

RTK Base Workflow for Eclipse OEM

Part Number 875-0218-000

June 29, 2016

I'M AN EXPERT:

1. Power on
2. Define base coordinates (either `$JRTK,1,lat,lon,height` or `$JRTK,1,P`)
3. Send corrections using:
 - i. `$JASC,ROX,1[,OTHER]` or
 - ii. `$JASC,RTCM3,1[,OTHER]` or
 - iii. `$JASC,CMR,1[,OTHER]`
4. `$JSAVE` if desired.

I'M A NOVICE:

1. Apply power to the receiver
2. Check `$JAPP` to ensure current HGNS MFA application is running
3. Check `$JK` to ensure the subscription code is ready to work as a base (3004,
4. Define the base coordinates using `$JRTK,1,lat,lon,height` or use
 - i. `$JRTK,1,P` to have the receiver use the currently calculated position as the reference coordinates.
5. Start sending out corrections using `$JASC,ROX,1[,OTHER]` or
 - i. `$JASC,RTCM3,1[,OTHER]` or `$JASC,CMR,1[,OTHER]` for ROX, RTCMv3 or
 - ii. CMR corrections, respectively.
6. Issue `$JSAVE` if desired. This will allow the receiver start up at these exact coordinates and run as a base again after a power cycle.

WALK ME THROUGH IT SLOWLY:

1. Place the GNSSGNSS antenna outside in an open area where it will be able to track as many satellites as possible.
2. Connect the antenna to the antenna cable, and then connect the cable to the receiver.
3. Apply power to the receiver.
4. Connect your PC COM port to the receiver's port. PortA will be used in this workflow.
5. Select software to communicate with the Eclipse. SLXmonDF or HyperTerminal can be used, along with other choices. If you have trouble connecting, ensure you are selecting the right port and baud rate, and ensure the correct cables are connected properly.
6. Once connected, from a screen that allows commands to be sent to the receiver, sent a **\$JAPP** command. The response may be like this:
\$>JAPP,MFA,MFA,1,21

To switch applications, issue **\$JAPP,OTHER** to the receiver and it will reboot in the new application. You may need to reconnect your PC software once this happens.

If the **MFA** application is not installed on the receiver, you will have to do that before you can have it work as a base. Consult your dealer or Hemisphere GNSSGNSS Technical Support for more details.

7. Once you have confirmed the **MFA** application is active, issue a **\$JK** command to ensure the subscription code is ready to work as a base. The response will be something like this: **\$>JK,01/01/3004,08**

The number **3004** here is important. If the number is not 3004, contact your dealer or Hemisphere GNSS Technical Support. They will need to have all of the information from the response to the **\$JK,SHOW** command. For example:

```
$>JK,SHOW,175,0,00/00/2000,0,0OPT=20HZ,RTK,RAW_DATA,L2_L5,MULTI_GNSS,BEIDOU3,
```

8. Once you have confirmed that the subscription code is capable of working as a base, you are ready to define the base station coordinates.
 - i. If you do not have known coordinates for your antenna location, issue **\$JRTK,1,P** to the receiver. This will tell the receiver to use the currently calculated position as the reference coordinates.

- ii. If you do have known coordinates for your antenna location, enter them using **\$JRTK,1,lat,lon,height** in decimal degrees and meters for the ellipsoidal height.
9. You are now ready to start sending corrections to one of the ports. This workflow will use Port B for sending corrections.
10. Ensure your corrections port is set to the correct baud rate. You can use **\$JSHOW** to verify what it is currently set to, or you can just re-define it as needed.
For example, assuming you are connected to PortA through your software, issue **\$JBAUD,9600,OTHER** to set PortB to 9600 baud.
11. Typically, corrections are transmitted over a radio modem link from the base to the rover. Ensure the radio modem device is set to the correct baud rate and is ready to transmit corrections. Ensure the radio antenna is connected properly and is located in an appropriate location. Apply power to the radio modem. Connect the radio modem data port to the GNSS receiver's correction port, PortB for this workflow.
12. You will need to select a correction format. There are 3 correction formats available. Use ROX format (Hemisphere GNSS proprietary) –GNSS. Use RTCM version 3 format when you may be using GNSS from Hemisphere GNSS and also from some other manufactures. If the other GNSS receivers do not support RTCMv3, use CMR format – this format will have the slowest RTK performance on your Hemisphere GNSS rovers.
13. From your PC software, send the command to start sending RTK corrections:
 - i. Issue **\$JASC,ROX,1,OTHER** to send ROX corrections
 - ii. Issue **\$JASC,RTCM3,1,OTHER** to send RTCM version 3 corrections
 - iii. Issue **\$JASC,CMR,1,OTHER** to send CMR corrections
14. The base system has now been set up to transmit corrections. You may optionally issue the **\$JSAVE** command to save these settings. This will allow the receiver start up at these exact coordinates and run as a base again after a power cycle – you can skip all of the steps you just went through! Note, if you do not put the base GNSS antenna in exactly the same location when you restart the system, you will introduce errors into your system. If you do restart your system with the base GNSS antenna at a new location, just follow the steps in this workflow again to ensure proper operation.

NOTES ON BASE STATION STARTUP:

Your Hemisphere GNSS RTK base receiver has several options to save time and simplify startup. You can issue **\$JRTK,1,P** then **\$JSAVE** to have the receiver perform a short position average every time it starts up, then it will be ready to transmit corrections. If you also issue the **\$JASC,ROX,1,OTHER** command before you **\$JSAVE**, it will offer hands-free base station startup every time. You could substitute **RTCM3** or **CMR** for **ROX** as well. In all cases, your rover coordinates will not have proper absolute accuracy (because they are all tied tightly to the base station coordinates, which are just solved from a quick position average). If you power down then power back on and the base receiver senses that it is within 10m of where it was last time it turned off, it will use exactly the same coordinates as last time so there will be continuity between your two surveys. If it senses that it is more than 10m away, it will re-average for new coordinates.

If you issue **\$JRTK,1,lat,lon,height** then **\$JSAVE** it, the receiver will store these coordinates in a special part of memory. It will remember that this was a manually entered location, and that they are not just from a position average. Using this method will ensure proper absolute accuracy for your rover.

FURTHER INFORMATION:

Consult www.HGNSS.com for the latest information, or contact your dealer. For support via email, please contact TechSupport@HGNSS.com