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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 39607-2020

**Data transmission interface protocol for global navigation
satellite system reference stations**

卫星导航定位基准站数据传输和接口协议

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1:1-2009: This standard was proposed by the Ministry of Natural Resources of the People's Republic of China: This standard is under the jurisdiction of the National Geographic Information Standardization Technical Committee (SAC/TC230): Drafting organizations of this standard: Standardization Institute of Surveying and Mapping, Ministry of Natural Resources, Guangzhou Zhonghaida Satellite Navigation Technology Co., Ltd., Shanghai Hua Surveying and Navigation Technology Co., Ltd., Henan Provincial Bureau of Surveying and Mapping, National Photoelectric Rangefinder Testing Center of Chinese Academy of Surveying and Mapping, Ministry of Natural Resources Chongqing Institute of Surveying and Mapping, Wuhan University, Jilin Province Surveying and Mapping Geographic Information Bureau: The main drafters of this standard: Wang Xiaohua, Huang Chen, Yin Xiaoqing, Deng Guoqing, Li Chenggang, Bao Zhixiong, Ouyang Zhongnan, Liu Ruochen, Xie Huazhong, Zhang Lichao, Zhai Qingbin, Xiao Ping, Wang Tiejun, Li Lin, Liu Zhenyu: Satellite navigation and positioning reference station Data transmission and interface protocol

1 Scope

China's national data transmission interface protocol for GNSS reference stations. It specifies the abbreviations, the general requirements, the data transmission interface and the transmission data types. A reference station is a receiver at a precisely known position whose observations allow other receivers nearby to correct their own - the basis of all high accuracy satellite positioning. China operates thousands of them, in national, provincial and commercial networks, and the value of that infrastructure depends on the observations flowing from the stations to the processing centres without regard to who built which. That is the interface this protocol fixes. It matters particularly for BeiDou: the international formats were designed around GPS and extended afterwards, and a Chinese network carrying full BeiDou observations needs a protocol that treats it as a first-class constellation rather than

an addition.

This standard specifies the general requirements, transmission interface, and transmission data types for data transmission between satellite navigation and positioning reference stations and data centers And transmission data structure: This standard applies to data transmission between satellite navigation and positioning reference stations and data centers:

2 Abbreviations

The following abbreviations apply to this document: BDS: BeiDou Navigation Satellite System (BeiDouNavigationSatelliteSystem) CGCS2000:2000 National Geodetic Coordinate System (ChinaGeodeticCoordinateSystem2000) DOP: Dilution of Precision (Dilution of Precision) FTP: File Transfer Protocol (FileTransferProtocol) Galileo: Galileo Navigation Satellite System (GalileoNavigationSatelliteSystem) GDOP: GeometricDilutionPrecision GLONASS: GLONASS Satellite Navigation System (GlobalNavigationSatelliteSystem) GNSS: Global Navigation Satellite System (GlobalNavigationSatelliteSystem) GPS: Global Positioning System (GlobalPositioningSystem) HDOP: horizontal component precision factor (HorizontalDilutionofPrecision) NAME0183: National Marine Electronics Association Standard Agreement (NationalMarineElectronicsAssociation) Ntrip: Protocol for RTCM network transmission over the Internet (NetworkedTransportofRTCMviaInternet Protocol) PDOP: Three-dimensional position precision factor (PositionDilutionofPrecision) QZSS: Quasi-ZenithSatelliteSystem RTCM: International Maritime Industry Radio Technology Committee Standard Agreement (RadioTechnicalCommissionforMaritime services) SBAS: Satellite-Based Augmentation System (Satellite-BasedAugmentationSystem) TDOP: TimeDilutionofPrecision UTC: Coordinated Universal Time (CoordinatedUniversalTime) VDOP: vertical component precision factor (VerticalDilutionofPrecision)

3 General requirements

- 1 The communication protocol for data transmission between the satellite navigation positioning reference station and the data center should adopt the TCP/IP protocol: 3:
- 2 The communication mode between the satellite navigation and positioning reference station and the data center can adopt C/S mode and B/S mode: 3:
- 3 The data transmission between the satellite navigation and positioning reference station and the data center can adopt wired and wireless communication methods: 3:
- 4 The encoding method of data transmission between the satellite navigation and positioning reference station and the data center should ensure the correctness of the transmitted data: