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System Status
# BDS Constellation Status

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</table>

A total of 45 satellites on orbit

Including:

- **15 BDS-2 Satellites**
- **30 BDS-3 Satellites**

Reliable Services

Healthy State

Stable Operation
Global

Horizontal 2.5m
Vertical 5.0m

Maximum length of a single message: 560 bits
Access success rate over 99%

Passed Cospas-Sarsat technical review

PNT

Horizontal positioning accuracy 0.24m
Vertical positioning accuracy 0.41m
Convergence time 20 mins

Maximum length of a single message: 14000 bits

Positioning accuracy, warning time, integrity risk meet specification

Real-time centimeter-level, post-processing millimeter-level positioning accuracy

GSMC

SAR

Asia-Pacific Region

RSMC

PPP

SBAS

GAS
## 01 System
Positioning, Navigation and Timing

### International GNSS Monitoring & Assessment System (iGMAS) Test Results and Comparison with Specification

<table>
<thead>
<tr>
<th>Items</th>
<th>Test Results</th>
<th>Specification</th>
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<td>Global Positioning Accuracy (95%)</td>
<td>horizontal 2.5m</td>
<td>horizontal 9m</td>
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<tr>
<td></td>
<td>vertical 5.0m</td>
<td>vertical 10m</td>
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<td>Global Velocity Measurement Accuracy (95%)</td>
<td>better than 0.1m/s</td>
<td>better than 0.2m/s</td>
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<tr>
<td>Global Timing Accuracy (95%)</td>
<td>better than 20ns</td>
<td>better than 20ns</td>
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<tr>
<td>Space Signal Continuity</td>
<td>99.996%</td>
<td>better than 99.8%</td>
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<td>Space Signal Availability</td>
<td>99%</td>
<td>better than 98%</td>
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June, 2022
BDS short message communication civil use service platform consists of wide aperture antenna, signal processing system, information processing system and information platform, and realizes the interconnection with ground-based mobile communication system and network. Based on “Terminal to Application Platform to Mobile Phones” service mode, the platform realizes the combination of BDS short message communication into smart phone, without changing SIM card, without switching mobile phone numbers, and without adding external equipment.
01 System Status

Four Service Platforms for Civil Use—BDS Satellite-based Augmentation System Civil Use Service Platform

Consists of 27 domestic and 3 foreign monitoring stations and 2 data processing centers. Broadcasts BDSBAS B1C and B2a signals via GEO satellites for APV-1 and CAT-I requirements.

As an outside window of BDS SBAS, the Platform is to be used to carry out airworthiness authentication, international standard promotion, systematic performance assessment, service and application promotion, etc.

- **Civil Aviation**: Air Route Navigation, Approach and Landing, ADS-B Location
- **Maritime Affairs**: Navigation in port and inland river
- **Railway**: Control and Timing for Trains, Route Monitoring, Resource Management
- **Public Transportation**: Route Selection, Vehicle Recognition, Emergency Rescue
- **Electric Power**: Safe Timing, Unmanned Powerline Inspection
01 System

Status

Four Service Platforms for Civil Use—China COSPAS SARSAT Civil Use Service Platform

Medium-Earth Orbit Local User Terminal of CNMCC (Cospas-Sarsat China Mission Control Center) and BeiDou MEOSAR Ground-based Support System, with other 35 Mission Control Centers and 47 MEOLUT around the world, constitute the ground segment of MEOSAR system.

SAR Return Link broadcast at B2b frequency point
Supported by 24 MEO Satellites and 3 IGSO satellites

Increase Confidence of people in emergency
Facilitate Search and Rescue Movement
Lower Spurious Alarming Rate
01 System Status

Four Service Platforms for Civil Use—Ground-based Augmentation System Civil Use Service Platform

More than 2200 BDS augmentation stations, data processing centers in China constitutes augmentation signal broadcasting system.
From 9th to 11th Nov. 2022, the 2022 World Internet Conference Wuzhen Summit was held. BeiDou Navigation Satellite System was selected as the practice cases of Jointly Building a Community with a Shared Future in Cyberspace.
02
BDS/GNSS Applications
The overall output value of China’s satellite navigation and location-based service industry increased to 469 Billion RMB in 2021. A full spectrum chain of basic products established, shipment amount of domestic chip over 100 million, intellectual property protection protected. Making breakthrough in mass market with smart phone as representative products. More than 130 million, also 98.5% shipments of smart phones in China supported BDS positioning function in the first half year of 2022.
02 BDS/GNSS Applications

- Detailed Information of BDS satellites shown in interface
- Lane-Level Navi/Traffic Light Reminder
- Real-time Location Sharing

Mobile Navigation
02 BDS/GNSS Applications

- BDS Short Message Communication applied to Smart phones without changing devices in July
- BDS Short Message Communication entering Actual Test phase

Availability of SMC for Mobiles

Sender

Receiver
BeiDou Services including PNT, Timing and Frequency, and Short Message Communication all fully applied in the field, with more than 380000 devices and terminals.

**Power Regulation, Information Management**
- All applying BDS Timing Signals

**Frequency Synchronization Backbone Network**
- All receiving BDS Frequencies

**Vehicles in Power Industry**
- All equipped BDS Terminals

- **Digitalization Construction of Power Grid Infrastructure**
- **High Precision Unmanned Powerline Inspection**
- **Safety Management of Employees**
- **Real-time Monitoring of Power Grid Operation**
BDS Based Studies on Bird Migration Activities

BDS Based Studies on Home Range of Wild Camel
Confronted with the threat of potential natural disaster in Sarez Lake in Tajikistan, China and Tajikistan utilized BDS to undertake the deformation monitoring and disaster warning in surrounding area in millimeter-level accuracy, providing important scientific and technological reference for the safety of the dam.

BDS high-precision based early warning and monitoring system released landslide warning 7 minutes ahead, whose scale is as large as a hundred thousand cubic meters, and successfully prevented casualties.
BDS-based products have been exported to and used in more than half countries and regions in the world. BDS has been widely used in ASEAN, Southern Asia, Eastern Europe, Western Asia, Africa in land ownership confirmation, precision agriculture, intelligent port management, etc., promoting local economic and social development.
International Cooperation
03 International Cooperation
Compatibility and Openness to Provide Better Service (Bilateral)

China-Russia
Comprehensively promote innovative and integrated development of BDS and GLONASS under the China-Russia Satellite Navigation Key Strategic Cooperation Project Committee framework

China-U.S.
Fostered the cooperation in compatibility and interoperability, SBAS, and civil use industries

China-EU
Coordinated with EU to foster a communication mechanism between Galileo and BeiDou, and frequency coordination communication was conducted
In order to promote national construction and social and economic development for both countries and enhance cooperation and communication in the satellite navigation field, CSNO and SANSA signed the MOU at the workshop on BDS/GNSS Applications in China and South Africa.

CSNO and CONAE has built a kind of normal cooperation mechanism in satellite and navigation, and will carry out cooperation in joint applications, test and assessment, education and training, etc., to accelerate economic and social development in Argentina.
03 International Cooperation
Joint Discussion, Construction and Sharing with The Belt and Road countries (Multilateral)

3rd China-Arab States BDS Cooperation Forum Dec. 8, 2021

2nd China-Central Asia BDS Cooperation Forum Oct. 13, 2021

1st China-Africa BDS Cooperation Forum Nov. 5, 2021

EXPO 2020 Dubai BeiDou Showcase Oct. 2, 2021
03 International Cooperation

Chinese Wisdom and Contribution through Multilateral Exchanges (Multilateral)

Participated the ICG-16 in Abu Dhabi, UAE in Oct. 2022 to promote compatibility and mutual development with other systems and better serve the world.
China actively participated in programs and activities under the UN framework to promote GNSS compatibility and interoperability, and held education and training activities in Asia-Pacific regions and Africa based on United Nation Education and Training Center.
The 14th China Satellite Navigation Conference (CSNC) is going to be held in Ji’nan, Shandong Province in 2023.
03 International Cooperation
Ratification by International Standards
BeiDou has been adopted as the third operator to provide tracking systems for ships after being given a certificate by the International Maritime Organization (IMO).
03 International Cooperation

Declaration of Intent Between the Co-operating Agencies of the International COSPAS-SARSAT Programme and the Maritime Safety Administration of the People’s Republic of China for Co-operation on the COSPAS-SARSAT Medium-Altitude Earth Orbit Search and Rescue (MARSAR) Satellite System

The Co-operating Agencies of the International COSPAS-SARSAT Programme and the Maritime Safety Administration of the People’s Republic of China, having referred to theEGAD-1995 Agreement and the EGAD-2000 Agreement,

NOTING the successful implementation of the COSPAS-SARSAT search-and-rescue satellite system currently operated under the terms of theInternational COSPAS-SARSAT Programme Agreement, dated in Paris on 1 July 1998,

NOTING the continued operation of the COSPAS-SARSAT System and its significant international coordination in the saving of human lives for more than forty years through the use of search-and-rescue receiver stations and satellites in low-altitude Earth orbit (LEO/GEO) and geostationary Earth orbits (GEO/GEO/S),

NOTING the completion of the COSPAS-SARSAT Parties to the Agreement to ensure the long-term operation of the COSPAS-SARSAT Systems and access to this System to all States on a non-discriminatory basis, and free of charge to the end-user in distress,

RECOGNIZING the possible efforts and ongoing coordination by the COSPAS-SARSAT Parties, the European Union, and the People’s Republic of China in the development of enhancing global SAR satellite-aided search and rescue by placing 300-MHz transponders on the satellites of the Global Navigation Satellite System (GNSS) in medium-altitude Earth orbits, known as B† (GALILEO), GLONASS and GPS,

NOTING the COSPAS-SARSAT Council, reflected in document C/C.110/2006/09/01, “COSPAS-SARSAT MIDARC Implementation Plan”, to ensure that new MIDARC satellite-aided search and rescue (SARSAT) Systems can be compatible with the existing COSPAS-SARSAT Systems, due to the greatest extent possible, interoperable at the user level,

RECOGNIZING that it is desirable for the Russian Federation, the United States of America, the European Union and the People’s Republic of China to coordinate planning and development of their MIDARC satellite constellations (including GNSS elements related to COSPAS-SARSAT Systems) to ensure that their satellite constellations will be compatible with the existing COSPAS-SARSAT System, and be the greatest extent possible, interoperable at the user level,

NOTING that the COSPAS-SARSAT Parties desire to cooperate at a regional level, including with the search-and-rescue services of the medium-altitude service satellite system (MMEARSAR) for the provision of maritime, aerospace and land search and rescue services, and the development and implementation of the COSPAS-SARSAT MIDARC System.

Signed in 6 copies in each of the English, French and Russian languages, each version being equally valid.

For the Maritime Safety Administration of the People’s Republic of China

For the National SAR Secretariat (NSS), Co-operating Agency of Canada

For the Centre National d’Etudes Spatiales (CNES), Co-operating Agency of the French Republic

For the Federal Maritime Agency (GMMA), Co-operating Agency of the Russian Federation

For the National Oceanic and Atmospheric Administration (NOAA), Co-operating Agency of the United States of America

30
04 Future Visions

1. Development of Back-up Satellites, Optimize Production and Status to Ensure the Stable and continuous Operation

2. Acceleration of Integration with Newly-Emerging Technologies to Meet the Maximized Needs of PNT System

3. A Comprehensive PNT System will be Established with BDS as the Core

- Positioning precision at decimeter level
- Global integrity services

- Navigation and communication empowers each other
- Communication accessible areas are navigable

- Acquire PNT information autonomously

Deep Integration

- High Precision
- High Availability
- High Continuity
- Low cost
Thanks for your continuous attention and support to the BDS development!

http://en.beidou.gov.cn