

RTK With System 300 and System 500

System 500 is the best GPS RTK system available today – it is also a big step forward from System 300.

However, it is still possible to combine System 300 and System 500 for RTK work – the most productive way is to use System 300 as the reference with System 500 as the rover. But what should be known when using the two systems together?

The System 300 Reference

The **Mission** on the System 300 reference should be configured as usual, but ensure the following settings are correct:

- In the [1013] **SET Datalink Parameters** panel, choose **RTCM CODE/PHASE OUT** and the **Byte Format Rule** to be **6** for the RTK data out settings. Be careful not to choose the “normal” System 300 RTK message - **RTIME CODE/PHASE OUT** – the text looks very similar.
- In the [1101] **SET Data Collection Parameters** panel, choose **Sampled** and the **Obs. – Rate Static** to be 1 sec. This ensures the data is transmitted from the System 300 reference with the minimum of latency.
- In the [1006] **SET Satellite Tracking Control** panel, set the **Minimum Elevation** to be **10°**. Remember that v2.0 firmware on System 500 uses satellites down to 10° to fix ambiguities, but needs satellites to be tracked to this elevation on both the reference and rover.

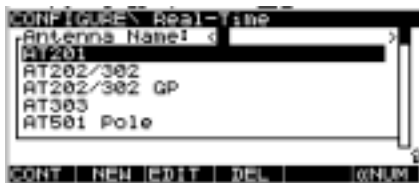
The System 500 Rover

On the System 500 rover ensure the following configuration settings are correctly set.



- **Data Format** must be **RTCM 18,19**. The Leica format can only be used when a System 500 sensor is being used at the reference.
- The **Ref Sensor** must be chosen as the sensor at the reference. When using System 300 as a reference, this parameter **must** be correctly chosen. Do not leave as “Unknown”
- The **Ref Antenna** parameter must also be correctly set as the antenna being used at the reference. The chosen antenna **MUST** be one of the **Leica default** antennas that are contained in this list.

If you are not sure which are the **Leica default** antenna then delete all antenna types in the list until you are left with only the antenna name “Unknown”. Then press **F5 (DEFLT)** to see all available System 500 antenna types and then press **F5(ALL)** to see in addition all System 300 antenna types. You may now select the correct System 300 antennas from this list.



Do **NOT** highlight one of the System 300 antenna and press **F2(NEW)** and then choose this new antenna. This will not then be a **Leica default** antenna.

You should note that failure to choose the correct **Ref Sensor** and **Ref Antenna** types may make ambiguity resolution on the rover difficult

and/or give wrong heights at the rover.

(When the Leica RTK data format is used, it is not necessary to select the **Ref Sensor** and **Ref Antenna**. This information is contained within the RTK message.)

Finally, in the **CONFIGURE Real-Time** panel, press **F6(RTCM)** to check that the **RTCM Version** is set to **2.1**, the **#Bits/Byte** is set to **6** and the **Ref Net** is set to **NO**. Note, this panel is only available in **Advanced mode**.

Working with the Rover

When using System 300 as the reference, the computed rover positions are the co-ordinates of the bottom of the pole.

But when you import this System 500 data into SKI-Pro, the co-ordinates that are imported for the reference are probably not the co-ordinates you had entered at the System 300 reference station. Why?

Also, the point ID that you entered at the System 300 reference does not appear in SKI-Pro. You will probably see the point ID **RTCM-Ref 0000**. Where has this come from?

To Be Continued...but Remember

- Always use **RTCM CODE/PHASE OUT** on the System 300 reference.
- Correctly configure the System 300 reference with **Sampled** data and the **Minimum Elevation** to be **10°**.
- Choose the correct **Ref Sensor** and **Ref Antenna** on the System 500 rover.
- Do not create new System 300 antenna and select these – use only **Leica Default** antenna.