

[GSC][USER REQUEST][Ticket #2277]

1 messaggio

GSC Help Desk <helpdesk@gsc-europa.eu>

3 febbraio 2026 alle ore 14:04

A: GSC Help Desk <helpdesk@gsc-europa.eu>, "bamarcant@gmail.com" <bamarcant@gmail.com>

Dear GSC User,

Your request (ID ticket #2277) has now been addressed by the European GNSS Service Centre. Please find below the reply from our expert team.

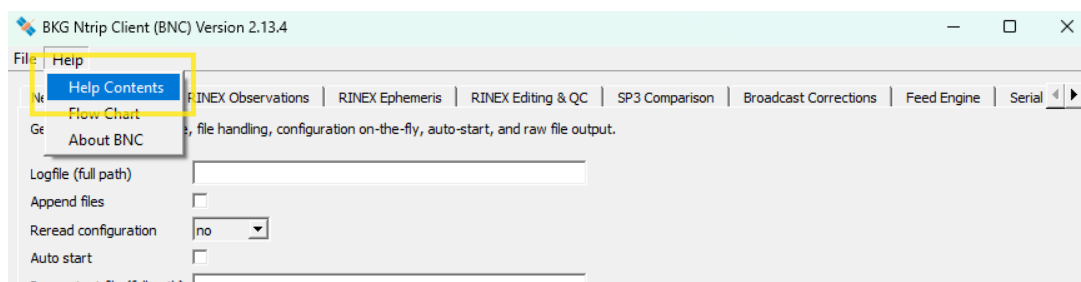
First of all, thank you very much for your interest in Galileo. Find below the answer to your questions.

The Galileo High Accuracy Service (HAS) provides positioning solutions referenced to the Galileo Terrestrial Reference Frame (GTRF), which is a highly accurate and regularly updated realization of the International Terrestrial Reference Frame (ITRF).

The GTRF is specified to be continuously and highly accurately aligned with the **International Terrestrial Reference Frame (ITRF)**, which is the physical realisation of the ITRS maintained by the International Earth Rotation and Reference Systems Service (IERS).

- **Precision of Alignment:** The alignment between the GTRF and the latest physical realisation of the ITRF is maintained such that the difference in coordinates for the reference markers is **less than 3 cm (2 σ)**.
- **Dynamic Updating:** The GTRF is regularly re-aligned whenever new ITRF realisations are published by the IERS.
- **Civil Equivalence:** For the vast majority of civil, commercial, and mapping applications, the GTRF and the ITRF are considered equivalent due to this stringent alignment

To georeference a static position obtained via HAS_PPP in a Geographic Information System (GIS) or geodetic software, you must identify the ITRF version that currently corresponds to the GTRF. According to recent programmatic documentation (2024), the Galileo system and the associated BKG Ntrip Client (BNC) configurations for HAS data distribution reference **ITRF2020**. In the International GNSS Service (IGS) context, this is referred to as **IGS20**. (Please refer to "Help Contents" section in BKG Ntrip Client (BNC) tools section)



Help Contents

is required in addition. Enter user and password you received from the Ntrip Broadcaster operator along with the mountpoint(s).

If 'Host', 'Port', 'Mountpoint', 'Ntrip' Version, 'User' and 'Password' are set, the stream will be encoded into 'State Space Representation' (SSR) messages and uploaded to the specified broadcaster following the specified Ntrip transport protocol options.

2.15.3 System - mandatory if 'Host' is set

BNC allows configuring several Broadcast Correction streams for upload, so that they may refer to different reference systems and different Ntrip Broadcasters. You may use this functionality for parallel support of a backup Ntrip Broadcaster or for simultaneous support of various regional reference systems. Available options for transforming orbit and clock corrections to specific target reference systems are

IGS20:	Stands for the GNSS-based IGS realization of the International Terrestrial Reference Frame 2020 (ITRF2020)
ETRF2000:	Stands for the European Terrestrial Reference Frame 2000 adopted by EUREF
GDA2020:	Stands for the Geodetic Datum Australia 2020 as adopted for Australia
SIRGAS2000:	Stands for the Geodetic Datum adopted for Brazil
DREF91:	Stands for the Geodetic Datum adopted for Germany
Custom:	Allows a transformation of Broadcast Corrections from the IGS20 system to any other system through specifying up to 14 Helmert Transformation Parameters

With each target reference system a respective Service CRS and RTCM CRS message is generated and uploaded.

Because a mathematically strict transformation to a regional reference system is not possible on the BNC server side when a scale factor is involved, the program follows an approximate solution. While orbits are transformed in full accordance with given equations, a transformed clock is derived through applying correction term

$$dC = (s - 1) / s * p / c$$

The EPSG datum that approaches the current GTRF most closely is ITRF2020 (which may be found under EPSG:9913 for Cartesian coordinates or similar identifiers for geographic coordinates). If your software has not yet implemented ITRF2020, ITRF2014 (EPSG:7789) is the preceding realisation and remains extremely close (within centimetres) to the GTRF.

*Please note that **WGS 84** (World Geodetic System 1984) is also a realisation of the ITRF. Therefore, for **most standard mapping purposes**, a HAS position can be treated as **WGS 84 (G2139, with EPSG:4326)**, which is the recent update aligned with ITRF2014/2020. However, for high-precision scientific work, ITRF2020 at the epoch of observation is the correct handling*

In practice, when handling a HAS_PPP sentence in the original configuration, the datum to be used is GTRF. High-precision applications require the user to account for the specific epoch and to apply necessary transformation parameters if a different local or national coordinate system is required.

We hope that this replies to your request, and please let us know if we can be of further assistance.

Please help us to improve our service: [Feedback Form](#). It will not take more than 30 seconds!

For further requests, you are welcome to use the contact form on the GSC web portal: <http://www.gsc-europa.eu/helpdesk/>

Thank you for contacting the GSC.

GSC Helpdesk

European GNSS Service Centre (GSC),

Torrejón de Ardoz





Spaceopal, the Galileo Service Operator (GSOp) is operating the GSC, under a contract funded by the European Union and concluded with the EUSPA, which is the Galileo Service Provider.



image004.jpg
7K