

HOW TO GUIDE: GLONASS

GLONASS is the Russian version of the US-run GPS system. It was designed as a standalone system, however the limited number of operational satellites has restricted usage to that of supplementing the GPS system.

Description

By means of an unlock code, the mojoRTK can be activated to make use of the GLONASS satellites if they are:

- visible and
- it is beneficial to do so

The activation of GLONASS will not force the product to always use all GLONASS satellites that are visible. In much the same way that not all visible GPS satellites are used, the mojoRTK system will only use the GLONASS satellites when it is beneficial to do so.

To utilise the GLONASS satellites GLONASS unlock codes must be enabled on both the mojoRTK base station and the mojoRTK console.

Benefits

The primary benefit of this unlock code is the improved accuracy and availability of the positioning that is gained, particularly in marginal GPS conditions.

Limitations

- This feature is not a “fix all” for positioning problems, only an aid. If conditions are unfavourable for GPS, this feature will help the situation although there may still be times when there are positioning problems due to satellite constellation issues
- The use of GLONASS will only be available if the data format is set to **mojo1** or **RTCM 3.0**. As there is no published standard for GLONASS reference corrections within the CMR protocol, this will result in unpredictable behaviour for any non-Leica device if CMR is used

Required Items

- GLONASS unlock code for the mojoRTK console
 - 9200001 GLONASS

Configuration

The unlock code for GLONASS must be generated through Virtual Wrench™ and can be programmed to be valid for any period of time. This is an ideal candidate to provide for a limited time to the end user so that the user may establish the advantages of accessing the GLONASS constellation.

Installing GLONASS unlock code manually on the mojoRTK console

1. Switch on the mojoRTK console
2. Press the OK button to enter the main menu
3. Select Settings -> Extended Features -> Enter New Code
4. Enter the 16 digit unlock code by using the main dial to select the value for a digit and pressing OK or Escape to move between digits
5. After the code has been accepted the mojoRTK console will restart and GLONASS satellite coverage will be unlocked

Installing GLONASS unlock code using Virtual Wrench™ on the mojoRTK console

1. Switch on the mojoRTK console
2. Press softkey 3 twice to bring up the Virtual Wrench™ connection screen
3. Select 'Yes' and press the OK button to connect to Virtual Wrench™
4. Once connected the GLONASS unlock code will be automatically downloaded and installed
5. After the code has been accepted the console will restart and GLONASS satellite coverage will be unlocked

On the mojoRTK base station, GLONASS can be enabled by navigating to Main Menu -> Settings -> GLONASS. It is turned on by default and does not normally need to be manually enabled unless deliberately turned off. The data format should be set to **mojo1** or **RTCM 3.0**, if the 3rd Party Head (console) unlock code is enabled.



Background Information

- GLONASS development began in 1976 with a goal of achieving global coverage by 1991
- From 12 October 1982, numerous rocket launches added satellites to the system until constellation completion in 1995
- Following completion, the system rapidly fell into disrepair with the collapse of the Russian economy
- In 2001, Russia committed to restoring the system
- In recent years Russia has diversified the program's development by introducing the Indian government as a partner and accelerated its growth with a goal of restoring global coverage by 2009.

A fully operational GLONASS constellation consists of **24 satellites**, with 21 used for transmitting signals and three for on-orbit spares. There are currently nine operational satellites in the GLONASS system and three recently launched satellites entering their commissioning phase. [<http://en.wikipedia.org/wiki/GLONASS>]

Glossary

GLONASS	G lobal N avigation S atellite S ystem
Base	Source of the correction signals for the RTK solution. Also referred to as: Base station, reference station and network reference station
Console	The mobile GNSS receiver. In Leica Agriculture terms this is a mojoRTK console