	1.7W
	Dual-Antenna (Typical)	2.2W	2.3W	2.4W	-
	Input Voltage	+3.25V ~ +3.45V			
Physical and Electrical	Dimensions	71mm×46mm×11mm			
	Weight	26g	27g	32g	24g
	RF Connectors	MMCX-K×2 First Antenna (RFM) Positioning Second Antenna (RFS) Heading			MMCX-K×1
Physical and Electrical	Power&Data Connectors	28-pin, double row, male (2.00mm)			
	Communication Ports	UART×3 1PPS×1 EVENT IN×2 EVENT OUT×1 CAN×1		UART×3 1PPS×1 EVENT IN×2 EVENT OUT×1 CAN×1 LAN×1	

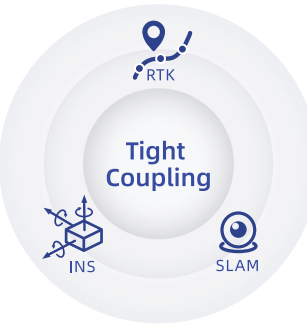
Notes: “●” means Supported, “○” means Optional, “-” means Not Supported.

# TECHNOLOGICAL INNOVATION



## High Precision GNSS ASIC

The GNSS chip designed for high-precision positioning supports multi-constellation, multi-frequency signal reception such as BDS, GPS, GLONASS and Galileo, including modern signals.



## Advanced INS/GNSS Integration

With tight coupling GNSS baseband signal processing, RTK ambiguity resolution, MEMS inertial sensors and Visual Odometry sensors, we can effectively deal with signal blockage and interference, thus achieve reliable high-precision positioning in challenging environments.



## Robust GNSS-based Vehicle Localization

Combining the RTK ambiguity solving process with the baseband signal tracking loop, it has excellent anti-blocking performance under the vehicle dynamic condition, and can provide stable, continuous and reliable real-time high-precision position and attitude information for smart cars.



www.bynav.com



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