



User Guide for RINEX Server

The RINEX server can be accessed through any web browser at the following address:

rinex.gnssnet.hu

The server provides real detected data from reference stations in RINEX format, as well as virtual RINEX data for the location selected by the user, for the past 30 days.

Current status of our stations: https://gnssnet.hu/GNSSnet_referencia_allomasok.jpg

Steps for RINEX data download

1. **Login:** The server can be accessed in any web browser at the address rinex.gnssnet.hu. Please login with your username and password! Do not use your registered email here! "Forgot Password" and "New Login" functions cannot be used from this interface.



User/Email	<input type="text"/>
Password	<input type="password"/>

[Login](#) [Forgot Password?](#) [New Login](#)

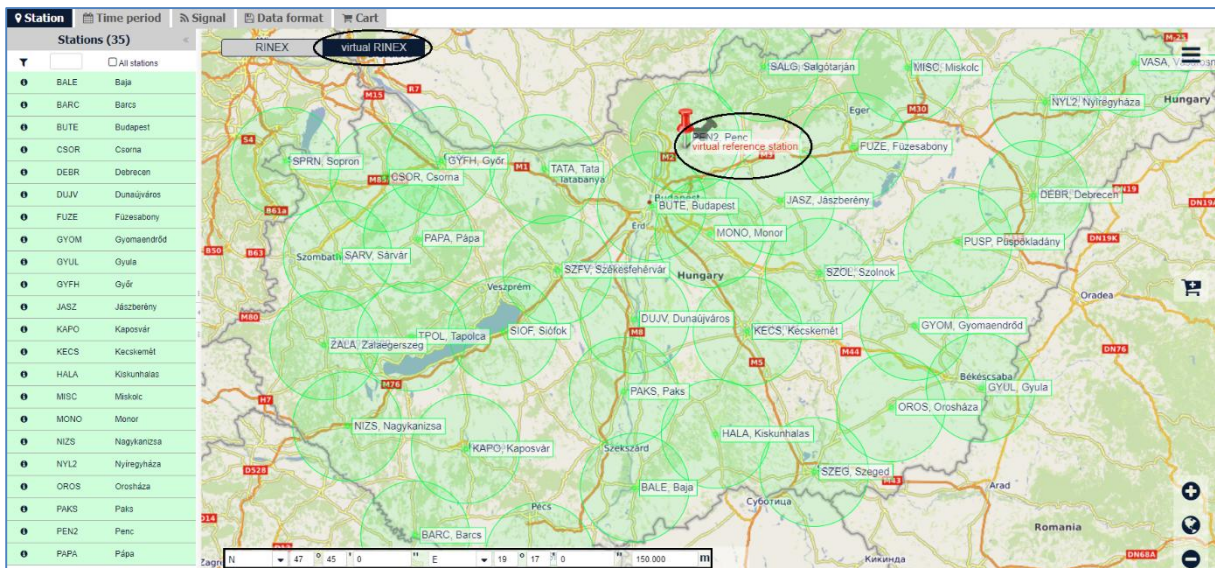
2. **Station:** Choosing RINEX station type and selecting the station you can get the real detected data of the station. If you select "virtual RINEX" station type, virtual RINEX data is generated for the given coordinate value (virtual reference station). You can change the format of the coordinate value in the upper-right hamburger menu. Both type of data can be downloaded for the past 30 days.

The screenshot displays the web interface for downloading RINEX data. On the left, a sidebar lists 35 stations, with 'KECS' (Kecskemét) selected. The main area shows a map of Hungary with green circles representing the coverage area of various RINEX stations. The top navigation bar includes 'Station', 'Time period', 'Signal', 'Data format', and 'Cart'. The 'Station' dropdown is set to 'RINEX', and the 'Data format' dropdown is set to 'virtual RINEX'.

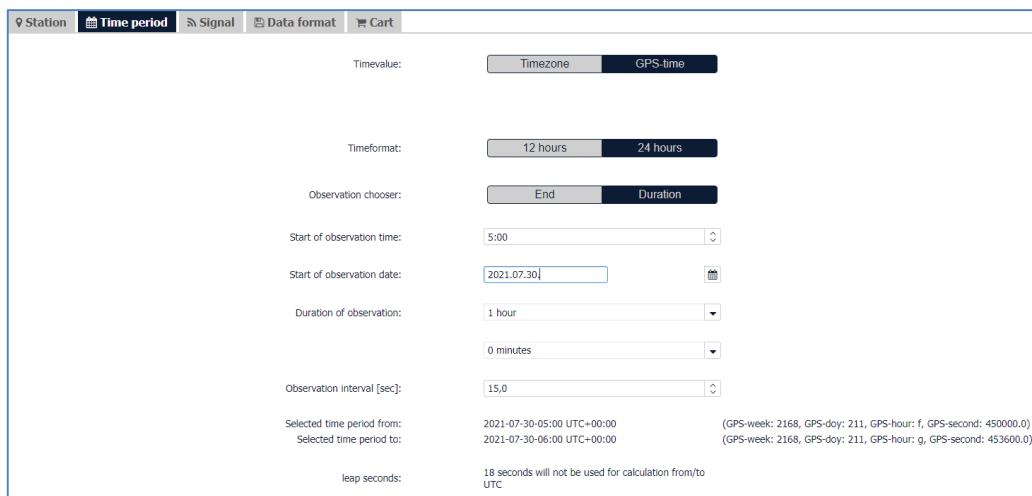
Lechner Nonprofit Kft.

1111 Budapest, Budafoki út 59. Postafiók: 1519 Budapest, Pf. 566

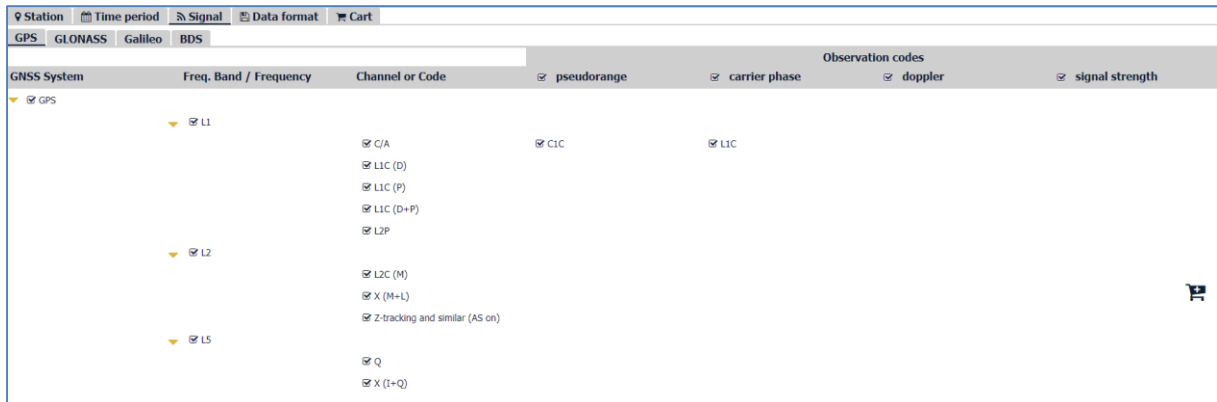
Telefon: +36(27)200-930, +36(27)200-931 e-mail: support@gnssnet.hu web: www.gnssnet.hu



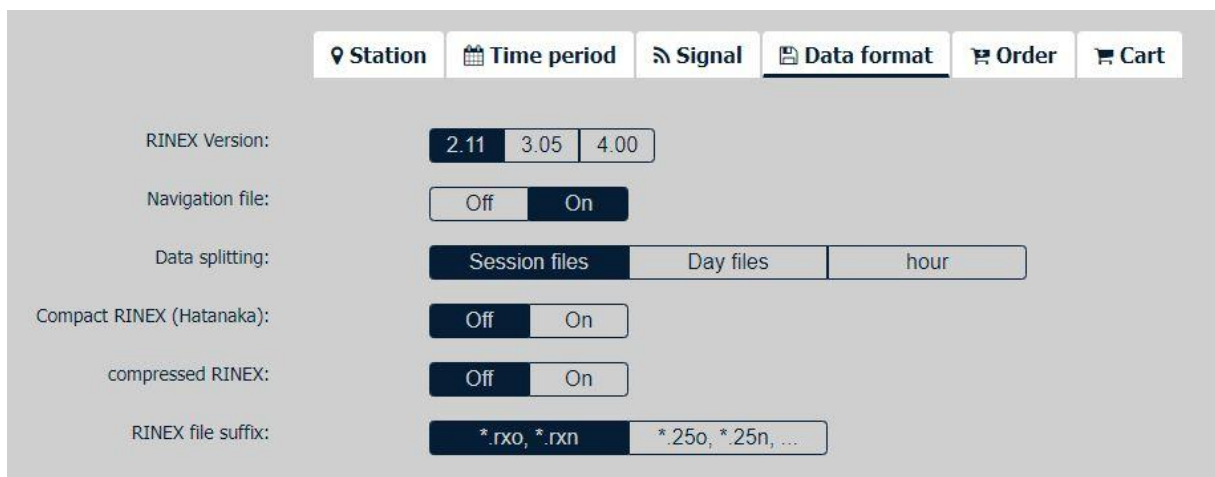
3. **Time period:** You can set the time window for the requested data in different ways. GPS time can be considered permanent, so there is no need to change the time relative to UTC according to daylight saving time. We recommend "GPS-time" because station detections are also recorded in GPS time, taking into account the current leap second value relative to UTC time. It is also important to set the "Observation interval" properly.



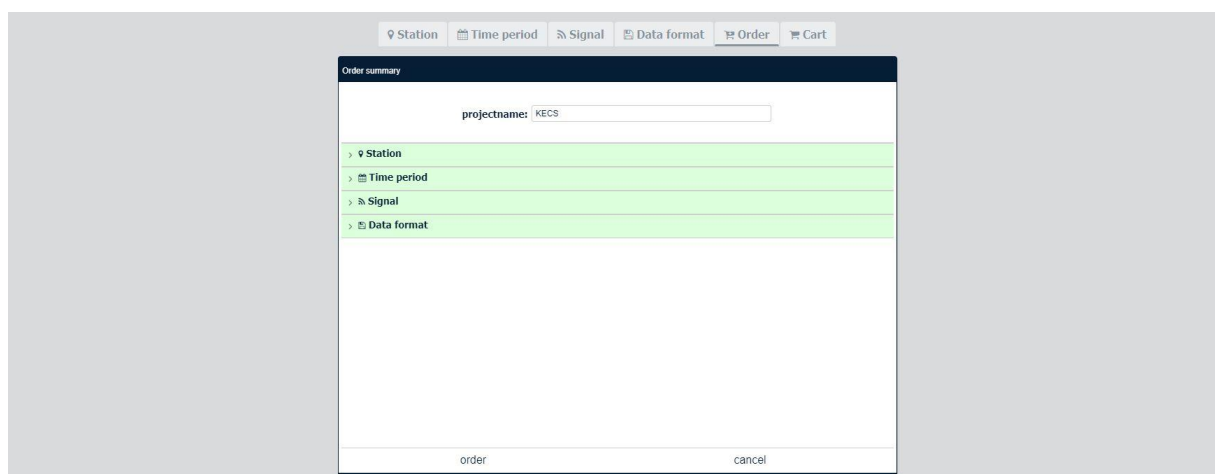
4. **Signal:** In this windows you can fine tune the content of the requested RINEX data. You should turn Galileo és BeiDou (BDS) on only when the selected reference station detects their signals or when the virtual reference station is in 30 km district of a GPS/GLO/GAL/BDS capable reference station. It is not worth turning on Galileo and BeiDou data when the user's device has not detected them or the processing software is not able to handle Galileo and BeiDou signals. For the GPS system on L1 and L2 frequencies, please select all channels and codes!

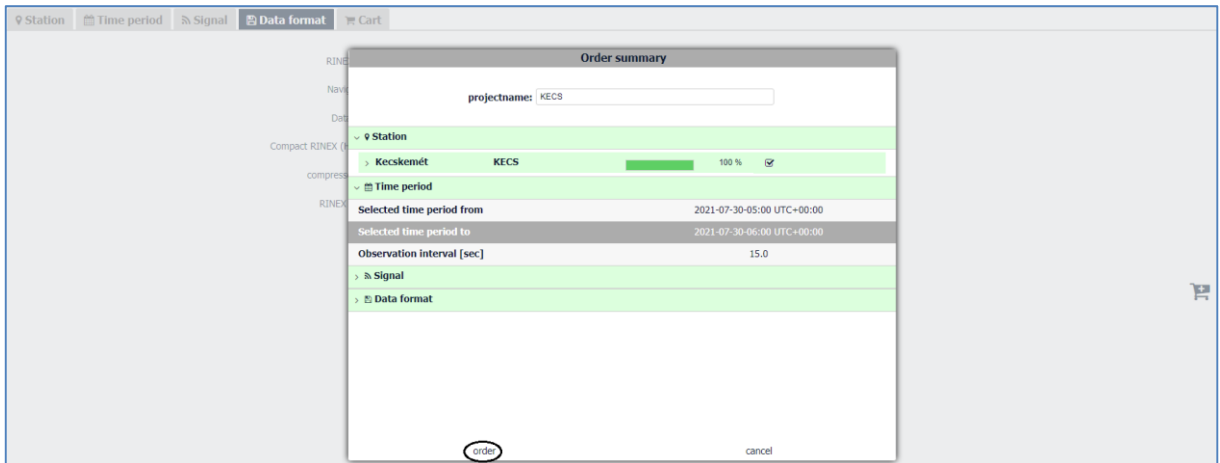


5. **Data format:** You can choose the settings according to your needs, except "Compact RINEX (Hatanaka)" and "compressed RINEX" settings, which we recommend to turn off. After setting data format, please click on Order tab!



6. **Order:** You have to set the name of the project, then you can review the settings of the planned download. If you find everything correct, you can continue with clicking on „order”.

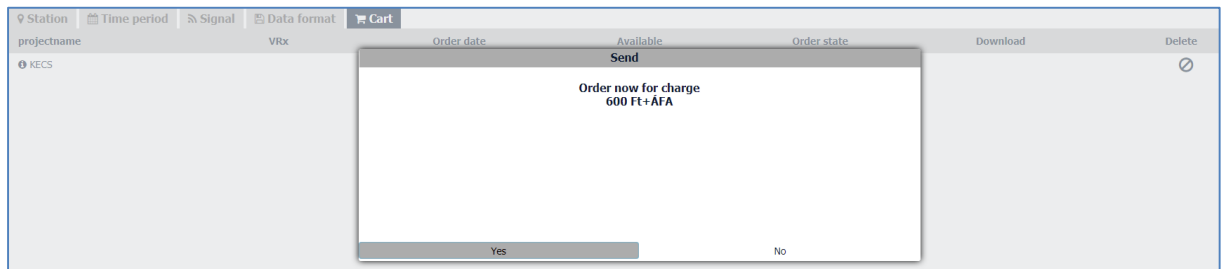




7. **Cart:** The order can be finalized, which also involves a payment obligation („order with charge”).

projectname	VRx	Order date	Available	Order state	Download	Delete
KECS		2021-07-30 11:31	100 %	order with charge		

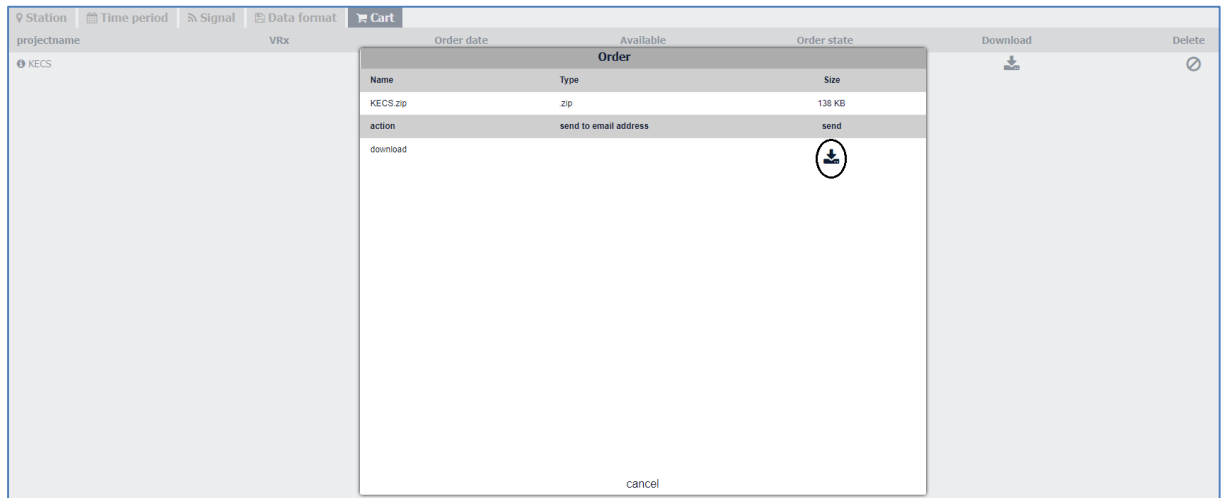
8. You can confirm your order in the following pop-up window with clicking on button „Yes”.



9. It may take 20-25 seconds to collect the requested data. Please wait until the check mark appears in the Order state column and the download sign appears in the Download column!

projectname	VRx	Order date	Available	Order state	Download	Delete
KECS		2021-07-30 11:31	100 %	✓		

10. The data download can be started by clicking on icon download. Please do not use the option of sending data to an email address!



Additional useful information

In the event of network maintenance or other possible errors, not all detection data may be available, therefore it is recommended to monitor the current status of the network on the GNSSnet.hu Monitor page during measurements.

GNSSnet.hu Monitor: <https://monitor.gnssnet.hu>

Single-frequency receivers are particularly sensitive to the distance from the reference station. If the distance between the reference station and the single-frequency receiver exceeds 10 km, we strongly recommend using a virtual station.

In the case of RINEX data generated for a virtual station, when determining the height, you must specify a value above the ellipsoid that corresponds approximately to reality (with an accuracy of 30-50 m). In Hungary, an average of 40-45 meters must be added to the height above sea level to obtain the height above the ellipsoid of the given area.

When post-processing with virtual data, you must specify ADVNULLANTENNA (or GPPNULANTENNA) when selecting the antenna type. This antenna is an ideal, point-like, isotropic (direction independent) antenna with no phase center eccentricity and no phase center variation (PCV). In practice, this is achieved by using the PCV model derived from the individual absolute calibration of the GNSS antennas at the reference stations to reduce the actual phase center to the antenna reference point (ARP), which is usually the bottom of the antenna. This method eliminates the deviations caused by the antenna phase center.

Best regards,
GNSS Service Centre