RTK Quick-Start Guide v4.2

This QuickStart Guide assumes that your Hemisphere GNSS <u>receiver has already been upgraded with the Dual Frequency and RTK Activations</u> and also has the <u>correct Firmware onboard</u>.

The instructions in blue are for users configuring their base/rover via the LCD front panel of their receiver.

<u>Equipment Requirements</u>
- 1 or 2 Hemisphere Eclipse based receivers with Dual frequency and RTK activations onboard
- Method of data transfer from base to rover (Serial cable. Radio modems, GPRS modem etc.)
- Power supply 12-32VDC

<u>Setting up a Hemisphere GNSS RTK Base station receiver</u>

- <u>Connect all equipment up</u> according to the appropriate diagram in the user manual and power on the receiver
- Open a terminal program and enter the following to <u>activate Base Mode and make sure FixLoc mode is not enabled</u>:

  $JMODE,BASE,YES
  $JMODE,FIXLOC,NO

  GNSS > Configure > RX Modes > Base > Yes
  GNSS > Configure > Rx Modes > FixLoc > No

- Depending on which <u>RTK corrections data message format</u> you are outputting (ROX, CMR, RTCM3) and which port you are outputting the corrections to the rover through (either PORTA or PORTB), please customize and send the following:

  $JASC,CMR,1,PORTA

  OR..

  $JASC,CMR,1,PORTB

  OR..

  $JASC,RTCM3,1,PORTA

  OR

  $JASC,RTCM3,1,PORTB

  OR..

  $JASC,ROX,1,PORTA

  OR..

  $JASC,ROX,1,PORTB

GPS > Configure > Data Port A > RTCM3 > 1

– Make sure all <u>NMEA strings are turned off</u> on the port outputting aside from the RTK corrections data message format (ROX, CMR, RTCM3)
– <u>Set the baud rate</u> of your base station receivers ports to 19200 by sending the following to the receiver:

$JBAUD,19200
$JBAUD,19200,OTHER
$JSAVE

System Setup > Baud Rates > Port A > 19200

Ensure the same baud rate of 19200 is consistent throughout your entire RTK system, including base station receiver, rover receiver, any radio's or other apparatus communicating in any way with your receiver

– <u>Check that your receiver is using the correct application</u> by sending the following command:

$JAPP

Depending on which model of receiver you are using, you will want to see either of the following application files in the active application firmware slot 1 – Either: MFA or WAASRTKB or SBASRTKB

Here is an example which indicates that MFA is installed in slot 1 and L-Band is in slot 2:

$>JAPP,MFA,LBAND,1,2

System Setup > Display Apps > InUse

– <u>Give the unit time to converge, this can take a couple of minutes depending on receiver's sky view, satellite almanac and ephemeris data.</u> To see if it has converged or how long it will take to do so, connect to the receiver with PocketMax3, select the 'Base' tab and below the 'Memory Location' field, you will see a convergence timer, or that the receiver has converged.

– If the rover hasn't already had it's source of differential switched to either CMR, ROX or RTCM3 then, depending on your scenario, a <u>null modem adaptor or null modem cable may be required</u> to link the base to the rover. Make sure the <u>Base station antenna is at least 10m away from your Rover receivers antenna</u>.

<u>Setting up a Hemisphere GNSS RTK Rover receiver</u>

The instructions in blue are for users configuring their base/rover via the LCD front panel of their receiver.

- <u>Connect all equipment up</u> according to the appropriate diagram in the manual and power on the receiver
- Open a terminal program and enter the following to <u>deactivate Base Mode and Fixed Location</u> or enter the following in blue through the LCD front panel:

  $JMODE,BASE,NO
  $JMODE,FIXLOC,NO

  GNSS > Configure > Rx Modes > Base > No
  GNSS > Configure > Rx Modes > FixLoc > No

- Depending on which <u>RTK corrections data message format</u> you are receiving from the base (ROX, CMR, RTCM3), on the LCD front panel of your receiver select the following and ensure the correction format used from the base is included to be received on your rover:

  Differential > Include > CMR > Yes
  Differential > Include > RTCM3 > Yes
  Differential > Include > ROX > Yes

  Or to do this via terminal, send the following commands:

  $JDIFFX,INCLUDE,CMR
  $JDIFFX,INCLUDE,RTCM3
  $JDIFFX,INCLUDE,ROX

- Depending on which port the corrections are going to, you will next need to <u>set the differential source</u> of your rover receiver. To do this, send the applicable message to the receiver:

  $JDIFF,PORTA

  or...

  $JDIFF,PORTB

- Make sure all <u>NMEA strings on the port you are receiving corrections through are set to off</u> (unless you are receiving corrections via NTRIP – in which case, you will need to issue $JASC,GPGGA,0.2 to the receiver)

- <u>Set the baud rate</u> of your rover receivers ports to 19200 by sending the following to the receiver:

  $JBAUD,19200
  $JBAUD,19200,OTHER
  $JSAVE

  System Setup > Baud Rates > Port A > 19200

Ensure the same baud rate of 19200 is consistent throughout your entire RTK system, including base station receiver, rover receiver, any radio's or other apparatus communicating in any way with your receiver

– Check that your receiver is using the correct application by sending the following command:

$JAPP

Depending on which model of receiver you are using, you will want to see either of the following application files in the active application firmware slot 1 – Either: MFA or RTK

Here is an example which indicates that RTK is installed in slot 1 and L-Band is in slot 2:

$>JAPP,RTK,LBAND,1,2

System Setup > Display Apps > InUse

– If the rover hasn't already had it's source of differential switched to either CMR, ROX or RTCM3 then, depending on your scenario, a null modem adaptor or null modem cable may be required to link the base to the rover. Make sure the Rover antenna is at least 10m away from your Base station antenna.

For further details on how to setup an RTK base/rover system, please refer to your receiver's user manual and also the Hemisphere GPS Technical Reference Guide which can be accessed at: http://hemispheregnss.com/gpsreference/